

SOUTHWEST COLORADO PREHISTORIC CONTEXT
ARCHAEOLOGICAL BACKGROUND AND RESEARCH DIRECTIONS

by

Frank W. Eddy
Allen E. Kane
Paul R. Nickens

Office of Archaeology and Historic Preservation
Colorado Historical Society
1300 Broadway
Denver, Colorado 80203

© 1984 BY THE STATE HISTORICAL
SOCIETY OF COLORADO

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.

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

TABLE OF CONTENTS

	Page
FOREWORD.	vi
1.0 REGIONAL FRAMEWORK	1
1.1 Southwest Colorado Study Area.	1
1.2 Cultural Units	4
1.3 Archaeological Study in the Project Area	5
2.0 DEFINITION OF TAXA AND TERMS	6
2.1 Spatial and Material Culture Definitions	6
2.2 Synthetic Units.	12
2.3 Lifeway Descriptors.	15
2.4 Process Descriptors.	17
3.0 CULTURAL UNIT STAGE DESCRIPTIONS	19
3.1 Paleo-Indian Stage	19
3.2 Archaic Stage.	23
3.3 Formative Stage.	31
3.3.1 The McElmo Drainage Unit.	34
3.3.2 The Monument Drainage Unit.	44
3.3.3 The Dolores Drainage Unit	47
3.3.4 The San Juan Unit, Middle Reach	54
3.3.5 The Mancos Drainage Unit.	57
3.3.6 The La Plata Drainage Unit.	63
3.3.7 Animas Drainage Unit.	67
3.3.8 Pine River Drainage Unit.	76
3.3.9 San Juan River Upper Reach Drainage Unit.	81
3.3.10 Piedra River Drainage Unit.	85
3.3.11 A Model of Formative Cultural Process for the Southwestern Colorado Study Area.	91
3.4 Protohistoric/Historic Stage	95
3.4.1. Navajo Tradition.	95
3.4.2 Ute Tradition	102
4.0 SUMMARY.	105
4.1 Nature and Status of the Southwestern Colorado Archaeological Record.	105
4.2 Paleo-Indian Stage	107
4.3 Archaic Stage.	108
4.4 Formative Stage.	108
4.5 Prohistoric/Historic Stage	109
REFERENCES CITED.	110

LIST OF TABLES

Table	Page
2.1 Outline of the Dolores Archaeological Program Site Typology.	9
3.1 Late PII-PIII Towns in the McElmo Drainage Unit and Bibliographic References	41
3.2 Southwest Climatic Cycles and Expected Anasazi System Responses	94
4.1 Bureau of Land Management Montrose District Site File Tabulation	106

LIST OF FIGURES

Figure	Page
1.1 Prehistoric Southwestern Colorado study region map.	2
2.1 Map of the northern San Juan Basin showing drainage unit subdivisions.	8
2.2 Cultural stage and phase sequences for southwestern Colorado	14
3.1 Suggested Paleo-Indian and Early Archaic cultural distribution and spread at several points of time	22
3.2 Cultural sequence of the Oshara Tradition	26
3.3 McElmo Drainage Unit.	35
3.4 Monument Drainage Unit (Colorado portion only).	45
3.5 Dolores Drainage Unit	48
3.6 San Juan River Middle Reach Drainage Unit (Colorado portion only)	55
3.7 Mancos Drainage Unit (Colorado portion only)	58
3.8 La Plata Drainage Unit (Colorado portion only).	64
3.9 Animas Drainage Unit (Colorado portion only).	68
3.10 Pine Drainage Unit (Colorado portion only).	77
3.11 Local phase sequences in the Pine, San Juan River Upper Reach, and Piedra Drainage Units.	78
3.12 Maps showing site distributions for Archaic and Los Pinas (left) and Sambrito Phases (right) of the Navajo Reservoir area	80
3.13 San Juan River Upper Reach Drainage Unit (Colorado portion only)	82
3.14 Maps showing site distributions for the Rosa Phase and Piedra Phase sites in the Navajo Reservoir area	84

	Page
3.15 Map showing site distributions for the Arboles Phase of the Navajo Reservoir area.	86
3.16 Piedra Drainage Unit.	87
3.17 Map showing site distributions for the seven named Chimney Rock Phase site groups.	90
3.18 Chart showing temporal occurrence by research district for phases of the Navajo Tradition, New Mexico and Colorado	97

FOREWORD

This document is the Final Report for the Southwest Colorado Prehistoric Context research design project, completed under provisions of Contract Number 83-045-00-AR, between the State Historical Society of Colorado, and Nickens and Associates of Montrose, Colorado. The research team for this effort has included Dr. Frank W. Eddy, University of Colorado, Mr. Allen E. Kane, Dolores Archaeological Project, and Dr. Paul R. Nickens of Nickens and Associates. Several colleagues have reviewed and made comments during the process of preparation of the report. We would like to extend appreciation to Judi Halasi and Linda Gregonis of the Colorado Preservation Office and Drs. E. Charles Adams and Susan Collins in this regard. Prior to implementation of the contract between the Colorado Historical Society and Nickens and Associates, the early stages of this effort were conducted by a committee of the Colorado Council of Professional Archaeologists. Members of this committee were Linda Gregonis, Mark Guthrie, and Anthony Klesert, along with the present authors. The preliminary work of that committee is gratefully acknowledged.

The report is subdivided into four sections. The first provides a brief environmental and cultural overview of the study area and the second one defines archaeological taxa and terms utilized in the compilation. Section three discusses in detail each of the four aboriginal cultural stages extant in southwestern Colorado, including the Paleo-Indian, Archaic, Formative, and Protohistoric/Historic Stages. Owing to the overwhelming abundance of Formative Stage cultural resources found in the study area, primary emphasis is placed on discussion of the Formative Anasazi Tradition. In this context, the Anasazi occupation of the area is further subdivided and reviewed via a series of drainage units, which are believed to be viable geographical subdivisions for future analysis of Anasazi temporal frameworks and research orientations. The final section contains a summary of the prehistoric context, including a recapitulation of the known cultural resource site inventory for the study area.

We hope that this document will provide a baseline context for future archaeological analysis within this portion of Colorado. It is well known that a tremendous amount of investigation has occurred within the boundaries of the study area, again primarily associated with Anasazi archaeology; however, with very few exceptions, synthetic statements for the region as a whole are generally lacking in the literature. In addition to the need for larger scale investigations, it will also be apparent to the reader that much work remains with regard to achieving better explanations of the cultural record for each of the stages, particularly those preceding and following the Anasazi, both in a diachronic and synchronic sense. Moreover, it will also be evident that many of the geographic subdivisions in the study area are in need of considerable analysis before concrete temporal frameworks and understanding of cultural processes, both inter- and intra-subarea, are achievable. Thus, the present report serves two important purposes -- to summarize what is known and to point to potential avenues for future research. We do not claim that our effort delineates the total range of data gaps and research needs for prehistoric southwestern Colorado; the diversity and complexity of the cultural resource database prevents such

a presentation herein. Nonetheless, if this report aids other investigators in future explanatory inquiries into the nature of aboriginal occupation and utilization of the study area, then our primary goal will have been achieved.

1.0 REGIONAL FRAMEWORK

This section provides information regarding the location of the Southwestern Colorado study region, along with brief comments pertaining to the environmental setting of the project area. A more complete discussion of the environmental background for southwestern Colorado as it relates to cultural resources can be found in the Bureau of Land Management overview for the area (Nickens 1982:7-35). A listing of the identifiable cultural units for the study area is also presented in the following paragraphs, along with a comment on the archaeological study of southwest Colorado.

1.1 Southwest Colorado Study Area. The study area can be simply defined as that portion of Colorado bordered on the west by Utah and on the south by New Mexico, which includes the Upper San Juan and Upper Dolores River drainage basins (Fig. 1.1), or what is commonly referred to as the "Four Corners" area. Generally, the prehistoric cultural definition is largely based on extant archaeological sites (i.e., the extent of the Formative Anasazi Tradition), but it is also based on physiography -- the northern and eastern boundaries are formed by the San Juan Mountains. In terms of relationships with neighboring prehistoric cultural context study areas in Colorado, the West-Central study area lies to the North with the Mountains study area found to the northeast and east.

The study area lies in the major physiographic known as the Colorado Plateau, a province covering some 150,000 square miles of Utah, Colorado, Arizona, and New Mexico. The portion of the Colorado Plateau encompassing southwestern Colorado is generally characterized as an extensive area of flat-lying sandstone and shale sediments, characterized by mesas and canyons. To the north and east, the Plateau abuts against the much higher San Juan Mountains, a complex sedimentary, igneous and metamorphic mountain chain, and the La Plata and San Miguel Mountains, smaller intrusive mountain extensions.

Most of the streams of the Mesa Verde area are northern tributaries of the San Juan River drainage system. In general, these flow south or southwest down the slope of the Colorado Plateau to the San Juan River. In order from east to west the major streams of the area are the Piedra, Pine, Animas, La Plata and Mancos Rivers and McElmo and Montezuma Creeks. On the west and north of the area, numerous dry washes and the Dolores and San Miguel Rivers flow northwest to empty into the Colorado River. Many streams, particularly in the western part, flow only after thundershowers or in the spring when the mountain snows melt. In the eastern section permanent streams, including the rivers named above, are relatively numerous. More water is relatively available even during the drought periods.

Forces of erosion are made very effective by the torrential nature the precipitation, the nature of underlying rock, the slope of the land, and the relative lack of vegetation. Streams are often eroded one or two thousand feet into the Plateau, leaving the characteristic mesa/canyon topography. Permanent streams generally have relatively gentle gradients and flat valley floors, about a half mile or more wide, while tributary and ephemeral streams are characterized by steep gradients, often averaging several hundred feet or more per mile, and "V"-shaped

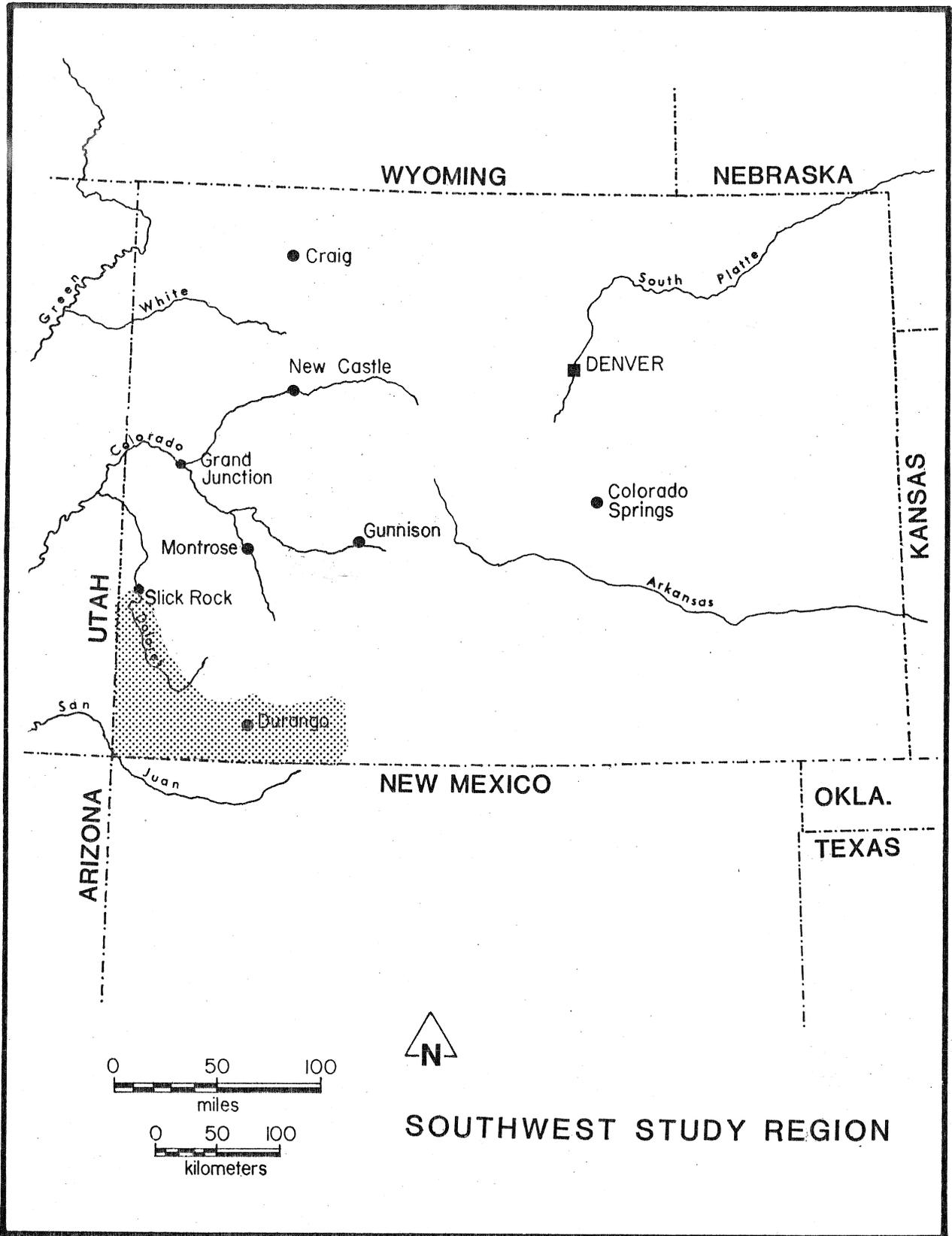


Figure 1.1 Prehistoric Southwestern Colorado study region map.

valleys, or canyons. Arroyo cutting and headward growth of canyons is actively occurring at the present.

Several physiographic subdivisions in the study area have been determined by variations in slope, erosion, and igneous activity. First, the Animas River has formed an extensive drainage basin around the vicinity of Durango. The Animas River Basin is deeply eroded into sandstone and shale deposits. The topography is typically mature rolling hills with the relief on the order of less than one thousand feet. Much of the original horizontal character of the underlying rocks has been lost with the exception of the spectacular Hermosa cliffs extending about 10 miles north of Durango. The river valley itself is about a mile wide in most places with several terraces. East of the Animas River Basin and separated by Yellow Jacket Pass lies the much smaller and physiographically younger basin of the Piedra River. Because of its intrusive igneous activity in the geologic past, nearness to the complex San Juan Mountains, and dense vegetation, the landscape here takes on an almost mountainous appearance. Chimney Rock, a prominent erosional remnant reaching an elevation of 8457 feet overlooks the Piedra River Basin. The Animas River and Piedra River Basins extend south to form the northeastern portion of the San Juan Basin, a much larger and more completely developed drainage area.

Other tributaries of the San Juan Basin, the Mancos River and McElmo Creek, lie to the west of the Animas River Basin and are separated from it by the fairly extensive divide between the La Plata and Mancos Rivers. Above this broad relatively flat area of rolling hills rise two prominent features, the Mesa Verde to the south and Ute Mountain to the southwest.

The Mesa Verde, a bold flat-topped cuesta, stands 1500 feet above the McElmo Valley and dips steeply to the south and southwest, joining the San Juan Basin. The Mancos River has cut through the mesa, giving rise to tributary canyons, which run in a general north-south direction to empty into the Mancos River. Mesa Verde has thus been dissected into smaller finger-like parts known as particular mesas of the Mesa Verde, e.g., Chapin Mesa and Wetherill Mesa. The dividing canyons possess nearly vertical walls due to the composition of the cuesta.

Ute Mountain faces the western escarpment of the Mesa Verde across the valley of Spring or Aztec Creek. This isolated igneous lacolith rises to an elevation of 9884 feet, forming one of several similar landmarks distributed throughout the Four Corners Region.

North of the Mancos are the Dolores and San Miguel Plateaus, drained by the rivers of the same names. The San Miguel Mountains, which lie between these plateaus, are geologically a spur of the San Juan Mountains isolated by erosion. The La Sal Mountains and the southwestern escarpment of the Uncompahgre Plateau also overlook the valley of the San Miguel. The landscape of these northern plateau and valley lands tends to be broad and mature with fewer of the steep mesas and canyons so characteristic of the southern and western parts of the Mesa Verde area. The study area has the variable climate characteristic of the Southwestern United States west of the Rocky Mountains. Average annual precipitation in the study area ranges from 8 inches in the southwest corner to over 20 inches in the higher elevations to the northeast. Average annual temperature regimes are also related to elevation, ranging between about 43 and 51° F.

Vegetation communities in southwestern Colorado vary widely in relation to geographic and climate conditions. Much of the project area is dominated by either pinyon-juniper woodlands or sagebrush zones. Other vegetation communities in the area include montane forests on the upper slopes of the mountains with scrub brush on the lower slopes, and shadscale and greasewood communities along drainages and in the lower elevations.

1.2 Cultural Units. Cultural study units form the largest definable developmental stage within a given region, based on chronological geographical, and similar cultural patterns. Several sequent major cultural units, or stages, can be defined for the study area. These are briefly listed below in an introductory fashion, and are more fully delineated in Section 3.0 of the report.

1.2.1 Paleo-Indian Stage. The earliest human occupants of the study area were most likely the big-game hunters of the broadly dispersed Paleo-Indian Stage, although actual evidence for their presence in southwest Colorado is severely limited at this point. On the Colorado Plateau, the Paleo-Indian Stage extended from about 10,000 to 5500 B.C.

1.2.2 Archaic Stage. The Archaic Stage (ca. 5500 B.C. to A.D. 1) featured hunting of smaller game animals than the preceding era, along with increased reliance on the gathering of wild plants. Late in this timeframe, a transition to a more sedentary, food-producing way of life took place. As with the earlier Paleo-Indians, abundant evidence for early and middle era Archaic utilization of southwestern Colorado is not available, although additional data are accruing as research efforts are oriented more toward pre-Formative archaeological resources.

1.2.3 Formative Stage--The Anasazi Tradition. Often characterized as sedentary agriculturists, the Anasazi occupied the entire study area and adjacent regions between about A.D. 1 and 1300, although this utilization was not uniform with regard to space and time. The overwhelming majority of the archaeological sites extant in the study area are associated with the Anasazi. The tradition is commonly subdivided into two eras, the Basketmaker (ca. A.D. 1-750) and the Pueblo (A.D. 750-1300).

In general terms, this tradition includes the growth and decline in the study area of settled villages and a food producing way of life, supplemented by hunting and collecting of wild floral and faunal resources. Accompanying this pattern was secular elaboration in material culture, social and religious organization, and interaction with neighboring cultural groups. By the end of the thirteenth century, the Anasazi had withdrawn from southwestern Colorado.

1.2.4 Protohistoric/Historic Stage

1.2.4.1 Navajo Tradition. Utilization of the study area by the Athabaskan-speaking Navajos was sporadic and limited, probably occurring after A.D. 1700. Navajo sites generally consist of campsites along the major rivers, or isolated sweat lodges of fairly recent origin; however, in some cases the sweat lodges may well be Ute.

1.2.4.2 Ute Tradition. The time for entry of the Numic-speaking Ute into southwestern Colorado is in question, but probably occurred during the 1600s. Today they are the primary Native American inhabitants of the area, including both the Southern Ute and Ute Mountain groups. Despite the extensive historical documentation for Ute occupation of the area, archaeological data related to the Ute are limited.

occupation of the study area, archaeological data related to the Ute are limited.

1.2.4.3 Pueblo Tradition. Although limited, there is evidence in southwestern Colorado for sporadic use of the area by protohistoric/historic Puebloan peoples. These sites usually consist of so-called "refugee" encampments (i.e., temporary locations occupied during times of conflict between the Pueblos and Spaniards in New Mexico, such as the Pueblo Indian Revolt of 1680) or evidence of trading or resource procurement expeditions.

1.2.5 Euro-American Stage. The Euro-American intrusion into southwestern Colorado began in the last half of the 1700s with Spanish exploring parties; however, intensive settlement of the area did not occur until the late 1800s. This stage is being analyzed separately from this effort and, hence, will not be discussed further herein.

1.3 Archaeological Study in the Project Area. The canyons and mesas of southwestern Colorado contain one of the most extensive and visible prehistoric records in the United States. Not surprisingly, the history and extent of previous archaeological endeavors in the area encompass a long timeframe, dating back to the late 1800s, and numerous individual efforts, many of which have been multiyear, large-scale investigations. A review of all of the previous archaeological and related work in the study area is not within the scope of this project and has been represented elsewhere. Thus, interested readers are referred to several previous publications for a fuller discussion of such matters. Two important synthetic reports have been published by the Bureau of Land Management. These include a bibliographic listing for southwestern Colorado archaeology (Hull and Scott 1978) and a cultural resource overview for the area (Nickens 1982). Other useful reference works include summaries of the area's tree-ring dates (Dean 1975, Robinson and Harrill 1974), Anasazi ceramic discussions (Abel 1955, Breternitz et al. 1974, Eddy 1966:382-400,450-468, and Rohn 1977:128-216) and Herald's (1961) earlier summary of the Mesa Verde area. Although not entirely specific to southwestern Colorado, Woodbury's (1954) summary of prehistoric stone implements is useful, as is the review of Anasazi basketry by Morris and Burgh (1941) and Kent's recent analysis of prehistoric textiles (Kent 1983).

2.0 DEFINITION OF TAXA AND TERMS

In this section, we provide definitions of the systematics utilized throughout the report. These definitions thus provide background and formalization of these topics for the study area. Included are spatial and material culture definitions, synthetic or integrative units, life-way descriptors, and processual descriptors.

2.1 Spatial and Material Culture Definitions. These definitions provide standard terminology for discussion of archaeological space and material culture.

2.1.1 Administrative spatial units. These are units of space usually assigned by the archaeologist working in the field and as such may not correspond to prehistoric use or conception of space. Rather they are an archaeological tool.

2.1.1.1 Site. The site is the basic unit of research and operation for archaeologists. Willey and Phillips present as the only requirement for a site that "it be fairly continuously covered by remains of former occupation, these pertain to a single unit of settlement, which may be anything from a small camp to a large city" (Willey and Phillips 1958:18). We have adopted a wider interpretation of the term; a site is any locus of former patterned human activity. It may be as large as a city or as small as a hunter's lookout. Settlements of many sorts from hunting camps to farming villages to urban centers are sites, but also included in the definition are special purpose locations such as rock art panels, agricultural check dams and roads. Sites may be "displaced"; that is, artifacts and materials may be moved some distance from their original location through geological or hydrological forces, and retain scientific worth. When dealing with locations with only scant evidence for prehistoric or historic use, (a few stone flakes, for example) the survey archaeologist will often have to rely on his own judgment in the determination of whether or not to define a site and assign a site number.

2.1.1.2 Isolated find (IF). One or a very few artifacts in a location which in the judgment of the archaeologist do not represent patterned human behavior.

2.1.1.3 Provenience unit or Field Specimen unit. These terms refer to intrasite units of space assigned by the archaeologist to record locations of recovered materials and architecture. They may roughly correspond to prehistoric phenomena (such as rooms, firepits or storage bins) or may be arbitrarily defined.

2.1.1.4 Locality. Willey and Phillips define a locality as "a slightly larger spatial unit, varying in size from a single site to a district of uncertain dimensions; it is generally not larger than the space that might be occupied by a single community or local group". (Willey and Phillips 1958:18). We propose here to keep the gist of Willey and Phillips' definition; that a locality is the space used by members of a community or in corporate ownership by groups within that community. This space includes the habitation sites in which the members of the community base many of their activities and in the case of agriculturalists, surrounding fields and field houses. A discussion of the concept of community is presented later.

2.1.1.5 District. The term "district" has been assigned several different and, therefore, confusing meanings by southwestern archaeologists (Collins 1981). To avoid added confusion, we propose that the term "district" be used in the sense of an administrative unit and that the term "drainage unit" be substituted in the cultural space hierarchy.

2.1.1.6 Drainage unit. The Drainage unit is a spatial-cultural unit developed by the authors specifically for this study of the Southwest Colorado prehistoric context, and is designed to replace the ambiguously defined term "district." The Northern San Juan area and the Mesa Verde Region (Gillespie 1976) can be conveniently divided into smaller physiographic units based on the drainages for major tributaries of the San Juan River and the Dolores River drainage (Fig. 2.1). It is proposed that these drainages also served as migration routes during times of unrest, and as primary avenues for exchange systems, and as lines of communication. If this supposition is correct, then the drainage units should also roughly reflect cultural divisions during prehistoric times. The authors have defined 11 such divisions for southwestern Colorado (see sections 3.3.1-3.3.10).

2.1.1.7 Region. The region is the spatial unit above the drainage unit. For our purposes the definition and boundaries of the Mesa Verde Region correspond to those outlined by Breternitz and his co-authors (1974) and depicted by Gillespie (1976:Fig. 1). The regional boundaries correspond roughly to the area where Mesa Verde ceramic wares were being manufactured; within the region, there are probably similarities in other material culture traits as well. On an even larger scale, the Mesa Verde Region is part of the Northern San Juan culture area (Gillespie 1976).

2.1.2 Site typologies. An important tool for description of cultural resources within a study unit and for later reconstruction or syntheses of settlement patterns is a site typology. Initially, typologies should probably be descriptive in nature and based on measurable phenomena observable by the survey crew. Later analysis of the survey data may permit development of a functional typology, perhaps based on a model of prehistoric settlement behavior in the study area.

2.1.2.1 Descriptive typologies. Data categories potentially included in the formation of a descriptive typology include topographic situation (rockshelter, mesa top, talus slope, etc.), categories and densities of material culture present, types of architecture present (if any) and site size. The formation and application of descriptive typologies is a necessary step in arraying the data recovered from survey operations for detailed analysis.

2.1.2.2 Functional typologies. Functional typologies reflecting the composition of local settlement patterns should be developed after analysis of survey data and comparison of survey data with that obtained from excavations. Functional typologies can be based on models of prehistoric settlement behavior. An example of a functional typology is presented in Table 2.1. The Dolores Archaeological Program Site Topology is based on several assumptions concerning the settlement behavior of prehistoric southwestern formative communities. They are, first, that occupation or use of sites can be arrayed as a continuum from brief use to permanent use; second, that sites used for only a brief span were probably used for a specific activity and those occupied permanently were probably used for varied activities.

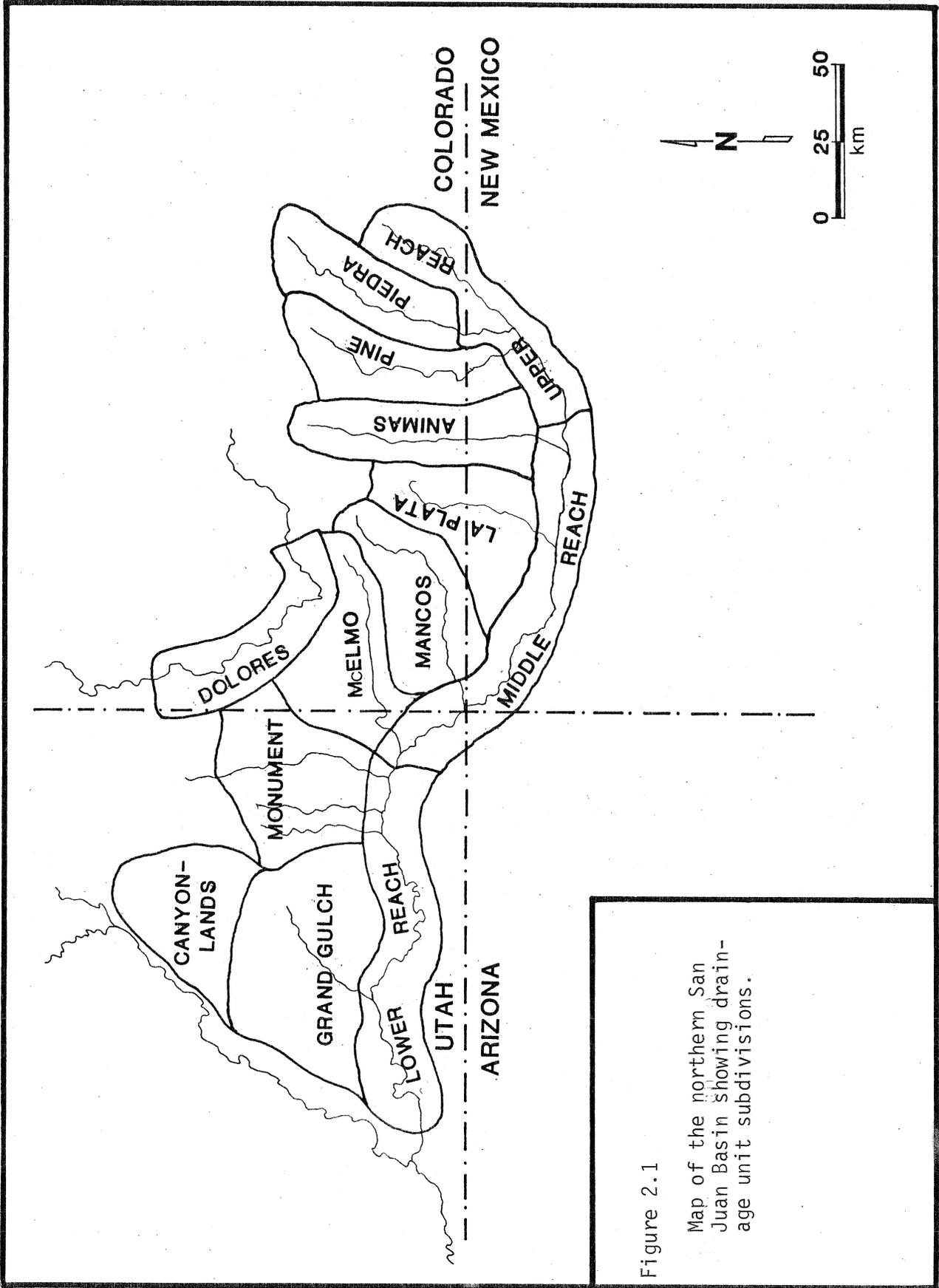


Figure 2.1
Map of the northern San Juan Basin showing drainage unit subdivisions.

Table 2.1. Outline of the Dolores Archaeological Program
Site Typology (from Kane 1981a)

I. Limited Activity Loci. Limited activity sites are characterized by brief use periods and a minimal range of activities.

A. Economic or technical loci

1. Procurement loci (quarries, kill sites, gathering sites, agricultural sites, water control sites)
2. Processing loci (butchering sites, chipping stations, etc.)
3. Maintenance loci
4. Storage loci
5. Consumption loci
6. Discard loci

B. Social or ceremonial loci (shrines, petroglyph panels, sentry posts)

C. Communications loci (roads and trails, boundary markers)

II. Seasonal loci. Seasonal loci were occupied on a short-term basis, but often periodically or seasonally. Activities performed at these sites were diversified, but the sites were established with a definite purpose in mind. The seasonal locus can be viewed as a location where a household or members of a household performed activities that were more conveniently accomplished at certain times of the year at that place.

A. Economic or technical seasonal loci

1. Procurement/processing seasonal loci
2. Agricultural camps or fieldhouses
3. Reservoirs or irrigation systems

B. Social/ceremonial seasonal loci

1. Towers
2. Forts
3. Isolated kivas or great kivas

C. Communications seasonal loci

III. Habitations. Habitations are locations where a wide range of activities were performed; they were occupied continuously, or for a major part of the year.

A. Base camps

B. Hamlets

C. Large hamlets

D. Villages

E. Specialized habitations

2.1.3 Social Space. The following units, when assigned, are intended to reflect actual prehistoric use of space and are presented in hierarchical order from smallest to largest.

2.1.3.1 Activity area. Locus where individual or task group consisting of a few individuals carried out a specific task or sequence or related tasks.

2.1.3.2 Dwelling unit. This term is synonymous with "apartment" or "room suite." It refers to the space and architecture used by a family unit. Early in the southwest Colorado sequence, dwelling units are represented by a pithouse and associated surface features such as storage cists, extramural hearths and a refuse area. Later, they are represented by surface room suites usually consisting of a living room and storage rooms, plus a portion of a plaza area.

2.1.3.3 Household cluster. The space and facilities used by a household. For our purposes the household is a social unit that shares (to an extent) meals, economic tasks, reproduction and child rearing (Wilke and Rathje 1982). Households may consist of one family unit (simple households) or several family units (complex households). The Dolores Archaeological Program has developed a model which suggests that early households (pre-A.D. 750) were of the simple type, but were replaced by a complex household organization in the late 700s (Kane 1983a).

2.1.3.4 Community cluster. The space used by a community including the habitation(s) village), and in the case of agriculturalists, surrounding fields and field houses. For our purposes, a community is defined as a group of households whose members are in day-to-day association (e.g., sight or verbal communication). Community clusters can be described as dispersed where there may be 100-200 meters between individual dwelling units or aggregated; in the latter case, dwelling units may share walls to form shared buildings or "pueblos."

2.1.4 Material Culture (artifacts). The following discussion is centered on those items and groups of items that are portable and serve a specific function usually associated with a particular activity.

2.1.4.1. Definition of artifact. An artifact is an item that has been deliberately modified or manufactured for a specific purpose. The modification or manufacture may be "additive" (creating larger items from raw materials--ceramic vessels, textiles) or "reductive" (creating smaller items from larger--stone and bone tools); or natural items can be modified through use. Artifacts can be classified as "tools" or those items used to process resources, "containers" or those items used to store or confine resources, or "personal gear" including clothing and adornment. Resources procured, used, and eventually discarded by prehistoric peoples also find their way into the archaeological record and may be classified as "materials" or "ecofacts". These include unmodified stone items, unused or discarded wild and domestic plant parts such as charred wood, seeds, pollen, etc., and scrap bone. For laboratory processing and analysis, artifacts and ecofacts can be classified and segregated by material class; the scheme used by the Dolores Archaeological Program is: flaked stone, non-flaked stone, ceramics, worked bone, unworked bone, worked vegetal, unworked vegetal, shell, mineral, other.

2.1.4.2 Tool Kits. Artifacts left in their prehistoric context (in situ) can be used to reconstruct how and where tasks or activities took place. Associated collections of in situ artifacts are termed

"tool kits." Household tool kits refer to collections of tools though to have been used for domestic purposes.

2.1.4.3 Assemblage. Assemblage refers to a collection of artifacts of a single type or multiple types. The collection is either total recovery or a representative sample(s) from proveniences (excavation units) thought to represent a cultural unit. That is, the collection is representative of the cultural unit (household, community, phase, etc.).

2.1.5 Material culture (architecture). Architectural facilities are classified as structures (major architectural efforts including houses, public buildings, etc.) or features (minor architecture or "furniture" including fire hearths, storage bins or pits, interior partitions, etc.). Used space within a site is enclosed space (including structures and internal features) and open space usually including some features.

2.1.5.1 Pit structures. Pit structures are subterranean or partially subterranean dwellings. The typical mode of construction is to excavate a round or subrectangular pit and then roof it over often using a basic 4 post support pattern or cribbing with 5-8 supports or "pilasters." Floor area ranges from 6-7 sq. m to over 100 sq. m. Pit structures can be classified according to structural characteristics that probably reflect function; a possible classification is: Basket-maker Pithouse, Pueblo Pithouse, Protokiva, Kiva, Communal house or big house, Great kiva or great pithouse, Other.

2.1.5.2 Surface structures. Surface structures represent efforts to enclose space without excavating a pit. Generally such edifices are called rooms, although specialized forms such as "towers" are found in the study area. Surface structures generally range from 4-5 to 50 sq. m. Surface structures can be classified based on form and inferred function as follows: Storage room, Granary, Domestic or living room, Milling room, Tower, Sweat lodge, Hogan.

2.1.5.3 Miscellaneous structure. These are architectural edifices, but the intent is not to enclose space, but supply some other function. Some examples are as follows: Windbreak, Check dam, Reservoir, Irrigation ditch, Stockade, Retaining wall.

2.1.5.4 Non-structures. Non-structures constitute open space at sites. Open areas can be classified according to placement and inferred function as follows: Plaza, Midden, Peripheral area, Borrow area, Agricultural plots.

2.1.5.5 Features. Features are "site furniture" or small usually non-portable construction often incorporated into structures. Features usually serve specific functions and are associated with activity sets. Features can be classified based on their placement.

2.1.5.5.1 Pit features. These are holes or pits deliberately excavated into surfaces. Some examples are: Hearths and fireplaces, Warming pits, Ash pits, Cists, Pot rests, Post holes, Ladder rests.

2.1.5.5.2 Wall features. "Site furniture" built into walls. Some examples are: Ventilator systems, Tunnels, Niches, Pegs, Shelves, Wall cists.

2.1.5.5.3 Surface features. This category includes furniture manifest as superstructures or surfaces. Examples include: Wingwall, Partitions, Bins, Steps, Deflectors, Metate rests.

2.1.5.5.4 For purposes of recording, clusters of artifacts can also be considered as features; these are usually classified according

to artifact type; for example: ceramic clusters, lithic clusters, bone clusters, mixed clusters.

2.1.5.5.5 Other archaeological phenomena, not easily classified, can be recorded as features, such as: Human burials, Animal burials, Rock art panels.

2.1.7 Description of physical architecture. Physical description of architecture can probably be classified according to member or placement.

2.1.7.1 Roofs. Roofs are superstructures over enclosed or open spaces. Descriptive narratives might address the following:

2.1.7.1.1 Support, including materials, patterns of individual supports and foundations.

2.1.7.1.2 Composition of the roof itself including materials used, form and method of construction.

2.1.7.2 Walls. Descriptive details might include:

2.1.7.2.1 Materials (earthen, jacal, adobe, masonry, composite walls, etc.)

2.1.7.2.2 Method of construction (foundation, single or double coursed, flagged, rubble cored, surface treatment, etc.)

2.1.7.2.3 Relationship to other walls (bonded, abutted, etc.)

2.1.7.3 Surfaces. Descriptive details might include:

2.1.7.3.1 Materials (use-compacted, adobe, paved, etc.)

2.1.7.3.2 Construction details

2.1.8 Spatial patterning at sites. Another important aspect of architectural studies is the spatial layout of sites including the relationships among pit structures, surface structures, miscellaneous structures and non-structures.

2.2 Synthetic Units. In order to generalize the patterns of human behavior and cultural process from the data - that is artifacts, ecofacts, and their provenience location within a context of geographical space - the archaeologist constructs synthetic units through the laboratory process of classification. These taxonomic units, as used in the San Juan Basin of Colorado and New Mexico, include: the archaeological stage, tradition, phase, branch, and component. (NOTE: From this point forward, we regret but feel strongly that the term stage must be used herein in two contexts. On the one hand, the major cultural units under study--Paleo-Indian, Archaic, Formative, and Protohistoric/Historic--have been designated as stages in order to be compatible with similar designations for the rest of the Colorado prehistoric research designs. However, as defined below, and in Section 3.3, Southwestern archaeologists have since the 1920s used the term to denote developmental levels of the Pueblo sequence in the northern Southwest. It should be clear to the reader from here on in which context the term "stage" is employed).

2.2.1 Stage. An archaeological stage is a synthetic unit of similar cultural content which is abstracted from many local and even regional sequences. From a laboratory standpoint, it is defined from an array of contemporary archaeological phases. As such, it is a measure of general evolution (Sahlins and Service 1970). Cultural content, in the form of artifact types and assemblages, is emphasized while time and space are left to vary. It is not uncommon to find that archaeological stages of the San Juan Basin start and stop at different times in differing drainage units. The stage unit concept allows organization of

the data in such a fashion as to emphasize sequential steps in cultural change common to many local archaeological cultures. However, when archaeological data are placed in a stage classification, it has the disadvantage that change is made to look like quantum jumps have taken place rather than a smooth, continuous advance in the growth and development of prehistoric society.

Rowe (1962) differentiates between the synthetic units of Period and Stage. By his contrastive definition, the period is a unit of pure time without cultural content or spatial boundaries. The period concept should never be interchanged with that of stage as they are basically different measures. In the American Southwest, only the Anasazi tradition is subdivided by stages. In contrast, other Southwestern Formative traditions, such as Mogollon, Hohokam, and Hakataya, are subdivided by numbered or named periods (Woodbury 1979:Fig. 2).

As shown on Fig. 2.2, two stage classifications have been developed for the San Juan Basin Anasazi - the Pecos classification of Kidder (1927) and the Roberts classification (Roberts 1935). Of the two, the Pecos system is in most general use today and the Roberts scheme is only of historical note.

The Pecos classification, organized by the assembled members of the first Pecos conference held at Pecos, New Mexico, in 1927, consists of three basketmaker and five pueblo numbered stages (Wormington 1947). The stage labels are customarily written out the first time they appear in a report after which they are shown as abbreviations. The serial sequence is given in Roman rather than Arabic numerals in the form of Basketmaker III (or BMIII). The purpose of the Pecos stages is to measure the nature or regional evolution of the Anasazi tradition. Each of the Pecos Classification stages will be further defined in Section 3.3.

2.2.2 Tradition. The synthetic unit called a tradition is made up of a cultural pattern enduring through time (Haury 1956). In the tradition, temporal continuity and persistence is emphasized over cultural change. So in the traditional unit, time is left to vary while space is limited. As an evolutionary concept, the tradition allows the life-history or ontogeny of individual cultures to be examined as they display growth, peak, and decline. From a laboratory perspective, a tradition is defined from a genetic series of sequential phases.

In the American Southwest, tradition is customarily reserved for a named regional cultural pattern such as Anasazi, Mogollon, Hohokam, or Hakataya (Woodbury 1979). In this paper, we will be largely concerned with just one of these basic Formative patterns - that of the Anasazi tradition. Other non-Formative traditions to be treated are Paleo-Indian, Archaic, Navajo, Ute, and Euro-american.

The Anasazi tradition is a sedentary village lifeway which appears about the time of Christ (AD 1), climaxes between AD 1100 and 1700 (PIII and IV) and shows decline under the acculturative impact of European domination up until the present day. However, extinction has not taken place and it continues today as the Pueblo Indian lifeway represented by some 20 Native American villages located in northern New Mexico and Arizona.

2.2.3 Phase/Branch/Component. An archaeological culture appearing within a brief interval of time and restricted in space is called a Phase (Willey and Phillips 1958). This unit is defined based on a contemporary and local artifact assemblage made up of tools and symbolic

DATE AD - BC	PECOS CLASSIFICATION (Kidder 1927)	ROBERTS' CLASSIFICATION (Roberts 1935)	GILA PUEBLO CLASSIFICATION (O'Bryan 1950)	MANCOS CANYON SEQUENCE (Reed 1958)	ALKALI RIDGE SEQUENCE (Brew 1946)	WETHERILL MESA SEQUENCE (Hayes 1964)	CHAPIN MESA SEQUENCE (Rohn 1977)	OSHARA TRADITION (Irwin-Williams 1973)	NAVAJO RESERVOIR DISTRICT (Eddy 1972)	CHIMNEY ROCK DISTRICT (Eddy 1977)	DOLORES RIVER PROJECT (Kane 1979)
1900											
1800											
1700	PUEBLO V	HISTORIC PUEBLO PERIOD									
1600											
1500											
1400	PUEBLO IV	REGRESSIVE PUEBLO PERIOD									
1300											
1200	PUEBLO III	GREAT PUEBLO PERIOD	Montezuma Phase	Mesa Verde Focus MCElmo Focus (?)	Montezuma (Mesa Verde) Focus MCElmo Focus	Mesa Verde Phase	Cliff Palace Phase				
1100			MCElmo Phase			MCElmo Phase	Far View Phase				
1000	PUEBLO II	DEVELOPMENTAL PUEBLO PERIOD	Mancos Mesa Phase	Mancos Focus	Mancos Focus	Mancos Phase Ackmen Phase	Mummy Lake Phase Glades Phase			Chimney Rock Phase	
900			Chapin Mesa Phase								
800	PUEBLO I			Piedra Focus	Ackman Focus	Piedra Phase	Spruce Mesa Phase				
700			Four Corners Phase				Twin Trees Phase	Loma Alta Phase Sky Village Phase			
600	BASKETMAKER III	MODIFIED BASKETMAKER PERIOD		La Plata Focus	Abajo Focus	La Plata Phase		Trujillo Phase			
500											
400											
300											
200	BASKETMAKER II	BASKETMAKER PERIOD									
100											
AD 1											
1000	BASKETMAKER I										
2000											
3000											
4000											
5000											
6000											
7000											
8000											
9000											
10,000 BC											

Figure 2.2 Cultural stage and phase sequences for southwestern Colorado (from Nickens 1982:Fig. 33).

objects, their numerical frequencies, and subset associations. In the American Southwest, the phase is often constrained in time as much as 200 years and where available dating precision warrants, it may be restricted even more precisely to 100 or less years. In many instances, the Phase is spatially confined to a geographical locality so that it takes on the social reality of a community. However, in other cases a particular phase may appear simultaneously in two continuous local sequences leading to the concept of co-phase (Willey and Phillips 1958:22-24). Vertical phase sequences are the building blocks of traditions whereas horizontal phase series form the basis for defining a cultural stage. Furthermore, the phase is the master unit in writing the historiographies of culture areas (Taylor 1948).

As a rule, phases in the archaeology of the American Southwest are labeled with geographical place names taken from published maps. When defined, they are formally presented in the professional literature as an aid to other archaeologists concerned with such comparative studies as the construction of traditions, stages, or simply writing regional cultural histories. The practice of naming phases without a published description of content, published type site, published type collection, and specification of temporal and geographical limits, is to be seriously discouraged on procedural grounds.

As a synthetic unit in the Southwest, the phase, sometimes called a focus (Colton 1939), was first presented by Gladwin (1934) as part of a larger taxonomy of terms which also included such concepts as roots, stems, and branches modeled after a dendrogram (Colton 1938). Today the tree analogy has largely been abandoned with the exception of the branch; a spatial term specifying regional distinctiveness which endures through time. In the San Juan Basin, named branches include: Kayenta, Mesa Verde, and Chaco as discussed above. Another synthetic term which comes down to us from the Phase-Branch classificatory system of Gladwin and Colton is that of the component. This term refers to a particular phase expressed as a definable artifact assemblage appearing in a particular stratum of a site. When the archaeological site is a discrete prehistoric occupation, then the site can be called a single component. However, should there be considerable time depth of occupation, then it is referred to as a multicomponent site. The component concept is particularly useful when preparing isochronic maps showing settlement data by discrete time periods; simply plot all archaeological components of the same age.

2.3 Lifeway Descriptors. The following discussions provide brief introduction to "lifeways" of the prehistoric groups which have occupied the study area over several millenia. Admittedly, they are superficial; however, they are intended to simply introduce the reader to the cultural unit descriptions in Section 3.0.

2.3.1. Economy/subsistence/adaptation. This complex set of cultural activities may be said to fit into the larger situation of procurement strategies in which technology and social organization also play significant roles. In the basic sense, however, we are examining the subsistence pattern in the study area as it is manifested at a given point in time and in turn changes through time. The research questions center on the biotic and abiotic resources available for exploitation, the evidence for utilization of resources in their relative proportion

to one another, how and what for the resources were used, and the relationships between the extant subsistence pattern and other elements of the cultural picture such as technology and social organization.

2.3.2 Technology. Technology may be succinctly defined as a complex of learned behavior which gives use to material culture. The technological abilities of a cultural group are more or less integrated with all other aspects of culture, particularly social and economic activities. However, it may be said that technology is of paramount importance to the continued well being of the group as a whole since it is the aspect of culture which provides a shield between the group and the natural environment. In this manner, technology provides shelter and protection and plays an all important role in procurement strategies, for subsistence necessities as well as materials for technological needs. The technological aspect of a given prehistoric context is best understood in terms of a technological complex, one comprised of various elements (tools, materials, and peoples' needs) and one that is rarely not undergoing secular alteration due to change-producing factors as diffusion, innovation and responses to environmental changes.

2.3.3 Demography. Demography may be defined as the quantitative analysis of human populations. Major demographic concerns for the Southwest Colorado prehistoric study area include the distribution of populations over space, their composition, and their growth and decline over time. The demographic arrangement of human groups over a given space includes not only the population density and distribution, but the adjustments or human choices expressed by that patterning. Frequently, synchronic or diachronic demographic situations may be viewed as a response to the provision of food, or other critical resources, for the population as a whole, although a strategy for attaining social or political ends may play a part in the decision. Other critical variables under this topic include settlement permanence (or settlement mobility as the case may be), settlement size, and settlement composition.

2.3.4 Social Organization. Following the Dolores Archaeological Program research design, this general subject may be viewed as including five important aspects: 1) residential organization; 2) kinship organization; 3) economic social organization; 4) political organization; and 5) religion and ideology. Social organization generally includes social groups, either residential or nonresidential in character, and status organization (e.g. kinship networks). For archaeological reconstructions, residential social groupings usually generate the most attention, being viewed at the individual, household, and community levels. Economic organization is closely related to the general social organization pattern and involves the interplay of information and materials that moves goods through the society. Political organization refers to the presence of and to the activities of a central authority or leadership operating within the community social structure, or in the intracommunity sphere. Ritual or ceremonial behavior of a cultural group is closely related to material culture and, as such, are often represented in the archaeological record.

2.3.5 Foreign Relations. At no point in time did the prehistoric traditions of southwestern Colorado exist in cultural isolation. Relations with peoples in neighboring regions included political contacts, population movements, exchange of goods, and diffusion of ideas. Throughout the timeframe under discussion, however, the data for the study are severely limited for all traditions except the Anasazi.

2.4 Process Descriptors. Explanation of cultural process is a difficult task, to say the least. In the following paragraphs, we present definitions which may be used as a basis for future analysis of prehistoric occupation of southwestern Colorado.

2.4.1 General framework for describing and explaining cultural process. The most profitable approach to recently gain acceptance among Southwestern archaeologists is to model local cultures along the lines of open systems. Changes within the system are often linked to environmental change and cultural flux on a regional scale.

2.4.2 Subsystems of cultural systems. Each cultural system is composed of a set of interacting subsystems; these include:

2.4.2.1 Demographic subsystem including population size and density, age/sex characteristics and labor pool composition.

2.4.2.2 Economic subsystem including adaptation, economic technology resource mix, etc.

2.4.2.3 Social organization including differentiation, economic organization and integration.

2.4.2.4 Exchange including exchange within the local system and with regional systems.

2.4.2.5 Settlement behavior including aggregation, site mix, territoriality, etc.

2.4.2.6 Material culture including facilities and artifact assemblages.

2.4.3 The environmental system. Cultural systems are usually conceptualized as closely linked to the environmental system. Pertinent components of the environment when studying prehistoric hunter-gatherers, subsistence agriculturalists or those cultures with a diversified economic base include: climate (precipitation and growing season are particularly important); soils distribution and geology; resource supply including available faunal and floral resources.

2.4.4 The relationship between the environmental system and cultural system. Several models or concepts can be adopted to describe this relationship. These include: short term stress; long term stress, climatic cycles; carrying capacity; marginality.

2.4.5 Classification of relationships among cultural system variables. Relationships among subsystems can generally be classified as one-way (one variable acts independently on another or dependent variable), or two-way in which both variables can act as the independent variable. Two-way relationships are often described as feedback; that is, a change in one will cause a change in the second. The change in the second will then cause a change in the first, etc. The relationships between variables can also be classified as "positive" or "negative"; in positive relationships, the change will be in the same direction (e.g. an increase in population size will cause an increase in integrative mechanisms; etc.). In negative relationships, the change will be in the opposite direction. Feedback relationships can also be characterized as positive (deviation amplifying) or negative (deviation reducing, homeostatic). Relationships within the system are often indirect, and may follow a pathway through other variables or subsystems.

2.4.6 Decision structures. Overall direction or classification of the systems can often be described by the type of decision structure or survival strategy practiced by the culture. Applicable decision struc-

tures or strategies developed by Southwestern archaeologists include: least cost models; game theory models; mini-max models.

2.4.7 System trajectories. Systems can be classified as incorporating an efficiency trajectory or a power trajectory (Stuart and Gauthier 1981) depending on whether the system is characterized by homeostatic ("negative") relationships or positive relationships. Power trajectories are often manifest as "cycles" with initial accelerating growth rates, a peak and then "burnout" or the downward part of the cycle. Power cycles may be related to climatic cycles (Euler et al. 1979).

2.4.8 Systems status. A number of models or concepts can be applied when describing a model at a point in time or during a short time span. These include: colonization or origin, growth, climax, decline, extinction or emigration.

2.4.9 Defining change. Defining change is dependent on the scale being investigated. Change might be defined as shifts within one cultural subsystem (fine-scale change), related changes in several subsystems (large-scale change), or changes in the relationships among subsystems. Measuring change is dependent on quantification.

2.4.10 Quantification. Quantification of subsystem variables usually takes the form of proxy or synthetic measures based on directly observable archaeological phenomena such as material culture and settlement behavior.

2.4.11 Other frameworks. Other frameworks besides systems theory are certainly valid in describing and explaining cultural process.

3.0 CULTURAL UNIT STAGE DESCRIPTIONS

In this section, we review the known archaeological picture for each of the cultural stages found in the Southwestern Colorado study area, including the Paleo-Indian, Archaic, Formative, and Protohistoric/Historic Stages. In each case, the extant archaeological data are briefly summarized and some of the potential research problems which require future attention are presented. In the case of the latter, the full range of problems for future research directions is not attempted, rather some of the major questions are highlighted. The first two stages, the Paleo-Indian and Archaic are discussed in somewhat general terms owing to the relative paucity of information available for these eras in southwestern Colorado. In contrast, the Formative Anasazi development is presented in both general terms and in the more specific drainage unit summaries. Separate sections are provided for each of the defined drainage units (see Fig. 2.1), including comments on the unit's spatial boundaries, temporal framework, and significant research problems. Only those drainage units or portions thereof falling within the State of Colorado are discussed in the following paragraphs. To close the formative discussion, a model of cultural process is offered in Section 3.3.11 which exemplifies the broader regional approach we feel is critical to a better understanding of prehistoric contexts in southwestern Colorado. Finally, separate discussions are given for the two post-Anasazi aboriginal groups in the study area, the Navajo and the Ute.

3.1 Paleo-Indian Stage. Despite the extensive history of archaeological investigations in southwestern Colorado, there is presently no definite evidence that this part of the state was occupied by groups of the Paleo-Indian Tradition. As a consequence of this lack of data, it is only possible to discuss this tradition in terms of the larger regional picture.

3.1.1 Paleo-Indian Culture History. The designation "Paleo-Indian" stage, or Lithic stage of Willey and Phillips (1958), is a cultural term applied to the earliest definable human occupants of the Colorado Plateau including the present project area. The later part of this New World cultural development can be subdivided into three cultural units or complexes: Llano, Folsom, and Plano (cf. Jennings 1974, Schroedl 1977). It has been common in the past to define each of these complexes on the basis of distinctive projectile points attributed to each, and by the primary animal(s) hunted. Additionally, although overlapping occurs, it is generally possible to place the complexes into a temporal ordering with the Llano complex being earliest, followed by Folsom, and ending with the Plano cultures.

Thus, the first of these complexes, the Llano, was characterized by the manufacture and use of the Clovis point, a unique, fluted, lanceolate point averaging 3 to 6 inches in length. Although other late Pleistocene fauna have been found in association with Clovis points, the mammoth (*Mammuthus* sp.) appears to have been the primary prey for these groups. As a result of several radiocarbon determinations throughout the Southwest, it is estimated that the Llano complex of the Paleo-Indian stage dates between 10,000 and 9000 B.C.

Sites and other items associated with the Folsom complex (ca. 9000-7000 B.C.) are more numerous than Llano sites and have a wider distribution throughout North America. The distinctive projectile point of this complex was the Folsom point, also lanceolate in form and made with delicate, pressure-flaked retouch. The points were thinned by the removal on each face of a long, thin flake. Animal remains found associated with Folsom points are those of large-horned, extinct bison--usually Bison antiquus.

The third and terminal Paleo-Indian subdivision was the Plano complex which has been dated to the period 7000-5500 B.C. This complex is identified by a number of projectile point types which have considerable variation in form and geographic distribution. Plano points are generally lanceolate-shaped, unfluted, and exhibit fine pressure-flaked flintwork. Typically, Plano complex points and other tools are discovered with early postglacial modern fauna, such as bison or antelope.

There are presently only hints of the existence for each of the Paleo-Indian complexes in southwestern Colorado and adjoining areas. These include limited but definite reported surface finds of projectile points which have been attributed to each of the three Paleo-Indian complexes. To date, however, no finds have been made of a concrete association between Paleo-Indian points and extinct forms of fauna in the Four Corners area and it must be noted that many of the examples listed below could well be instances of later use of "curated" or collected points by groups such as the Anasazi. A Clovis point was found in Oak Creek Canyon, San Juan County, Utah, and reported by Lindsay (1976). Another Clovis point has been noted just south of the Utah-Arizona state line in Navajo County (Agenbroad 1976). A fragmentary Folsom point was recovered in 1977 on Lime Ridge, Utah, about two miles northwest of the confluence of Comb Wash and the San Juan River (Bruce D. Louthan, 1978 personal communication). On the Dark Canyon Plateau, west of the Abajo Mountains in Utah, Sharrock and Keane (1962) have described a fragmentary Folsom point from Sweet Alice Springs and Folsom points have been reported from the Moab, Utah, vicinity (Hunt and Tanner 1960).

Unfluted Plano points have also been reported from the region. Hunt (1953:24) reported on a Angostura-like projectile point from the La Sal Mountains east of Moab, Utah, and Hicks (1975:44) has noted four Plano complex points from the vicinity of Hovenweep National Monument. Tentative classifications of the Hovenweep points include a complete Gypsum Cave point, and fragments of a possible Scottsbluff I or Eden point, a possible Plainview point, and a possible Agate Basin or Angostura point. A little farther east, Hayes (1964:88) recovered a single Plano point of the Milnesand type during an archaeological inventory in Mesa Verde National Park.

Thus, a combination of faunal and cultural evidence suggests that big game hunters of the Paleo-Indian complex occupied the Colorado Plateau. Based on the evidence at hand, it may be inferred that this occupation was somewhat more limited and sporadic than contemporaneous developments in neighboring regions such as the Southwest and the Great Plains east of the Rockies. Whether or not this occupation was continuous and static over the span of several millenia cannot be stated for certain.

3.1.2 Paleo-Indian Lifeways. Aside from temporal changes in projectile point manufacture and big game preference, there are certain cultural characteristics which typify each of the Paleo-Indian complexes. Groups in each period appear to have oriented their subsistence patterns toward the larger, migratory faunal forms. One aspect of Paleo-Indian subsistence orientation we should not overlook, however, is a probable dependence on smaller animal species and many varieties of edible floral species available in the environmental settings occupied by these groups. In the archaeological context, difficulties of preservation and the transitory, nonsedentary lifestyle of the Paleo-Indians undoubtedly mask the overall importance of these food items in the economy.

In a general vein, the lifeways of Paleo-Indians include completely nomadic small groups, or bands which were involved in year-around exploitative activities. Data relating to these groups is usually scant in the archaeological record. Wendorf and Hester (1962) have provided a comparative analysis of the known information and have observed that Paleo-Indian sites fall into one of two categories: campsites and kill sites. Campsites frequently occur on ridges or dunes; flint knapping debris; and a wide range of stone tools (fluted or unfluted points, hammerstones, several varieties of scrapers, and utilized flakes). Kill sites, on the other hand, are found near the banks of former lakes or streams, or at the base of a cliff where animals were stampeded to their death. Kill site contexts are usually restricted to animal skeletal materials or tools, including points of the various complexes, which were utilized in the killing and butchering processes. In the majority of the cases, the kill sites contain multiple killings, ranging all the way from one animal to more than 200. Site situations for both types of Paleo-Indian activities appear to be dictated by proximity of primary economic resources, and by a need for observation of game.

3.1.3 Cultural Process in the Paleo-Indian Tradition. Irwin-Williams and Haynes (1970) have presented a model for explaining early population change and movement in relationship to climatic fluctuations. Their reconstruction is based on large-scale environmental and cultural patterning; nonetheless, the model can be scaled down to a specific area such as southwestern Colorado to provide a possible background for defining Paleo-Indian culture change (Fig. 3.1).

According to this model, the mammoth-oriented Llano groups represent a relatively short-lived adaptation to a late Pleistocene environment marked by more effective moisture than the present. This environmental context was capable of supporting important economic species such as the mammoth, bison, sloth, horse, and camel. By 9000 B.C., a shift towards less effective moisture conditions was occurring, with the end result being the drastic decline or extinction of the mammoth and other members of the faunal species hunted by the Clovis groups. Apparently, conditions following this period saw a return to a moister climate, one which was very favorable to large herds of now-extinct forms of bison. This situation coincides with the Folsom complex which, as of 8500 B.C., ranged eastern Utah and Arizona, and Colorado and New Mexico. By 7000 B.C., a drier period had forced the Paleo-Indian hunters eastward toward the Great Plains, leaving southeastern Utah abandoned. The Great Basin Archaic groups now occupied all of Utah north of the Colorado River, and the western-based

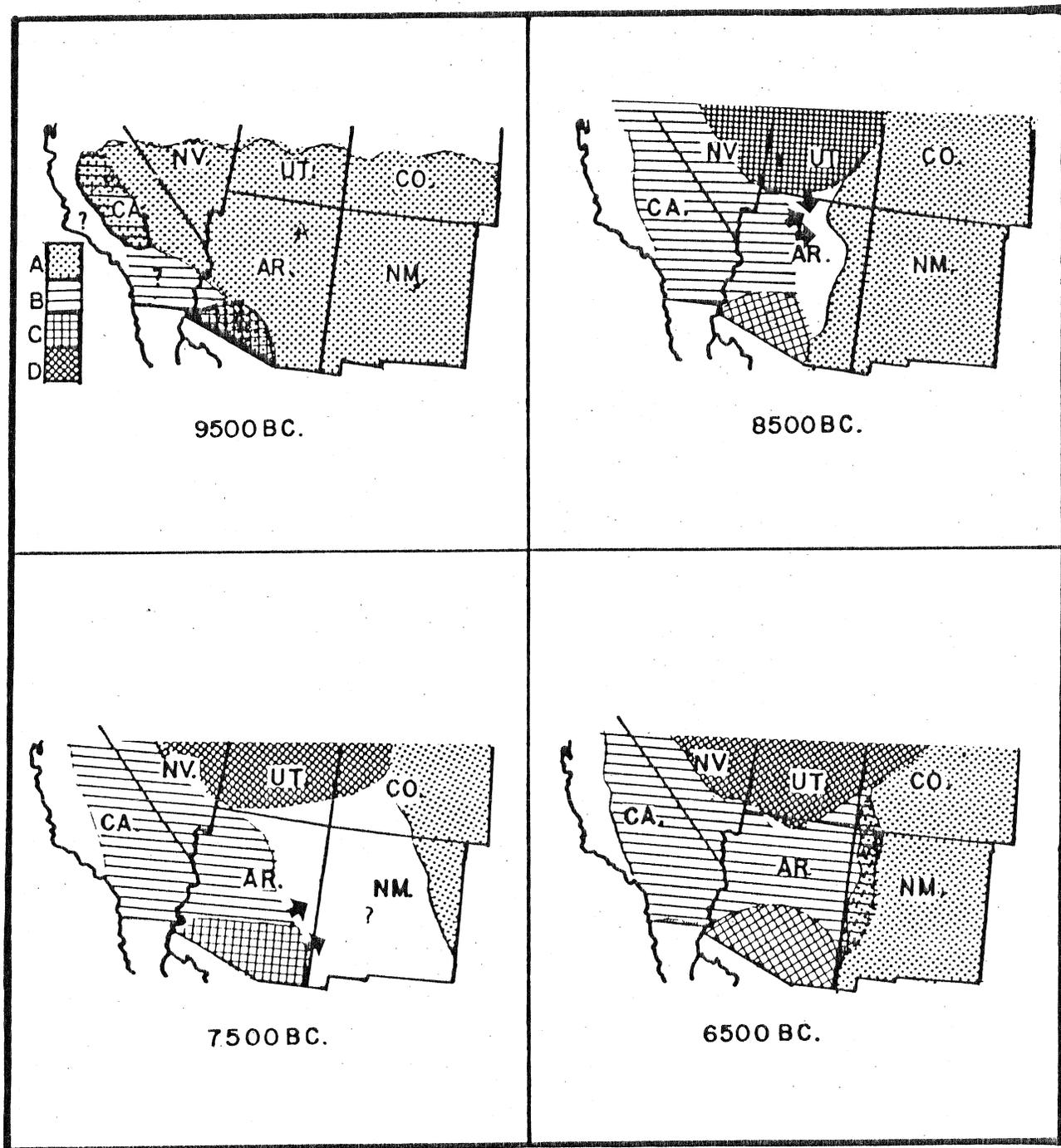


Figure 3.1. Suggested Paleo-Indian and Early Archaic cultural distribution and spread at several points of time.

Pattern A: Plains-based Paleo-Indian;
 Pattern B: Western-based Archaic cultures;
 Pattern C: Southern-based Archaic cultures;
 Pattern D: Great Basin Archaic cultures
 (after Irwin-Williams and Haynes 1970: Figs. 2-4).

Archaic cultures were spreading toward the Four Corners area from the extreme southwestern portion of the southwestern United States. Irwin-Williams and Haynes see another period of increased moisture beginning about 6700 B.C. which, by 6500 B.C., was reflected by a concomitant westward movement of the Plano complex groups to near the present Utah-Colorado line. This population movement correlates well with the reported distribution of Plano points in the Mesa Verde-Hovenweep area and the La Sal Mountains. By this time, the western-based Archaic cultures occupied much of the southern Colorado Plateau, including the Four Corners area; the Great Basin Archaic groups persisted on the northern Colorado Plateau.

3.1.4 Research Problems. In summary of the Paleo-Indian stage, then, we see possibly an initial occupation of the Four Corners region by the Llano hunters sometime around 9500 B.C. Changing environmental conditions may have ushered in the Folsom complex shortly thereafter; however, by the end of the Folsom period, the Paleo-Indian big game hunters seem to have withdrawn to the east, again in response to fluctuating environmental situations. A reoccupation of the southeastern Colorado Plateau by Plano hunters occurred by 6500 B.C., who may have co-existed with Archaic cultures in the region of southwestern Colorado. It cannot be stated with certainty when the last Paleo-Indian hunters were found in southwestern Colorado or if indeed they were ever present, based on current data. The evidence suggests that the Archaic lifeway, characterized by a wider flexibility in resource-oriented subsistence patterns, was dominant in the Four Corners area by at least 5500 B.C.

Based on the apparent lack of substantive evidence for Paleo-Indian utilization of southwestern Colorado, it may well be necessary to look for reasons why the area was not extensively utilized during this era. One reason for this void could include lack of adequate forage for the megafauna hunted by the Paleo-Indians. Paleoclimatic studies could be utilized to identify floral patterns for the study area. Beyond explaining why Paleo-Indians were not in southwestern Colorado, there seems to be little in the way of significant research questions for this tradition.

3.2 Archaic Stage. This stage includes post-glacial societies with subsistence economics based on hunting of modern game and intensive foraging of plant foods. The focus of Archaic peoples on wild vegetal foods yielded the folk science knowledge from which incipient horticulture developed by 2,000 BC during middle Archaic times (Woodbury and Zubrow 1979). The stage appeared in the American Southwest as early as 8,000 years ago as a broad spectrum food quest once the gregarious megafauna herds of the Pleistocene epoch had become extinct due to both hunting pressures of the Paleo-Indian and climatic changes which took place between 10,000 and 7,000 years ago.

In addition to the dependence on smaller and more varied fauna, increased gathering of plant foods, and early experimentation with the domestication of corn, a whole series of new tools, symbols, and manufacturing techniques were added to the Archaic inventory compared to the tool assemblage of the Paleo-Indian tradition. Among these inventions or innovations are: 1) ground and polished stone implements, 2) milling tools, 3) tubular pipes, and 4) such ornaments as stone, shell

and bone beads. In addition, stemmed and notched points were fashioned as stone tips for the dart projected with the atlatl or throwing board. In the San Juan Basin, primary stemmed dart points (Jay and Bajada types) characterized the early Archaic; indented base and serrate edged points (San Jose and Armijo types) typify the middle Archaic; and stubby bladed, corner notch points are type fossils for the late Archaic (En Medio type) (Fig. 3.2). A final invention of importance for the cooking of meat and plant foods is the use of fire cracked rock. These artifacts are found associated with deep roasting pits (fireless cookers) and stone boiling in baskets (Fig. 3.2).

In the dictionary usage of Webster, archaic means "of an earlier or more primitive time." In this sense, the archaic stage is the logical predecessor of the Formative Stage. The Archaic has variously been referred to as: 1) Desert Culture (Jennings 1957); 2) Basketmaker I (Kidder 1927); 3) preceramic period; 4) pre-Formative (Willey and Phillips 1958); and Picoa (Irwin-Williams 1967). The latter term, an acronym for Pinto Basin, Cochise, and San Jose, conveys the idea that although regional variations are known in the Southwestern Archaic by 5,000 years ago, still the entire tradition is built on a basic pattern of post-glacial adaptation to a semi-arid environment (Irwin-Williams 1979).

3.2.1 Archaic Culture History. The Archaic of the San Juan Basin can be periodized by its projectile points into: early (6,000 - 3,000 BC), middle (3,000 - 1,000 BC) and late (1,000 BC - AD 1). This classification is based on the stemmed, indented base or Pinto-like points of the middle Archaic which constitute a kind of a "water shed" for much of the western Archaic (Lister 1953). By this scheme, the early Archaic is an adaptation to the hot, dry conditions of the Altithermal whereas the middle and late Archaic correlate with the resumption of more modern climatic conditions defined as the early Medithermal by Antevs (1955). The Archaic smoothly evolved into the various name village Formative traditions during late Medithermal times.

Irwin-Williams (1979) recognizes four subtraditions of the Archaic within the American Southwest. Each is a regional variation constituting a local adaptation to a specific desert habitat. These Archaic subtraditions are: 1) San Dieguito-Pinto of the Mojave Desert, California; 2) Oshara of the semi-arid Colorado Plateau; 3) Cochise of the Sonoran Desert, southern and central Arizona, and; 4) Fresno-Hueco of the Chihuahuan desert, southern New Mexico. Of these, only the Oshara sequence is of direct relevance to the San Juan Basin (Irwin-Williams 1973).

The Oshara was first defined through the research of Cynthia Irwin-Williams (1973) in the Arroyo Cuervo district located northwest of Bernalillo, New Mexico, in the Rio Grande Valley. However, one of the principal taxa of that tradition, the San Jose phase, was itself defined much earlier from research in the Grants, New Mexico, area conducted by Joseph H. Toulouse, Jr. and Kirk Bryan (Bryan and Toulouse 1942).

Oshara is a tradition made up of five genetically related Archaic phases: Jay, Bajada, San Jose, Armijo, and En Medio. The tradition expresses over 6,000 years of continuity extending from 8,000 years ago to several centuries after the birth of Christ. The En Medio phase merges smoothly and becomes Basketmaker II around AD 1. Some of the salient characteristics of Oshara are the emphasis on dart points and by

inference hunting of modern game. In contrast to the Cochise tradition, Oshara displays a low proportion of milling tools and in fact these do appear until the shallow basin nether stones of the San Jose phase after 3200 BC (Fig. 3.2). At the same time the first artificial shelters also appear in the form of amorphous shaped, packed earth floors with a low brush superstructure.

Another characteristic of Oshara is the tendency for Medithermal age sites to occupy stabilized sand dunes for their well drained settlement locations and also for the specialized edible plants, such as large seeded grasses, which abound and stabilize the dune surface. Interestingly, the early Archaic sites are often found buried within the dune having been exposed through "blow-out" wind erosion. Presumably these blow-out sites represent a time when the now-stabilized dune fields of the Arroyo Cuervo and Chaco Basin districts were active. Dune movement was certainly taking place during the Altithermal but early Medithermal droughts may also have been times of activity as the arid climate conditions burned off stabilizing vegetation and the prevailing wind pattern put the dune field in temporary motion.

As revealed in the literature, the Oshara tradition is distributed through much of northwestern New Mexico, northeastern Arizona, and southeastern Utah; essentially that terrain making up the Four Corners country. This rich geographical distribution of Archaic resources, however, is in striking contrast to the general sparse occurrence of Oshara remains in southwestern Colorado north of the San Juan River. The most prominent exception to this distributional statement is to be found at Hovenweep National Monument in the McElmo drainage unit where Winter (1973) reports strong concentrations of Oshara archaeology. The principal determinate of Archaic sites seems to be the presence of fossil dune fields and surface sheet sand to which the Oshara people seem to have been drawn as if by a magnet. Similarly, the pinyon-juniper mesa lands north of the San Juan generally lack much sand dune mantling; a situation which seemingly repels Archaic occupation beyond occasional forays.

The five-phase cultural sequence for the Oshara tradition is summarized as follows:

Jay Phase (500 - 4800 BC). The Oshara tradition is inaugurated by the Jay phase (Irwin-Williams 1973). Based on her comparison between the artifact assemblages of Jay and the preceding Cody phase of the Plano Paleo-Indian, there is a complete break between the two taxa so that no genetic connections are in evidence. Jay sites show a close relationship to sheet sand deposits and particularly at canyon heads. Some are positioned around ephemeral ponds. Site types include: base camps, special activity sites, and quarry workshops. The tool kit includes bifacial knives and side scrapers in addition to the stylistically distinctive primary stemmed dart points (Fig. 3.2). Tools were made on basalt by both hard and soft hammer percussion. The position of the small size sites with regard to local resources and particularly accessibility to water suggests to Irwin-Williams (1973) the presence of small microbands which exploited large and medium-size fauna (Fig. 3.2).

Bajada Phase (4800 - 3200 BC). During the Bajada occupation of the San Juan Basin, there is evidence of a considerable decrease in moisture - the period Antevs (1955) has termed the Altithermal. Despite the indicated reduction in available resources and particularly water supply, the site inventory obtained from Arroyo Cuervo indicates a very

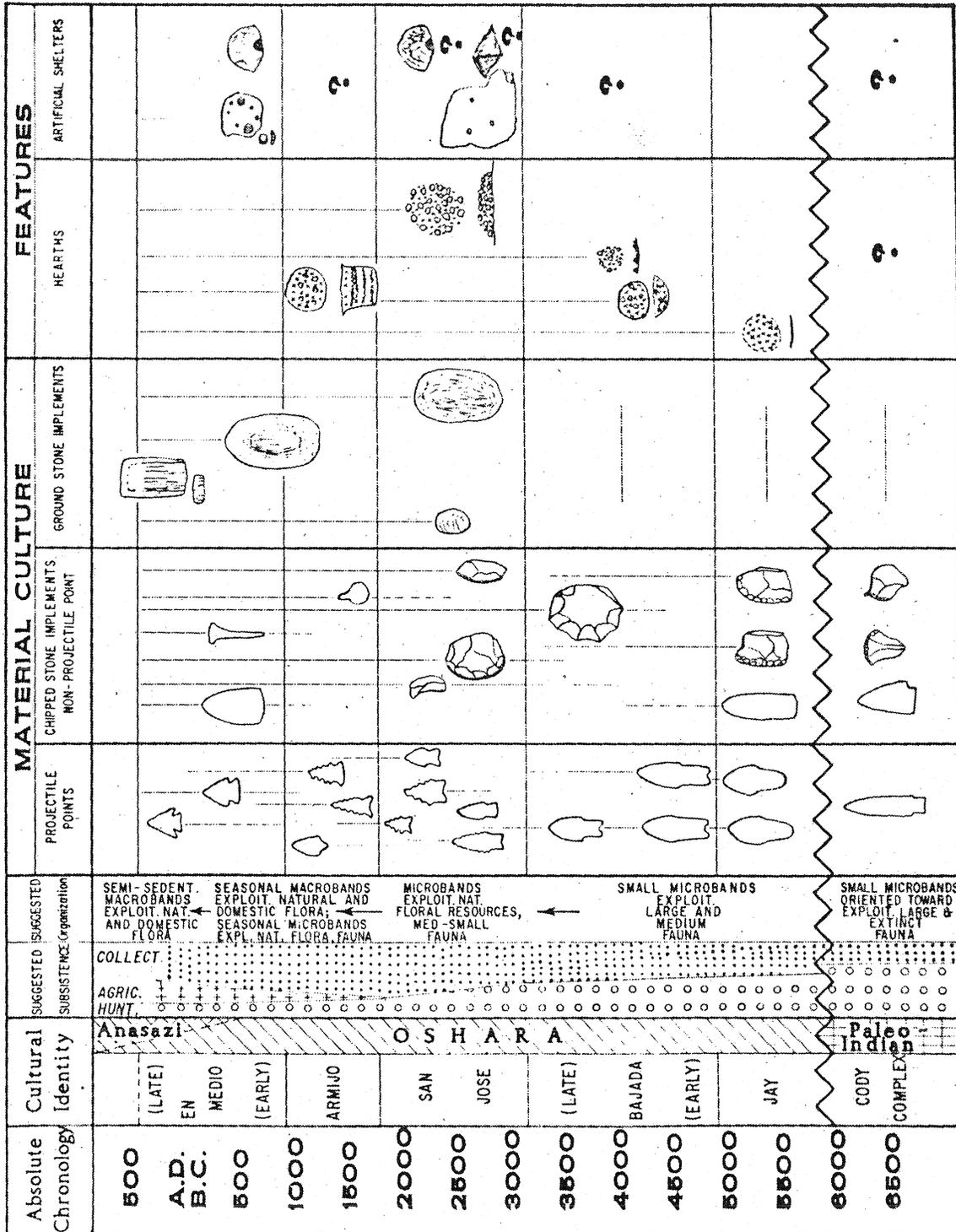


Figure 3.2 Cultural sequence of the Oshara Tradition (From Irwin-Williams 1973:Fig. 7).

slight increase in population. Otherwise, the situation, composition, and size of sites is little different from the earlier Jay phase. However, at this time some improvement in food processing is to be noted in the presence of small hearths and earth ovens both filled with hearth rock. The tool kit remains basically stable with the addition of large chopping tools.

San Jose Phase (3200 - 1800 BC). The initial phase of the middle Archaic period is the San Jose, first defined through archaeological and geological studies conducted by Bryan and Toulouse (1943). This unit of the Oshara tradition reflects an adaptation to the Medithermal of Antevs (1955) which witnessed an end to the Long Drought of the Altithermal being replaced by increased effective moisture, dune stabilization and soil formation. In the Arroyo Cuervo district, the principal effect of the Medithermal moisture was an increase in the number and flow of local springs of importance to Archaic foragers for the siting of their base camps (Irwin-Williams 1973). The most prominent settlement effect of the improved resource base is shown in the increased number and size of camp sites. Further, the presence of irregular-spaced post-hole arrangements strongly suggest simple temporary houses of a wickiup style. Continuing a pattern first introduced in the Jay phase, is the use of hearth-filled fire places for cooking, particularly of plant foods. During the San Jose phase, fireless cookers consisting of mounds of cracked rock were added to the roasting pit and basin hearth food preparation technology (Fig. 3.2). Identified faunal remains indicate the taking of medium and small game; probably by projected dart and traps.

The tool kit shows continuity with earlier assemblages with the addition of milling implements. The shallow basin grind slab and its companion cobble hand-stone are the principal implements for pulverizing grass seeds and nuts. But added to this is the use of pounding stones including one hafted example (Irwin-Williams 1973). This tool assemblage mirrors economic activities oriented around a mixed foraging subsistence.

And finally, the combined improvements in the climatically controlled resource base coupled with improvements in the exploitive technology appear to have fostered a population increase.

Armijo Phase (1800 - 800 BC). During the Armijo phase, Irwin-Williams (1973) is able to detect a slight decline in the available moisture; an environmental conclusion which undoubtedly stressed the Medithermal adaptation of the Oshara peoples. Probably not coincidentally, the first appearance of maize agriculture took place; an adaptive improvement to a temporarily declining economic base. Palynological evidence indicates that corn was grown on the narrow floodplains of the canyon floor near canyon heads within easy access to the most preferred site situation. Although at first only a minor supplement to the hunting and foraging economy, growing dependence on cultigens is evident in the excavated data leading to small food surpluses (Irwin-Williams 1973). This minor food production explains the increase not only in size of site, but also in site complexity since patterned work areas appear for the first time. Although not identified, Irwin-Williams (1973) tells us that several ritual objects appear and these may well have had to do with crop and human fertility not to mention animal magic for hunting. Functionally related change in social organization was the appearance of macrobands which aggregated on a seasonal basis as the food supply

temporarily improved (Fig. 3.2). Irwin-Williams (1973) suggests that this seasonal surplus may have resulted from corn agriculture. In which case macroband aggregation was a fall season event when many microbands coalesced, probably at particular rock shelters with a south-facing view which would capitalize on the solar warming effect during the cool-half of the year.

En Medio Phase (800 BC - 400 AD). The En Medio phase straddles the terminal Archaic and the first defined stage of the Anasazi; that is Basketmaker II. Palynology indicates that this time interval was one of increased effective moisture which would have improved not only the basic Archaic hunting and gathering subsistence but also the potential for maize gardening. Correlated with this resource improvement is evidence for growing regional populations as evidenced by increasing site size, site number, and site density. Further, the growing importance of maize cropping is evidenced by the appearance of slab-lined storage pits; a direct measure of surplus production.

Improvements in the tool kit are expressed in the increasing emphasis on ground stone tools, pressure flaking technology, and the appearance in the fossil record of artifacts made on fiber, wood, and leather; all perishable industries recovered from the Arroyo Cuervo rock shelter excavations. The milling tools are deep basin forms with cobble hand-stones.

3.2.2 Archaic Lifeway. The reconstructed picture of Archaic society is that of small microbands of people attached to particular reaches of a drainage. The adaptation of these societies was principally controlled by the kinds, distributions, and seasonal yield of plants of which wild grass seeds, cactus fruit, yucca pods and roots, amaranth seeds, chenopod seeds, and juniper berries were most important. The companion hunting strategy must have been focused on the seasonal movements of such modern game as deer and antelope. In addition, Oshara hunting camps in the Jemez Mountains were likely special activity stations for the taking of such high altitude game as elk and mountain sheep. Perhaps Oshara bands headquartered in the Chaco Basin also journeyed north to hunt the pinyon-juniper mesalands and San Juan Mountains north of the San Juan River to produce the stray projectile points and sparsely distributed Archaic sites discovered in the Upper Reach of the River (Dittert, Hester, and Eddy 1961).

Gradual growth in inventory and structural complexity is documented towards the end of the Oshara. New additions to the slightly expanding tradition are all related in some functional manner to the first appearance of corn agriculture shortly after 2000 BC. This third element of the subsistence economy is thought to have led in a cause-and-effect manner to a decrease in microband mobility, more prolonged cold-weather aggregation, population increase, greater complexity in group organization, and in the use of magic in the control of the social and natural environment.

3.2.3 Cultural Process in the Archaic Tradition. The most overriding cultural process evident in the Oshara tradition is persistence and continuity. Although cultural change is seen in certain stylistic artifact classes, such as the dart points, still the basic pattern is that of a direct tradition in which phase-to-phase continuity greatly overshadows trait introduction or loss (Haury 1956). This observation provides long-term stability and cohesion to the Archaic lifeway, the result of a stable adaptation to the semiarid environment.

However, towards the end of the tradition, in late Archaic times, certain indications of accretional growth have been observed. Most of these have to do with the gradual appearance of sedentism and village life which are marked by storage pits, cists, and enlarged sites. Corn horticulture and architecture, although appearing somewhat earlier in middle Archaic times, are other important measures of the growing economic role of food production leading to the village Formative pattern around AD 1. Although not immediately evident south of the San Juan River at this early date, full scale village sedentism is amply attested to by village remains in both the Animas and Pine River drainage units appearing at the time of Christ.

3.2.4 Research Problems. Judging from the literature on Archaic archaeology, heavy concentrations of Oshara tradition sites are to be found south of the San Juan River in the Chaco Basin of northwestern New Mexico. This material is part of an extensive distribution of local Archaic which extends all the way from the Arroyo Cuervo Region near Bernalillo in a curving arch through Hovenweep and into southeastern Utah in the Aneth area (Irwin-Williams 1973). However, in contrast, Archaic remains are generally sparse to absent north of the San Juan River in southwestern Colorado proper (with the exception of the Hovenweep area). Although not devoid of Archaic sites, the low density of occupation suggests a major research question as to why the general disfavoring of the northern tributaries of the San Juan Basin.

Since nearly all of the few known Archaic sites are surface exposures, an important research question has to do with the degree to which the time-sensitive Oshara point typology (Irwin-Williams 1973:Fig. 7) applies throughout southwest Colorado. For instance, the 6,000 year long Oshara Tradition is broken up into many named dart point types of which the early Archaic forms, called Jay and Bajada points, are dated between 3,200 and 6,000 BC. But do these projectile types uniformly appear throughout the San Juan Basin within this age range? Similarly, the middle Archaic points, of such value for dating surface sites, are called San Jose and Armijo types, by Irwin-Williams (1973). These index fossils are stemmed, indented base point types distinguished by serrated blades. According to the Arroyo Cuervo typology, these types are dated between 1,000 and 3,000 BC where they serve as middle Archaic markers for the Stemmed, Indented Base Horizon found throughout the western United States extending from California (Pinto Basin points), through Arizona (Chiricahua points), Wyoming (Duncan and Hannah points), and into Texas (Pedernales type). These ubiquitous point styles are sometimes found as isolated artifacts north of the San Juan where they are most common of the Archaic remains. In the Dolores drainage unit, they constitute the guide fossils for defining the Big Bend Phase dated between 1000 and 3000 BC. And finally, the late Archaic is marked by large, corner notched dart points, called En Medio by Irwin-Williams (1973). These are Basket Maker III points dating from just after 1,000 BC until just before AD 500 (Fig. 3.2).

Some of the first systematic study of Archaic remains within the entire American Southwest was performed by Sayles and Antevs (1941). This research led to the definition of the Cochise culture of southern Arizona. Since few projectile points were associated with the three-fold phase (called stages originally) breakdown (Sulphur Springs, Chiricahua, and San Pedro), Sayles used a developmental milling tool typology for dating of the Cochise sites; particularly surface exposures

where stratigraphy and radiocarbon were not feasible. Therefore, it seems possible that some chronological information may lie dormant in the milling tools of the Oshara Tradition awaiting an attribute study to pull out time-sensitive characteristics. Inspection of Figure 3.2 shows just such a dating potential with shallow basin nether milling stones dated to the middle Archaic while deep basin forms appear about 1,000 BC. Again Trujillo Phase (i.e. Basket Maker III) milling tools have evolved into one-end closed trough metates. BMII forms are transitional with mixed Archaic basin and Puebloan trough forms as revealed in the Navajo Reservoir District (Eddy 1961, 1966). Since hand stones (i.e. manos) are closely correlated in shape to the nether mill stones that they grind on, then similar chronological information is also inherent in their manufactured shapes and wear surfaces. But a useful chronology of these implements still awaits a very detailed laboratory study based on a collection obtained from a tightly controlled stratigraphic series.

Even more refined chronological data can be extracted from the excavation study of Archaic sites. Especially sites and artifacts buried in arroyo-bank profiles, blowouts in stabilized sand dunes, and deep rockshelter middens are all susceptible to time-stratigraphic study. Using the geochronology techniques pioneered by Antevs (1955), Archaic sites buried in alluvial fills can be interpreted in terms of the SW cut/sequence and dated according to the nuances of the Alti-thermal and Medithermal Climatic periods. Similarly Archaic sites found on or buried in stabilized sand dune fields have chronological implications in terms of arid climatic periods such as the Alti-thermal Long Drought (2,000/3,000 BC - 5,500/6,000 BC) or shorter duration intervals of the Medithermal such as the Fairbanks (500 BC) drought. The implication is that the dunes were active during these xeric episodes after which they were stabilized by vegetation during mesic climatic intervals at which time they were employed as well-drained campsites by Archaic foragers (Bryan and Toulouse 1943). Modern exposure of such buried archaeology is by blowout scouring which reveals Archaic artifacts and hearths within a wind-deflated depression but not outside of this area of natural impact. But in order to precisely tie-down the relationship between the dune stratigraphy and the archaeology, it will be necessary to face up the interior wall of the blow-out depression for profile study. Anyone who has tried to dig straight-sided excavation pits in a sandpile will certainly be aware of the futility of long maintaining a straight wall for study. Our recommendation for effecting such profiling is to thoroughly wet the sand using a water tanker truck to saturate the sand just before very hasty excavation is begun. Of course excavations could also be conducted during the winter when frontal storm systems have thoroughly soaked any aeolian deposits containing Archaic remains.

Further, deeply buried Archaic sites can be expected in rockshelter overhangs. It was just such site situations which were so successfully exploited in the Arroyo Cuervo district by Irwin-Williams (1973) where they were amenable to stratigraphic study in order to trace the origins of village life (Archaic/Anasazi transition). But rockshelter deposits are particular difficult to excavate stratigraphically since they are inherently unstable to trenching and typically they have been seriously mixed and churned by rodent burrowing. To compound the matter, American archaeologists seem to be overly prone to dig in metric levels which have the disadvantage of cross-cutting, and thereby mixing, the artifact

assemblage of adjacent layers. This problem is most common when digging the foreslope of rockshelter deposits where the depositional strata often dip at a high angle; sometimes just at the angle of repose. For these reasons, we recommend the balk excavation techniques described by Wheeler (1954) and applied so successfully to the San Juan Basin by Joe Ben Wheat of the Colorado University Museum, Boulder, Colorado. These horizontal excavation procedures involve stripping of natural strata in such a fashion that the strike and dip of each stratum is maintained throughout a block excavation. By stepping back the walls of the excavation, some of the problem of rockshelter slumpage is counteracted. Archaic archaeology offers the potential for detailed study of architectural context such as houses and pits of various kinds (Fig. 3.2). These fixed facilities provide a cultural context of studies of dated association between artifacts and ecofacts; a sort of sealed deposit serving as a time capsule.

And finally, some special-topic problem areas should be mentioned. The middle Archaic is the stage of incipient agriculture leading to Formative village life. For this reason, the chronological study of pottery and cultigens is particularly important since these are the indicators of a Formative lifeway. Presently the earliest pottery in the San Juan Basin is a polished brownware called Los Pinos Brown which appears in a late BMII context around AD 300 (Eddy 1961). Again light frame brush shelters are presently known from the middle Archaic age where they indicate the beginnings of sedentism (Fig. 3.2). A third indicator of sedentism and food production is the presence of storage facilities for crop harvest. Thus a significant research problem for future investigations is to examine the nature of these Formative indicators - cultigens, pottery, storage facilities, and architecture - as to their first appearance and amplifying effect on the growth history of the Oshara tradition as it evolves into the Anasazi village lifeway.

3.3 Formative Stage. As noted earlier, the Anasazi Tradition comprises the Formative Stage in southwest Colorado. We have chosen to present the Anasazi data via a drainage unit concept (see Fig 2.1 and Sections 3.3.1-11), as opposed to the district breakdown used in previous archaeological reports. We believe this categorization best covers the entire study area and has validity in terms of the data. Before discussing each of the defined drainage units, however, it will be useful to discuss in more detail the widely used Anasazi Pecos classification and its developmental stages (Basketmaker I-III and Pueblo I-V)(see Fig. 2.2).

The first Pecos stage is labeled Basketmaker I (BMI). In 1927 this synthetic unit was postulated without benefit of data. Today, with far more prehistoric evidence in hand, we would call this the earliest stage part of the Archaic tradition. In the original definition BMI was hypothesized to be a nomadic way of life supported by a hunting and gathering economy. Subsequent to 1927, the presence of incipient agricultural has been recognized in BMI (Archaic) times through the excavations of Dick (1965) at Bat Cave and through the fossil pollen investigations of Martin (1963). In New Mexico and Arizona, the beginnings of agriculture are now known to go back as far as 2000 BC or earlier (Woodbury and Zubrow 1979).

Basketmaker II (BMII) was defined in 1927 as a stage of semi-agriculture and semi-hunting (Wormington 1947). It was characterized by the presence of finely woven baskets but no pottery. Now we know that late BMII sites in the Pine River Drainage Unit, for example, show some very early appearance of polished brown pottery, called Los Pinos brown, dating as early as AD 300 (Eddy 1961; Dittert, Eddy, and Dickey 1963). It is not known whether the rare occurrence of this brown ware pottery on the Colorado Plateau is due to trade from a southern Mogollon cultural resource (Wheat 1955), or if it was locally made as a copy of Mogollon brown ware. BMII stage is generally bracket-dated between AD 1 and 450 where it represents the very beginnings of the sedentary village agriculturalists; part of a continent wide stage which Willey and Phillips (1958) have termed the Formative stage.

Basketmaker (BMIII), called Modified Basketmaker in the stage terminology of Roberts (1935), is typified by the presence of fired grayware pottery, with type names such as Twin Trees Plain, Chapin Gray, and Lino Gray (Colton 1953; Abel 1955; Breternitz, Rohn, and Morris 1974). In the Lower Reach of the San Juan River, a continuation of the brown ware series is known by the presence of Abajo Red-on-orange. Polished brown ware, locally made, continues as the utility pottery in the upper San Juan, a type name called Sambrito brown (Dittert, Eddy, and Dickey 1963). Late in the BMIII stage, both organic and mineral paint decorated vessels appear after AD 600 with gray ware types such as Lino Black-on-gray and La Plata Black-on-gray. Associated with small farm homestead sites are constructed pit houses with antechambers as illustrated by Shabikeschee village (Roberts 1929), sites in the Dolores drainage unit, the Durango sites of the Animas District (Carlson 1963), and in the Upper Reach of the San Juan River (Eddy 1966). The stage is dated by tree-ring chronology between AD 450 and 700.

The Pueblo I (PI) stage is characterized by cranial deformation due to the use of a hard cradleboard, neckbanded jar vessels, and villages composed of pit houses. This, and the subsequent Pueblo II stage, was combined by Roberts (1935) as Developmental Pueblo. Pit houses during this stage have roof entryway rather than egress through an antechamber. Further, they have a four-post roof support, mud wing walls, central fire pit, ventilator shaft, and interior bench (Eddy 1966). This stage is dated between AD 700 and 900.

Pecos stage Pueblo II (PII) shows a widespread geographical extension of life in small gridded masonry villages (Wormington 1947). These settlements, called "unit pueblos" by Prudden (1914), have a front-oriented alignment with surface living rooms fronted by a masonry kiva with a low trash mound beyond. The ceramic complex, in addition to decorated black-on-white pottery, includes all-over corrugated utility pottery. The corrugated jars often show the presence of charcoal soot from use in boiling of liquids and gruels and in addition, some of these wide-mouthed jars appear in surface storage rooms in company with mealing bins where they are lid-covered for storage of corn and beans. Notable in this PII developmental stage is the first appearance of a true kiva or ceremonial room with masonry walls, six pilaster roof supports, and a floor sipapu or ceremonial hole; developments which take place between AD 900 and 1100. The kiva is thought to have been an outgrowth of the PI residential pit house, some of which also show a subsidiary ceremonial function (Morris 1939; Eddy 1966). At least in the Mancos drainage unit certain stone masonry towers are interconnected to kivas by a tunnel.

Another significant development during the PII stage is the appearance of water control features for the first time (Rohn 1963; Woodbury 1961). These consist of devices to tap surface runoff and lead this water to agricultural fields; inventions which take place after AD 1000. Examples are: contoured rock borders for fields, waffle gridded fields, gully check dams, irrigation canals and water impounding reservoirs.

Pueblo III (PIII) in the Pecos classification is also termed Great Pueblo in Roberts terminology. PIII is generally considered the cultural climax or classic development of San Juan archaeology after which the San Juan Basin was abandoned to Anasazi occupation between AD 1200 and 1300. The most convincing explanation for this evacuation of the Four Corners country is that of drought, dated between AD 1276 and 1299 in the tree-ring chronology, coupled with arroyo cutting of the canyon floodplain; an erosion process which began as early as the 9th century in the upper reach of the river leading to the destruction of agricultural potential (Schoenwetter and Eddy 1964). PIII is a cultural stage characterized by the presence of great communal houses such as the cliff dwellings of Mesa Verde National Park and elsewhere in the Lower and Middle Reach of the San Juan Basin. The multistoried, multi-tiered gridded pueblos, with many small kivas (sometimes called clan kivas), few large Great Kivas, and plazas constitute large villages, some of which approach town size in the Mancos and McElmo drainage units. Multistoried masonry towers both square and round are prevalent in the Monument drainage unit with lesser frequency elsewhere in the region.

Outstanding during PIII times is the growth of intensive local specialization with the recognition of stylistic differences in ceramic decoration and architecture. These regional differences form the basis for the different cultural branches in the Gladwin-Colton classification to be discussed in a moment. Named branches are Kayenta of northeastern Arizona (Lower reach), Mesa Verde (extending from the Monument drainage unit to the Piedra drainage unit, and the Chaco (Chaco basin) as mapped on Figure 2.1.

The abandonment of the Four Corners country led to resettlement of Anasazi people in the northern Rio Grande valley of New Mexico as well as a build up of populations on the southern perimeter of Black Mesa in the middle reach of the Little Colorado drainage of northeastern Arizona. These displaced peoples, plus local indigenous communities formed what the Pecos conference called the Pueblo IV stage. Largely because of the runny glaze paint decoration of polychrome pottery in the Rio Grande, Roberts (1935) called this stage the Regressive Pueblo. However, today PIV would be included with PIII as the cultural florescence of the Anasazi tradition due to the presence of large gridded pueblos with interior plazas. Some of these sites are town-size in the many hundreds of rooms tiered in multiple stories. PIV, dated between AD 1300 and 1700, shows a gradual disappearance of corrugated wares. Tracing of the San Juan Basin immigrants with link-up to living Pueblo peoples suggests the following geographical transformations:

- 1) Upper San Juan ---- Towa speaking Jemez and Pecos Pueblos, New Mexico (Eddy 1966; Hawley-Ellis 1964).
- 2) Chaco branch ---- northern Tewa Pueblos, New Mexico (Reed 1949).
- 3) Mesa Verde branch ---- southern Tewa (Hano) Pueblos of the Galisteo Basin, New Mexico.

4) Kayenta branch ---- Shoshonean speaking Hopis of Black Mesa, Arizona (Dean 1970).

Alternative reconstructions for the origins of the modern Pueblo Indians are rampant in the literature. For a sampling of the differences of opinion see Wendorf and Reed (1955) not to mention the varied perspectives of Ford, Schroeder and Peckham (1972).

It should be noted that some current authors, such as Rohn (1978), end the Pueblo IV stage with the appearance of Spanish explorers of which the first significant historical figure was Francisco Coronado in 1540. In this fashion P IV is entirely prehistoric and P V is wholly historic. However, this practice is a departure from the original Pecos stage formulation of Kidder (1927).

After the Pueblo Revolt of 1680 to 1692, 1698, the Pecos classification identifies the developmental growth of the Anasazi tradition as Pueblo V or the historic stage. Glaze polychrome pottery is replaced by matt-paint polychromes such as the Tewa Polychrome series. Successive cultural contact with Spanish colonial, Mexican national, and American territorial influences have greatly affected the modern Pueblo Indian people whose background is a direct outgrowth of the prehistoric Anasazi tradition (Rohn 1978). Many archaeologists express this cultural continuity by the hyphenated cultural tradition term, Anasazi-Pueblo.

3.3.1 The McElmo Drainage Unit.

3.3.1.1 Boundaries of the Unit. This unit is generally defined as all lands with drainages that ultimately feed McElmo Creek and the Cross Canyon drainage east of Montezuma Canyon (Fig. 3.3). On the south the boundary is formed by the north slope of the Mesa Verde, the divide between Mud Creek and Navajo Wash, the north slopes of Ute Mountain and the divide between Rincon Canyon and East McElmo Creek. On the west, the boundary is formed by Cajon Mesa, the mesa west of Nancy Patterson Canyon, Bug Point, and then the divide between Monument Canyon and Squaw and Cross Canyons to a point north and east of Dove Creek. On the north, the boundary is formed by the 7000 foot contour on a line running from Dove Creek to Puett Reservoir; the archaeology north of this line appears to have more of an affinity with the Dolores Canyon System. On the east, the boundary is formed by the divide between McElmo Creek and the Mancos River near the entrance to Mesa Verde National Park.

3.3.1.2 Temporal Framework for the Unit. Winter (1976) and Nickens (1982) have used the Wetherill Mesa phase system (Hayes 1964) as a framework for culture history summaries of this area, alternatively called the Yellowjacket District (Gillespie 1975, Kane 1980). We believe the adoption of the Wetherill Mesa framework is premature and may bias interpretation of the archaeological record. For this presentation, therefore, we have retreated to the more general Pecos classification. Some suggestions regarding preliminary phase designations are discussed; these should be viewed as a model to be tested rather than a conclusion.

Basketmaker II Stage (A.D. 1-450)

Few known or suspected archaeological resources dating to this stage have been recorded in the McElmo drainage unit. The drainage units to the east and west may have been more favorable for BMII adapta-

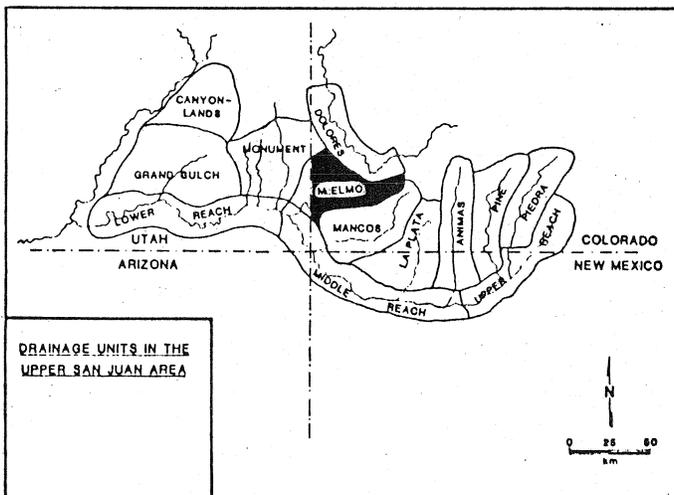
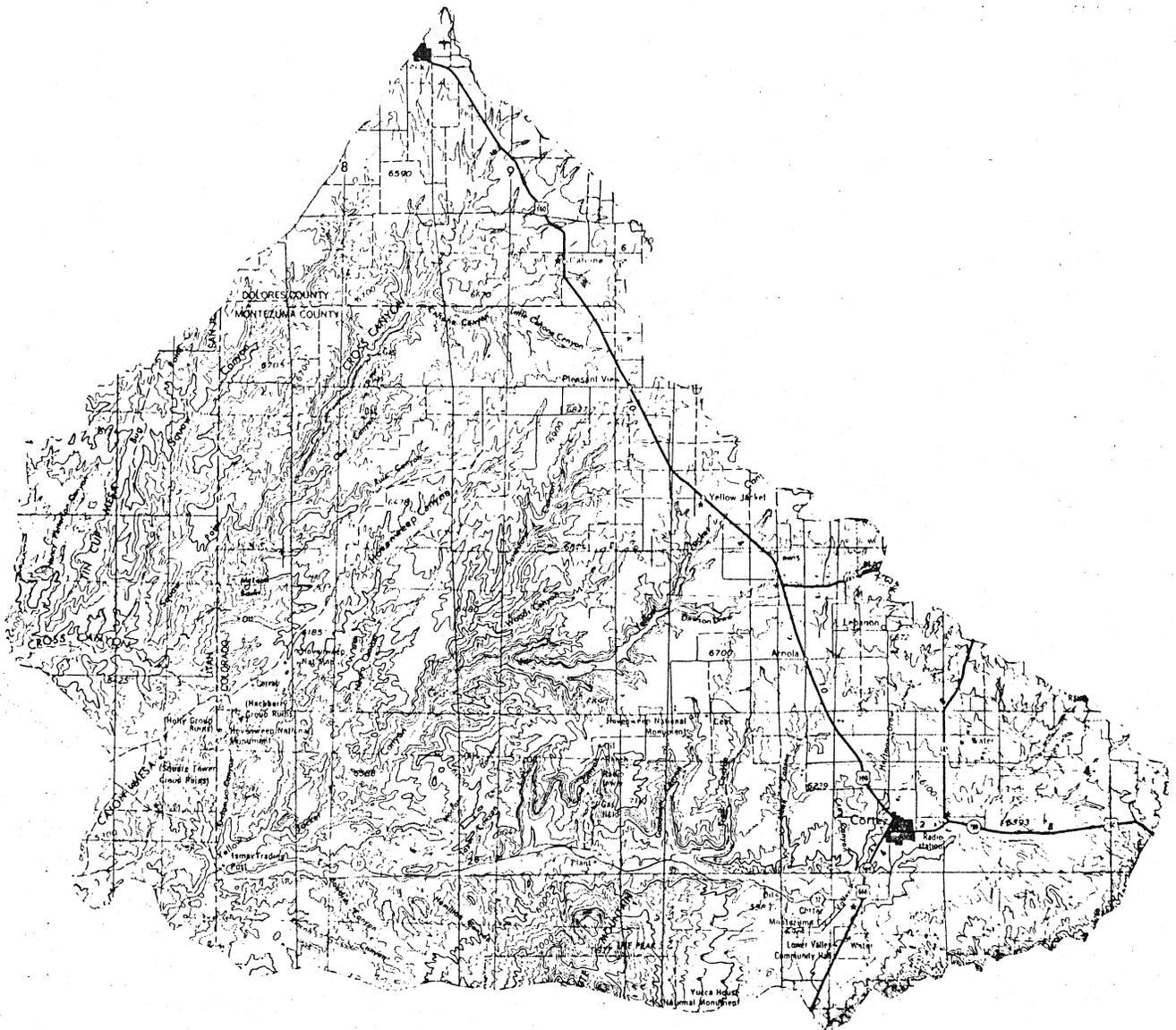


Figure 3.3 McElmo Drainage Unit (from USGS 1:250,000 Cortez Map) (reduced).

tions as substantial communities have been reported for both the Animas drainage to the east (Morris and Burgh 1954) and the Cedar Mesa area to the west (Lipe and Matson 1971). Winter (1976:283-284) believes the Hovenweep-Cajon Mesa area on the west side of the unit was a marginal, low population locality during this stage. It appears this conclusion may hold for the drainage unit in general, although more comprehensive survey information must be obtained to substantiate or refute this generalization.

Basketmaker III Stage (A.D. 450-750)

A sizable population of Anasazi groups is documented for the McElmo Drainage Unit in the period defined for the BMIII stage. The first substantial influx of Anasazi peoples into the unit is undocumented, although it was probably during this stage. Stevenson (1975:33) reports that Rohn has excavated a BMIII site dating ca. A.D. 590-600. Other documented BMIII occupations (Rohn 1974, 1975; Wheat 1955) apparently date in the 600's. From this evidence it appears the best estimate for immigration of BMIII peoples into the unit is the late 500's and early 600's. BMIII habitation sites within the unit exhibit two contrasting patterns of architectural units. The more simple is similar to the Tres Bobos Subphase as described (Section 3.3.3.3.1) for the Dolores Drainage Unit. Habitations consist of 1-2 pithouses and associated surface use areas; each settlement probably represents a single family household. This pattern is recorded in the western portion of the unit (the Hovenweep-Cajon Mesa locality) by Winter (1976:283-284), and has also been documented for the east portion as well (Brisbin 1976:33). Rohn (1975) and Wheat (1955) have described more complex patterns for 7th century sites situated to the north of the main canyon system. At the Gilliland site Rohn (1975) discovered a complex of four pithouses associated with numerous surface ramadas, storage cists and miscellaneous structures and features; the complex was surrounded by a protective stockade. Rohn (1974) later excavated a similarly arranged BMIII settlement, the Payne site. At 5MT1, a multiple occupation site near the present farming community of Yellowjacket, Wheat (1955) has investigated a BMIII village including a great kiva; architectural complexity for the BMIII component seems at the same level as that exhibited for the Gilliland and Payne sites. The relationship between these two patterns may be partially temporal: the single/double pithouse sites may be early (A.D. 550-650) and the more complex sites may be slightly later (A.D. 650-700). The stockades described by Rohn represent a related problem: were the stockades protective devices against nomadic raiders or do they reflect local competition for the best farming lands? Winter (1976:286) believes late La Plata Phase settlements in the Hovenweep-Cajon Mesa locality were deliberately situated at defensive strong points, and that local competition for resources increased during the late BMIII stage. The stockades and aggregation of dwelling units may be reactions to increased local competition after A.D. 650. If this is correct, then the observed dichotomy may be more than temporal; areas most favorable for BMIII adaptations may exhibit aggregated settlements with stockades while more peripheral areas are characterized by the single/double pithouse pattern. This latter model is supported by data from the units to the north (the Dolores and Monument units) where late 7th century settlements contain one or two

pithouses. The northern areas are seen as peripheral in terms of climate and elevation. More directed field research is needed to approach this problem. The interior layout and feature complement of structures and material culture appears generally to correspond to the "normal" regional patterns described elsewhere for these cultural attributes (Hayes and Lancaster 1974, Birkedal 1976, Brisbin 1981, Nickens 1982).

The Pueblo I Stage (A.D. 750-900)

The period represented by this stage appears to be one of population decline and consolidation within the unit. In the Hovenweep-Cajon Mesa locality Winter reports (1976:286) that site densities more than doubled during the late BMIII-early PI time span; after A.D. 750, however, groups had begun to leave the southern three-fourths of the unit. Kane (1977), based on a review of available survey records, suggests site densities within the unit had declined to one-half of one-third of the BMIII levels during the PI stage. This decline may be related to the contemporaneous Dos Casas-Perlman Subphase growth in the Dolores Drainage Unit to the north and east (see Section 3.3.3.2).

The Center for American Archaeology Northwestern University is currently excavating a late PI village, the Duckfoot site, near Crow Canyon (E. Charles Adams, personal communication). The investigations suggest a surface pueblo with 10-15 rooms and 3 pit structures. Intra-site patterning is similar to that observed for contemporaneous analogues in the Dolores Drainage Unit. This settlement appears to be relatively isolated and not part of a larger aggregated community as is common in the Dolores unit.

In the northern part of the unit Martin (1936, 1939), on the basis of his investigations in the Ackman-Lowry locality, has suggested that large, aggregated villages were a common settlement pattern during early PI, but were abandoned by A.D. 850. However, his interpretation of particular ceramic types as relative dating markers was incorrect; correlation of his prehistoric sequence with current ceramic type dating would place the abandonment of these large villages during the PI-PII Transition at approximately A.D. 900. This interpretation is consistent with the tree-ring dates obtained from Martin's Site 1 which support major construction episodes in the mid and late 800s (Robinson and Harrill 1974:11-16). The layout and structure complement at Site 1 (Martin 1939) is similar to contemporaneous villages in the Dolores unit. Martin estimates that two large integrative structures, 75-100 surface rooms and 15 or more pithouses are present at Site 1 which makes it comparable in size to analogues at Dolores. Martin's Site 2 seems to be less complex architecturally, although it is a huge aggregation of residential units (probably 10+ pithouses and 80+ rooms). The site contains at least three room-block complexes, each consisting of 15-30 rooms and two or more pithouses. Tree-ring analysis suggests occupation in the late 700s. Site 2 has no analogues in the Dolores District; it bears similarities to the Alkali Ridge complex in the Utah portion of the Monument Unit (Brew 1946). Other large PI aggregated villages have been recorded in the northern part of the unit, for example, the Radio Tower site (5MT2475).

In summary, impressions are that the unit underwent population consolidation and decline during the PI stage. This may have been in

response to regional climatic changes about A.D. 800 (Euler et al. 1979, Kane 1983) and movements to higher altitude "refugia" (Berry 1982) such as the Dolores Unit. Aggregation appears to have been a consistent phenomenon across drainage units in the 800s. The late PI settlements identified in the Ackman-Lowry locality of the McElmo unit are similar in layout and content to contemporaneous villages in the Dolores Unit. It is proposed that late PI consolidation/aggregation and movement north and to higher altitudes is a response to drier and warmer conditions in the 800s. Present survey coverage suggests a northwest-southeast band of late PI aggregated settlements from Cross Canyon on the west to Lost Canyon on the east; the band appears to be mainly confined to the 6600-7400 elevation contours and includes the Dolores Unit south of the Dolores canyon and the northern and northeastern portion of the McElmo unit. It is also proposed that the split between units is arbitrary and that only one cultural expression is present. This can be termed the McPhee Phase according to Kane (1981, 1983).

Detailed architecture and material culture correspond to regional patterns described by archaeologists reporting results of PI site excavations (Morris 1939, Martin 1939, Hayes and Lancaster 1974, Brisbin 1983, n.d.).

The Pueblo II Stage (A.D. 900-1100)

The period represented by the early PII stage (A.D. 900-1000) appears to be characterized by population movements and shifts in settlement patterns. The McPhee Phase aggregated villages are abandoned and replaced by a dispersed pattern of small settlements. Kane, based on then current survey coverage, suggests a doubling in site density during this period (1977:2-63), although settlement appears to have remained concentrated in the north and northeastern parts of the unit. This probably does not mean population growth, but rather a shift from a low number of large villages to a larger number of smaller settlements or "hamlets."

Recent research directed toward investigating early PII behavior and material manifestations of culture is virtually non-existent. Prudden's (1903, 1914, 1918) concept of the unit pueblo or unit house is often adopted as a model of intrasite patterning for this stage. According to Prudden (1903:234): "The house in this type of ruin in its simplest form consists of a single row of rooms, each usually five or six feet wide and from 8 to 10 feet long, with a straight wall upon the back, and a short, right angle wing at each end; the whole forming approximately one side of a square. This usually opens southward, with an estufa (kiva) occupying the partially enclosed court." The "unit houses" investigated by Prudden, however, date to the PIII stage, so the applicability of the unit model to the earlier PII stage needs to be demonstrated. Martin (1938) excavated four small sites near the modern Ackman community in 1937. Although Martin argues that two of the sites actually were occupied in the 9th century, examination of his table summarizing the ceramic collections (Martin 1938:1-1 Fig. 57) indicates that the occupations for these sites were in the 10th and 11th centuries. This conclusion is based on the presence of corrugated wares (termed "indented corrugated" by Martin), the large percentages of Mancos B/W in the collections and the infrequent occurrence of PI type redwares. These sites form the best current data for the early PII

stage. A conjecture is that early PII sites are under-represented in the record because of later superposition and remodeling of architectural units. Many late PII-early PIII sites contain anomalous early sherds in the survey collections suggesting earlier occupations (Kane 1977:2-65).

The late PII stage in the McElmo unit is characterized by population growth and areal expansion. Kane (1977:3-66) suggests a threefold increase in densities of habitation sites and an even greater increase in numbers of seasonal and limited activity sites. The majority of sites are located in the plateau-mesa top environmental zone in the northern and northeastern portion of the unit; settlements were also established in the southern and western rimrock, talus and canyon bottom locations. Site locations favored were canyon rims along major drainages in the northern and central portions, the bottoms of Yellowjacket and McElmo canyons and rockshelters in the cliff zones of the northern tributaries of McElmo Creek.

Winter (1976:236-237) suggests a threefold increase in numbers of sites by A.D. 1000 in the Hovenweep-Cajon Mesa locality and also proposes an expansion into new environments. He believes the expansion was due to local population pressures and that many groups were forced to adopt new subsistence technologies, principally floodwater and irrigation agriculture (1976:289). There apparently was not much local conflict between communities as almost all late PII sites lack defensive architecture.

That the late PII population had adopted new, intensive agricultural methods is supported by the identification of late PII ceramics at large prehistoric reservoirs within the unit; this suggests that these catchments were originally constructed and used during this stage. Schroeder (1968:92) believes that terracing of shallow arroyo heads in the Hovenweep locality began during this stage, and terracing and utilization of check dams in the main McElmo Creek drainage was begun also. Rimrock granaries and non-habitation sites in the southern and western portions of the unit contain late PII ceramics, perhaps implying that late PII communities were more actively exploiting the rimrock, talus and cliff zones. Excavation data for the late PII stage is present in greater quantity when compared to early PII. Martin's reports for Lowry Pueblo (1936), Charnel House and Herron Farms Unit No. 1 (1929), and Beartooth Pueblo and Little Dog Ruins (1930) are the best sources for this type of information. Wheat (Brown 1975, Wheat 1980) and Rohn (Brown 1975) have excavated several late PII sites for which no comprehensive reporting is available. Wheat's investigations near the large Yellowjacket site complex (5MT5) have included the excavation of a PII houseblock and stratigraphically earlier pitrooms at Porter Pueblo (5MT1) and three houseblocks and associated kivas at 5MT3. Rohn has excavated several architectural units at the Ewing site including two that had a protective stockade (Rohn 1974:118); tree-ring dates from the Ewing site (Robinson and Harrill 1974:29-32) suggest occupation in the late 11th and early 12th century.

Interior architecture and material culture for the PII period corresponds to regional patterns; these have been described by archaeologists working in the Mesa Verde Region (Lister 1965, 1966; Swannack 1969, Hayes and Lancaster 1974; Nickens 1982). The layout of architectural units at individual settlements appears to be more variable; an informative summary of the PII architectural patterning in the Ackman-Lowry locality has been prepared by Martin (1939:474-480).

The Pueblo III Stage (A.D. 1100-1300)

The trends of growth, expansion, aggregation and intensification of agricultural practices established during the PII stage were maintained during the early PIII stage (A.D. 1100-1200). Site densities and population levels probably remained approximately the same for the northern mesa top localities, but increased in the southern and western canyon zone (Kane 1977:2-70). The large aggregated settlements (following the convention used by Chaco Canyon archaeologists, these can probably appropriately be termed "towns") established during the PII stage continued to flourish. These settlements contain non-residential architecture (great kivas and towers) as well as numerous residential houseblocks. Little systematic excavation has been conducted at these complexes and none since the 1940s. A list of these complexes and bibliographic references are shown in Table 3.1.

The Lowry Ruin and the Ida Jean and Wallace sites of the Wooley Ranch complex have been identified by the Chaco Center staff as Chacoan outliers (Powers et al. 1983:161-167, 170-174); these locations and perhaps others in the drainage unit may have functioned in a regional system characterized by formal exchange between the centralized Chacoan "towns" and the outliers (Powers et al. 1983:341-345). Considering only the McElmo drainage unit, a major question is the number of local settlements involved, their role in the regional system and the relationship between the Chacoan communities and traders and the local population. A speculation is that McElmo involvement in the regional system is greater than indicated by the Chaco staff; this idea is based on the premise that the "Great Houses" identified at many of the McElmo Unit PII-PIII complexes are Chacoan outliers. A directed fieldwork program would be necessary to substantiate or disprove this notion. Analysis of tree-ring data suggests a very severe and region-wide period of drought in the Four Corners Area beginning approximately A.D. 1130 and enduring until 1180 (Dean and Robinson 1977, Powers et al. 1933:345); this may be responsible for population movement and decline within the unit beginning about A.D. 1150. During the late PIII stage, site densities within the unit are less than one-half when compared to late PII or early PIII. This decline is most apparent in the northwest, northeast and southeastern portions of the unit; the cliffs and canyons of lower McElmo canyon and the Hovenweep locality apparently were the last bastion of Anasazi settlement within the unit with the exception of the Mud Springs complex. Late PIII population levels are greatly reduced in the northern plateau/mesa top environmental zone, and most small settlements appear to have been abandoned by late 1200. Although no corroboration is available through tree-ring dates, occupation of the large "town" complexes may have continued into the middle 1200's. This inference is based on the late PIII pottery styles exhibited by Prudden in his reports on the Mitchell Springs, Squaw Point and Bug Point excavations. Lowry Ruin appears to have been abandoned before A.D. 1175 according to the occupational synthesis developed for the settlement by Martin (1936:194-209). Local movement may have been to canyon rim and canyon bottom locations. For example, the large settlement situated at the point between the McElmo and Yellowjacket canyons (Prudden 1914:261) appears to have been inhabited into the late 1200's.

In the Hovenweep-Cajon Mesa locality, Winter (1976:283-289) documents only a slight decrease in site totals; local movements were to

Table 3.1 Late PII-PIII Towns in the McElmo Drainage Unit and Bibliographic References

<u>Settlement</u>	<u>Description</u>	<u>References</u>
Mud Springs Ruin	Late PIII complex built on rimrock around canyon head; 15-20 residential complexes, triple wall tower. Site is now owned by the Archaeological Conservancy.	Holmes 1878:398-99; Prudden 1903:238; Fewkes 1919:19-21; Morgan 1881:190
Mitchell Springs Ruin	Contains numerous residential complexes and double wall tower.	Jackson 1876:378; Morgan 1918:189-190; Fewkes 1919:19-20; Prudden 1914:38-56
Wooley Ranch Ruins	There are several dispersed residential units: the Haney site, the Ida Jean site, the Wallace Ruin and others.	Prudden 1903:258; Fewkes 1919:20; Brisbin and Brisbin, n.d.; Powers, Gillespie and Lekson 1983:161-167
Blanchard Ruin	Major portion of site destroyed to build Manitou Springs Cliff Dwelling; recorded during Dolores Project 1975 survey.	Fewkes 1919:23; Kane 1975
Sand Canyon Pueblo	Canyon Head Complex; recorded in 1967 by CU-BLM survey (5MT765); some stabilization by CU, currently being investigated by Center for American Archaeology.	Fewkes 1919:18
Goodman Point	The ruin is owned by the Park Service. It contains several massive roomblocks similar to Yucca House and 2 great kivas, one built on bedrock.	Prudden 1903:260-261; Fewkes 1919:17-18
Yellowjacket (Surouaro) Ruin	A very large PII-PIII complex containing numerous roomblocks, a great kiva, a partially destroyed structure (Great House) similar to the Yucca House "Upper House", and many satellite settlements. Partially owned by Archaeological Conservancy.	Prudden 1903:262-263; Fewkes 1919:16-170 Wheat 1975, 1980; Brown 1975; Hurst and Lotrich 1932

Table 3.1 (cont'd)

<u>Settlement</u>	<u>Description</u>	<u>References</u>
Herren Ruin	A large PII-PIII complex privately owned. Two units were excavated by Martin in 1929. The main roomblock was recorded by the Dolores Project survey in 1974 (Site No. 5MT2516).	Martin 1929:3; 11-35; Martin 1936:474-481
Lowry Ruin	Lowry Ruin itself is one roomblock unit of a larger complex including a great kiva. The site was excavated by Martin and later stabilized by the BLM-University of Colorado. It is a Chaco outlier and is maintained as a visitors facility by the BLM.	Martin 1929:5-6; 1936 White and Breternitz 1976; Powers, Gillespie and Lekson 1983:170-174
Lancaster (Clawson) Ruin	A PII-PIII complex with numerous roomblock units and a separate "Great House." Now owned by the Fort Lewis College Foundation	Martin 1929:3
Ray Ruin	Another large PII-PIII complex, privately owned.	Martin 1929:3, 25-35
Cahone Ruin	A large PII-PIII complex containing numerous roomblocks, a great kiva and a "Great House"; privately owned.	Guthe 1949
Squaw Point Ruin	Another PII-PIII complex with roomblocks, a "Great House" and a reservoir. Prudden excavated one unit in 1913; privately owned.	Prudden 1903:267-269; Prudden 1918:13-24; Fewkes 1919:28 -29
Bug Point Ruin	A PII-PIII complex similar to the Squaw Point Ruin. One unit was excavated by Prudden, others by Leh. The complex is in the Monument D.U., but is included here because it is part of the larger PII and PIII settlement system; privately owned.	Prudden 1903:269-271; Prudden 1918:26-50; Fewkes 1919:29; Leh 1938,1939,1940, 1942

canyon-head complexes such as Cutthroat Castle, Holley House, Horseshoe House, Cannonball Ruin (Morley 1908), and McLean Basin Towers. Rock-shelters in the rimrock and on the talus of McElmo Creek and its northern tributaries exhibit increased use during the late PIII period. Tree-ring dates (Robinson and Harrill 1974, Winter 1976) suggest that there was a flurry of building activity in Hovenweep and McElmo Canyon in the 1250's and 1260's. This last Anasazi occupation was short-lived and the unit was probably abandoned before A.D. 1300.

The abandonment of most mesa-top complexes during the late PIII stage suggests that local communities were relying on mesa-top farming. Winter (1976:289-290) proposes that populations in the Hovenweep locality were practicing floodwater farming and irrigation agriculture and that foraging and dependence on semi-domesticated ruderal plants increased.

The PII-PIII system of large aggregated communities and the later Hovenweep style of canyon head complexes with defensive architecture are phenomena that are unique to the McElmo drainage unit. It is proposed here, therefore, that phase designations be used to identify these two phenomena. The Yellowjacket Phase is proposed as a designation for the PII-PIII system; the dates for this cultural unit are approximately A.D. 1050-1250. The Hovenweep Phase is proposed as a designation for the late PIII canyonhead system; prospective dates are A.D. 1225-1300.

Domestic and ceremonial architecture and material culture for the PIII stage in the McElmo drainage unit appear to conform to regional patterns. These have been described in detail by archaeologists working in the McElmo unit and nearby areas (Martin 1936, Hayes and Lancaster 1974, Lister 1964, Morley 1917, Rohn 1971, Cattenach 1980).

3.3.1.3 Research Problems. Suggested problem orientations are listed below with no particular order of priority; if there is a first priority it is probably large-scale research of the Yellowjacket Phase, given the regional importance of the problem and the precarious status of some of the major point resources assigned to the phase.

1. Aceramic sites. The unit contains a significant number of aceramic sites, many of which can be assigned to the Archaic stage. We (Section 3.2.1) believe the southern portion of the unit was the homeland of an Oshara type Archaic culture. An important research need is to systematically sample the aceramic site universe, determine likely cultural affiliations and develop a preliminary culture history for this resource. A second focus would be the Archaic stage in the unit and its relationships with other local Archaic manifestations within the Four Corners Area.

2. Anasazi origins and the BMIII stage. Little work has been focused on the BMIII occupation of the unit and, yet, understanding of Anasazi origins in the unit is necessary for investigations of other stages. The time span and method of this origin need to be determined and the dichotomy in BMIII settlement patterns investigated and explained.

3. The emergence, growth and decline of an aggregated settlement system during the late PII-PIII stages (Yellowjacket Phase) and the role/influence of Chaco culture. This is probably the most important problem, both from a practical and scientific sense, and yet, the most difficult because of the scale of the problem and the inaccessibility of some of the resource. An immediate need is the protection of the

resource base so, when research becomes feasible, the opportunity will still be present. One specific question that can be asked is whether there was a Chacoan presence at most of these large settlements or "towns" and, if so, what role did it play in influencing social organization and economic practices.

4. Mechanisms of abandonment of the unit and factors causing the abandonment. This research would be an extension of the work done by Winter (1975, 1976) and would test correlations between climate and other stress factors and the abandonment of the unit. The relationship between the Hovenweep Phase and the Yellowjacket Phase should also be investigated: do the Hovenweep sites actually represent a temporary stop for the groups formerly settled at the large settlements, and why is defensive posture so obviously emphasized in their position and construction?

3.3.2 The Monument Drainage Unit (portion in Colorado only).

3.3.2.1 Boundaries of the Unit. This unit includes the lands of the Montezuma Canyon-Monument Canyon drainage system except for Cross Canyon (Fig. 3.4). On the east and southeast the boundary is formed by the 7000 foot contour along an approximate line running from Dove Creek northwest to East Summit. South of Dove Creek, the boundary is formed by the divide between Monument and Squaw Canyons and then south along the west margins of Big Point and Tin Cup Mesa. On the south the boundary is formed by the southern fingers of Alkali Point, McCracken Mesa, White Mesa and Black Mesa. On the west the boundary is formed by Comb Ridge, Milk Ranch Point and the extent of the canyon system formed by Hammond Canyon, Cottonwood Wash and Allen Canyon. On the north the boundary is formed by the south and east slopes of the Abajo Mountains, South Canyon Point, Iron Canyon Point, West Summit and East Summit.

3.3.2.2 Temporal Framework for the Unit, Eastern (Colorado) portion. Little of this unit is contained in Colorado; that portion that is included in the state exhibits cultural affinities to the Dolores Drainage Unit (Sec. 3.3.3) and the McElmo Drainage Unit (Sec. 3.3.1).

The Basketmaker III Stage

Early Dolores Project inventory surveys and the MAPCO survey (Breternitz and Martin 1973, Kane 1975a, Fetterman and Honeycutt 1982) have recorded numerous sites apparently dating to the Basketmaker III Stage in the Colorado portion of the unit. Two of these sites, 5DL309 in the MAPCO mitigation report (Gerwitz 1982a) and 5DL310 in MAPCO (Adams 1982) were tested by the MAPCO project staff in 1981. These sites seem to be very similar in content and age to the Tres Bobos subphase sites investigated by the Dolores Project: they consist of one pitstructure-surface structure complex probably inhabited by one independent household unit. Tree-ring dates obtained from construction beams indicate occupations in the late 600s (675-700). Settlement patterns also are similar to that described for the Tres Bobos Subphase (refer to Section 3.3.3). Material culture probably does not vary significantly from other BMIII occupations in the Mesa Verde Region (Hayes and Lancaster 1975, Birkedal 1976, Nickens 1982). Because of the observed similarities between the BMIII occupation in the Monument Unit

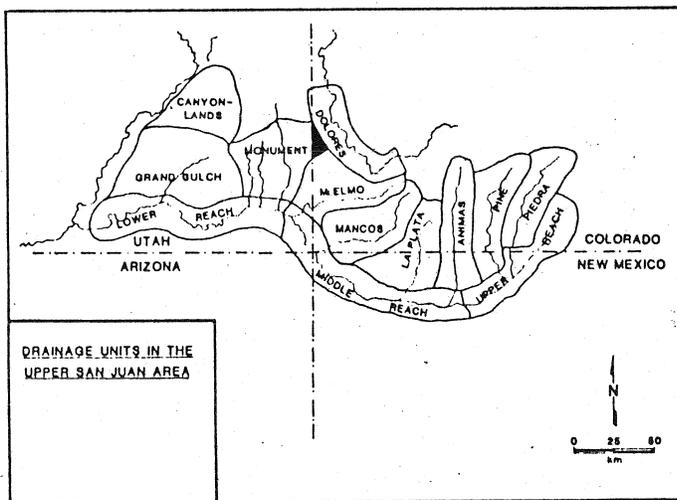
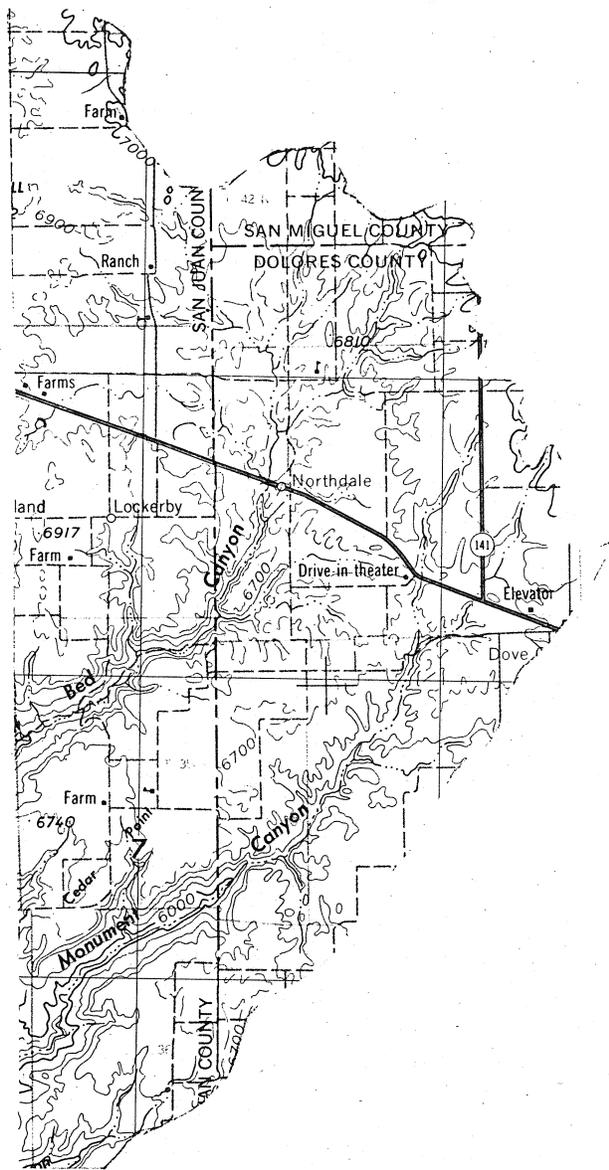


Figure 3.4 Monument Drainage Unit (Colorado portion only) (from USGS 1:250,000 Cortez map).

and the Tres Bobos Subphase in the Dolores Unit, we suggest that the spatial definition of the Tres Bobos Subphase be expanded to include the Colorado portion of the Monument unit.

The Pueblo I Stage

No resources assignable to this stage have been recorded. This lack of data suggests a withdrawal of prehistoric populations from the unit in the early 700s. This interpretation is consistent with trends noted for other units (see discussion in Sections 3.3.1 and 3.3.3) which indicate concentration and aggregation of populations in the Dolores and northern McElmo units during the 800s. Fetterman and Honeycutt have reached a similar conclusion (1982:I-28-I-30).

The Pueblo II and Pueblo III Stages

Large Yellowjacket Phase PII-PIII communities are located on Squaw and Bug Points (Prudden 1903:267-271; 1917:13-45), a few kilometers south and southwest of the drainage unit boundary respectively. To our knowledge, the mesas to the north and south of Monument canyon have not been subject to inventory survey. These areas may contain outlying PII-PIII settlements associated with these larger communities. If so, they would constitute a significant resource within the Colorado portion of the unit.

Aceramic Resources

The Colorado portion of the Monument unit also contains a significant resource in aceramic sites; the cultural affiliation of such sites is often difficult to ascertain. They may represent occupation during the Paleo-Indian or Archaic Traditions, or limited activity Anasazi Tradition use, or recent Protohistoric Stage occupation. Some of these types of resources were recorded during early Dolores Project surveys (Kane 1975) and by the MAPCO project staff (Fetterman and Honeycutt 1982). MAPCO also tested one of these lithic sites, 5DL318 (Gerwitz 1982b). The testing operations did not reveal any architectural features; however, 288 flaked and non-flaked lithic artifacts were recovered from the site (Gerwitz 1982:6-137). Stylistic interpretation of projectile points recovered from the site suggests it was occupied during the Archaic and Formative stages. Fetterman and Honeycutt (1982:6-7) also report that a Navajo or Ute sweat lodge was recorded during the MAPCO survey. The data obtained by Gerwitz supports the unformalized model area archaeologists have developed for explaining such sites: they are locations occupied temporarily and seasonally by prehistoric groups for economic and subsistence purposes, and were attractive for groups of various cultures.

3.3.2.3 Research Problems. A few possible research orientations are listed below. These particular recommendations are based on the state of knowledge concerning archaeological resources in the unit and the estimated strengths of the potential data base.

1. More accurate estimation of the types and affiliations of resources within the unit and development of a cultural sequence. Current survey coverage within the unit is spotty and insufficient

accurately gauge the resources present. A prime objective, therefore, for archaeologists working within the drainage unit is to obtain more of this type of data. Once this more comprehensive information is available, more complete descriptions of unit resources will be possible and more definitive problem orientations can be developed.

2. Early Anasazi occupation in the unit. A substantial Anasazi occupation is documented for the unit in the Basketmaker III stage; the manifestation is similar to the Tres Bobos Subphase of the Sagehen Phase as described for the Dolores Drainage Unit. This early occupation is important for several reasons: first, it may represent one of the northernmost expansions of Anasazi culture and probably represents a frontier situation; second, the unit was apparently occupied for only a short period before abandonment. If this is an accurate summary of the prehistoric sequence, then the unit would be a good field laboratory for investigating some currently fashionable theoretical areas such as colonization, abandonment, and frontiers. Study of this particular manifestation would also yield more data concerning Anasazi population dynamics in the San Juan Basin and adjacent areas.

3.3.3 The Dolores Drainage Unit.

3.3.3.1 Boundaries of the Unit. This unit is generally defined by all lands draining into the Dolores River south of Big Gypsum Valley and McIntyre Canyon, and west of the Dolores/West Dolores confluence (Fig. 3.5). The unit includes the river canyon itself and plateau highlands above 7000 feet to the east and north of the canyon. On the south and west the unit boundary generally corresponds to the 7000 foot contour. Archaeological sites and settlement patterns north and east of this contour generally show more affinities with the prehistoric systems within the canyon than with those located south and west (the McElmo and Monument Drainage Units). On the north the boundary is formed by Horse Range Mesa, McIntyre Canyon, Steamboat Hill, and Cape Horn. On the north and east the boundary is formed by the Disappointment Valley, Ryman Creek drainage, the southern slopes of Thomas Mountain, Belmead Mountain, Beaver Mountain and Nipple Mountain and the Cottonwood Creek drainage. On the east and southeast, the boundary is formed by the 9000 foot contour in the West Dolores, Dolores, Lost Canyon and Turkey Creek drainages and the upper reaches of the Mancos River drainages along Chicken Creek, and the 7000 foot contour south of Summit and Puett Reservoirs.

3.3.3.2 Temporal Framework for the Unit. The framework developed by the staff of the Dolores Archaeological Program (DAP) will be employed to describe by period the adaptations and lifeways of the local prehistoric cultures. This phase scheme was originally developed and described by Kane (1981, 1982).

Basketmaker II

There is only slight evidence for use of the Dolores Drainage Unit by Anasazi groups prior to A.D. 600. Although many suitable shelter and open locations are present, a BMII occupation has only been identified at one site within the canyon system proper. Cougar Springs Cave (5MT4797), a site on the south slope of Dry Creek Canyon investigated by Dolores Archaeological Program staff yielded several temporary use surfaces and artifacts assignable to BMIII groups (Gross n.d.). This

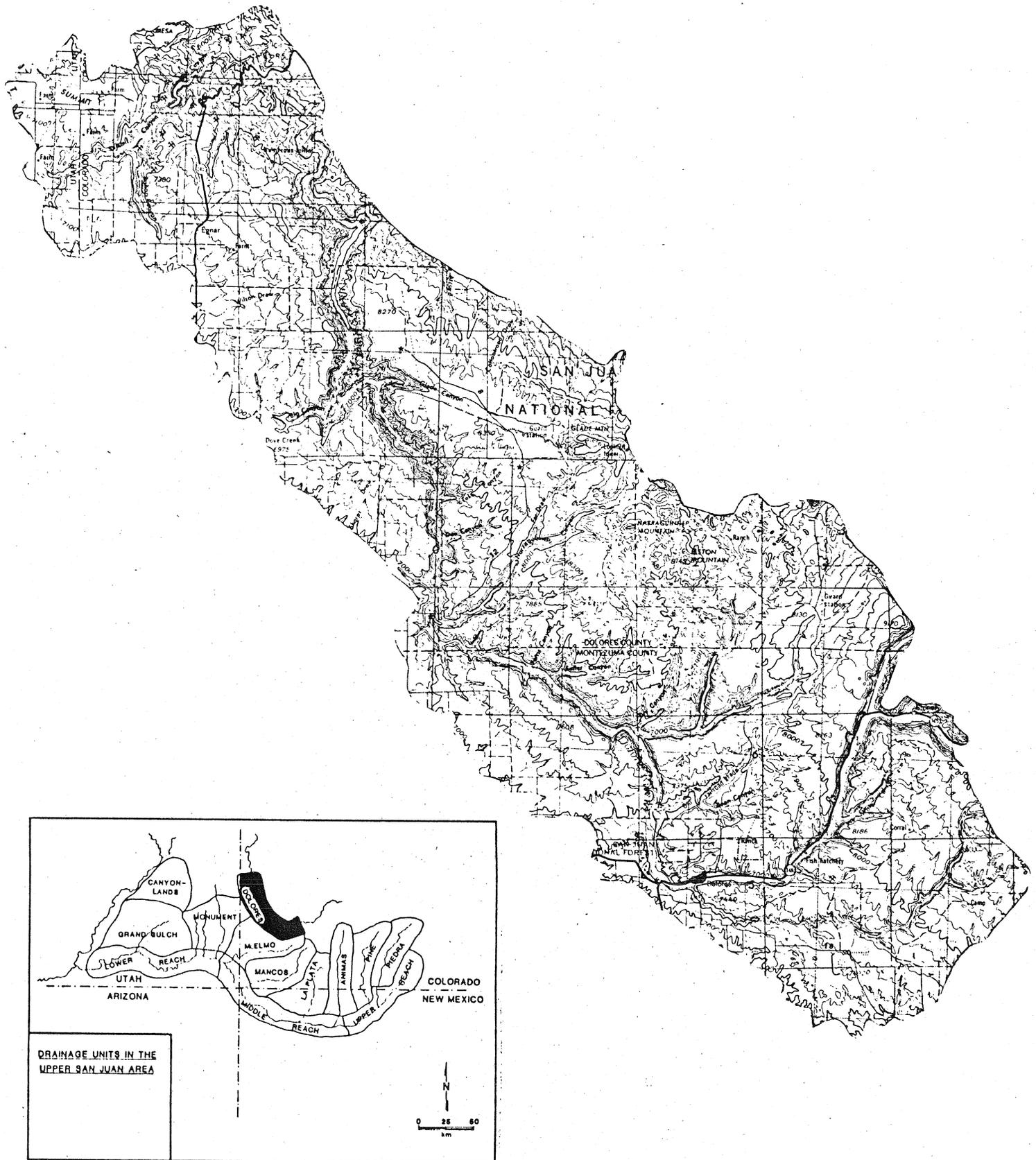


Figure 3.5 Dolores Drainage Unit (from USGS 1:250,000 Cortez map) (reduced).

assignment is reinforced by several radiocarbon samples which dated between A.D. 1 and 600. It thus appears from the available evidence that BMII groups did not make extensive use of the Dolores unit as they did in drainage units more to the east and south.

Sagehen Phase (A.D. 600-850). The Sagehen Phase represents initial Anasazi colonization and subsequent growth in the Dolores Drainage Unit. According to Kane (1980, 1981) the phase is divided into three sub-phases: Tres Bobos, Sagehill and Dos Casas.

Tres Bobos Subphase. The Tres Bobos Subphase represents initial colonization and "settling-in" of the drainage unit by Anasazi groups. All investigated settlements appear to be "unit hamlets" (Kane 1982:75); that is, one single family household pithouse and auxiliary structures per site. The earliest example excavated by the Dolores Project staff is Tres Bobos Hamlet (5MT4545, Brisbin and Vemen 1981); tree ring and other data suggest the site was occupied in the early 600s. Unit hamlets dating to this unit are dispersed with a distance of 100-150 m between each small settlement; no clusters of pithouse units such as those described by Wheat (1955) and Rohn (1975) for the McElmo Drainage Unit have been identified. Unit hamlet settlements are located on terraces within the river canyon, in the Sagehen Flats area to the west of the canyon, and on the higher mesas and plateaus south of the canyon. Individual hamlets were probably socially affiliated with other small settlement units in loosely organized communities or "neighborhoods" (Kane 1981). Architecture and material culture are similar to the regional Basketmaker III patterns (Birkedal 1976, Hayes and Lancaster 1974, Nickens 1982).

Sagehill Subphase (A.D. 700-780) The subphase is defined demographically by stagnation or slow growth. Local groups practiced a dispersed settlement strategy with the unit or small hamlet as the primary habitation site. The "hamlets" are characterized by a single dwelling unit apparently representing a single nuclear or extended family household. These small habitations apparently served as the base camp for small groups operating virtually independently in an economic sense. The primary reaction to local environmental stress was movement to a new location; habitation sites were usually occupied for no more than 20-30 years. A major shift evident in intrasite patterning is the increasing use of surface rooms as the center for multiple activities rather than for storage. Sagehill subphase surface rooms are larger than their Tres Bobos predecessors and contain more internal features such as hearths and metate stations. The rooms are non-contiguous and arrayed in an arc north and west of the pithouse; late in the subphase, three-room suites consisting of two rear storage rooms and a front habitation room appear. Pitstructures are deeper and subrectangular; the antechamber is replaced by a tunnel and shaft ventilation system. The bench is usually absent. These pitstructures apparently functioned mainly as centers of domestic activities. Artifact assemblages and styles correspond closely to those described for the late Basketmaker III period in other drainage units of the Northern San Juan (Birkedal 1976, Hayes and Lancaster 1974).

Dos Casas Subphase (A.D. 760-850). Beginning near the middle of the 8th century, the prevalent pattern of dispersed habitation units was replaced by a form incorporating aggregated dwellings. The Dos Casas subphase represents the widespread adoption of this new habitation type and associated population growth within the drainage unit. There is a temporal overlap with the Sagehill subphase as some groups continued to

practice the unit hamlet settlement strategy after the introduction of aggregated settlements. After A.D. 780, the transition was complete and habitations consisted of small pueblos with 3-6 surface room suite dwellings and 1-2 pitstructures. The reader is referred to the DAP site report series, specifically the reports for Windy Wheat Hamlet (Brisbin 1982), Dos Casas Hamlet (Brisbin et al. 1982), and Perunan Hamlet (Wilshusen 1983), for detailed descriptions of Dos Casas architecture and material culture. It is important to note that these pueblos appear to spread over the areas of favorable terrain and soils, thereby retaining some semblance of the earlier dispersed settlement strategy. The architectural model developed by the DAP staff (Kane 1981, 1983) suggests these settlements were the home bases of several households (family units) inhabiting a room suite and sharing a pitstructure. The room suite "apartments" were arranged in a straight line or in a crescent with the pitstructures in a plaza area to the south. Because these pitstructures exhibit evidence suggesting dual domestic/economic and ritual functions (the latter to integrate the separate family units), they can probably be considered "proto-kivas" as described by Morris (1939) and Hayes and Lancaster (1974). Other architectural characteristics and material cultural were similar to those described for other PI settlements in the Mesa Verde area (Martin 1939, Brew 1946, Hayes and Lancaster 1974).

McPhee Phase (A.D. 850-975). The culmination of the growth cycle initiated during the previous Sagehen Phase is reflected in the McPhee Phase. A population and organizational climax is evident in the drainage unit during the early part of the period (A.D. 850-900). A collapse, perhaps reflecting a mass exodus, swiftly followed in the early 10th century and the canyon system itself and the highlands to the south and east were virtually abandoned by the end of the phase. Settlements consist of aggregated roomblock units and appear to have been evenly distributed along the river and in the adjacent highland areas. McPhee Phase settlement patterns in general incorporate a more complex and diverse site set than previous analogues, apparently in response to intensifications in agriculture and exchange and greater organizational complexity.

Periman Subphase (A.D. 850-900). The Periman Subphase represents maximum trends in population densities and organizational complexity in the drainage unit. Ten to twenty villages (aggregated settlements containing multiple roomblocks) are estimated to have been present within the drainage unit. The gross distribution of these villages suggests a trend toward uniform spacing, perhaps indicating competition. Large individual settlements integral to the Pueblo I settlement system (termed "villages") include May Canyon Village, House Creek Village, McPhee Village, Cline Crest Village, Rio Vista Village, Windy Ruin and Grass Mesa Village. These settlements may represent the eastern portion of a broad band of Pueblo I aggregated habitation units extending west into the McElmo Drainage Unit (refer to section 3.3.1.2). The villages consist of aggregates of Dos Casas-type roomblocks or pueblos arranged in linear rows or in columns so that the plaza areas are south of the surface rooms. The basic dwelling was the 3-room suite or apartment, but more special-purpose rooms are present than in previous phases. Periman Subphase pitstructures exhibit greater variation in sizes and feature complement than their counterparts during the Sagehen Phase; some appear to have been used solely for ceremonial or ritual purposes.

Characteristics of material culture are similar to those described for other Pueblo I sites in the Mesa Verde area (Martin 1939, Hayes and Lancaster 1975, Morris 1939). In depth presentation of site data is available through the DAP report series (Kleiden 1983, Nushusen 1981, Brisbin 1983a, 1983b).

Cline Subphase (A.D. 900-975). The hallmark of this unit is a demographic and organizational decline. Most Anasazi groups apparently left the drainage unit between A.D. 890 and 920. There is no certain explanation for this sudden exodus, but apparently population unrest at the end of the 9th century is a regional phenomenon (Hayes 1964, Hayes and Lancaster 1974, Berry 1982). One theory is that stress (perhaps climate related) was brought to bear on local economic systems, especially agricultural production, and that local communities reacted in different ways to the problem. Movement out of the drainage unit appears to have been the primary coping strategy. Designation of the Cline Subphase is intended to represent a different response--one of continued or increased reliance on organization and perhaps exchange networks. This reaction was apparently adopted by the groups at McPhee Village (a habitation complex in the canyon itself near the town of Dolores) and perhaps other aggregated communities on the west and south side of the river. Agricultural organization and technology apparently were similar to the preceding Periman Subphase; post A.D. 900 fieldhouses at a distance of 2-4 km from the central villages are present. At McPhee Village itself, 12 of the 15 identified individual roomblock units were abandoned and population had shrunk from an estimated 100-150 family units to 5-10. The surviving architectural complexes exhibit complete remodeling, and pueblos incorporate increased number of functionally specialized rooms; protokivas are replaced by true kivas. The presence of large percentages of trade wares in the ceramic assemblages at McPhee (Blinman 1981) suggests that this community was participating in an intensified regional exchange network. Other architecture and material culture approximate descriptions provided by other archaeologists for the early Pueblo II stage in the Mesa Verde area (Hayes 1964, Swannack 1969, Rohn 1977). Site reports with detailed description of Cline Subphase architecture and material culture are available in the DAP report series (Brisbin 1983b, Kuckleman, 1983a).

Grass Mesa Subphase (A.D. 880-925). A different response to this period of stress is exhibited at Grass Mesa Village and to a lesser extent, Rio Vista Village. At these locations, the Periman Subphase manifestations are similar to that at McPhee Village, but post-A.D. 880/890 settlement patterns and architecture are radically different. Grass Mesa subphase villages are aggregated with dwelling units clustered in central locations. However, rather than adapting the surface roomsuite/kiva residential pattern as at McPhee, many Grass Mesa families lived in pithouses while others apparently maintained the classic surface roomsuite/proto-kiva pattern. No integrative structures associated with the small domiciliary pithouses have been identified. This shift in architectural patterns implies a dramatic change in social structure as well. The Grass Mesa Subphase is a classic example of exceptions to the "Normative" Pecos Classification (Hayes 1964:86); in this case, groups assignable to the PII stage according to material culture and time period are living in pithouses rather than masonry surface rooms. Detailed descriptions of Grass Mesa Subphase architecture and material culture are available from the DAP report series (Dolm 1981, C. Breternitz 1983).

Sundial Phase (A.D. 1050-1200). Prehistoric use of the Dolores Drainage Unit for the period A.D. 975-1050 is poorly documented, although seasonal use is suspected. The Sundial Phase is, therefore, defined as beginning about 1050. Use of the unit, except for the southern margin, was probably mostly seasonal and specialized in nature. Sites were established with specific purposes in mind and hence exhibit locational preferences for certain topographic situations and environmental zones. In essence, these sites represent peripheral portions of settlement patterns with the parent population centers to the south and west. Permanent settlements are present in localized areas along the southern margin of the drainage unit; for example, the Escalante Ruin and the Reservoir Ruin complexes apparently date into the 1100s.

Marshview Subphase (A.D. 1050-1200). The subphase has been defined to represent the seasonal use of the unit during the PII and PIII stages. Most sites assigned to the subphase are limited activity or seasonal loci. Marshview components have been identified and investigated at several of the rockshelters in the Dolores Project area. A Marshview occupation at Lemoc Shelter (Hogan 1980) may represent an elk hunting camp. Other Marshview components have been identified at open sites (Wilshuson 1982, Morris 1983, Kuckleman 1983b) and may represent seasonal farming locations or abortive attempts to resettle the unit. The latter sites often consist of a small circular pitstructure lacking the definitive characteristics of a kiva and perhaps non-permanent ramada-like or jacal surface structures.

Escalante Subphase (A.D. 1125-1175). This subphase represents settlement in the southern margins of the drainage unit by groups, some of which may have had affinities with the Chaco culture. The most well known settlement is the Escalante complex which has been described by Halasi (1979) and Reed (1979). The Escalante Ruin itself consists of a roughly squared roomblock with a large kiva in the central plaza. Tree-ring dates suggest major construction episodes in the late 1120's and early 1130's. This central pueblo is surrounded by a loose aggregation of small hamlets, certainly an atypical pattern for the period. The investigators of the Escalante complex (Halasi 1979:399-403, Reed 1979:113-137) and archaeologists investigating the Chaco phenomena (Powers, et al. 1983) believe that Escalante is a Chaco outlier; the extant architecture and material culture lend credence to this theory. The Dolores Project staff has speculated about the function of such a complex. One recurring idea is that Escalante served as a trading or resource gathering center and that the inhabitants assembled and processed resources from the frontier area to the north (the Dolores Canyon and adjacent highlands before transportation to more southern population centers. Construction of a surface room-kiva complex at site 5MT2215, 6 km north of Escalante may represent an abortive effort to expand the system. Less is known about the Reservoir Emerson Ruin complex, located about 1.5 km east of Escalante; however, the presence of a tri-wall structure (Eddy and Kane 1981) suggests that this complex, as Escalante, may have been established with a specific purpose in mind. Neuman Ruin, a compact E-shaped roomblock-kiva complex located on a prominent hillock south of Lost Canyon, also may represent a Chaco outlier. It is similar in form and topographic situation to Escalante. The Escalante and Reservoir communities represent the last verified Anasazi occupation in the drainage unit; by A.D. 1200 the area was apparently permanently abandoned by the Anasazi peoples.

Aceramic Resources

It is evident from the spotty survey coverage available that the unit contains a significant resource in aceramic sites (lithic scatters). Anasazi settlement of the Dolores unit was probably restricted to the eastern portion of the canyon proper upstream of the Dolores River Ranch, and to the highlands south of the river. Sites exhibiting Anasazi architecture have been recorded within the canyon as far north as the Mountain Sheep Point area (5DL180 and 5DL181, see Toll 1977). Aceramic sites have been recorded in all parts of the unit including the DAP project area (Stiger n.d.a., n.d.b.), the House Creek-Beaver Creek area east of the river (Zier and Robinson 1975, Reed and Wharten 1978, Hibbetts and Wharten 1980), the Glade area (Ward-Williams 1975a and 1975b, Bradley and King 1983), and the canyon proper downstream from the Dolores River Ranch (Toll 1977, Errickson and Ives 1983).

Most of these survey documented sites have not yielded sufficient data to permit cultural classification or assignment to a tradition. In total they probably represent Paleoindian and Archaic use of the unit, limited or seasonal locations of Anasazi settlement systems, and occupation by Protohistoric groups including the Ute tribe. Paleoindian style projectile points have been recorded at several locations within the unit including sites 5MT5653 and 5MT5656 near Nipple Mountain on the eastern border of the unit (Hibbetts and Wharton 1980). A sizable Archaic resource is documented, but unquantified. Sites assumed to represent Archaic occupations appear to exhibit great variability in size and content ranging from small (100m² area) flaked stone scatters to large scatters incorporating flaked and ground stone artifacts; an example of the latter is 5MT5570 (Hibbetts and Wharton 1980) in the House Creek drainage. Protohistoric use of the unit is also well documented; a metal projectile point was recovered from site 5DL188 (Toll 1977) and protohistoric occupations are documented at several sites within the Dolores Project area (Chenault 1983, Hovezak 1983).

3.3.3.4 Research Problems. The following, in no particular priority, are suggested research priority units given previous work and projected impacts.

1. Aceramic sites. The unit contains a significant resource in terms of ceramic sites. These are most visible in the Glade area north of the canyon but are also present in the canyon and on the highlands south of the canyon. These sites present an interesting problem in that they may individually represent Archaic, Anasazi, or Numic occupation or combinations. The Glade area may represent a transition zone between the Oshara Tradition and the Uncompaghre Complex (Hibbetts and Wheaton 1980, Bradley and King 1983), and is thought to have a seasonally used resource procurement zone during the Anasazi occupation. The aceramic sites problem is important in that the use history of the cultural dynamics of this frontier area cannot be understood without further resolution.

2. The Escalante, Reservoir-Emerson, and Neuman site complexes; late Anasazi occupation in the drainage unit. Escalante Ruin and the Dominguez Ruin, a small outlier, were investigated by the University of Colorado and the BLM in the mid-1970s (Halasi 1979, Reed 1979). More complete investigation of this complex is important to establish the functional identity of this Chacoan outlier and the

workings and organization of the complex as a whole. The Reservoir-Emerson Ruins consist of a PII-PIII roomblock-kiva unit, a possible great kiva and a tri-wall structure (the Emerson ruin). The co-occurrence of these structures plus a small size of the roomblock associated with the specialized architecture suggests specialized use, perhaps a counterpart to the Escalante Complex. The Neuman Ruin is also an important resource in considering this problem.

3. Continued investigation of the McPhee Phase population-organization climax. Even with the generous funding provided by the government, the Dolores Archaeological Program was only able to investigate a few of the villages that constitute part of a wider system of aggregated and organizationally complex settlements during the late 800's. The exact spatial dimensions of this system are unknown as are the characteristics of the settlements outside of the Dolores Project Area. The investigation of growth and decline of local cultures on the northern periphery of Anasazi settlement is critical to understanding Anasazi cultural process; models of Anasazi population flux (Berry 1982, Euler et al. 1979) often incorporate northern areas as drought "refugia" and warm climate optima. The Dolores example is a classic case and further examination would shed more light on this important problem.

3.3.4 The San Juan Unit, Middle Reach

3.3.4.1 Boundaries of the Unit. For our purposes, we are only interested in that part of the unit within Southwestern Colorado. That would include most of Sleeping Ute Mountain and the lands to the south (Fig. 3.6). The drainages of the lower Mancos River, Navajo Wash, Cowboy Wash, Mariano Wash, Coyote Wash, Marble Wash and East McElmo Creek are within the unit. The east boundary of the unit is formed by the Mesa Verde and the mouth of Mancos Canyon while the northern boundary is formed by the divide between East McElmo Creek and Rincon Canyon, the northern slopes of Sleeping Ute Mountain and the divide between Mud Creek and Navajo Wash. For purposes of this study we will consider the Colorado-Utah and Colorado-New Mexico boundaries to be the western and southern limits of the unit.

3.3.4.2 Temporal Framework for the Unit. No comprehensive synthesis has been attempted for this unit; indeed, little is known regarding the densities and temporal or cultural affiliations of the resources in this area.

Archaic, BMIII, PI and early PII Stages

Few resources assignable to these stages have been identified within the Colorado portion of the middle reach unit. No inferences as to use or non-use of the area of settlement patterns and lifeways are possible until more comprehensive survey data is available.

PII and PIII Stages

Resources representing these stages are present in the record. Probably the most significant single resource in the unit is Yucca House, a PIII complex protected as National Park Service property. Yucca House was noted by the first explorers in the Mesa Verde region (Holmes 1876:899-400; Jackson 1876:377-378) and merited a separate descriptive section in one of Fewkes' early treatises on the archaeology of southwestern Colorado (Fewkes 1919:23-26). Recently the complex was

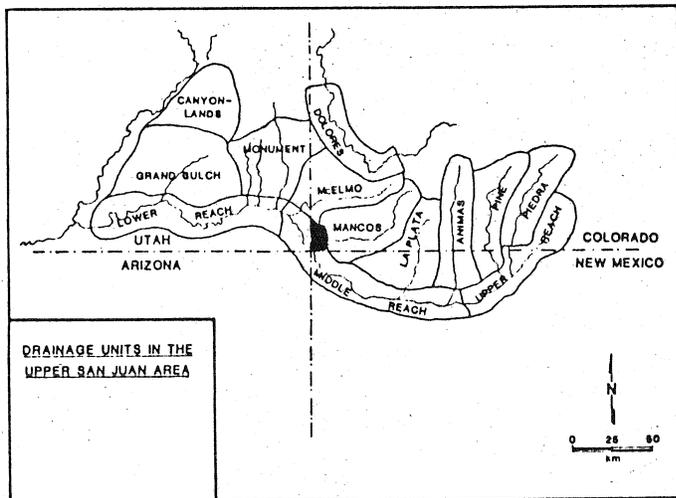
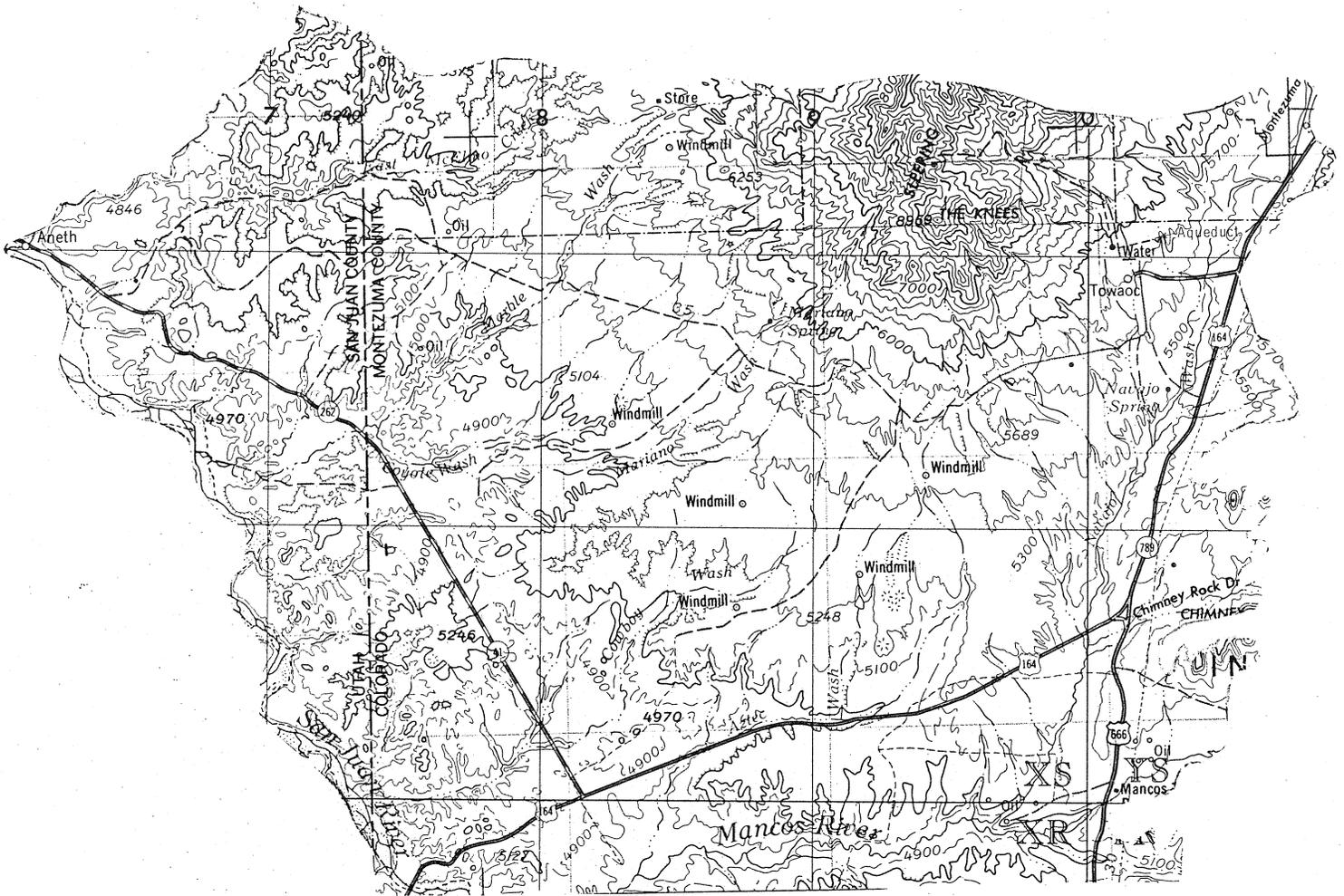


Figure 3.6 San Juan River Middle Reach Drainage Unit (Colorado portion only) (From USGS 1:250,000 Cortez map).

identified by archaeological researchers as being a Chaco outlier (Powers, et al. 1983). Remains at Yucca House itself consist of a very large rectangular structure with attached rooms (the "Lower House"), a multistory structure west of the Lower House with intramural kivas and "Chaco" masonry (the "Upper House"), and linear single story roomblock complexes to the north and south of the Upper House. These last are similar in layout and other physical manifestations to PII-PIII complexes in the McElmo Drainage Unit such as the Yellowjacket and Lancaster Ruins.

Dating the occupation of Yucca House is problematic; several tree-ring dates were obtained by Gila Pueblo in the 1940s and the Park Service in 1953 (Harrill and Robinson 1974) but their original provenience is unsure. These dates are in the late 1100s and early 1200s which indicate use in the late PIII stage. However, the presence of a Chacoan style structure and the PII-PIII style linear roomblocks suggests a major occupation in the 1100s. The architecture of the Lower House suggests late PIII construction, so perhaps the tree-ring specimens were obtained from this structure.

Powers, et al. (1983:177) report that there are no documented outliers associated with Yucca House; however, the 1975 Dolores River Project survey recorded 5 "hamlet" type sites 100-1000 m west, southwest, and northwest of the main complex (Kane 1975b). Ceramic type dating suggests a PIII occupation; this is consistent with site layout and the architectural complement. Each site consists of a single linear or "L"-shaped roomblock and 1-2 kiva depressions. Grinnell College tested a few of these sites in the mid-1970s (Luebben 1982). A possible example of cannibalism was discovered at one of the sites (Luebben and Nickens 1982). These hamlets probably form a portion of a settlement system with the center at Yucca House; similar systems have been reported at other suspected Chaco outliers (Reed 1979, Powers, et al. 1983).

Other PII-PIII habitation sites have been recorded on the colluvial slopes south of the Ute Mountain massif (Breternitz 1975). These may represent expansion of the Anasazi system into locally marginal areas during favorable climatic episodes; this expansion may be contemporaneous with the period of maximum population levels (the Yellowjacket Phase) in the bordering McElmo Drainage Unit.

The Protohistoric Stage

Although not systematically recorded, the unit contains a highly significant resource in protohistoric stage sites assignable to the Numic (Ute) Tradition. The drainage unit itself is part of the homeland of the Weeminuche band of the Ute Indian Tribe and probably contains many habitation and seasonal or limited activities economic sites and some social and ceremonial sites as well.

3.3.4.3 Research Problems. Three possible research orientations are presented below; these particular choices are based on the state of current knowledge about cultural resources in the unit, and the anticipated strengths of the potential data universes.

1. Reconstruction of the cultural history of the unit and composition of the resource. Probably the most pressing research need is a basic estimation of the amounts and types of resources within the unit. Current survey coverage is sparse and spotty and is entirely inadequate in terms of even a cursory description. Hence, it is

critical to obtain better survey coverage to permit accurate estimates of resources and to construct basic characteristics of the periods represented. Individual researchers working within the unit should be encouraged to compile this type of information in an easily accessible format and to include an assessment of how the sites they recorded compare with the bulk of the data universe previously recorded for the drainage unit.

2. The Yucca House Community. The Yucca House Complex is a critical resource, both in the context of the Middle Reach Unit and in a regional sense. Archaeologists working in the vicinity of the complex should be aware of the possible presence of sites associated with the system. A research priority is the consolidation of all available information on the complex (survey records, the work by Grinnell College, notes or records of early exploration, a bibliography) in a central location--probably at Mesa Verde National Park. Actual fieldwork should be oriented to gain a better definition of the complex--Yucca House itself and the associated "hamlets." The temporal relationships among the Lower House, the Upper House and the linear roomblocks need to be clarified.

3. The Protohistoric Stage and the Ute Tradition. As noted previously, very little about the nature of this resource is known. A high research priority, therefore, is better definition of the nature of this resource and the density and types of Ute Tradition sites in the unit. Ute sites are often fragile and extremely susceptible to even relatively minor disturbance; consequently, definition of the resource within the next decade is a high priority. Some sites possibly established during the Prehistoric State, for example, the Sun Dance area at Towaoc established between 1895 and 1904 (Jorgensen 1972), continue in use to the present day. These probably need to be assessed and possibly considered for nomination to the National Register of Historic Places.

3.3.5. The Mancos Drainage Unit

3.3.5.1 Boundaries of the Unit. The Mancos Drainage Unit is generally defined as those lands drained by the Mancos River (Fig. 3.7). It includes the tributaries draining Mesa Verde National Park, the Mancos Canyon, and the eastern and southern tributaries of the river which drain the portion of the Mesa Verde south of the river, including: Lewis Creek, Johnson Canyon, Greasewood Canyon, Grass Canyon, and Moqui Canyon. The eastern and southeastern boundaries of the unit follow the Montezuma County line, which runs along the divide between the Mancos and La Plata Rivers. To the south and southwest, this unit abuts the middle reach of the San Juan River unit, and it is bordered on the north by the McElmo Drainage Unit.

3.3.5.2 Temporal Framework for the Unit. No other drainage unit in the project area has witnessed as much past archaeological work as the Mancos Drainage Unit, due largely to the presence of Mesa Verde National Park with its internationally known ruins. Aside from extensive survey and excavation in the part, the lands just to the south in and around the Mancos Canyon, located on the Ute Mountain Reservation, have received considerable attention through the efforts of the University of Colorado. As a result, the literature reporting work in the unit is voluminous. The history and results of this previous work has been published elsewhere (Nickens 1982, Smith n.d.) and need not be repeated here. Similarly, chronological frameworks have received

considerable attention, as have cultural dynamics for the Anasazi Tradition. Consequently, we provide only a brief overview here since the Mesa Verde phase systems are adequately described elsewhere (cf. Hayes 1964; Rohn 1977; Smith n.d.).

Pre-Basketmaker III (to A.D. 450)

To date, Paleo-Indian, Archaic, and Basketmaker II evidences are lacking for the Mancos Drainage Unit, indicating either very sporadic use during these periods or, perhaps, none at all. Although the latter possibility cannot be stated for certain, the fact remains that considerable prior field investigations have not identified such remains.

Basketmaker III - Pueblo III (A.D. 450-1300)

As noted, the Mancos Drainage Unit was intensively occupied during the Basketmaker III era and first three stages of the Pueblo sequence. Although there are some data gaps, particularly the mesa and canyons south of the Mancos River, it appears this occupation was continuous, though not in all areas of the unit as several population movements within the units have been identified as occurring through time. The general Mesa Verde sequence, with variations, are discussed below.

The first attempt at establishing a system of phases descriptive of the Mesa Verde Region was made by the Gladwins (1934), who proposed a La Plata Phase for Basketmaker III and Pueblo I, a Mancos Mesa Phase equivalent to Pueblo II, and McElmo and Montezuma Phases for early and late Pueblo III. Based on his work on Alkali Ridge, southeastern Utah, Dr. Brew (1946) modified this sequence to include an Abajo Focus to refer to the Basketmaker III - Pueblo I situation, and continued the usage of the Mancos Focus (Pueblo II) and the McElmo and Montezuma Foci (Pueblo III). In the Mancos Canyon of southwestern Colorado, Reed (1958) found the Gladwins' original phase system to be usable, but he added the Piedra Phase to account for the Pueblo I period in the Mesa Verde area. O'Bryan (1950), working with data from Mesa Verde National Park, also employed the Gladwins' phase system in retaining the latest three phases but replacing the La Plata Phase with the Four Corners and Chapin Mesa Phases for the Basketmaker III and Pueblo I periods. In current terminology the Gladwin, Brew, Reed, and O'Bryan systems have been replaced although many of the elements of each have been incorporated in those systems presently in use.

Based on the earlier work and the Wetherill Mesa survey, Alden Hayes (1964) developed a phase sequence for the western portion of Mesa Verde National Park. This system continues to be used for a large portion of the Mesa Verde Region, but, as with any localized phase sequence, slight temporal and cultural variations may be expected away from the locale where the sequence was defined. Each of Hayes' phases is briefly listed and discussed below. It will be noted that a phase designation is not available for the Basketmaker II period, a reflection of the lack of early Basketmaker remains in Mesa Verde National Park.

La Plata Phase (A.D. 450-700). The trait list for this phase includes turkey domestication, cultivation of corn, beans and squash, troughed metates, basically notched projectile points, undeformed skulls, and pottery of Chapin Gray and Chapin or La Plata Black-on-white. The dwellings were shallow pithouses, circular to roughly

rectangular, with four roof-support posts, a bench support for sloping wall poles, a fire hearth often intersected by a low partition wall, and a ventilator that is sometimes narrow but more often widened to form an antechamber. Houses are oriented with the ventilator/entrance to the south or southeast, and above ground storage structures may be associated.

Piedra Phase (A.D. 700-900). The Piedra Phase is considered to represent the transition from the year-round residence in the pithouses to habitation to surface rooms. Pithouses continue to be used, however, in association with surface rooms and are sub-rectangular in shape with narrow or true ventilator shafts. These surface structures are commonly crescentic rows of contiguous rooms of jacal and adobe, often slab-based, from one to three rows deep. Ceramics associated with this phase include Piedra Black-on-white, Chapin Gray, Moccasin Gray, and Abajo Red-on-orange.

Ackmen Phase (A.D. 900-975). This phase was characterized by the appearance of the first true kivas, a development from the earlier pithouses, first true masonry, and the introduction of corrugated culinary pottery. The kivas usually lacked the southern recess, a characteristic of later structures. Masonry characteristics included poorly developed coursing of sandstone blocks, infrequent chinking, and frequent use of adobe. Surface habitations typically consisted of a few contiguous rooms in a straight line located north of the kiva and well-defined trash area. Utility pottery types included Mancos Gray and Mancos Corrugated and the decorated white wares were predominantly Cortex Black-on-white while the introduction of Mancos Black-on-white occurred.

Mancos Phase (A.D. 975-1050). Surface structures of this phase were still one story and usually were a single or double row of up to 12 rooms laid in a straight line. Sometimes a perpendicular wing of rooms was added to one end of the linear roomblock to form an "L"-shaped configuration. Masonry techniques improved with uniformly selected building blocks which were sometimes given a rough shaping with a hammerstone used to spall back the edges of the block. Kivas were still located south of the houses, but were drawn closer to the surface rooms, often immediately adjacent. The kiva structures were constructed with masonry pilasters to support the superstructure and were usually lined with masonry from floor to bench level and often all the way to the roof. Another architectural innovation of this period was the introduction of circular, surface structures commonly called towers. The precise function of these features remains unknown.

Mancos Corrugated is the culinary ware during this phase and Mancos Black-on-white continued as the dominant decorated pottery type. Deadman's Black-on-red was important in some areas of the Mesa Verde region. Slab metates replaced the earlier troughed variety and side-notched projectile points appeared for the first time.

McElmo Phase (A.D. 1050-1150). During this phase the Pueblo III or so-called "Classic" Pueblo period was initiated in the Mesa Verde region. Towers were occasionally two-story structures and some multi-story dwelling units were built. Masonry itself became more highly developed with well-finished building blocks and compound walls more common. Communities of 30 or more rooms were constructed, though pueblos of 10 to 15 rooms were more common. Kivas during this period were fully lined with masonry and occasionally incorporated within the roomblocks. In some parts of the Mesa Verde region, construction of sizeable cliff dwelling units was initiated toward the end of this phase.

Ceramics during this time include Mancos Black-on-white, and Mancos Corrugated. While Mancos Black-on-white continued as the dominant decorated ware, the introduction of McElmo Black-on-white marked the beginning of the utilization of carbon-painted pottery which became dominant during the next phase.

Mesa Verde Phase (A.D. 1150-1300). This time period marked the termination of the Anasazi occupation of southwest Colorado. Little in the way of architectural innovation took place during this phase. The chief difference in dwellings was that the majority of the sites were in alcoves where limitations imposed by the configuration of the cave wall were frequently more important to village layout than were the inherited notions of the builders. Examples of the result of this space constraint included other than circular-shaped kivas and more frequent multi-story rooms. Ceramics from this phase include McElmo Black-on-white, Mesa Verde Black-on-white, and Mesa Verde corrugated as a replacement of the earlier Mancos type.

Another phase sequence has been delineated for Chapin Mesa, also in Mesa Verde National Park, by Arthur Rohn (1977). Like the Wetherill Mesa sequence, the Chapin Mesa one is largely based on survey data and extends from the Basketmaker III period to the Pueblo III era. Rohn does observe that Chapin Mesa may have had some limited Archaic and Basketmaker II occupation, but the evidence is too scanty to postulate characteristics for those manifestations. Also noted in this sequence is the presence of the twentieth century Navajo sites. Generally speaking, the Chapin Mesa situation seems to mirror the Hayes breakdown with slight variations in relationships. Consequently, extended definitions of each phase are not included herein; interested readers should consult Rohn's definitive statements (1977:231-246). The phase names, suggested dates, and Pecos period equivalents are listed as follows:

<u>Chapin Mesa Phase</u>	<u>Dates</u>	<u>Pecos Classification</u>
Twin Trees	A.D. 590-750	Basketmaker III
Spruce Mesa	A.D. 750-900	Pueblo I
Glades	A.D. 900-1000?	Early Pueblo II
Mummy Lake	A.D. 1000?-1100	Late Pueblo II
Far View	A.D. 1100-1200	Early Pueblo III
Cliff Palace	A.D. 1200-1300	Late Pueblo III

The portion of this unit south of the Mancos River extends into New Mexico and blends into the Middle Reach of the San Juan River, generally around the 5500 foot elevation. The archaeological picture for this area south of the Colorado line has received limited attention and can be summarized as follows: Like the surrounding area, this unit evinces little concrete data for occupation during the Paleo-Indian and Archaic Stages. Paleo-Indian finds in the San Juan Basin consist of scattered, isolated projectile points (Hewett 1977:69), and while Archaic sites have been identified (e.g., Powers et al. 1980) within the unit, they are not abundant nor extensive. It should be noted, however, that immediately south of the San Juan River, Archaic sites are more numerous (e.g., Reher 1977, Simmons 1981), consisting of habitation sites, camp sites, and apparent special use, food processing sites.

Apparently the area north of the river was not extensively occupied during the Basketmaker era or during Pueblo I times (Marshall and Stein 1978, Powers et al. 1980) as the first intensive occupation of these

lower elevations occurred ca. 950, extending through about the middle of the thirteenth century. Powers and her co-authors (1980) have noted occupation during this span in the San Juan Mine Coal Lease area, located north of the river near the center of the unit. Throughout this sequence, ceramic affiliations were predominant with the Mesa Verde area, with good mixture with the Cibola and Chuska series to the south.

Of special note in the unit is the Squaw Springs Ruin (LA1988), located near Navajo Springs on the Ute Mountain Reservation (Marshall and Stein 1978:Appendix B). This resource consists of a community of some 31 ruins, dating from late Pueblo I (A.D. 950) to early Pueblo III (A.D. 1200) times. In the center of this community is a large, partly multi-story, masonry building with two enclosed plaza areas and three kivas. Also included within the larger community of one or more great kivas. Thus, this site can be considered as another of the Chacoan outlier sites (cf. Powers et al. 1983).

To summarize the Anasazi temporal framework for the Mancos Drainage Unit, the Hayes' phase system seems to be the best overall classification, at least for the park itself. This sequence properly defines the developmental characteristics of the Mesa Verde Anasazi. What is lacking, however, is a good understanding of cultural and demographic dynamics for the drainage unit as a whole and especially the areas away from Mesa Verde National Park. One recent example comes from an intensive survey of some 1050 acres on Palmer Mesa, located in the extreme southwestern corner of the unit, just below the Colorado-New Mexico state line. These sites of Anasazi affiliation were found to be predominantly Basketmaker III or Pueblo II, with all Anasazi utilization of the area seen as being short-lived (Rudecoff 1980). As opposed to the picture for the northern portion of the drainage unit, Palmer Mesa is viewed as having seen only seasonal or temporary utilization by the Anasazi. If in fact the drainage unit scheme has validity for the Mesa Verde area and the Hayes' phase classification is applicable throughout the unit, additional work is going to have to be completed for verification.

Causal factors leading to the abandonment of the Mesa Verde area by the Anasazi groups are not fully understood, but probably include a combination of reasons (Nickens 1981). Possible causes include climatic deterioration in the form of extended and recurring droughts, erosion of agricultural lands, increased disease levels, and the arrival of Athabaskan or Shoshonean groups.

Post-Anasazi (A.D. 1300-Present)

Very little is known concerning aboriginal of the Mancos Drainage Unit after A.D. 1300. Ute or Navajo utilization of the unit has not been identified for the pre-reservation period. It is interesting to note that although the present Navajo Reservation and Ute Mountain Reservation abut in this area, there appears to be little occupation of the respective reservation area by either group, perhaps a reflection of the historical animosity between them.

3.3.5.3 Research Problems. The Mancos Drainage Unit represents somewhat of a paradox with respect to outlining future research directions. On the surface, the relatively large amount of previous work would appear adequate to answer many questions, and it does. We know a good deal about Mesa Verde architecture and material culture.

However, there are some problems. The first of these has been a long-standing primary concern with archaeological sites within Mesa Verde National Park. Until recently this was true for all of southwestern Colorado. In the Mancos Drainage Unit proper, it is understandable that spectacular, well-known resources on public (National Park Service) lands would be investigated before those on fairly inaccessible Indian-owned lands. Only in the past 15 years has much work been done outside the park in the drainage unit.

One of the most obvious deficiencies resulting from all the past work in the unit as a whole, is a lack of a synthesis for all of these data, including those from both survey and excavation from the park and the adjacent areas. Several thousand sites, probably more than 6,000, have been recorded in the unit, and probably in the neighborhood of 50 to 60 sites have been excavated or extensively tested. The Hayes' phase system outlined above was derived from a survey of one mesa in the park and it remains to be seen how well it holds up against excavation data and, in fact, for the rest of the drainage unit. The park, which forms a somewhat more mesic setting than areas to the south, may well be the most suitable place to look for good continuity in Anasazi cultural development from BMIII through PIII times; on the other hand, it is probable that differences exist in the archaeological record in other zones within the unit. This is particularly true in the case of population dynamics contributing to the growth, decline and abandonment of the area of the Anasazi communities. Similarly, differences may be expected in technological developments, one example of which would be the distribution and use of water control systems and agricultural techniques throughout the unit. In short, if the postulated drainage unit concept has validity the Mancos unit could serve as a good testing ground for looking at internal cultural development and synchronic occupation and utilization of an entire unit within phase timespans.

Beyond this, there is an almost unlimited number of more specific research topics which could be pursued in the Mancos Drainage Unit. Some of the more important of these involve questions related to paleodemography, social and political integration, foreign relations, paleoenvironmental studies, and abandonment.

3.3.6 The La Plata Drainage Unit

3.3.6.1 Boundaries of the Unit. This unit is bounded on the west by the divide between the drainage systems of the La Plata and Mancos Rivers (approximating the Montezuma-La Plata county line), and on the east by the divide between the La Plata and the Animas Rivers (Fig. 3.8). The drainage unit extends southward to the lowlands along the San Juan River in New Mexico and north to the San Juan Mountains near Parrott and Baldy Peaks. Within the Colorado portion of the unit, the dominant drainages on the west are Ponds Arroyo, San Juan Arroyo, Cherry Creek, Alkali Gulch, and Hay Gulch; on the east they include Long Hollow and the upper reaches of McDermott Arroyo.

3.3.6.2 Temporal Framework for the Unit. Archaeological survey and some excavation work have occurred in this drainage unit since the 1880s. Until recently, the primary work was that of Earl Morris (1919, 1939), who surveyed and excavated ruins in the unit between 1913 and 1930. In the past few years, several cultural resource overviews and surveys have been conducted in conjunction with pipeline and transmission corridors and the proposed Bureau of Reclamation Animas - La

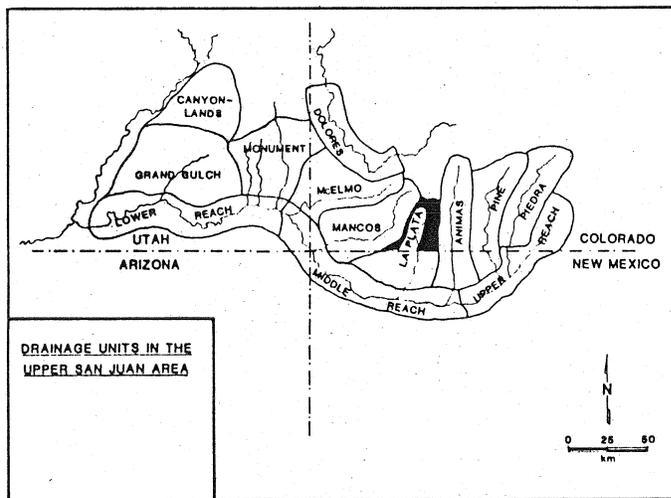


Figure 3.8 La Plata Drainage Unit (Colorado portion only) (From USGS 1:250,000 map).

Plata Project, and some excavation has been undertaken in the upper portion of the drainage unit. Despite this past and ongoing activity, and the fact that several thousand archaeological sites are known to occur in the unit, a phase system has not been established and it is necessary to present the temporal framework in terms of the Pecos Classification. Due to the scope of this document, the discussion, for the most part, is restricted to that portion of the drainage unit in Colorado.

Pre-Basketmaker III

Utilization of the Colorado portion of the La Plata drainage prior to A.D. 500 is largely undocumented. Possible Archaic manifestations have recently been reported for the higher elevations along Cherry Creek (Fetterman and Honeycutt 1982); but this association is limited and consists of projectile point typology. The subsequent Basketmaker II period is unreported, but may eventually be identified in the area since a BMII village has just been documented on the east side of the La Plata river about five miles south of the Colorado state line (Foster 1983). The site, designated as LA37972, consists of several shallow pit structures, dated by radiocarbon means to the first three centuries A.D. Ceramics were not found in association with the structures, indicating contemporaneity with the early Los Pinos phase sites in the Navajo Reservoir district (Eddy 1966:431).

Basketmaker III (A.D. 450-750)

Occupation of the La Plata River valley apparently was fairly heavy during this era, particularly in the later portion. Morris (1939) partially excavated at least five sites which he designated as BMIII. With few exceptions, most of the sites were not extensively investigated as apparently most work was undertaken in the midden areas, searching for ceramics and human burials. At Site 19, located near the confluence of San Juan Arroyo and Cherry Creek, Morris (1939:63-64) estimated some 15 living units, of which he excavated one, a fairly typical Basketmaker III pithouse, along with 30 burials and 33 pottery vessels from the midden.

Fortunately, Morris decided to spend the entire 1927 field season excavating a single BMIII village, designated Site 23, situated on the west side of the La Plata River about a mile south of the north of Long Hollow (Morris 1939:67-75). Actually, the site appears to have included at least four BMIII village units, comprised of crescentic rows of surface rooms and pithouse structures. According to Morris (1939:67), Site 23 "was selected because it was known to be typical of the period as exemplified in the La Plata region." As a consequence, the description of this site and the attendant artifacts should be considered as baseline data for the BMIII occupation of this drainage unit.

Pueblo I (A.D. 750-900)

Although specific data are not available, it appears that the fairly intensive occupation of the La Plata River valley continued to be so during PI times, with several sites evincing the transition in terms of architectural and material culture changes. Morris (1939:29) observed that as a result of his extensive work the Pueblo I period was

not as well known as the BMIII, and that there was still a need for additional excavation before the culture history of this timeframe could be fully understood. For the La Plata Drainage Unit, Morris' comments still have validity. Morris proceeded to compare the PI remains of the La Plata area to those in the Piedra region, reported by Roberts (1930). He noted marked differences in PI architecture between the two areas, but occurring with similar pottery wares.

With regard to the La Plata PI sites, Morris' Site 18, excavated in 1922, serves as an example of this site type. Morris observed that the PI villages in the area were very much like the earlier BMIII villages except for a tendency toward more massive construction and an increasing use of stone masonry. At Site 18, located on a mesa top between Ponds Arroyo and Red Horse Gulch, a large cluster of separate dwellings was grouped in random fashion to form a loosely knit village. The dwellings each contain two rows of crescentic surface rooms, each with a subterranean chamber in front of it. The pithouses were still serving as domiciles. Morris also notes changes in pottery during this time in which the pottery was more "advanced" than that of the preceding Basketmaker era with increased use of painted decoration and a relative prevalence of neck-banded culinary vessels.

Recently, Fetterman and Honeycutt (1982) have documented PI use of the higher elevations of the northern sector of the drainage unit, along Cherry Creek, between A.D. 600 and 900. The authors believe these sites represent hunting and/or vegetal processing campsites for the early Anasazi living in the lower elevation habitation sites.

Pueblo II-III (A.D. 900-1300)

Both of these stages are represented in the Colorado portion of the La Plata Drainage Unit, but seemingly in greatly reduced density from the earlier stages. Based on Morris' early efforts and the results of recent surveys in the La Plata areas, it appears that the larger sites of both eras are concentrated more in the southern portion of the drainage unit in New Mexico where numerous, large PIII villages are located, some with PII components as well. At this point, the late Anasazi utilization of the upper sector of the drainage unit is expressed as small habitation sites and campsites or special use sites. Similarly, the PIII spread of Chacoan influence, seen along the lower La Plata River at Morris' Sites 29 and 41, does not seem to be directly expressed in the Colorado section of the La Plata Drainage Unit.

Post-Anasazi (A.D. 1300 - 1700)

There are presently some interesting hints of early Navajo encampments along McDermott Arroyo, many containing Navajo pottery along with Pueblo IV types (Leidy 1976). All are sherd and lithic scatters without discernible architectural features. Ceramic types from these include: San Bernardo Polychrome; Dineta Utility; Jemez Black-on-white; Rio Grande Glaze D (San Lazaro Glaze-Polychrome); Gamma II Black-on-red, Gamma II Polychrome; Gamma II-III Polychrome; Gobernador Polychrome; Rio Grande Glaze E L (Puaray Glaze Polychrome); Gobernador Indented; and, Sikyatki Polychrome. All of these types appear to date to the Navajo Gobernador Phase (A.D. 1550-1700), but toward the end of the time

period. The Acoma, New Mexico, area Gamma types may represent earlier occupations, but do, for the most part, date to the late 1600s.

These sites probably represent refugee situations, a response to the 1680 Pueblo Revolt. Similar refugee sites have been previously recorded in southern Colorado in the Piedra and Upper San Juan River drainages (Roberts 1925, 1930:16). Roberts believed that Jemez Puebloans from the Pajarito Plateau on New Mexico, fleeing the hostilities, briefly camped in the Piedra River Valley.

Another indication of post-Anasazi use of the upper La Plata area has been reported for site 5LP437, a campsite near Cherry Creek (Fetterman and Honeycutt 1982). The site consists of a sparse scatter of flaked lithic and groundstone artifacts, and two hearths. A radiocarbon date of 470 ± 60 years (ca. A.D. 1480) yields the earliest positive evidence for utilization of the drainage unit during protohistoric times, although it cannot be discerned whether the site represents a Pueblo IV situation or an early Ute date. The site lies at an elevation of 8280 feet and has been designated as a short term encampment with indications of both hunting activities and vegetal processing.

3.3.6.3 Research Problems. Evident in the foregoing paragraphs is the fact that the La Plata Drainage Unit contains an extensive and varied culture history. A first priority for future research in the unit is the delineation of a more specific chronology and phase system, although considerable archaeological work, both survey and excavation, will be necessary beforehand. There is also tantalizing evidence that considerable internal variation is present with respect to distribution and density of Anasazi occupation through the Pecos stages, along with differential functionality of occupations in the upper and lower sectors of the drainage unit. In this respect, the unit exhibits similarities to the drainage units to the east.

The post-Anasazi occupation of the unit is certainly deserving of future work. The question of possible early Ute presence in the higher elevations of the northern part of the unit, such as at site 5LP437 is critical to the topic of the date for the appearance of the Utes in southwestern Colorado. Similarly, the late 1600s Navajo sites along the Colorado-New Mexico state line have considerable potential for contributing information on early Navajo history and contacts with Puebloan groups of the Pueblo IV stage.

3.3.7 Animas Drainage Unit

3.3.7.1 Boundaries of the Unit. This unit is bounded on the west by the divide between the La Plata and Animas Rivers, and on the east by the divide between the Pine and Animas Rivers (Fig. 3.9). As such, its eastern and western boundaries are somewhat more constrained than the previously defined eastern and western boundaries for the Durango area (cf. Gooding 1980:6-11). The southern boundary extends into New Mexico where it coincides with part of the northern boundaries of the San Juan River Upper and Middle Reach units (see Fig. 2.1). The drainage unit is bounded on the north by the La Plata and San Juan Mountains.

3.3.7.2 Temporal Framework for the Unit. The Animas Drainage Unit has been the focus of considerable previous archaeological survey and excavation projects, although most of the work has occurred near the city of Durango, Colorado (Nickens 1978, Reed 1982; Ware 1981). Unfortunately, a large share of this work has only been sparsely reported or

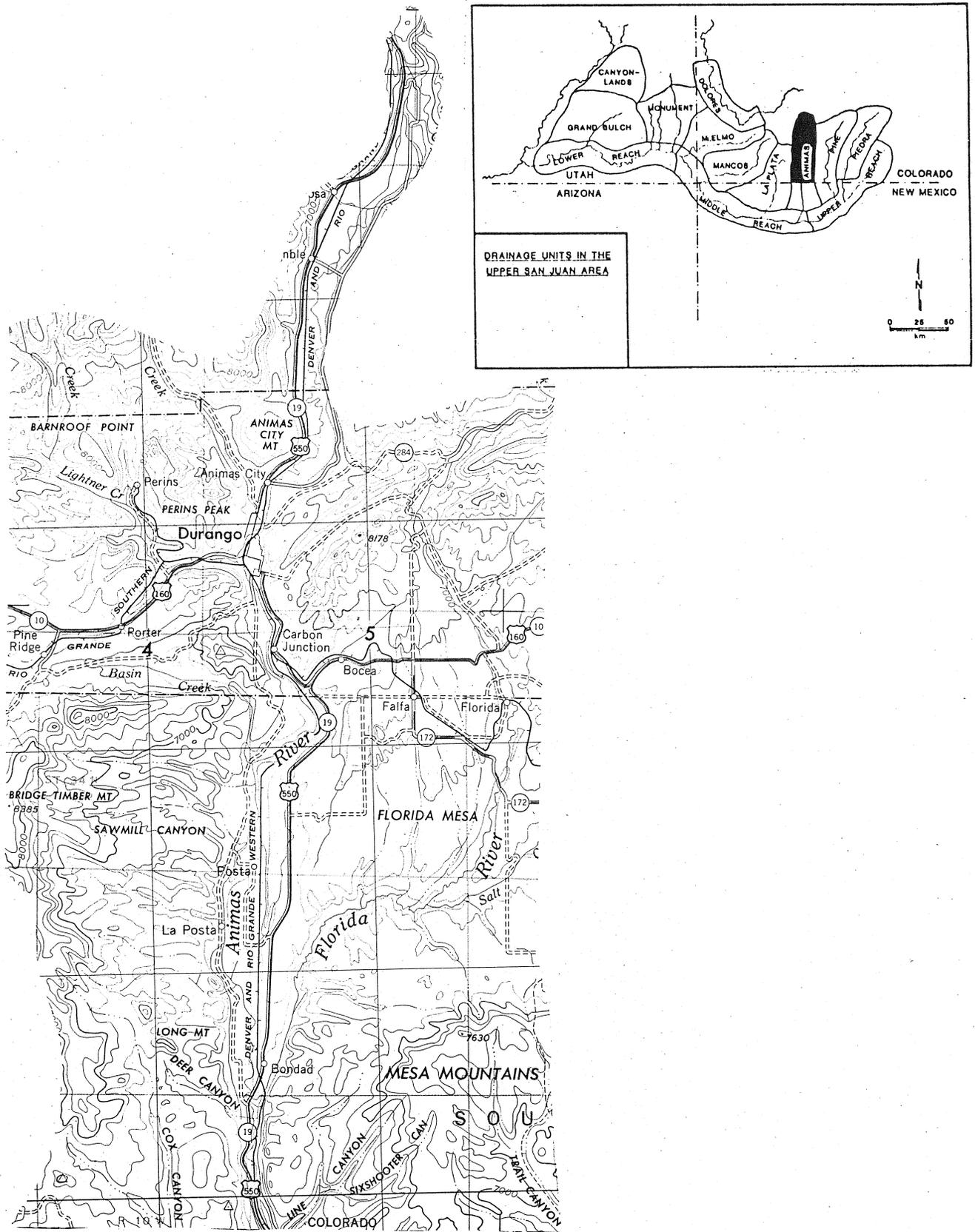


Figure 3.9 Animas Drainage Unit (Colorado portion only) (From USGS 1:250,000 Durango map).

not at all (see Ware 1981:22). Nonetheless, important work undertaken by Earl Morris (Morris and Burgh 1954; Carlson 1953), along with recent excavation reports (Gooding 1980; Reed and Kainer 1978) and large-scale surveys associated with the Bureau of Reclamation Animas-La Plata Project (Leidy 1976, Winter et al. 1981). Other pertinent work includes a survey of the Bodo Canyon area (Nickens and Chandler 1981) and generally unpublished nearby work by members of the Fort Lewis College faculty in Durango (see Duke and Matlock 1983 for a brief summary of the Fort Lewis work, and Ware 1981:21-23). Special note should also be made of the report edited by Winter and his colleagues (1981) which not only discusses survey work in the Ridges Basin area southwest of Durango but also includes important summaries of the area's environmental and geologic resources, along with reviews of the Ute and Euro-American occupation of Ridges Basin and the surrounding region.

Based on the works cited above it is possible to delineate, with a good degree of preciseness the prehistoric cultural continuum for the Animas Drainage unit, although it should be remembered that the bulk of the data came from the northern sector of the unit. As discussed below, there is evidence for Archaic utilization of the Ridges Basin area followed by rather intensive occupation of the area by Basketmaker II and III groups. Interestingly, the end of the Basketmaker III era (ca. A.D. 800) for the most part marks the end of widespread Anasazi use of the northern part of the unit. Data for the later Pueblo periods are sparse, reflecting only limited and sparse occupation. In this respect, the Animas Drainage unit is somewhat anomalous when compared to other drainage units to the west and east in southwestern Colorado. Here, as in some of the neighboring units, a phase sequence has not been delineated and it is necessary to discuss the temporal framework in terms of the Pecos classification.

Pre-Basketmaker

Prior to 1980, no pre-Basketmaker sites had been definitely identified in the Animas Drainage Unit. However, the Animas-La Plata survey has recently documented 54 lithic sites in the Ridges Basin area (Ware 1981, 1982), dating to Archaic times (ca. 4000 B.C. to A.D. 1). After Ware (1982:8-9), these sites are generally described as follows:

All of these sites are extremely large and diffuse (up to several acres in extent), and with only one exception, all are clustered in the extreme western end of Ridges Basin. The topography in this portion of the Basin is characterized by broad meadows intersected by low, pine-covered hills and linear ridges. The majority of the large lithic sites in this area of the Basin are located on the slopes and crests of these hills along the margins of the meadows. In fact, virtually every hill high and steep enough to support ponderosa pine also supports some evidence of human occupation.

The largest of these sites consists of diffuse surface scatters of debitage interrupted by frequent dense concentrations of debitage, flakes, and ground tools. These surface concentrations of tools are

often associated with concentrations of burned sandstone, presumably the disarticulated remains of simple fire hearths. Although clusters of such features are apparent at some sites, the majority of surface concentrations and fire hearths appear to be randomly distributed over the sites. The size, complexity, artifact variability, and apparent temporal span of these large lithic sites in Ridges Basin suggest a pattern of occupation involving the gradual accumulation of debris from small temporary encampments over a long period of time, perhaps as long as several thousand years. This pattern of long-term, ephemeral occupation raises important questions about the "attraction" of western Ridges Basin for small, mobile groups of hunters and gatherers. Local geography may hold some of the answers to these questions.

Almost all of the large lithic sites in Ridges Basin cluster in the extreme western end of the Basin at a point where the valleys of Basin Creek and Wildcat Creek converge, approximately three kilometers east of a low divide between the Animas and La Plata River Valleys formed by the heads of Long Hollow and Basin Creeks....

According to Ware (1981), the geographic situation where the Archaic sites cluster is one coinciding with a natural transportation-migration route for both humans and migratory herds of elk and deer, thus explaining the high density of Archaic-period campsites.

Artifacts encountered at these sites included a large number of points classified as Archaic in affiliation. Some 10 points were identified as being associated with the Jay, Bajada, or San Jose phases of the Oshara sequence (see Section 3.2), and another 25 were classified as San Pedro points (Winter et al. 1981).

Basketmaker II

This period, spanning between approximately A.D. 1 and A.D. 500, is particularly well represented in the Durango area; indeed, few other areas in the Southwest can compare to the Durango area. Early excavations, followed by excellent reporting of the Carnegie Institution's investigations at the Falls Creek Rockshelters and Talus Village (Morris and Burgh 1954) have largely shaped Southwestern archaeologists' conceptions of this segment of Anasazi prehistory.

At least five Basketmaker II sites have been excavated in the Durango area. The Carnegie Institution, as mentioned, excavated Talus Village, located on the western side of the Animas River Valley, and the North and South Rockshelter sites, located not far from Talus Village above Hidden Valley along Falls Creek. These sites are 6 miles north of Durango. Talus Village is an open site located on a fairly steep slope. Small terraces were visible along the slope prior to excavation; these were found to be the result of house construction. Similar artificial terraces were discovered on the slopes below the North and South Rockshelters. The Tamarron Site, also located north of Durango in the

Animas Valley but located near the present-day Tamarron Resort, is another open Basketmaker II site. This site, consisting of a single habitation structure, was excavated in 1977 by the Colorado Highway Department prior to improvement of U.S. Highway 550 (Reed and Kainer 1978). The University of Colorado excavated Basketmaker II sites north of Durango in 1966 but, unfortunately, no final report has yet been produced. It is also possible that Basketmaker II structures were revealed in Ridges Basin southwest of Durango. In 1966, Homer Root of Fort Lewis College encountered two shallow, circular features during the excavation of a Basketmaker III settlement. Root posited that they were "dance areas" in his field notes but I.F. Flora, a visitor to the site who had aided Earl Morris in excavations in Hidden Valley, suggested that they were Basketmaker II pithouses. Unfortunately, Root's data have not been published, making it difficult to assess either assertion.

These excavations have revealed considerable homogeneity in Basketmaker II architectural and artifactual remains. Houses were typically about 5 meters to 6 meters in diameter with slightly concave floors, and were cut into the slope to provide a reasonably level habitation area. Some are thinly plastered with clay. Various floor features were dug into the saucer-shaped floors, including slab-lined storage cists and heating pits. Evidence suggests that some of the storage cists were covered by beehive-shaped, conical adobe superstructures. A single structure might have a half dozen or more floor features. The superstructures over the habitation floors were apparently log-cribbed domes constructed in the following manner. A basal course of wooden beams was laid end to end in a polygonal to circular fashion. This course was set slightly higher than the excavated floor. Additional log courses were then cribbed atop the basal course. Between each course mud was packed into the interstices. The extent of cribbing is uncertain. The cribbing may have been truncated by a flat roof, which would have reduced the structure's height. To prevent downslope wash from damaging the structure, sandstone slabs may have been set along the outside, upslope portion (Reed and Kainer 1978).

Excavations of Basketmaker II sites in the Durango area have also revealed a diverse artifactual assemblage. Especially important in this regard are the Falls Creek Rockshelters, where perishable materials, protected from the elements, were recovered, including beautifully preserved coiled baskets, cradles, clothing items such as sashes and yucca and leather sandals, twined bags and ornaments. Other artifact types found at this and other sites include bone gaming pieces, bone awls and other tools, one-hand and two-hand manos, trough and basin metates, chipped stone drills, scrapers, and projectile points.

Interestingly, the transition between the use of the atlatl and dart and the bow and arrow may be represented in the Durango area. The Carnegie Institution's excavations at the Falls Creek Rockshelters and Talus Village yielded large quantities of large corner- and side-notched projectile points suitable for use with dart and atlatl. Other Basketmaker II sites in the region have yielded similar point types. At the Tamarron site, however, small arrowheads and no large dart points were discovered in undoubted association with typical Basketmaker II period architecture (Reed and Kainer 1978). Unfortunately, no absolute dates were recovered at the Tamarron site; it seems apparent, however, that the introduction of the bow and arrow occurred during the Basketmaker II Period rather than the Basketmaker III Period as conventionally thought.

Too few Basketmaker II sites have been recorded and investigated in the Durango area to make any definitive statements concerning settlement and subsistence patterns. Some trends, however, can be suggested. It appears that Basketmaker II habitation sites cluster in the higher elevations over 7,000 feet. That evidence of corn and squash have been recovered in archaeological contexts suggests that horticulture was practiced at or near the habitation sites. Presently, sites such as the Falls Creek Rockshelters and the Tamarron site have limited environmental potential for corn and squash horticulture. While rainfall is certainly adequate, the average growing season, or the time between the last frost of spring and the first killing frost of fall, makes horticulture a risky venture. It seems evident, however, that collected wild plants and animals formed a very important portion of the Basketmaker II Period diet. Plants such as pigweed (or amaranth), vetch, lambsquarters, sunflower, and prickly pear have been recovered at Basketmaker II sites near Durango. Recovered animal bones probably utilized for food include mule deer, bighorn sheep, cottontail, and marmot.

Basketmaker III

Sites attributed to the Basketmaker III Period of the Anasazi Tradition are numerous in the Durango area; indeed, Basketmaker III sites far outnumber Basketmaker II Period sites and sites of later periods. The Basketmaker III Period, then, represents the peak of Anasazi occupation in the Durango area. No longer did habitation sites cluster in the higher elevations in the unit; pithouses are found in both the higher and lower elevations. Numerous nonhabitation sites of Basketmaker III affiliation -- the so-called limited activity sites where specific resources were procured or processed -- are also recorded in large numbers.

While numerous Basketmaker III sites have been excavated in the Durango area, widely available published reports of these investigations are not available. Reports by Roy Carlson (1963), detailing Earl Morris' Carnegie Institution excavations in Falls Creek Flat and by John Gooding (1980) on his highway salvage excavations a couple of miles south of Durango are the primary sources for describing the Basketmaker III occupation of the area. These reports indicate that the Basketmaker III culture of the Durango area was quite similar to that in other portions of southwestern Colorado in terms of architecture, artifacts, and settlement patterns.

Basketmaker III habitation sites commonly possess one or more pithouses along with associated surface storage structures and cultural trash. The pithouse structures typically consist of a large (ca. 5 meter diameter) circular hole excavated one or two meters below the ground surface with a timber and dirt superstructure. The floors were flat and often plastered with clay, and had a central firepit and sometimes subfloor storage pits. Four or more main roof support timbers were usually situated towards the center of the room. Smaller timbers extended from beams between these main roof supports to the room's periphery, often to a bench raised above the floor. Smaller sticks and other materials were then placed over these timbers which were in turn covered by earth. A smokehole, which also may have served as a portal for entrance, was left in the center of the roof above the firepit.

Ventilation and possibly passage was facilitated by a shaft and tunnel extending from the main room southwards for several meters.

Surface structures, probably used mainly for storage, were often located northwards of the pithouse. These were generally masonry or jacal.

Most of the artifact types utilized in the Basketmaker II Period continued to be manufactured in the Basketmaker III Period. Various types of chipped stone scrapers, knives, projectile points and drills, and ground stone implements, and bone tools characterize both periods. Several artifactual innovations of major importance did occur, however. Primary among them was the introduction of pottery. Ceramics during the Basketmaker III Period were quite functional but in comparison to the ceramics of subsequent Anasazi periods were rather plain. Lino Gray is the most common type; vessels of this type are usually in the form of jars and are not decorated. These vessels were made by coiling; they were tempered with sand. The surface of the vessel was scraped smooth and the rims were rounded or tapered on the top. The vessel was fired in a non-oxidizing environment, resulting in its gray color. Some vessels were polished prior to firing and these are classified into the Twin Trees Plain type. When vessels similar to the aforementioned types were painted, they are known as Lino Black-on-gray or Twin Trees Black-on-white. In the Durango area, lead ore was often added to the organic and mineral paint, resulting in a glazed decoration. Neither painted variety was slipped, that is, coated with a thin film of light-colored clay prior to painting and firing, so the painted designs do not stand out as boldly as do the painted ceramics of subsequent Anasazi periods.

The Basketmaker III Period is generally considered to span the time between A.D. 500 and A.D. 750. Present evidence indicates that the Basketmaker III occupation of the Durango area may not have been continuous, however. Cutting dates obtained at Talus Village and the Falls Creek Rockshelters indicate a termination of construction activities at approximately A.D. 330 at these three Basketmaker II sites. The next cluster of cutting dates obtained from tree-ring specimens occurs between A.D. 650 and A.D. 800. Very few cutting dates have been obtained for the period between A.D. 400 and A.D. 650, suggesting to some (e.g., Ware 1981) the possibility of either a substantial decline in the occupation/utilization of the area, or a shift from a partially horticultural economic base back to hunting and gathering and its associated transient lifestyle. The period between A.D. 650 and A.D. 800 saw a flurry of construction activities, however, and the development of a full-blown horticultural-based society.

The Pueblo Periods

By approximately A.D. 800 the Basketmaker III Period pithouse villages were abandoned. While other areas in southwestern Colorado witnessed the continued development of Anasazi culture in the Pueblo I, II, and III Periods, present evidence suggests that the Durango area was utilized after A.D. 800 only on a temporary basis. The recent survey in Ridges Basin (Winter et al. 1981) reported finding 105 Basketmaker III sites but only 12 sites of Pueblo period affiliation. The latter sites, identified by the presence of Pueblo period ceramics, generally lack structures, have very low sherd counts, and probably represent short-term forays into the area for resource procurement on a seasonal basis.

3.3.7.3 Cultural Processes. The northern part of the Animas Drainage Unit is particularly rich in cultural resources affiliated with the early Anasazi periods; indeed, much of our understanding of the Basketmakers of southwestern Colorado is a result of earlier investigations in the vicinity of Durango. A comparatively dense Basketmaker II occupation has been documented in the area, which has few parallels in the entire San Juan Basin. Importantly, some of these sites have been meticulously excavated and described.

The Basketmaker II culture manifested an incorporation of a horticultural subsistence system and substantial permanent houses. These represent a radical shift in land-use patterns and life style from the earlier Archaic Tradition. The basic features of Anasazi life were established in the Basketmaker II Period; subsequent periods primarily refined the Basketmaker II patterns.

The Basketmaker III Period was characterized by increased reliance upon horticulture to meet the needs of a growing population. Increased reliance upon horticulture in turn permitted further population growth. Populations expanded over most of the Durango area and most of southwestern Colorado. The Basketmaker III occupation of the Durango area terminated at approximately A.D. 800, however, possibly for reasons to be discussed below. With the abandonment of the area for habitation purposes came another radical change in land-use patterns as the area reverted back to temporary usage for resource procurement.

An attempt to understand the course of cultural development in the Durango area must consider the environment with which the culture interacted. The environment by no means directs human adaptations but it does impose certain limitations on the options available. The social environment has to some extent been previously discussed; groups certainly had to adapt to growing populations and the concomitant value of food production. The natural environment has yet to be considered, however. Ware (1981) has correlated cultural developments with paleoenvironmental reconstructions derived for the Southwest (Euler et al. 1979). As mentioned, Basketmaker II occupations are well documented between A.D. 1 and A.D. 330, after which there was apparently ephemeral use of the area until approximately A.D. 650 when a major Basketmaker III construction period began. This construction flurry terminated by approximately A.D. 800, after which the area was only seasonally or sporadically utilized on a short-term basis. Ware correlates the construction phases as evinced by tree-ring cutting dates with warmer/drier and cooler/moister climatic trends indicated by tree-ring, geological, radiometric, and palynological data. He points out that presently at an elevation of 6600 feet near Durango the growing season is only 99 days, far short of the 110 to 120 days required for successful dry-land corn horticulture (Ware 1981:27). Rainfall is presently more than adequate. The short growing season, however, makes horticulture at the elevation of many of the Basketmaker II and III villages a risky venture with present climatic conditions. The paleoenvironmental data cited by Ware (Euler et al. 1979) suggests cycles of warm and dry conditions rotating with cooler and moister conditions every 275 years. Ware hypothesizes that during the warm and dry periods areas of higher elevations, such as the Durango area, were more suitable for horticulture and were attractive to the Anasazi. During region-wide cooler and moister cycles the lower elevations were more suitable for the Anasazi economy and life-style, resulting in a withdrawal from the higher elevations. In this

model the Durango area served as a high-elevation refuge in times of regional warm and dry conditions.

Other hypotheses have been offered but may not answer quite as many questions as Ware's hypothesis. Gooding (1980), for example, considers drought in the Durango area to be a major cause of abandonment and cites tree-ring evidence for support. Gooding believes that a severe drought hit the Durango area between A.D. 800 and A.D. 809, causing abandonment in the area. This model is dichotomous with Ware's model which implies that an onset of cool and moist conditions rather than drought created an environment unsuited for horticulture.

3.3.7.4 Research Problems. The Animas Drainage Unit contains certain prehistoric data in an abundance not comparably found in neighboring drainage units. These anomalous situations include evidence of intensive utilization of the area by Archaic groups, Basketmaker II peoples, and the protohistoric/historic Ute (the latter are discussed in Section 3.4.2). This presence is in itself a circumstance requiring much additional investigation concerning the underlying reason(s). Conversely, the general absence of Pueblo I-III Anasazi between A.D. 800 and 1300 in the northern portion of the drainage unit is deserving of closer inspection. On the surface it would appear that the area around present-day Durango was not entirely suitable for a lifeway in which food production assumed great importance in the subsistence pattern, since it was the hunter/collectors and early agriculturalists who most intensively utilized the area. Ware's (1981) model of the upper Animas drainage as a "marginal" area for intensive agriculture appears to have validity for the timeframe up to A.D. 800, but it does not fully explain the apparent seasonal use only of the area by the post-Basketmaker III Anasazi. Of interest to this pattern is a similar situation in the next drainage unit to the east along the Pine River (see Section 3.8).

To be sure, our temporal and spatial picture for cultural patterns in the Animas Drainage Unit is probably skewed by the information presently at hand. The available cultural data have accrued from the Durango vicinity, as virtually no substantive archaeological work has taken place in the southern two-thirds of the drainage unit. It follows, then, that there is a clearly defined need for larger-scale cultural resource surveys and excavation projects along the Animas River and its tributaries south of Durango. Some specific research topics which could profitably be examined via future research in the drainage unit include the following.

1. The nature of the Archaic-Basketmaker II transition, since this area is apparently one of the few places in southwestern Colorado with a relative abundance of remains dating to both eras.
2. The development of settled villages throughout the Basketmaker II and III stages, including sequent changes in all aspects of the extant lifeways.
3. Inquiry into the question of "marginality" of the northern sector of the drainage unit for more intensive agricultural undertakings. Why, for example, was the area suitable for early agriculturalists (i.e., Basketmakers), but not the later Pueblo groups? Seemingly, despite the well documented climatic fluctuations which occurred in the region throughout the Anasazi timeframe, there must have been periods when

agriculture would have been possible in the Animas unit between A.D. 800 and the abandonment of the northern Anasazi area by A.D. 1300. On the other hand, further paleoenvironmental studies may indeed reflect that the upper Animas drainage was unsuitable for the level of agricultural dependence desired by the post-Basketmaker Puebloans.

3.3.8 Pine River Drainage Unit.

3.3.8.1 Boundaries of the Unit. The Pine River heads in the foothills of the San Juan Mountains above Vallecitos Reservoir and flows almost due south to a junction with the San Juan River just upstream from the Navajo Dam (Fig. 3.10). The upper and middle reach of the river, from Vallecitos south to Ignacio and La Boca, Colorado, consists of a broad, open valley flanked with cobble covered Pleistocene age terraces. At La Boca, however, the drainage changes character sharply as the river cuts through broad mesalands made up of horizontally bedded sandstone formations. Below La Boca, meaning "the mouth" in Spanish, the river flows through a narrow, confining canyon southward to its junction with the San Juan. The lower portion of the canyon is flooded by reservoir impoundment which is part of Lake Navajo.

3.3.8.2 Temporal Framework for the Unit. Site survey conducted as part of the Navajo Reservoir investigations of the Museum of New Mexico, Santa Fe, has covered the lower 13 miles of narrow canyon (Dittert et al. 1961). This research, as well as subsequent excavations conducted in the "box canyon" portions of the drainage unit, revealed a local phase sequence which includes: Los Pinos, Rosa, and Gobernador (Fig. 3.11). In addition, Piedra and Arboles phase components are present at two Rosa Phase sites but the sparse nature of these late Pueblo I and early Pueblo II remains does not warrant plotting these phases on Figure 3.14. In terms of component count, the heaviest occupation of the lower Pine is Basketmaker II, early Pueblo I, and 18th century Navajo sites. Subsequent rockshelter excavations amplify this picture through the addition of a Basketmaker III component (Eddy 1966).

Less systematic research has been conducted in the middle and upper reach of the river. These consist of spotty excavations or causal survey and most have been motivated by some sort of archaeological contract. Notable among this work are the Basketmaker II excavations of Fennenga and Wendorf (1956) at Ignacio, and a survey by amateur archaeologist Betty X. Green (personal communication) along this portion of the river. These show that the middle Pine is heavily flanked by Rosa Phase pithouse sites situated along the leading edge of each cobble terrace from La Boca north to Bayfield location on U.S. Highway 160. The survey by Green further demonstrates that cobble ring sites of the Basketmaker II stage cover not only the entire middle reach of the river but also extend north nearly to the Vallecitos Reservoir (Fig. 3.10).

Thus the primary occupation of the entire Pine River drainage unit is BMII and early PI or Los Pinos and Rosa Phases. Lesser episodes of occupation date to BMIII and the homestead period. The Gobernador Navajo, although prevalent in component count of forked-stick hogan sites, is not heavily represented above the mouth of the Pine. Archaic Oshara sites were not recorded along the drainage although they are known to be present on the mesa tops overlooking the river (Eddy 1972: Fig. 4).

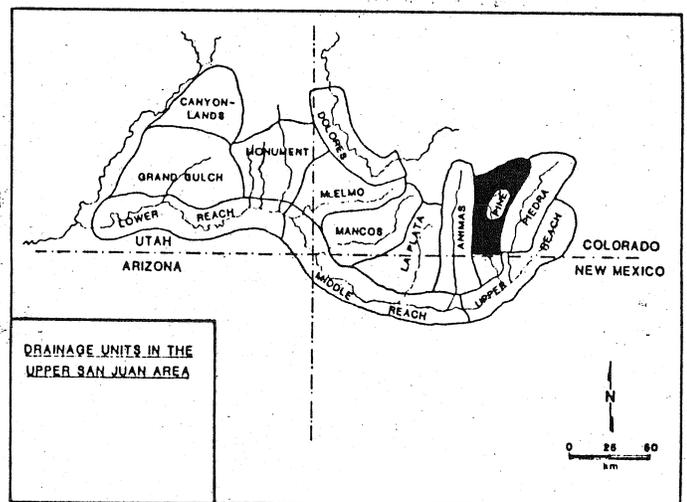
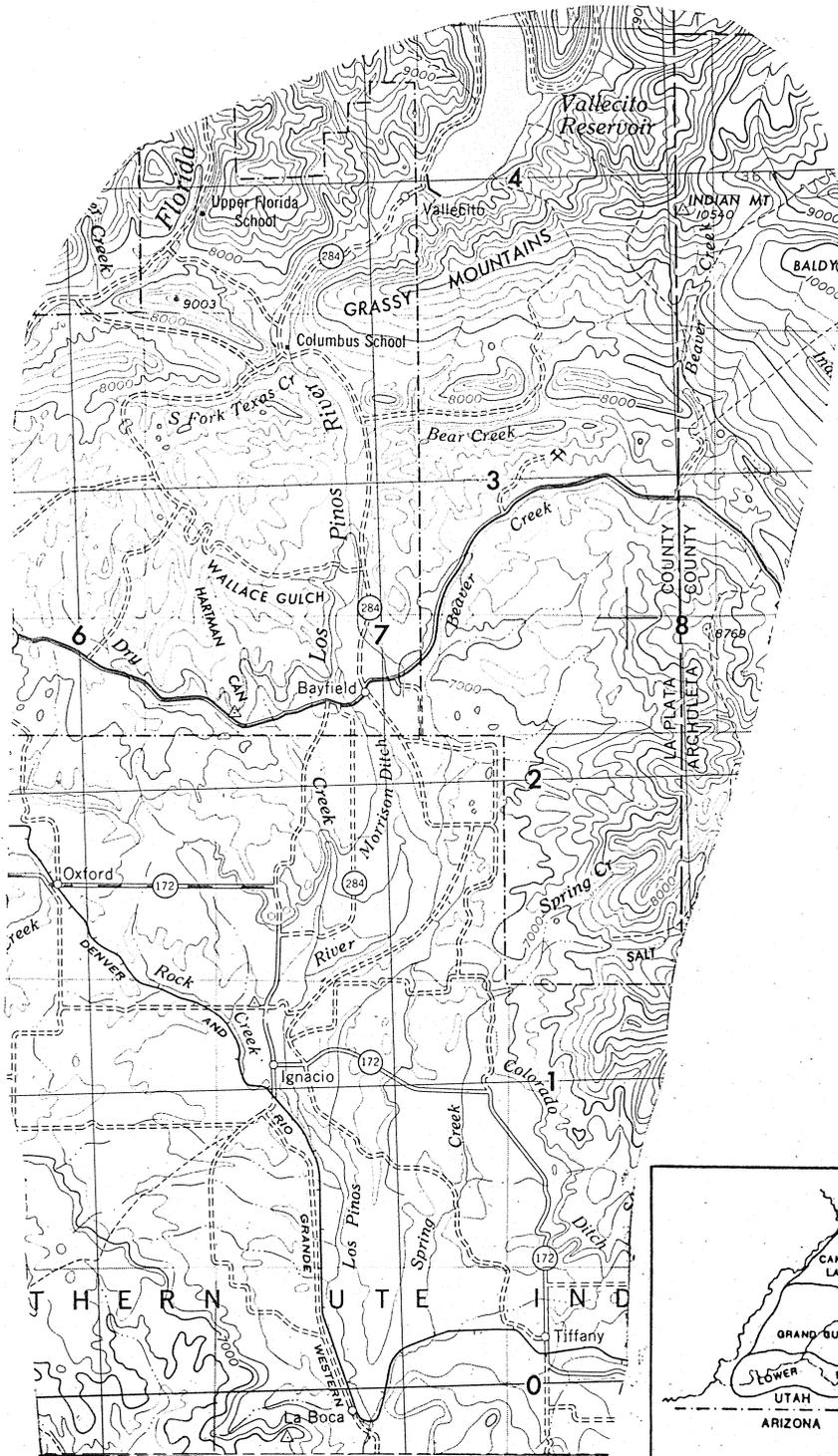


Figure 3.10 Pine Drainage Unit (Colorado portion only) (From USGS 1:250,000 Durango map).

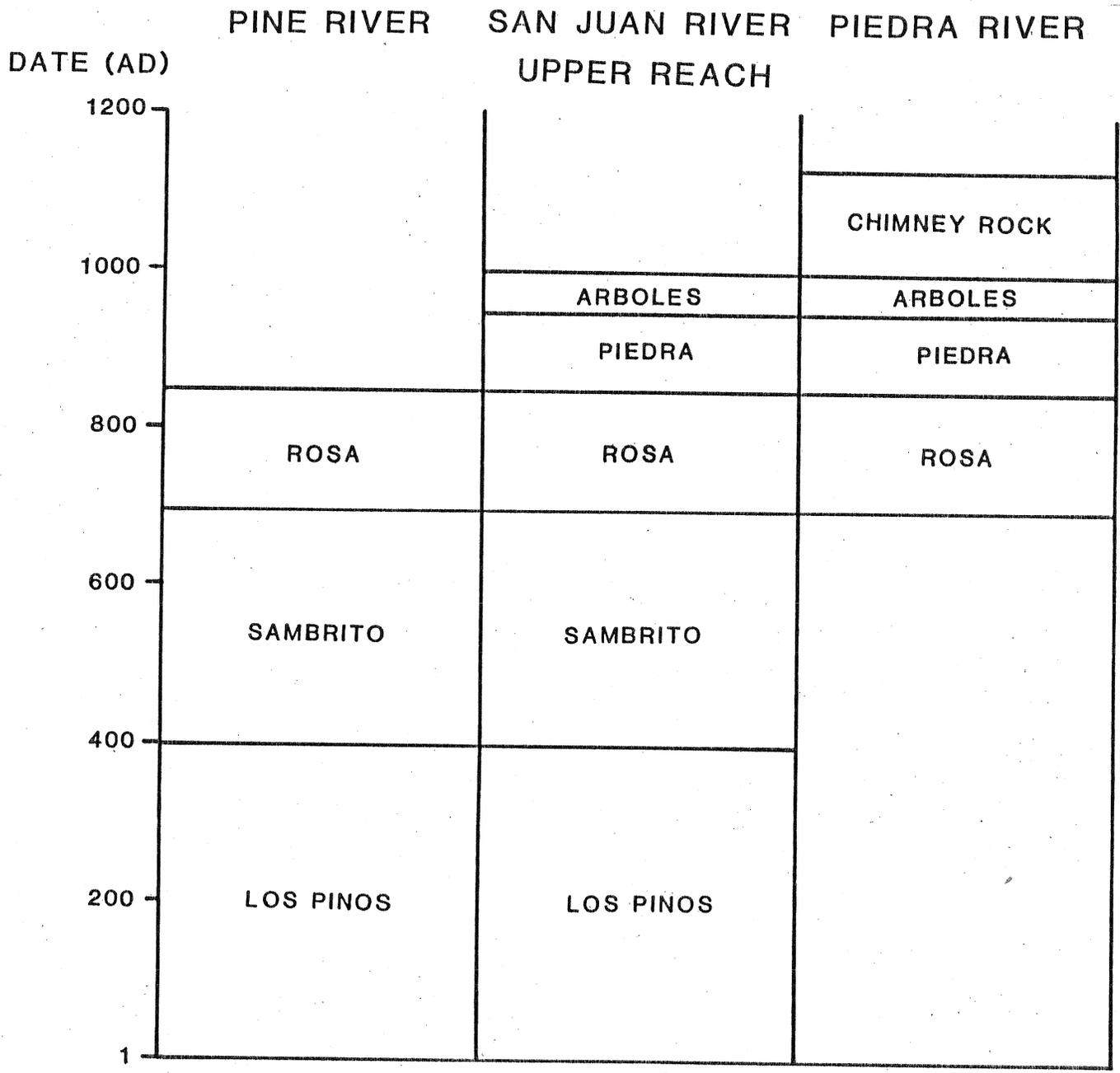


Figure 3.11 Local phase sequences in the Pine, San Juan River Upper Reach, and Piedra Drainage Units.

Los Pinos Phase (A.D. 1-400). Basketmaker II sites in the Pine River are representative of the very beginnings of sedentary village life in the Southwest (Dittert et al. 1961; Eddy 1961, 1966, 1972). Here are found permanent villages composed of scattered circular houses constructed of horizontally-laid cribbed logs. Some of the earlier houses have antechambers while later structures are surrounded by a paving of river cobbles. The interior features of the house consist of pits and coiled mud cists for storage of corn which was grown in abundance. Exterior to the structures are fire hearths, storage pits, and a sheet of trash. Burials were placed in the pits, both inside and outside of house structures.

The chipped stone industry was utilized in processing foodstuffs obtained through hunting and plant food gathering. In addition to charred corn cobs as well as mud impressions of corn, further evidence for horticulture is to be found in the many milling tools. These are both of the Archaic basin form as well as closed-end trough types usually called metates. A few sherds of polished brown pottery are found on each site after A.D. 300.

As shown on Figure 3.12, the distribution of Los Pinos Phase sites is largely centered on the Pine River with far fewer located along the San Juan. Based on this data from the Navajo Reservoir survey, as well as the information from Green's work, it seems likely that the distributional center of the Los Pinos phase was on the middle and upper Pine River with colonization taking place into the lower reach. Thus application of food production to a sedentary lifestyle took place in the headwaters of tributary streams just below the base of the San Juan Mountains. This pattern is duplicated above Durango in the Animas drainage unit where the Hidden Valley sites of Morris and Burgh (1954) show the same relationship between corn agriculture and the beginnings of village life.

Sambrito Phase (A.D. 400-700). Basketmaker III occupation is known only from human burials interred in pits in the lower Pine River at the Todosio rockshelter, LA4298 (No. 1) as reported by Hester and Shiner (1963:Table 21). Burial 2, a male aged between 35 and 39 years, was flexed on its right side. A Sambrito brown pot, a calcite pendant, a pipe, and matting were placed with the body as offerings.

Burial 5, a child of indeterminate sex, also had a Sambrito brown vessel as well as a bone awl and basketry fragments interred in the storage pit as ritual offerings. The phase as a whole is better described from excavated evidence found in the Upper Reach of the San Juan River.

Rosa Phase (A.D. 700-850). Early Pueblo I occupation is heavy throughout the lower and middle Pine River drainage unit. It is commonly expressed as one or two pithouses found on the front edge of each Pleistocene cobble terrace overlooking the river. Associated with the pithouses are surface storage units constructed of mud and wood framing; a building technique which Southwesterners call by the Spanish term - "jacal." Other extramural features are storage pits, pit ovens, shallow basin hearths, and scattered trash (Dittert et al. 1961; Eddy 1966, 1972).

3.3.8.1 Research Problems. Problem domains to be addressed to the Los Pinos Phase remains have to do with a recheck of Green's amateur survey of stone ring sites which she believes extend throughout the middle and upper reach of the Pine River Drainage Unit. Originally

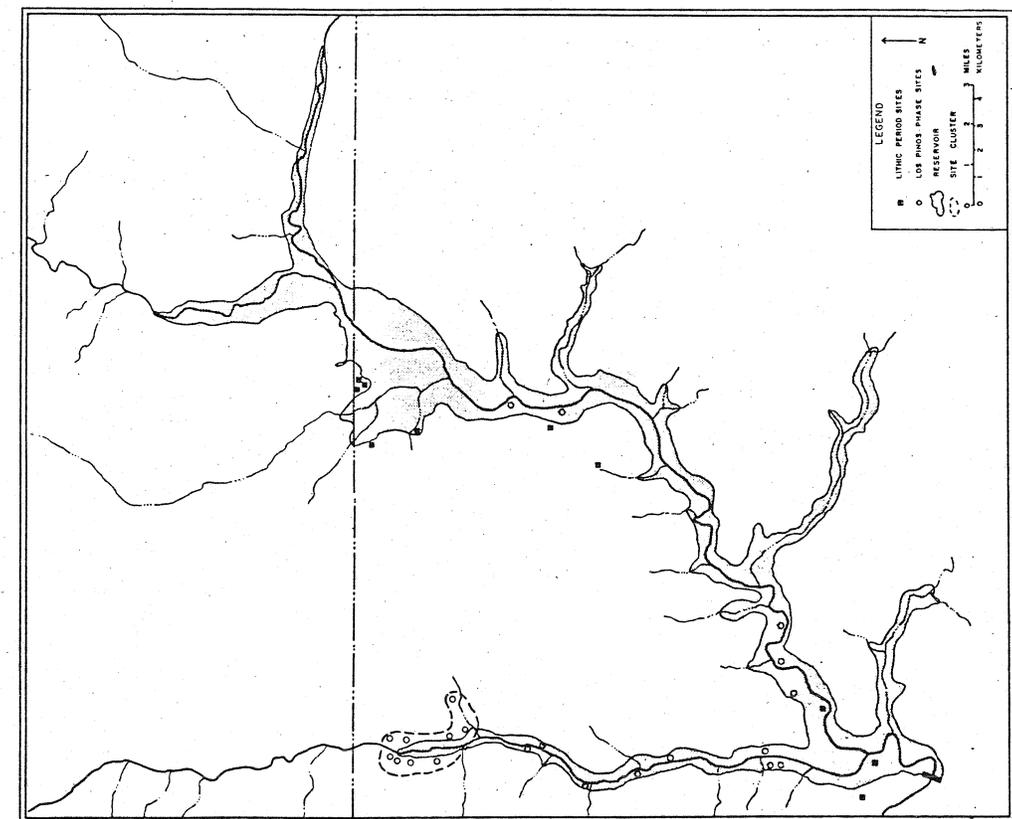
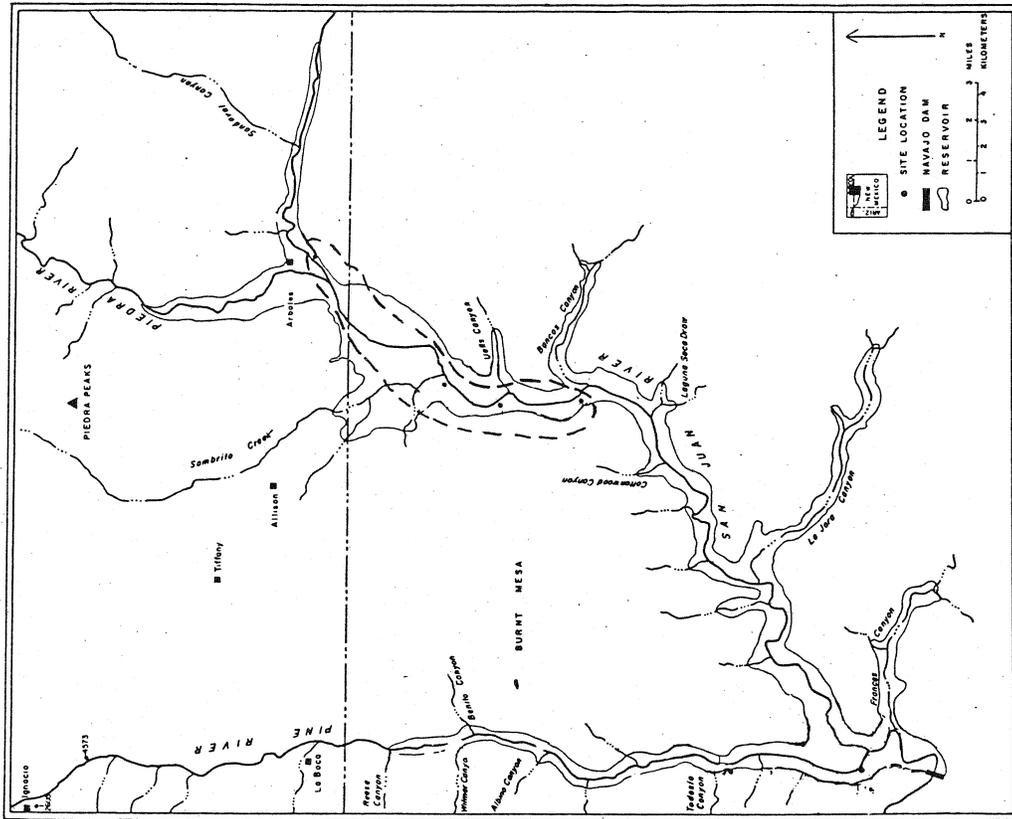


Figure 3.12 Maps showing site distributions for Archaic and Los Pinas (left) and Sambrito Phases (right) of the Navajo Reservoir area (From Eddy 1972: Figs. 4 and 5).

she described the BM II structures as rings of cobbles which had occasional sherds of polished brownware pottery (personal communication, 1960). This description certainly sounds like the Los Pinos phase structures which we defined through excavation in the lower reach of the drainage unit (Eddy 1961). But are they indeed the same archaeological phenomenon, or are they something different? This distributional problem should be investigated in greater detail through both survey recording and excavation.

Further BM II investigations should examine the very beginnings of agriculture and village life; particularly to test the idea that the earliest Los Pinos phase sites occur at the head of the drainage unit up towards the Vallecitos Reservoir. And if this is so, then how did colonies of BM II sites push downstream past La Boca, Colorado, into the canyon-and-mesa terrain of the lower Pine River? What were the motivating factors for this distributional spread of farming villages? Did demographic expansion lead to this downstream movement? If so, what were the organizational effects of increasing population size and migratory shift in range? What new forms of adaptation were necessary for the expansion from the foothills to canyon lands habitat?

Rosa Phase sites are ubiquitous throughout the upper end of the San Juan Basin. Why is this so? Can we account for the tremendous increase in early PI sites as a result of natural biological procreation of people or was there immigration into this region from elsewhere? If so, what is the source of PI populations? Are there regional and local variations in Rosa phase sites and communities? If so, why? What is the organizational arrangement of Rosa phase communities? Why are some communities, such as those found in the Largo-Gobernador drainage unit, defended with vertical walled palisades while others, such as those along the upper reach of the San Juan, not stockaded?

And what about the more minor episodes of occupation within the drainage unit? For instance, why is it that Sambrito and Piedra phase surface sites have not been encountered while excavations of rock shelters in the lower reach of the drainage unit has revealed buried archaeological remains of BMIII and late PI times?

As to the Navajo occupation of the Pine River, why are the 18th century Gobernador remains heavily concentrated in and near the mouth of the river? But some rockart shrines are known in the lower reach canyon country along the Pine. Why are these painted ceremonial places located on cliff faces at the confluence of major tributaries? What ceremonials were held there? Were any of these sacred places visited after the Navajo pulled out of the Pine with migration to their present reservation homeland?

3.3.9 San Juan River Upper Reach Drainage Unit.

3.3.9.1 Boundaries of the Unit. The San Juan River originates in the mountains of the same name at Wolf Creek pass. Flowing south-westward, the river passes through Pagosa Springs and out of Colorado at the former townsite of Arboles (Fig. 3.13). From there, it flows in a generally westward direction though the northwest portion of New Mexico crossing through the Four Corners country. As mapped on Figure 3.13, the Upper Reach of the drainage unit is terminated above the mouth of the Animas River at Bloomfield.

3.3.9.2 Temporal Framework for the Unit. Site survey and excavations conducted by the Navajo Reservoir project provide archaeological data for the stretch of the river from just above the state

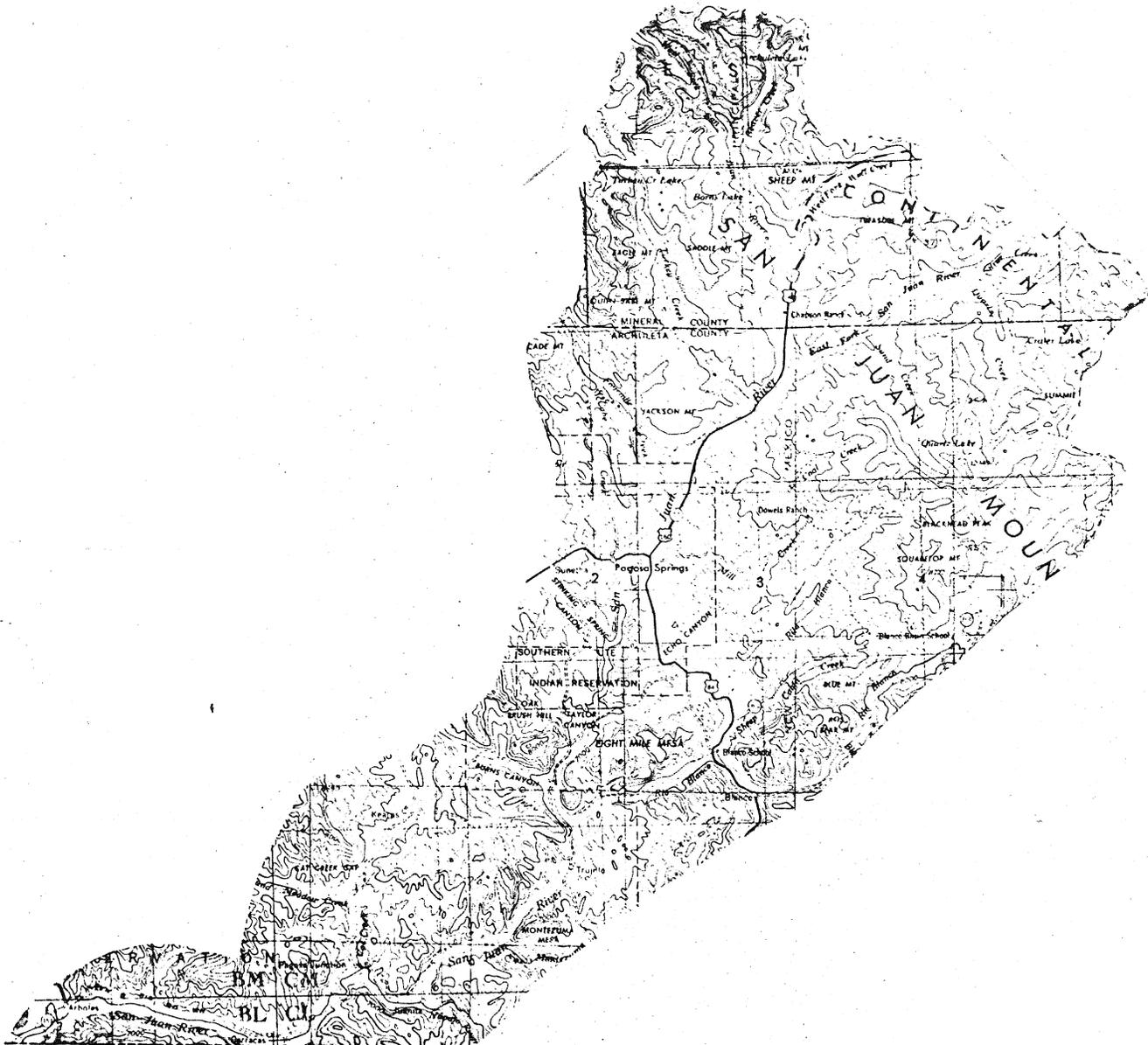
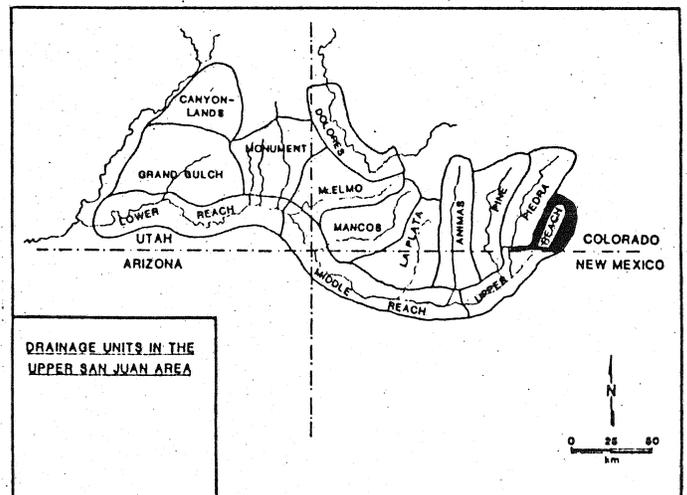


Figure 3.13 San Juan River Upper Reach Drainage Unit (Colorado portion only) (From USGS 1:250,000 Durango map) (reduced).



border as far downstream as the Navajo Dam located just below the mouth of the Pine River (Dittert et al. 1961; Eddy 1966). These investigations have revealed rich resources of the Anasazi and Navajo traditions including: the Los Pinos, Sambrito, Piedra, Arboles, and Gobernador Phases (Fig. 3.11).

Los Pinos Phase (A.D. 1-400). Only a few sites of Basketmaker II age have been recorded along the San Juan River and these are all located within New Mexico below the Colorado border (Fig. 3.12). Otherwise BMII sites within the Upper Reach drainage unit appear to lie outside of the principal distribution of early village farming sites centered within the Pine River.

Sambrito Phase (A.D. 400-700). This Basketmaker III phase is defined through excavations along the San Juan River from tributary Mancos Canyon upstream to near Arboles, Colorado (Fig. 3.12). Outstanding features of the phase are: 1) the first appearance of true pithouse architecture, 2) locally made polished brown ware pottery, and 3) evidence of diffusion from the Mogollon culture. Excavated site types include a village, 2 sites with two to three pithouses, 2 sites with a pithouse and many ovens, and a camp buried in floodplain alluvium. The village has 7 pithouses of which several are thought to have doubled as intercommunity proto-kivas. Here human skeletons were buried in abandoned pit ovens associated with sacrificed dogs (Eddy 1966, 1972).

Rosa Phase (A.D. 700-850). As shown on Figure 3.14, the Pueblo I occupation of the Upper Reach constitutes one of the heaviest populations in the history of the drainage unit. Sites have been recorded from the Navajo dam upstream to the head of the Navajo Reservoir. Three particularly dense groups of sites indicate the former presence of prehistoric communities (Fig. 3.14). These are interpreted as Simple Nuclear-Centered communities in which one or more pithouse village served as a central place for market and religious activities (Beardsley 1956). Mera (as reported in Hall 1944) has reported Rosa Phase sites throughout the upper San Juan Basin as far up river as Pagosa Springs where the high elevation and short growing season (approximately 70 days) precluded permanent occupation above this point on the river (Dittert et al. 1961; Eddy 1966, 1972).

Excavations by Hall (1944) in the Largo-Gobernador drainage unit formed the original basis for defining the Rosa Phase (Fig. 3.14). Here three stockaded settlements tree-ring dated in the late 700s and early 800s placed the occupation securely in the early stage of Pueblo I. These findings have been amplified through the work of Morris (Carlson 1964).

Piedra Phase (A.D. 850-950). Late Pueblo I occupation displays a significant upstream relocation compared to the earlier Rosa Phase (Fig. 3.14). The most dramatic change is the upstream movement of people under the influence of headwater entrenchment of the San Juan River, a form of erosion which disturbed corn agriculture by lowering the water table after A.D. 800 forcing leap-frog relocation of communities (Schoenwetter and Eddy 1964, Eddy 1974). The resulting competition for arable land led to internecine warfare expressed in construction of stockades, burned pithouses, multiple burials, and cannibalism (Eddy 1966, Flinn et al. 1976).

Arboles Phase (A.D. 950-1000/1050). The Arboles Phase is a mixture of traits, some of which are properly to be classified as Pueblo I while others are Pueblo II in character. For instance, just below the

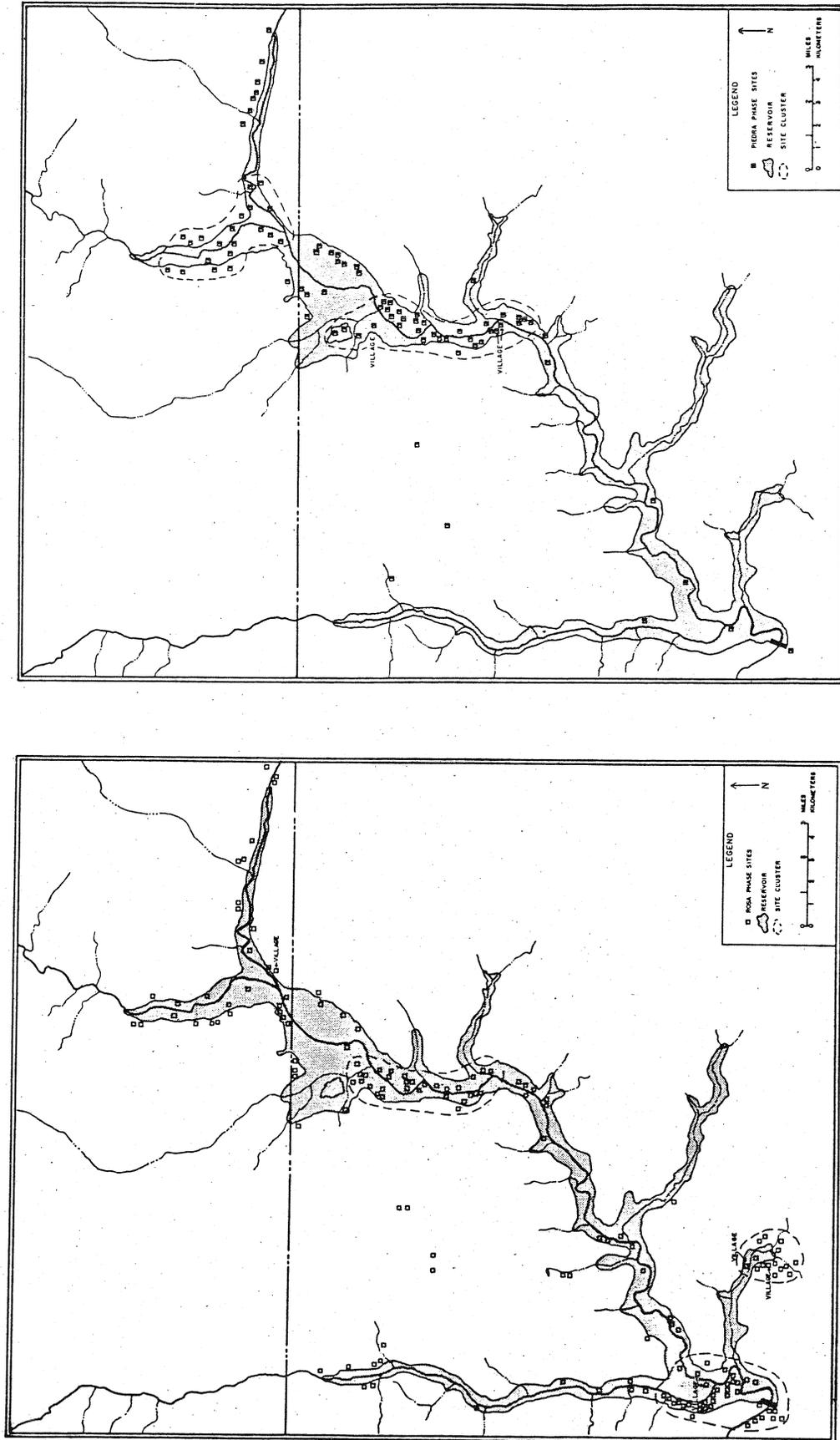


Figure 3.14 Maps showing site distributions for the Rosa Phase (left) and Piedra Phase (right) sites in the Navajo Reservoir area (From Eddy 1972: Figs. 6 and 7).

Colorado line in New Mexico are a scattering of pithouse sites with neckbanded pottery typical of the PI stage. However, north of the state line are to be found sites with masonry architecture and some corrugated pottery. These sites are more typical of the PII stage. And yet both kinds of sites would seem to be contemporary based on the shared presence of Arboles Black-on-white, a slipped decorated vessel type (Dittert et al. 1961, Dittert and Eddy 1963).

During the Arboles phase, headwater entrenchment of the San Juan River continued forcing further relocation of communities into two site groups located around old Arboles, Colorado (Fig. 3.15). By A.D. 1000 or 1050, the entire Navajo Reservoir had been abandoned to Anasazi occupation. That these Pueblo I and II settlement movements are not unique to the Navajo Reservoir study, is demonstrated by the site survey of Brew (personal communication) conducted upon Burnt Mesa and in the uplands north of the river along Sandoval Canyon (Adams 1975)(Fig. 3.4).

3.3.9.1 Research Problems. Problem investigations into the Los Pinos phase data can best be conducted outside of this drainage unit due to the scarce BMII archaeology to be found along the San Juan River. Research directed towards the Sambrito phase, due to the general lack of surface manifestations, can be accomplished by carefully probing beneath the architecture of large PI village sites. Here small pit houses, ovens, and storage pits of BMIII age can be investigated for problems of demography, technology, settlement, and organization of Sambrito phase communities. Particularly the origin of the BMIII communities should be examined to test the idea that they express Mogollon diffusion or even immigration of small groups of Mogollon peoples.

Much of the research design for the examination of Rosa phase remains can be taken from that already presented for the Pine River drainage unit. However, when the phase series - Rosa, Piedra, and Arboles - is considered together, then problems of upstream leapfrog settlement movement can be examined (Eddy 1974). Especially the role of arroyo cutting, internecine warfare, and status differential under the impact of land competition should be investigated in detail.

3.3.10 Piedra River Drainage Unit

3.3.10.1 Boundaries of the Unit. Like the Pine River just to the west, the Piedra flows due south from the San Juan Mountains to a junction with the San Juan River at the former townsite of Arboles, Colorado (Fig. 3.16). The valley is broad and flat in its lower reach being flanked by several levels of stepped, cobble mantled Pleistocene terraces upon which prehistoric sites are located. One major tributary joins the Piedra and that is the Stollsteimer Creek forming a confluence from the east. At the V-shaped junction lies multiple level Stollsteimer Mesa upon which Roberts (1930) found a particularly rich array of Pueblo I and early Pueblo II age pithouse sites. Still in the middle reach is Chimney Rock Mesa; actually a monoclinial "cuesta" upon which Jeancon (1922), Roberts (1922), and Eddy (1977) have studied late Pueblo II age sites (Fig. 3.17). Above this point the river cuts through foothills of the San Juan Mountains in a narrow canyon. The boundary between middle and upper river is sharply marked by the east-to-west path of Highway U.S. 160. The Piedra River was named by the early Spanish explorers of the 17th century for its cobble-rock bed, "piedra" meaning stone in Spanish (Bolton 1972). Another early Spanish name of significance in the Piedra Valley is Chimney Rock; actually two free-standing pinnacles of sandstone named by the Escalante expedition as

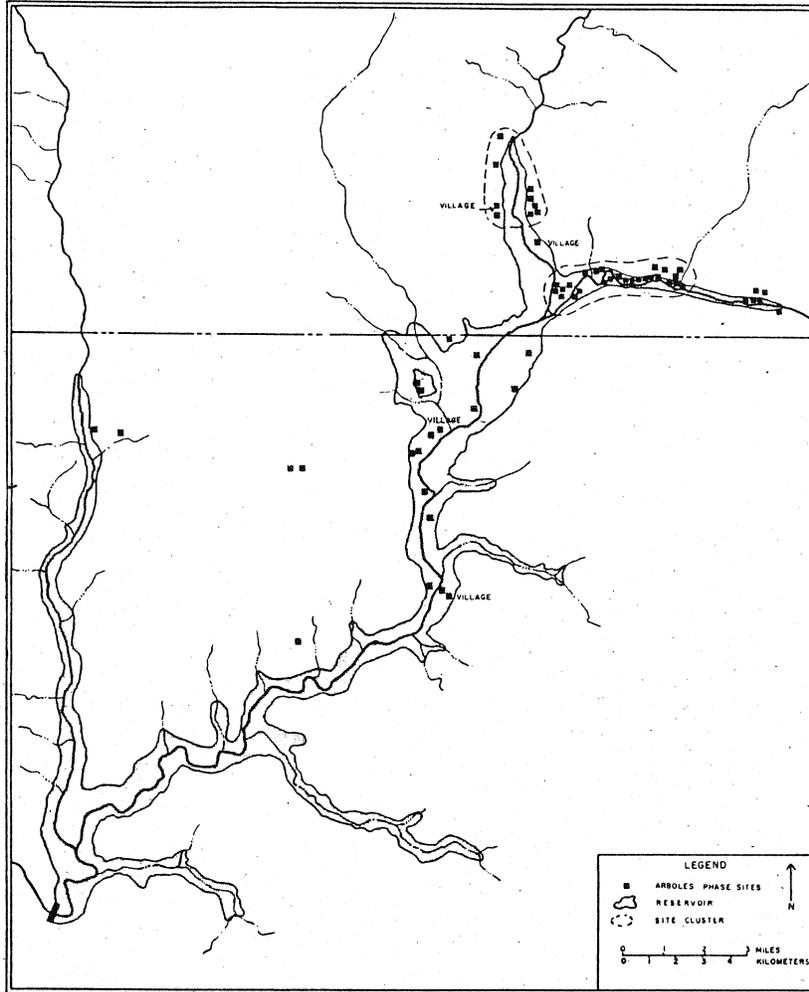


Figure 3.15 Map showing site distributions for the Arboles Phase of the Navajo Reservoir area (From Eddy 1972: Fig. 8).

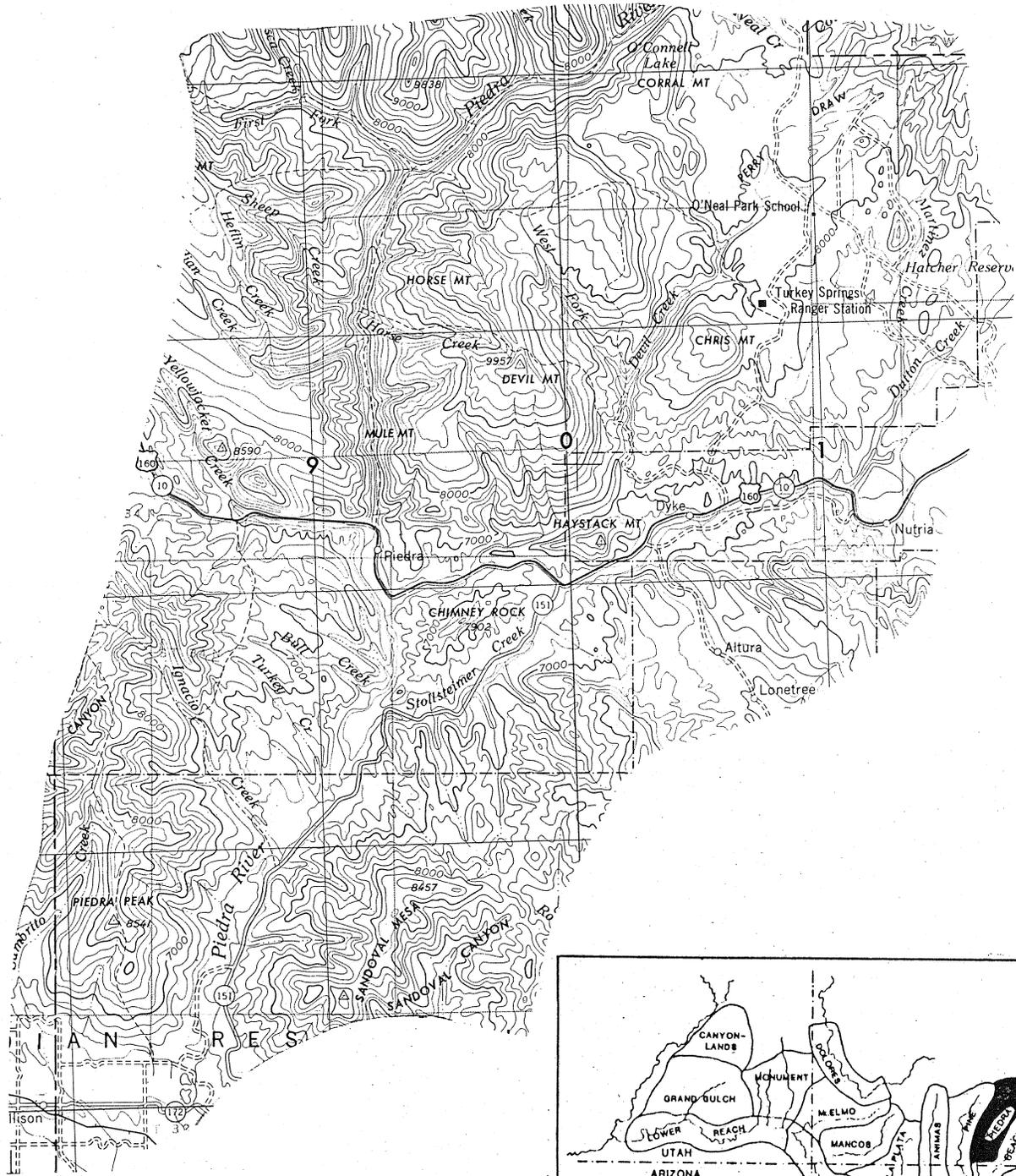
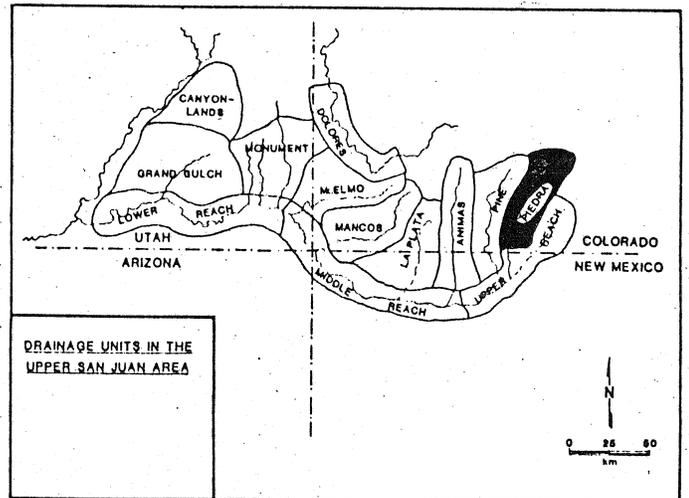


Figure 3.16 Piedra Drainage Unit (From USGS 1:250,000 Durango map).



"Piedra Parada" (see Miera y Pachecho's map in Bolton 1972, Cutter 1977). In the lower reach of the river just above its mouth, is found the Piedra Peaks above the right bank of the river and Sandoval Mesa overlooking the left bank.

3.3.10.2 Temporal Framework for the Unit. The rich cultural resources of the Piedra have been investigated by many different archaeologists over the years as summarized in Eddy (1977) and Tucker (1981). Early work was conducted by Jeancon (1922) and Roberts (1922) in the employment of the Colorado Historical Society. Later Roberts (1930) returned to the field to excavate on the Stollsteimer Mesa where he defined the Piedra Phase and laid the research background for the Arboles Phase. Still later work in the lower portion of the drainage unit was conducted by the Navajo reservoir project personnel (Dittert et al. 1961, Dittert and Eddy 1963, and Eddy 1966, 1972). Adams (1975) amplified the Reservoir studies through doctoral dissertation studies of upland occupation just to the east of the Piedra River confluence. In addition, many small culture resource management studies have been conducted for the San Juan National Forest and the Southern Ute Tribe who have major landholdings in this area. These various researches have defined a local sequence of phases which includes: Rosa, Piedra, Arboles, Chimney Rock and Gobernador (Fig. 3.11). Notably absent from the drainage unit is any evidence of either Los Pinos or Sambrito Phase occupation.

As shown on Figure 3.12, the earlier settlements of Basketmaker II age lie to the west while later Pueblo II age settlements, such as those of the Chimney Rock phase, are found away from the main stem of the San Juan River and at high elevation near the base of the San Juan Mountains. Thus throughout the whole history of the Anasazi tradition, occupation in the upper basin of the San Juan exhibits a full cycle in terms of its environmental adaptation. Early village agricultural sites first appear in the upper ends of the tributary rivers followed by colonization of the lower elevation reaches of the main stem river. After A.D. 800 the upper tributary habitat is again repopulated with final abandonment of the upper watershed made just after A.D. 1100 in late PII times. Changing regimes of temperature and moisture are thought to be responsible for this adaptive cycle as these climatic parameters have effected corn agricultural potential (Schoenwetter and Eddy 1964, Dean and Robinson 1977, Eddy 1974).

Rosa Phase (A.D. 700-850). As shown on Figure 3.14, early Pueblo I occupation of the lower reach is moderate with no site cluster of sufficient density to warrant the designation of a community. Most of these sites are a single deep pithouse with associated surface jacal storage and/or living unit. Less common sites are composed of multiple pithouses, surface units, cairns, and hearths, as well as one cooking area and a campsite (Dittert et al. 1961:Fig. 25). Pithouse sites continue in moderate densities upstream along both sides of the river as far as Highway 160.

Piedra Phase (A.D. 850-950). During the late Pueblo I times the density of pithouse sites increased in the Piedra River junction area sufficient to constitute a Simple, Nuclear-Centered community as mapped on Figure 3.14. Further, Roberts' (1930) work on the Stollsteimer shows that the Pueblo I occupation there also warrants community designation during both Rosa and Piedra phase times.

Definition of the Piedra phase was first made through the excavations of late Pueblo I sites located upon Stollsteimer Mesa (Roberts

1930). The critical criteria for recognizing the phase unit, beside the pithouse architecture which Roberts thought were reservoirs, is the presence of decorated Piedra Black-on-white, Piedra neckbanded, and Piedra gray (Eddy 1966).

Arboles Phase (A.D. 950-1000/1050). Early Pueblo II occupation was initially recognized by Roberts (1930) from his Class C ruins dug on Stollsteimer Mesa although the phase name was not applied until some years later through research conducted in the upper end of the Navajo Reservoir (Dittert et al. 1961). Throughout the Piedra Valley there are a scattering of small masonry PII rooms with corrugated pottery such as the excavated Railroad and Martinez sites of the lower reach. In general, as one moves upriver along a timeline of A.D. 1000, the number and variety of surface masonry units increases until a peak in structural complexity is encountered on and around Chimney Rock Mesa (Eddy 1977). However, the distinctiveness of the Chimney Rock materials has led to designation as the contemporary Chimney Rock phase. The upstream relocation of settlements, first noted in the Navajo Reservoir after A.D. 800, continued through PII times with culmination at Chimney Rock.

Chimney Rock Phase (A.D. 950-1125). Upon Chimney Rock Mesa, an area administered by the San Juan National Forest, are found hundreds of PII archaeological mounds containing surface masonry houses (Eddy 1977, Tucker 1981) (Fig. 3.17). Their spatial distribution has been examined through nearest neighbor analysis to reveal seven named site groups thought to represent contemporary prehistoric communities (Tucker 1981). The larger of these communities follows the Simple, Nuclear-Center format with central place village. These PII villages often have a Great Kiva which is thought to serve a social integration purpose for the entire community (Eddy 1975).

One of these communities, named the High Mesa Group, has as a member site the Chimney Rock Pueblo which, judging from such architectural attributes as kivas, wall masonry, and L-shaped village layout, is a Chaco colony, a recognized outlier in the Chacoan interaction sphere (Joint Management Plan 1982). This, as well as sites of Mesa Verde cultural affiliation, constitute the first Colorado prehistoric entry on the National Register of Historic Places. Through the Chimney Rock Pueblo, it is thought that contemporary (A.D. 1075-1125) administrative priests at Chaco exploited local Mesa Verde peoples at Chimney Rock for shipment of resources 93 miles into Chaco Canyon, itself. Although the exact nature of these resources had not been identified, David Breternitz (personal communication) has speculated that the local availability of elk and mountain sheep would make dried meat, called "jerkey," a likely export food to be sent to Chaco. Although the return goods sent to Chimney Rock over the Chacoan road system is again unknown, still it is significant that Chaco B/w trade pottery does increase at Chimney Rock during PII times and these pots were likely the shipping containers (Eddy 1977).

3.3.10.1 Research Problems. Problem investigations to be addressed to the Pueblo I and II remains of the Piedra River drainage unit are a repeat of those described for the Upper Research drainage unit. Major emphasis could deal with the isochronic mapping of early puebloan remains in time periods extending between AD 700 and 1000/1050 so that the concept of upstream settlement relocation can be tested on a transect extending from the mouth of the Piedra River up to Chimney Rock

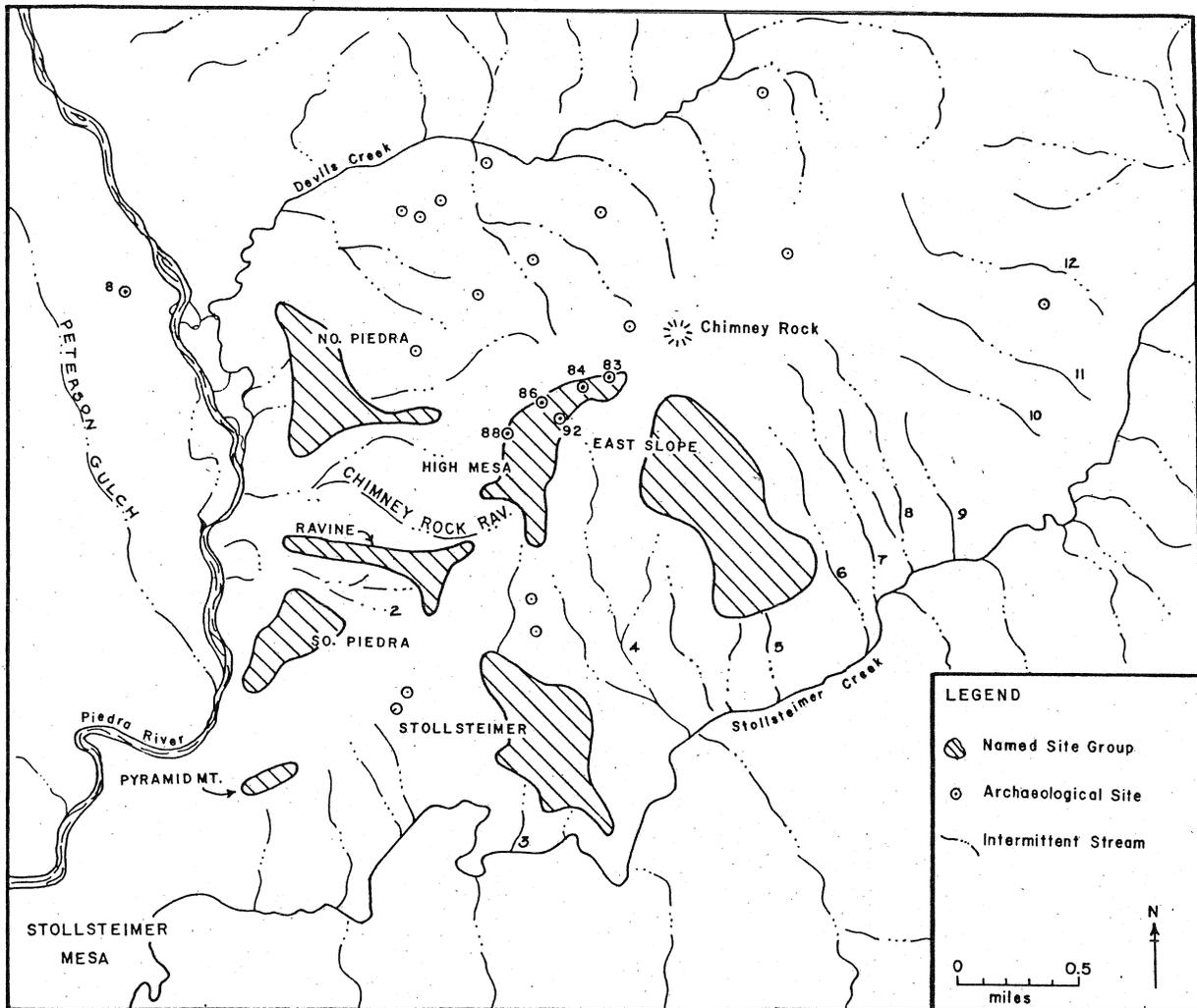


Figure 3.17 Map showing site distributions for the seven named Chimney Rock Phase site groups (From Eddy 1977:Fig. 4).

Rock and Highway 160; that is, on a north-to-south line throughout the lower and middle reach of the Piedra River drainage unit.

Other problem areas to be investigated should confront the spatial variation along this north-to-south transect in the appearance of corrugated pottery and masonry architecture. In addition, functional problems can be examined to include technology, settlement, demography, and community organization.

Concerning the Chimney Rock phase, the distribution of sites should be further examined including the few late PII settlements which are known to lie outside of the Archaeological Area designated by the San Juan National Forest. Known examples of such outliers are 5AA8 located above Petersen Gulch to the west of the Piedra River (Eddy 1977:Fig. 4) and a site, now destroyed, which once was present on a coal lease just to the southeast of Chimney Rock in the Stollesteimer Creek (USGS, 7.5 minute series, Chimney Rock quadrangle). The functional relationship between these, and other still to be discovered outliers, should be examined. Further work needs to be conducted on land use and particularly farming practices carried out by PII peoples of the Chimney Rock area. How were these people able to live upwards of 1000 feet above the floor of the surrounding perennial river valleys? Why were their settlements pushed upwards and away from major sources of potable water? Much needs to be learned about their settlement patterns, demography, technology, and community organization. For instance, what was the role of Great Kivas in their religious life? Were small kivas, sometimes called clan kivas, present within the seven named communities (Fig. 3.17)? What about the role of PII age pithouses whose presence is suspected but not yet demonstrated through excavation? And finally, what about the abandonment of Chimney Rock Mesa? Many scholars see the exodus of these people, ceramic dated about AD 1125, as a corollary to the collapse of the Chaco Canyon Regional System and the beginning of the end of Anasazi occupation in the Four Corners Region of the San Juan River Basin.

3.3.11 A Model of Formative Cultural Process for the Southwestern Colorado Study Area.

3.3.11.1 Introduction. The intent in presenting this model of cultural process is not to provide a comprehensive explanation for Formative temporal and spatial variation within the Southwestern study unit. Rather, the purpose is to provide a simple framework that can be used in addressing a limited portion of the available data base. The model is based on the "punctuated equilibria" concept as presented by Berry (1982:3-5). That is, process is viewed as periods of relative stability and conservatism separated by times of stress, upheaval and population movement rather than a smooth gradual transition or ascent. The model basically relies on environmental variability and population flux as the prime movers in cultural systems; a postulate is that migration plays a much larger role in the prehistoric southwestern United States than is accepted in traditional views (Berry 1982:4). The model presents process as a regional phenomenon. That is, in general, local change is part and parcel of larger regional patterns in environment and culture, and local change cannot be explained without a regional perspective. The model is based on concepts originally presented by Euler and his associates (Euler et al. 1979), by Berry (1982), by Earle and Christiansen (1980) and by Stuart and Gauthier (1981). Some of the tenets of the model were developed by the Dolores Archaeo-

logical Program staff and were presented at the Second Anasazi Symposium in Farmington, New Mexico (Kane 1983b, Lipe et al. 1983, Petersen 1983).

3.3.11.2 Limits of the model. The model addresses horticultural human systems in the prehistoric American northern southwest. It is probably not applicable to groups practicing hunting and gathering or foraging subsistence strategies or to groups incorporating a chiefdom or higher level of social organization.

3.3.11.3 Underlying assumptions of the model. The model is based on several assumptions about the nature of human and environmental systems in general, about the Anasazi culture system in particular, and about the relationship between the Anasazi system and the prehistoric environment. These baseline assumptions are as follows.

First, human systems are sensitive to variation and flux in the environmental system and will respond to changing environmental conditions.

Second, Anasazi systems relied on horticulture/agriculture as a primary subsistence means. That is, a large proportion, if not most, of the caloric intake into the system was in the form of harvested crops or associated resources (such as ruderal plants or garden hunted fauna). Given a dependence on horticulture, Anasazi systems were especially sensitive to environmental variables that affected crop yields. These included climate in the form of adequate precipitation and growing season, and fertility of soils. Soil fertility can be viewed as a static variable with little or no temporal change. Soil exhaustion was apparently a long term phenomenon that apparently had little effect on Anasazi systems.

Next, the prehistoric climatic record for the American southwest exhibits a series of drought cycles with major droughts occurring approximately every 450 years and lesser droughts every 225 years (Euler, et al. 1979:Fig.4). Variability in elevations within the northern Southwest resulted in some areas being favorable for horticulture during drought episodes while other areas were relatively unfavorable. During more mesic intervals, favorability was usually reversed. In general, "highland" areas (6600-7400 ft.) are characterized by relatively greater precipitation but a shorter growing season when compared to "lowland" (less than 6600 ft.) areas. Hence, highland areas would be characterized by a greater relative "carrying capacity" during warm dry episodes, but would be less desirable during cool wet periods. The periodic droughts can be viewed as episodes of "long term" (greater than a decade) stress for Anasazi groups settled in lowland areas.

Next, the Anasazi systems reacted in several ways when faced with long term stress resulting from a major warm dry episode or drought. One response was movement; this was in most cases long range migration to high elevation areas (termed "refugia," Berry 1982:108); another response was technological intensification including modification of agricultural and storage techniques, and physical manipulation of water and land; a third response was organizational intensification including structural modifications at the household and interhousehold levels, and greater investment in agricultural labor.

Next, movement in human systems can be characterized as "spread" or slow expansion, probably as the result of internal growth in a basically stable system, or as "migration," or long distance movement in a basically unstable system undergoing stress.

Next, human systems in a relatively benign environment will favor efficiency in their economic practices. That is, they will adopt a "satisfying" or "least cost" (Earle and Christenson 1980) strategy when fulfilling economic needs. Such systems can be termed "efficiency" systems (Stuart and Gauthier 10-24). Human systems faced with long term stress and an unstable environment favor output production in their economic practices; that is, they adopt "optimizing" strategies. Such systems are termed "power" systems or trajectories (Stuart and Gauthier 1980:10-24).

Finally, in situations where efficiency and power systems are in competition for land and resources, the power system will have an adaptive advantage through its emphasis on intensive land use and population growth. The efficiency groups are forced to vacate or are assimilated into the power society.

3.3.11.4 Mechanics of the model. The model suggests that Anasazi systems are characterized by growth/decline or stable/instability cycles that are correlated with climatic cycles. During "benign" periods, here equated with cool mesic conditions, Anasazi groups were primarily settled in lowland areas and pursued "least cost" efficiency subsistence and demographic strategies. Slow rates of population growth resulted in gradual expansion and "spread" into more marginal highland areas. During "stress" episodes, here equated with 30-50 periods of warm and dry or drought climate, Anasazi groups reacted by migration to high altitude refugia, and by technological and organizational intensification. This cyclic process is summarized by Berry (1982:120):

The situation, then, may have been something like the following: (1) during drought periods, a portion of the Plateau Anasazi population crowded into the few existing microenvironments that could support maize farming; (2) the remainder left the Plateau, most likely moving into the southern Basin and Range province of Arizona and New Mexico and the southern tip of the Rocky Mountain province in the area around Santa Fe; (3) with the amelioration of climatic conditions, significant numbers of people returned to the Plateau.

Subsistence and demographic strategies favoring output at the expense of efficiency were adopted. Such power systems overwhelmed indigenous efficiency groups which rapidly disappeared. The Anasazi left the high elevation refugia after a relatively short period (50-100 years) because of climatic shifts to more cool and dry conditions. With the shift, growing seasons became shorter resulting in the highland areas becoming more marginal.

Based upon the regional reconstruction by Euler and his associates (Euler et al. 1979:Fig.4) Table 3.2 is a summary of expected Anasazi system responses in light of climatic fluctuations.

3.3.11.5 Implications for the Southwest Colorado Study Area. The southwest study area provides a good test case for the model. Specific high altitude refugia within the study unit are predicted to be as follows: (1) the southern portion of the Dolores Drainage with elevations between 6600-7400 ft.; (2) the northern portion of the McElmo Drainage Unit and the Colorado Portion of the Monument Unit; (3) the Mesa Verde in the Mancos Drainage Unit; (4) the northern portion of the

Table 3.2 Southwest Climatic Cycles and Expected Anasazi System Responses

Period	Climate ¹	System Characteristics
AD375-580	cool, mesic cycle	efficiency systems, simple organization, moderate population growth and expansion ("E" system)
AD 580-620	warm and dry interval (X- $\frac{1}{2}$ drought)	some long range migrations, power systems established, more complex organization and agricultural technology ("P" system)
AD 620-850	cool and mesic	"E" systems
AD 850-920	warm and dry (X/Y drought)	"P" systems, migrations and other reactions more extreme than during X- $\frac{1}{2}$ drought
AD 920-1130	cool and mesic	"E" systems, movement from high altitude refugia during first part of period
AD 1130-1170	warm and dry (Y- $\frac{1}{2}$ drought)	shift to "P" systems
AD 1170-1400	cool and mesic	"E" systems
AD 1400-1470	warm and dry (Y/2 drought)	mass migration, "P" systems

¹Reconstruction based on Euler et al. 1979. Fig. 4.

LaPlata Drainage Unit; (5) the northern portion of the Animas Drainage Unit; (6) the northern portion of the Pine Drainage Unit; (7) the northern portion of the Piedra Drainage Unit including the Chimney Rock District and (8) the northern portion of the San Juan Drainage Unit, Upper Reach.

Thus, the Dolores Drainage Unit and northern or high elevation portions of other drainage units are predicted to be high altitude refugia and should exhibit exponential rates of population growth during drought episodes (beginning AD 530, 850 and 1130). These high altitude areas should exhibit a population decrease corresponding with the end of the droughts (AD 620, 910 and 1170). Opposite trends in population levels should be evident in lowland areas within the study unit. New immigrant groups in the refugia should exhibit modifications and increased complexity in agricultural technology and organization. This should be evident in architectural patterning and artifact assemblages. Previously existing forms of architecture and material culture representing indigenous efficiency groups should quickly disappear. The improved technologies and modified organizational characteristics should be evident in the lowland areas after the end of the drought, where, according to Berry (1982:3-4), "forced coexistence and coalescence of immigrant groups in these various refugia produced the syntheses of material culture traits that were to become diagnostic of the ensuing stages."

3.4 Protohistoric/Historic Stage

3.4.1 Navajo Tradition. The Navajo Tradition, located in northwestern New Mexico and in a restricted portion of southwestern Colorado, is a result of unique historical processes of migration and acculturation. Part of a larger southward drift of Athabascan speakers, the Navajo and their linguistic cousins, the Apache, are thought to have originated in the Canadian subarctic boreal forest. From this original homeland, they moved southward through the High Plains generally paralleling the front range of the Rocky Mountains. Remnants of this drift migration of small bands are the Dismal River Apache of Kansas, Nebraska, southeastern Colorado, and eastern New Mexico (Gunnerson 1960). From the southern High Plains springboard, the various Athabascan bands pivoted at right angles from their southward migration to enter the American Southwest of New Mexico and Arizona, moving in a westerly direction. Based on this historical reconstruction, one of the first Athabascan groups to leave the Plains and enter the Southwest were the people who later became known as Navajos. For this reason, and because of intimate contacts with Pueblo refugees and Spanish colonists during the 18th century, the Navajo culture differs significantly from other Athabascan groups now called Apaches. What we know of this Navajo tradition, once it had become adapted to the Colorado Plateau, is documented as a local sequence of archaeological phases outlined on Figure 3.18.

3.4.1.1 Navajo Culture History. The first evidence of Navajos in the Southwest is derived not from the archaeological record, but rather from Spanish historical documents. This information comes from an archival source dated 1598 although a mention of the Navajos by their present name is somewhat later in 1626 (Hester 1962:Fig. 25; Schroeder 1963:5-6, Fig. 1). These sources have led ethnohistorians to surmise that the Navajo were already located in the upper San Juan Basin in

their ancestral homeland, the Dinetah, by A.D. 1550. However, actual archaeological evidence of these earliest Athabascan speaking migrants is presently dated no earlier than A.D. 1640 for the general north-western New Mexico area (Schaafsma 1979).

In order to trace the culture history of the Navajo tradition, a local sequence of four genetically related phases is described: Piedra Lumbre, Gobernador, Cabezon, and Reservation (Fig. 3.18). A fifth phase, the Dinetah, is questioned because of the lack of in-place Navajo artifacts and sites of demonstrable pre-1700 age (Eddy 1966:458-459). This taxon will not be discussed further.

Piedra Lumbre Phase (A.D. 1640-1710). The earliest known archaeological manifestation which can unequivocally be termed Navajo is the Piedra Lumbre Phase of the Chama Valley, Abiquiu District (Schaafsma 1979). From site survey and excavations at the type site, AR-4, Schaafsma (1979:abstract) tells us that the Peidra Lumbre Phase is characterized by an assemblage of:

- (a) structures of dry-laid masonry,
- (b) Rio Grande (trade) Pueblo pottery,
- (c) lithic tools,
- (d) limited metal artifacts,
- (e) settlement pattern ranging from single masonry structures in isolation to communities with as many as 26 loosely grouped structures; and,
- (f) evidence of . . . sheep husbandry.

These remains mark a time when the Navajos first differentiated from other Apachean peoples. Further, the presence of sheep bones indicates that acculturation under Spanish colonial contact was already underway with a shift in the subsistence economy from hunting-and-gathering and small scale horticulture to a mixed economy of aboriginal practices combined with herding (Schaafsma 1979:2).

Gobernador Phase (A.D. 1700-1775). Between A.D. 1700 and 1775, the Navajo had migrated further into northern New Mexico and for the first time entered what is now southern Colorado by extending their range north of the San Juan River by moving up the Piedra River Valley nearly as far north as Chimney Rock Mesa (see Section 3.3.10). The distribution of Gobernador Phase sites at this time was widespread to include such research districts as the Gobernador, Navajo Reservoir, Piedra River, and Bisti-Star; the latter being located just west of the present-day Navajo Indian Reservation (Huse et al. 1978).

During this time, the Navajo were serving as hosts to Jemez and other Pueblo Indians of the Rio Grande Valley who were fleeing the reconquest of New Mexico by Spanish soldiers under command of de Vargas. Following the twelve year-long Pueblo revolt (A.D. 1680-1692), de Vargas confronted each of the many rebelling native villages during the years 1692 to 1698. Reaction to the return of the Spanish colonial forces were varied with some native people capitulating on sight, some manning local defensive topographic features, and still others fleeing long distances to live temporarily with potentially hostile peoples such as the Navajos of the upper San Juan and the Apaches in Kansas. During this period of enforced and highly intimate contact, the Navajo adopted many customs of their Pueblo Indian guests of which economic and religious practices were prominent areas of acculturative change. While this cultural mixing was underway, considerable stress was being applied to the social fabric by a continuous series of raids. The Navajos and

RESEARCH DISTRICTS

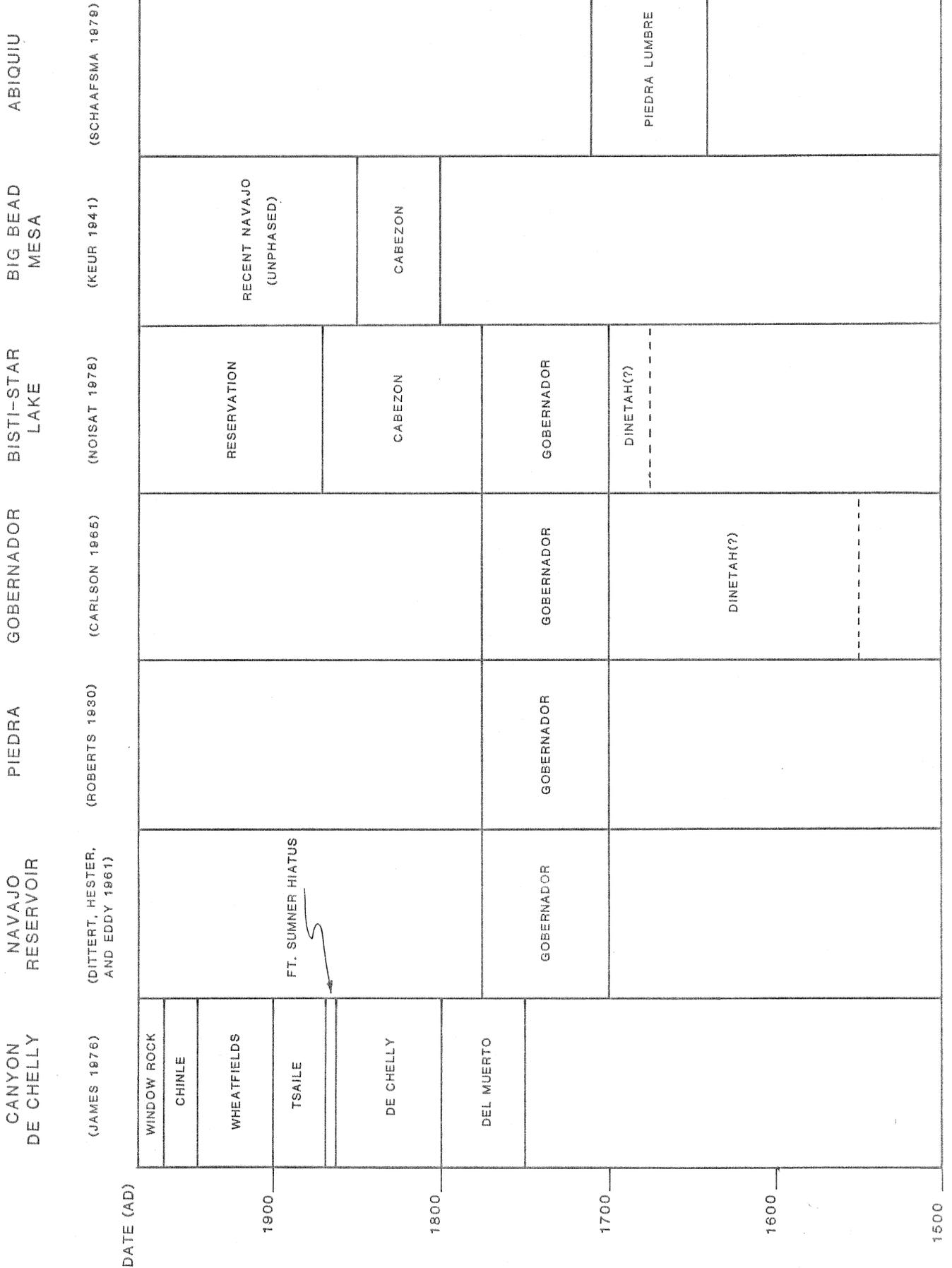


Figure 3.18 Chart showing temporal occurrence by research district for phases of the Navajo Tradition, New Mexico and Colorado.

their Pueblo allies, who often occupied strategic natural eminences in the mesa lands of the Gobernador and other districts, were forced to repulse raids from the north which were mounted by Utes and their High Plains allies, the Comanche; the latter being equestrian bison hunters resident within southeastern Colorado. To further compound the pressure, Spanish colonial military forces were marching from the Rio Grande River valley to attack the Navajo fortifications for Indian slaves and in retaliation for Navajo raids which swept the Rio Grande Valley for booty.

As an archaeological manifestation, the Gobernador Phase was originally defined from excavations by Farmer (1942), Keur (1944), and Earl Morris (Carlson 1965). The artifact assemblage upon which the Gobernador Phase is defined has been summarized by Dittert, Hester, and Eddy (1961:246) as follows:

... forked stick hogans; Pueblitos; ramadas; fortified sites; undercut cooking pits; metate rests; slab mealing bins; cist burial; cremation (?); pictographs and petroglyphs; Dineta Utility pottery; Gobernador Indented pottery; Puebloan trade wares; chipped artifacts; slab metate with two-hand mano; oval, single groove arrow shaft smoothers; gilsonite pendants; trade stone material from the Abiquiu area; bone awls; uninterlocked close-coiled two-rod-and-bundle basketry; wooden basketry awls; fire drill and hearth; wooden scoops; Yei; Twin War God deities; sheep and horses; weaving; Olivella shell beads; distinctive types of corn and beans; stone masonry hogans; cribbed log hogans (?); sweat lodges; wooden plows (?); notched-log ladders; digging stick; dance paddles; Macaw fetishes; metal; and glass beads.

An interpretation of these historical and archaeological data leads to the conclusion that the Gobernador Phase was a time of intense culture change under the stress of raiding and other forms of cultural contact. The principal model for change was that presented by the Jemez and lesser numbers of other Rio Grande Pueblo Indians. The main areas of Navajo society which exhibit change during this 18th century period were the economy and religion. Economic practices, which had first begun to express modification from the High Plains practices of hunting, gathering, and limited horticulture, now showed additional evidence of European and Puebloan procurement strategies. These include intensified herding of sheep, use of horse for long distance hunting of High Plains bison herds, horse-mounted raids for loot and booty to be obtained from the Spanish colonial farms of the Rio Grande Valley and trade with both the Rio Grande and Western Pueblo villages.

Religion was another institution in Navajo society which was experiencing profound change. From the Pueblo guests, the Navajo were learning masked dances and the symbolism of a new pantheon of natural and heroic deities. The Navajos, for their part, reworked this Puebloan theology into certain unique religious themes of which the Yei curing ceremonies are most important. However, other themes were also adapted such as nature and War gods.

Cabazon Phase (A.D. 1775-1868). By A.D. 1750 the Navajo began to be forced out of the upper San Juan Basin by Ute raiding pressure and this process was largely completed by 1775 (Bolton 1972, Cutter 1977). The

enforced relocation of the Navajo was to the southwest and west into what is now the present-day Reservation area. But this area covered much more land to include country south to Mount Taylor and as far west as the Hopis of northeastern Arizona. As a result of this enforced relocation, the Navajo came under increased acculturative influence from European settlers, first from Spanish colonists and later in historical order from Mexican settlers and ultimately those of the United States as the Southwest changed ownership from one nation to another. The Cabezon Phase, first described by Keur (1941) from her investigations at the type locality of Big Bead Mesa, covers this period of increased European contact. Much of the European cultural encounter was of a hostile nature with Navajo raiding farms and ranches for stock and manufactured goods. For their part, the Europeans retaliated through punitive raids on Navajo settlements to recover stolen sheep, goats, horses, household effects, and religious items (Brugge 1980). Much of this hostility of raid and counter-raid was terminated by the Kit Carson campaign in which most but not all of the Navajo were rounded up and taken to Fort Sumner on the Pecos River of eastern New Mexico where they were held in exile from A.D. 1863 to 1868. Upon their return in 1868, they were placed on a reservation where they live today. For a description of the Cabezon Phase taken from survey research in the Bisti-Star Lake district, see Noisat (1978:89). The corresponding phase sequence for the western Navajo of the De Chelly sequence is provided by James (1976)(Fig. 3.18). Reservation Phase (AD 1868 - present). Navajo culture of the United States government designated reservation is characterized by acculturative forces emanating from Christian missionaries, European owned trading posts, and the school system of the Bureau of Indian Affairs (BIA). Definition of this phase has been made by Noisat (1978) from ethnographic information and a pedestrian survey of the Bisti-Star District in which large numbers of recently occupied Navajo sites were studied. The most important settlement expression of the Reservation Phase is the homestead. This settlement type consists of a cluster of seasonal campsites and permanent hogans of a close-knit, matrilineal kin group (Noisat 1978:81). The sheep husbandry and curing chant religious customs described from earlier phases are important elements of contemporary Navajo culture which have been brought forward from earlier times. Raiding and long distance bison hunting have been dropped as viable economic pursuits whereas new practices are entrance into the national cash economy through wage labor and the sale of such crafts as Navajo rugs and silver and turquoise jewelry.

3.4.1.2 Navajo Lifeways. As a means of describing Navajo archaeological culture, a lifeway reconstruction will be made at one point in time. This synchronic picture will be taken from the Gobernador Phase (AD 1700-1775) for two reasons: 1) first because this cultural pattern is the only time that the Navajo Tradition was resident in southwestern Colorado, and 2) also because the full blown Navajo culture recorded ethnographically as the Reservation Phase, was first evident in the archaeological record during this 18th century time period.

Lifeway topics to be discussed include: subsistence, settlement, demography, social organization, and foreign relations. A processual treatment of the Navajo Tradition will be made in a later section.

The basic subsistence economy of the early Navajo reflects an aboriginal pattern originally derived from the High Plains and likely as far back as the proto-Athabascan culture of the Canadian boreal forest.

This pattern focused on mixed hunting-and-gathering of animals and plants. But by the time the Athabascans had adapted to the central High Plains, small scale corn horticulture had been added to the subsistence economy. To this agricultural food production was added sheep herding as evidenced as early as AD 1640 in the Chama Valley. By the time that the Navajo had located in the upper San Juan Basin, raiding for Spanish colonial booty, long distance trips by horseback to hunt High Plains bison, and long distance trade with both the Rio Grande Spanish and the Pueblo Indians were important supplements to the home economy.

The basic residential structure of the 18th century Navajo settlement pattern was the forked-stick hogan. These structures have been discovered as isolated domiciles where they likely housed a nuclear family of three or four people. When hogans are found in sets of two to three, they likely reflect an extended family; perhaps matrilineal in descent and matrilocal in residence to judge from modern Navajo customs. But when larger contemporary hogan clusters appear, then a local group or outfit is probably indicated. In the Gobernador country south of the San Juan River, defensive pueblitos and masonry walled compounds indicate defensive fortifications which served as a refuge during times of enemy raids.

Navajo demography has not been easy to reconstruct because few 18th century burials have been recovered which are necessary for an understanding of population sex-age structure. It is thought that the missing burials were in fact tucked into cliff crevices or other obscure locations where they are disassociated from residential and in-transit campsites. For this reason, discovery has been hampered with a consequent loss of information. Reconstruction of demography based on hogan estimates led Dittert, Hester, and Eddy (1961:248) to estimate 840 persons in the Navajo Reservoir District during the 18th century. This would equal 205 persons per generation during this 75 year period.

Foreign relations between the 18th century Navajo and neighboring peoples were uneven at best. From the Ute and Comanche they were busily defending themselves against harassing raids. Eventually these measures proved insufficient and the Navajo emigrated from the upper San Juan to the vicinity of their present-day reservation lands. Relations with the Spanish colonist of the Rio Grande Valley were equally stormy with the Navajo raiding for plunder and being raided in return by Spanish military forces for the recovery of these goods and for slaves. More equitable relations were maintained between the Navajo and Pueblo. The Jemez and other Rio Grande refugees were hosted within Navajo settlements. Even the stay-at-home capitulating Pueblo Indians showed friendly relations with the Navajo based on the extensive and long distance trade conducted between the upper San Juan and the Rio Grande Pueblos, Zuni-Acoma, and Hopi Indians.

3.4.1.3 Cultural Process in the Navajo Tradition. The basic cultural processes operating within Navajo Culture between the 17th and the 19th centuries were migration and acculturation. These two processes have been examined in depth by Hester (1962) in which he has been able to demonstrate that a basically band organized hunting and gathering society has been transformed to one tribally organized and supported by sheep husbandry. These changes have come about through extensive and intensive cultural contact between the Navajo and their neighbors.

Almost continual migration over the years has led from the origins of the tradition in the Canadian boreal forest, a conclusion reached from linguistic evidence and certain circumpolar traits such as the use of heartline motif in rockart, through a southward drift on the High Plains, to a series of penetrations into the American Southwest of New Mexico and Arizona. The most northern of these penetrations was by a group of Athabascan speakers who became the Navajo. The original name of this group applied by the Spanish was "Apache de Nabajoo" indicating their recent separation from the remaining groups of Athabascan speakers who became the various named Apache bands.

Growth of the Navajo Tradition was a result of acculturation in which selective economic and religious traits were borrowed from neighboring peoples and incorporated into the aboriginal Navajo culture to form a distinctly new cultural blend. Religious traits were largely absorbed from the Refugee Pueblo Indians whereas economic traits, such as animal husbandry and the growing of orchard crops, were learned from the Spanish. Raiding and long distant bison hunting were likely acquired by copying the Utes and particularly the Comanche who were allied with the Utes during the first quarter of the 18th century. Adoption of the horse for raiding and bison hunting was essential to these endeavors. And finally, food production through corn horticulture, a subsistence practice noted as early as the 17th century, may well have been brought into the Southwest from the High Plains. Here it could have been learned from the riverine village farmers of the Great Plains during some proto-Apachean stage predating the 18th century Dismal River Aspect.

3.4.1.4 Research Problems. If the presentation of the preceding section sounds too cut-and-dried, let us not be deceived. Much remains to be researched on the Navajo. For instance, the pre-1700 archaeology necessary to complement the archival documentation of 16th and 17th century Navajo life is still in its infancy. While Schaafsma (1979) has done an admirable service in defining the Piedra Lumbra Phase of these centuries, still the poorly understood Dinetah Phase of the upper San Juan leaves much to be desired as a satisfactory taxon. And there still remains a gap in the archaeology of the Navajo from the historical estimate of AD 1550 until AD 1640 during which time we have no Navajo archaeology. This is a particularly important set of missing data since the earlier documents are skimpy in cultural information and leave much to be desired in terms of descriptions of economic and religious institutions.

Another problem domain is that of human biology and demography. Pre-19th century Navajo burials are urgently needed for study by physical anthropologists who could investigate such subjects as sex ratios, age profiles, skeletal diseases, dental wear, genetics, and burial customs to mention just a few questions of cultural biology.

The historical and archaeological records both indicate considerable border warfare during the 18th and 19th centuries within northwestern New Mexico and southwest Colorado. Study of the border sites and fortifications is essential for an understanding of the roles of warfare in human relations. What are the drives and function of such conflict? How do societies adjust to such pressures and why do they incorporate warfare into their institutional fabric? These and many other research questions remain to be answered with protohistoric Ute and Navajo data to be found within southwestern Colorado.

3.4.2 Ute Tradition. The Southern Ute Indians which today inhabit a long narrow east-west strip of land in the southern portion of the study area represent a late 1800s placement of three former Ute bands on reservations. Formerly, Ute bands ranged throughout western Colorado and much of Utah. It is an interesting paradox that, as we shall see later, the Ute have been historically documented as occupying the present study area and the surrounding area for more than three centuries, yet we know virtually nothing of Ute archaeological context. In large part this problem is associated with pre-reservation Ute lifeways and the resultant difficulty in properly identifying early Ute sites. Within this general context then, research problems related to the origin and utilization of southwest Colorado are seen as significant.

3.4.2.1 Ute Culture History and Lifeways. The time and direction for entry into western and southern Colorado by the Numic-speaking Utes have not been determined, but probably post-dates the Anasazi abandonment of the area with the movement coming from the west (cf. Madsen 1975, Schroeder 1965, Stewart 1966). The only chronometrically-derived archaeological data for Ute occupation is the dendrochronological determination by Dean (1969) that one of the structures in the Basketmaker II Talus Village near Durango is actually Ute in origin and dates to just about A.D. 1600, and perhaps as late as 1774. The earliest historic period reference made by the Spanish regarding the Utes was made in 1626 and by the time of the Pueblo Indian Revolt of 1680, the Spanish had made a treaty with the Colorado Utes and some Spanish had visited their country (Schroeder 1965:54). It is generally accepted in the literature that although the Utes frequently ranged south of the San Juan River, their homelands were north of the river, which separated their land from that of the Navajos.

Following a series of treaties in the late 1880s, a parcel of land was set aside for the Utes in southwestern Colorado. The Utes living in the area at that time were divided into three bands, the Mouache, the Capote, and the Weeminuche. After 1900, the reservation was divided into the Southern Ute Reservation, the home of the Mouache and Capote bands, and the Ute Mountain Ute Reservation, the home of the Weeminuche band (Delaney 1974:68-71).

While the early historic presence of Utes in southwestern Colorado is clearly documented (e.g., Rivera's 1976 diary [Cutter 1977]), archaeological sites attributed to Ute affiliation have seldom been reported in the many previous archaeological inventories for the area. On the surface this situation may appear somewhat enigmatic; however, reference to Ute ethnographic and culture material literature yields several possible solutions to the problem. Pre-twentieth century Ute encampments were apparently temporary in nature with relatively unsubstantial brush shelters being the rule. Domed- or conical-shaped frames covered with brush or bark (termed "wickiups") were present among the Weeminuche band (Stewart 1942), the evidence of which would have disappeared rather quickly after abandonment. One pole shelter of a more permanent nature was discovered near Johnson Canyon (Nickens 1976), which is believed to be of Ute origin (Omer Stewart, personal communication) even though diagnostic artifacts were lacking and another has been documented just south of Durango (discussed below). After the arrival of the Americans and the adoption of horses by the Utes, skin-covered tipis came into vogue which were capable of being moved from one

camp to another. Thus, even though Ute wickiups are more prevalent in other parts of western Colorado (Reed and Scott 1982:55-58), it is not too surprising that such structures have not survived in southwestern Colorado. The presence of Ute wickiups were noted in accounts of early settlers, for example in the Mancos Canyon, in the last two decades of the nineteenth century, but none of these have been documented in recent archaeological investigations.

Studies of Ute material culture provide additional clues to the problem of identifying Ute sites. Pottery, one of the diagnostic hallmarks of archaeological investigation, was very rare among the Southern Ute groups. Opler (1939) noted that Ute pottery was evidently not manufactured in quantity and, despite a careful search of several known Ute camping spots in southwestern Colorado, he could find no examples of ceramics. He further states that informants of 60 years and older at the time of his study in 1936-37 related that they had never seen ceramic vessels made by Utes. Evidently, basketry and skin sacks were the preferred containers among the Southern Utes. An exhaustive study of Ute culture elements and their distributions by Stewart (1942) which included Weeminuche and Mouache informants adds further confusion to the problem. The Southern Ute informants' stone tools, including arrow points, knives, drills, grooved stone axes, and grinding stones, were not manufactured but rather were collected for use from prehistoric sites. In the case of arrows, hardwood points were employed frequently in place of stone tips. Some percussion and pressure flint knapping was done, but stone tools which might be considered as being diagnostic were generally scavenged from prehistoric sites which are plentiful in the area. In short, it appears that some recorded archaeological sites which lack ceramics and contain only stone tools, even diagnostic Anasazi artifacts, may have been incorrectly attributed to the earlier cultures. Seemingly, however, this mistake is unavoidable unless historic documentation of Ute encampments at a particular locale can be substantiated.

At the present, the best data for Ute archaeology in southwestern Colorado come from site 5LP353, a Ute wickiup site located just south of Durango. The site was partially excavated in 1978 and a preliminary report prepared (Heikes 1979). The site consisted of a standing four-pole forked stick wickiup; interior features included a hearth and a small cist in the floor area. Associated artifacts included: 48 chert, quartzite, chalcedony, and obsidian flakes, a grinding slab, 6 handstones, a partial biface knife blade, 2 small hammerstones, 7 utilized flakes, 7 bone fragments, and 122 plain gray ware sherds. The pottery sherds were partially reconstructed to form parts of two vessels, which, based on construction and form, were tentatively identified as Dineta utility pottery, a pottery type made by the Navajo before 1800.

Results from archaeological survey efforts have been generally disappointing with respect to the identification of Ute sites. As of April 1983, for example, the Bureau of Land Management Montrose District site files included only 13 sites out of over 6500 listed sites which had been designated as being Ute in origin. This site file covered the four counties--Archuleta, Dolores, La Plata, and Montezuma--which cover the southwestern Colorado study area. In the recent survey of Ridges Basin, just southwest of Durango, however, Winter and his colleagues (1981) recorded 15 sites (out of a total of 194) which were believed to be Ute. Within this category of sites, four characteristic features

were found to occur on one or more of the sites: 1) Pueblo V pottery sherds; 2) chipped bottle glass artifacts; 3) Desert Side-notched points; and 4) sweat lodges. These sites were viewed as representing hunting or gathering camps.

3.4.2.2 Research Problems. Clearly, further research is required for a fuller understanding of Ute occupation of the study area. Central to this problem is the difficulty in identification of Ute sites. Future investigators must be aware that such sites are not highly visible nor readily apparent on the ground. Desert Side-notched points appear to be a diagnostic artifact of the Ute in southwestern Colorado, as they are throughout western Colorado and the Great Basin. Nine of these points were collected by the Ridges Basin survey and Dean (1969:36) notes the presence of a similar point from the later structure at Talus Village. Other possible diagnostic features to be aware of include Protohistoric/historic pottery, both Pueblo and Navajo, bottle glass artifacts, trade items (e.g., metal projectile points or glass beads), and sweat lodges.

The ethnographic and historic literature should prove valuable for the preparation of a database for both early Ute material culture and possible locations of Ute encampments. With regard to the latter, historic accounts noting Ute camp locations in southwestern Colorado could profitably be utilized not only to identify locations, but site characteristics and, depending on location, Ute settlement pattern. Early explorer's narratives often contain such information. Consider, for example, the following early statement by the well-known archaeologist Frank H.H. Roberts (1925:41):

Stollsteimer Mesa is interesting, not only because of its pithouse remains, but also on account of the many indications which it gives of having been used as a camping ground by the Utes. In many places old tipi poles may be seen scattered over the ground. In a few instances, these poles are on mounds resulting from the covering over of pithouses suggesting, as is also the case around Ignacio, that, contrary to popular opinion, the Utes held no fear of the spirits of the departed builders of these fast vanishing domiciles. Many Ute beads were found on the ant heaps surrounding the places where the tents had been pitched or brush shelters erected. In addition to the tipi poles, occasional signs can be found of the ring of earth which was thrown up around the edge of the tent for the purpose of keeping out the wind and water during inclement weather.

At a higher level of inquiry, little is known with regard to Ute cultural processes and interactions, both between bands and with neighboring cultural groups. The time of entry by the Utes into southwestern Colorado as part of the larger Numic spread throughout the Great Basin and Northern Colorado Plateau is still an open question, as is the cultural makeup of the earliest Ute. If the archaeological record can be utilized to learn more about early Ute group size, subsistence practices, seasonal movements, and changes in material culture, it will be possible to achieve better understanding of the effects of culture change on the Ute, particularly with respect to circumstances surrounding adoption of the horse and the subsequent period of Euro-American contact.

4.0 SUMMARY

In this final section, we provide a brief summary of the overall nature and status of the known archaeological record for the southwestern Colorado study region. It is evident from the preceding discussion that this resource base has been the center of considerable previous survey and excavation efforts (see Nickens 1982 for a more complete discussion of previous work in the area). Yet, it is also apparent that much research remains to be undertaken before a more complete understanding of the past aboriginal occupation of the study area can be gained. Many of these data gaps or needs have been listed for each of the designated major cultural units as a result of the review of existing knowledge for each unit (see Section 3.0).

4.1 Nature and Status of the Southwestern Colorado Archaeological Record. The existing archaeological record for the study area is currently extensive and growing at a high rate, both in terms of site files and archaeological data. This accumulation of archaeological information will continue as a result of various uses of federal and state lands and the historic preservation legislation which requires adequate protection of cultural resources within this context. Today, some 13,000 archaeological and historic site numbers have been given out for the four counties encompassing the southwestern Colorado study area. Although herculean efforts are being made to upgrade, update and keep such files current, it is a monumental responsibility, particularly with respect to the concern of data collected many years ago being sufficient in quality and quantity for today's needs and standards.

In spite of these difficulties, site files can be expected to provide a sampling of the cultural resource picture in a given area. To give an example of the usefulness of a site file, a listing of sites was obtained from the Bureau of Land Management Montrose District for review. This site file, as of April 1983, listed over 6500 sites in four counties located in southwestern Colorado (Table 4.1). Initial inspection of the list indicates that it contains about 50 percent of the site numbers given out by the Office of the State Archaeologist of Colorado for these counties. Primarily, sites on BLM lands are included, but the list also includes many sites occurring on lands under other ownership. Compilation of site numbers and cultural affiliation reveals an expected pattern, based on the narrative discussions in the preceding sections. Organized by relative percentages of occurrence and cultural unit, the results are as follows:

Paleo-Indian	- less than one percent (N=3)
Archaic	- less than one percent (N=41)
Formative	- 75 percent (N=4944)
Protohistoric/historic	- less than one percent (N=32)
Anglo	- 3 percent (N=212)
Unknown	- 20 percent (N=1326)

As site files are upgraded (i.e., poor or missing data are eradicated), they will hopefully become more useful for defining both temporal and spatial characteristics of the database. The use of sophisticated analytical and computer-aided mapping of site locations and temporal frameworks will assist in defining patterns to the point where, for example, it should be possible to evaluate changing demographic

Table 4.1
Bureau of Land Management Montrose District
Site File Tabulation

<u>Cultural Unit</u>	<u>County</u>				Totals
	Archuleta	DoLores	La Plata	Montezuma	
Paleo-Indian	0	1	0	2	3
Archaic	4	11	2	24	41
Formative (to period)	52	147	55	2685	2939
Undifferentiated Anasazi	1	176	0	1828	2005
Protohistoric/Historic Navajo	2	3	1	13	19
Ute	1	3	1	8	13
Anglo	2	13	11	186	212
Unknown	16	258	66	986	1326
Totals	78	612	136	5732	6558

situations through time by the drainage units defined in this report. The ability to achieve such computations is growing nearer, but much work remains to be done with the basic site file data.

Status of the archaeological record in southwestern Colorado is even more difficult to adequately document since intensive and systematic studies of such situations of site vandalism and other site destruction have only begun (e.g. Nickens et al. 1981). Simply put, it is hard to make generalized statements until the precise types and magnitude of the various impacts have been identified. Suffice it to say that, due to the density and visibleness of archaeological sites in southwestern Colorado, uncounted resources have in the past been irreparably damaged and in some cases completely destroyed. Two forces that have been primarily responsible for this loss of data are vandalism and agricultural impacts. Assessment of potential future sources of destruction to archaeological resources suggests these two forces will continue to be important factors, but can be somewhat mitigated through active preservation programs and public awareness. Other potentially serious future impacts may stem from energy development and real estate development in the vicinity of the town of Cortez. Vandalism has been rife within the unit, both on private and public levels. The resource is well known to local inhabitants, ironically partially through the publicity afforded early archaeological explorations in the area. In the past there was no protection program for public-owned resources, nor was there awareness by the local public concerning the value of the resource. Hopefully, the situation has changed in recent years. The BLM is taking a much more active role in preserving the public portion of the resource and has undertaken a study of the factors leading to vandalism (Nickens et al. 1981). The Archaeological Conservancy is active in the district and has recently acquired Mud Springs Ruin and is negotiating for the Yellowjacket Ruin. These two individual resources are very important in the context of the prehistory of the area and in the past had been severely damaged by vandalism, even to the extent of destruction by mechanized equipment. The Conservancy should be encouraged to continue and expand its program. A recent increase in professional archaeological activity in the parts of the study area by both federal agencies and private concerns has resulted in greater public awareness of the potential benefits of the resource. Hopefully, this will inspire a more sympathetic and objective attitude toward archaeological resources by local residents. Development of several types will continue to be a major problem. Development lands and modern farming practices, especially deep plowing (Nickens 1982:120) can be very destructive to both architectural and non-architectural sites. Energy development in the form of oil and gas exploration and well pad development and CO₂ field development, and real estate development and subdivision are also sources of damage. Some of the impacts of development can probably be mitigated through active protection and active awareness, avoidance of important point resources through incorporating archaeological resources in development planning and energetic, well-publicized excavations when other alternatives fail.

4.2 Paleo-Indian Stage. At the present it is still difficult to assess the evidence for this stage in the study unit. The extant data are extremely scanty, usually consisting of isolated points or Paleo-Indian points on sites which clearly date to much more recent times.

Given the amount of past work in the study area, which has yielded such little evidence, it is probably time to look for reasons why the Paleo-Indians did not inhabit the area rather than asking if they were there.

4.3 Archaic Stage. Until recently, the Archaic remains in southwestern Colorado have received comparatively little attention, probably owing to the fact that such sites are not plentiful nor spectacular in the research sense. Nonetheless, it is clear that the area was utilized by pre-Formative Archaic peoples. Since the data are somewhat limited in their nature, however, sites which possess buried strata should be accorded high research and preservation priorities. It is necessary to conduct some good basic descriptive Archaic site archaeology in order to generate evidence for chronology and cultural patterns of this stage. In a similar vein, while current data indicate affiliation to the Oshara Tradition, the dynamics of this relationship remain unclear. There is also a need to examine the relationships between southwestern Colorado archaic remains and those in the mountains study area to the north and east, which are more prevalent. Finally, due to the paucity of Paleo-Indian remains, southwestern Colorado is probably not an area to search for data relating to the Paleo-Indian/Archaic transition; however, information relating to the Archaic/Formative transition may be present in the study area, albeit restricted to areas where Basketmaker II remains also occur, such as the Animas Drainage Unit.

Once again, the critical type of resource from which answers to such questions is the stratified site, either open or in rockshelters, which contains chronometrically datable materials and/or culturally diagnostic artifacts. Such sites will also likely yield important economic and climatic data. On the other hand, such sites are not likely to be numerous and it will be imperative to continue to gain as much information from the surface "lithic scatter" Archaic sites although care must be exercised to insure that these sites are indeed Archaic in age and not Formative or Ute in affiliation.

4.4 Formative Stage. As noted, a majority of the previous and ongoing research in the study area is oriented toward the Anasazi remains. Given the overwhelming visibility and density of Anasazi sites in southwestern Colorado and the surrounding region, this emphasis is understandable. Furthermore, the tremendous amount of survey and excavation efforts expended to date has given us a fairly detailed picture of the Anasazi lifeway.

Nonetheless, many potential research domains remain to be more completely examined, both through reexamination of present data and collection of new information; intra- and interregional cultural dynamics, relationship to paleo-environment, and abandonment, to name but a few. Seemingly, the large-scale, multiyear, well funded project is the way to approach such needs. It is notable that several examples of this type of project have occurred in recent years; however, these efforts have focused on restricted geographic unit and a regional perspective (i.e., inter drainage unit) has been absent. Section 3.3.11 presents an example of one regional approach toward a better understanding of cultural patterns for the study area as a whole. Also, each of the drainage units defined herein, or parts of them, still require extensive sample-oriented or intensive cultural resource inventory and subsequent delineation or refinement of the more precise phase

sequences. In addition to these general needs, several drainage unit specific research questions have been listed in Sections 3.3.1 through 3.3.10, along with the type(s) of data required.

4.5 Prohistoric/Historic Stage. This stage, which includes the Navajo and Ute Traditions, is one which contains significant data gaps. While several sites attributed to both traditions have been encountered by previous surveys, little archaeological information is available and with few exceptions (e.g., Winter et al. 1981 for the Ute), no systematic research has been completed. Within this context, three potentially productive sources for such data are historic accounts, ethnographic data, and archaeological sites. A combination of these data sets would produce information on predicted settlement and subsistence patterns, chronology, and material culture, which should permit clearer definitions of the sites themselves. It is probably fair to state that the value of protohistoric/historic aboriginal sites in southwestern Colorado has been slighted, primarily due to a generally understandable placement of emphasis on the ubiquitous Formative cultural resources.

REFERENCES CITED

- Abel, Leland J.
1955 Pottery Types of the Southwest. Museum of Northern Arizona Ceramic Series, No. 38, Flagstaff.
- Adams, E. Charles
1975 Causes of Prehistoric Settlement Systems in the Lower Piedra District, Colorado. Unpublished Ph.D. dissertation. Department of Anthropology, University of Colorado, Boulder.
- Adams, Terry L.
1982 Site 5DL310: a Basketmaker III Habitation Site North of Dove Creek, Colorado. In Testing and Excavation Report, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwest Colorado, by Jerry Fetterman and Linda Honeycutt, pp. 6-146-6-176. Woodward-Clyde Consultants, San Francisco.
- Agenbroad, Larry D.
1967 The Distribution of Fluted Points in Arizona. *Kiva* 32:113-120.
- Antevs, Ernst 1955 Geo-climatic Dating in the West. *American Antiquity* 20(4):317-335.
- Beardsley, Richard K.
1956 Functional and Evolutionary Implications of Community Patterning. In *Seminars in Archaeology: 1955*, R. Wauchope, ed., pp. 129-157. *Memoir of the Society for American Archaeology*, No. 11.
- Berry, Michael S.
1982 *Time, Space and Transition in Anasazi Prehistory*. University of Utah Press, Salt Lake City.
- Birkedal, Terje G.
1976 Basketmaker III Residence Units: a Study of Prehistoric Social Organizations in the Northern San Juan Basin. Paper presented at the 47th Annual Meeting of the Society for American Archaeology, Minneapolis.
- Blinman, Eric
1981 Foreign Trade Wares in Ceramic Assemblages from McPhee Pueblo, 5MT4475. Ms. on file at the Dolores Archaeological Program, Dolores.
- Bolton, Herbert E.
1972 *Pageant in the Wilderness: The Story of the Escalante Expedition to the Interior Basin, 1776*. Utah State Historical Society, Salt Lake City.
- Bradley, Suzanne R. and Thomas J. King, Jr.
1983 A Survey of the Dolores Plateau, Examination of the Glade Road Site (5DL775), and Sites 5DL776 and 5MT5166. Ms. on file, Cortez Projects Office, Upper Colorado Region, U.S. Bureau of Reclamation.

- Breternitz, Cory D.
 1983 Excavations in Area 3, Grass Mesa Village (Site 5MT23), 1979 and 1980. Dolores Archaeological Program Technical Reports DAP-085. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Breternitz, David A.
 1975 Archaeological Resources of the Towaoc Canal and Laterals, Dolores River Project, Colorado. National Park Service Inter-agency Archaeological Services, Denver.
- Breternitz, David A. and Daniel W. Martin
 1973 Report of the Dolores River Project Archaeological Reconnaissance, 1972-1973. Submitted to Midwest Archeological Center, National Park Service, Lincoln.
- Breternitz, David A., Arthur H. Rohn, Jr., and Elizabeth A. Morris
 1974 Prehistoric Ceramics of the Mesa Verde Region. Museum of Northern Arizona, Ceramic Series No. 5, Flagstaff.
- Brew, John Otis
 1946 Archaeology of Alkali Ridge, Southeastern Utah. Papers of the Peabody Museum of American Archaeology and Ethnology 21, Cambridge.
- Brisbin, Joel M.
 1976 Excavations at the South Oak Street Site: a Small BMIII Settlement. Ms. on file at the Dolores Archaeological Program, Dolores.
- 1982 Excavations at Windy Wheat Hamlet (Site 5MT4644), a Pueblo I Habitation Site. Ms. on file, Dolores Archaeological Program, Dolores.
- 1983a Excavations at Pueblo de los Golandrinas (Site 5MT5107), a Multicomponent Pueblo I Village Site. Ms. on file, Dolores Archaeological Program, Dolores.
- 1983b Excavations at McPhee Pueblo (Site 5MT4475). Ms. on file, Dolores Archaeological Program, Dolores.
- Brisbin, Joel M. and Charlotte J. Brisbin
 n.d. Contributions to the Sites being Excavated in the North McElmo Drainage Area of Southwestern Colorado (Ida Jean site). Fort Lewis College, Durango.
- Brisbin, Joel M., Alice M. Emerson, and Sarah H. Schlanger
 1982 Excavations at Dos Casas Hamlet (Site 5MT2193), a Basketmaker III/Pueblo I Habitation Site. Dolores Archaeological Program Technical Reports DAP-028. Final report submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.

- Brisbin, Joel M. and Mark Varien
 1981 Excavations at Tres Bobos Hamlet (Site 5MT4545), a Basketmaker III Habitation Site. Dolores Archaeological Program Technical Reports DAP-025. Final report submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Brugge, David M.
 1980 A History of the Chaco Navajos. Reports of the Chaco Center, No. 4, Albuquerque.
- Bryan, Kirk and Joseph H. Toulouse, Jr.
 1943 The San Jose Non-ceramic Culture and its Relation to a Puebloan Culture in Mexico. American Antiquity 8(3):269-280.
- Carlson, Roy L.
 1963 Basket Maker III Sites near Durango, Colorado. University of Colorado Studies, Series in Anthropology, No. 8, Boulder.
 1964 Two Rosa Phase Pit Houses. Southwestern Lore 29:69-76.
 1965 Eighteenth Century Navajo Fortresses of the Gobernador District. University of Colorado Studies, Series in Anthropology, No. 10, Boulder.
- Cattanach, George S., Jr.
 1980 Long House, Mesa Verde National Park, Colorado. National Park Service Publications in Archeology 7H, Washington.
- Chenault, Mark L.
 1983 Excavations at Los Atavios (Site 5MT5399), a Protohistoric/Historic Burial. Dolores Archaeological Program Technical Reports DAP-113. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Collins, Susan M.
 1981 The Anasazi and the District: Geography, Management or "Sociologie". Paper presented at the Anasazi Symposium, Mesa Verde National Park, Colorado.
- Colton, Harold S.
 1938 Names of the Four Culture Roots in the Southwest. Science 87(2268):551-552.
 1939 Prehistoric Culture Units and Their Relationships in Northern Arizona. Museum of Northern Arizona Bulletin 17, Flagstaff.
 1953 Potsherds. Northern Arizona Society of Science and Art, Flagstaff.
- Cutter, Donald C.
 1977 Prelude to a Pageant in the Wilderness. The Western Historical Quarterly 8(1):5-14.

- Dean, Jeffrey S.
 1969 Dendrochronology and Archaeological Analysis: A Possible Ute Example from Southwestern Colorado. *Southwestern Lore* 35:29-41.
- 1970 Aspects of Tsegi Phase Social Organization. In *Reconstructing Prehistoric Pueblo Societies*, edited by William A. Longacre, pp. 140-174, University of New Mexico Press, Albuquerque.
- 1975 Tree-Ring Dates from Colorado W: Durango Area. Laboratory of Tree-Ring Research, University of Arizona, Tucson.
- Dean, Jeffrey S. and William J. Robinson
 1977 Dendroclimatic Variability in the American Southwest: AD 680 to 1970. Laboratory of Tree-Ring Research, Tucson. Submitted to the National Park Service, Department of Interior. National Technical Information Service Report PB 266 340.
- Delaney, Robert W.
 1974 *The Southern Ute People*. Indian Tribal Series, Phoenix.
- Dick, Herbert W.
 1965 Bat Cave. *Monographs of the School of American Research*, No. 27, Santa Fe.
- Dittert, Alfred E., Jr. and Frank W. Eddy (assemblers)
 1963 Pueblo Period Sites in the Piedra River Section, Navajo Reservoir District. *Museum of New Mexico Papers in Anthropology*, No. 10, Santa Fe.
- Dittert, Alfred E., Jr., Frank W. Eddy, and Beth L. Dickey
 1963 Evidences of Early Ceramic Phases in the Navajo Reservoir District. *El Palacio* 70(1-2):5-12.
- Dittert, Alfred E. Jr., James J. Hester, and Frank W. Eddy
 1961 An Archaeological Survey of the Navajo Reservoir District, Northwestern New Mexico. *Monographs of the School of American Research* 23, Santa Fe.
- Dohm, Karen
 1981 Excavations at Areas 1, 2, and 7, Grass Mesa (Site 5MT23), 1979. Ms. on file, Dolores Archaeological Program, Dolores.
- Duke, P.G. and Gary Matlock
 1983 *An Archaeological Policy for the City of Durango*. Durango City Council, Durango.
- Earle, Timothy and Andrew L. Christenson
 1980 *Modeling Change in Prehistoric Subsistence Economics*. Academic Press, New York.
- Eddy, Frank W.
 1961 Excavations at Los Pinos Phase Sites in the Navajo Reservoir District. *Museum of New Mexico Papers in Anthropology* 4, Santa Fe.

- 1966 Prehistory in the Navajo Reservoir District, Northwestern New Mexico. Museum of New Mexico Papers in Anthropology 15, Santa Fe.
- 1972 Culture Ecology and the Prehistory of the Navajo Reservoir District. Southwestern Lore 38(1-2):1-75.
- 1974 Population Dislocation in the Navajo Reservoir District, New Mexico and Colorado. American Antiquity 39(1):75-84.
- 1975 A Settlement Model for Reconstructing Prehistoric Social Organization at Chimney Rock Mesa, Southern Colorado. In Collected Papers in Honor of Florence Hawley Ellis, edited by R. Frisbie, pp. 60-79. Papers of the Archaeological Society of New Mexico 2, Norman.
- 1977 Archaeological Investigations at Chimney Rock Mesa: 1970-1972. Memoirs of the Colorado Archaeological Society, No. 1, Boulder.
- Eddy, John A. and Allen E. Kane
 1981 An Archaeoastronomical Reconnaissance of the Dolores Archaeological Program Area. Dolores Archaeological Program Technical Reports DAP-021. Final report submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Ellis, Florence Hawley
 1964 A Reconstruction of the Basic Jemez Pattern of Social Organization. University of New Mexico Publications in Anthropology, No. 11, Albuquerque.
- Errickson, Mary and Gay Ives
 1983 DAP Downstream Recreation Areas. Letter report on file at the Dolores Archaeological Program, Dolores.
- Euler, Robert C., George J. Gumerman, Thor N.W. Karlstrom, Jeffrey S. Dean, and Richard H. Hevly
 1979 The Colorado Plateaus: Cultural Dynamics and Paleoenvironment. Science 205:1089-1101.
- Farmer, Malcolm F.
 1942 Navajo Archaeology of Upper Blanco and Largo Canyons, Northern New Mexico. American Antiquity 8:65-79.
- Fenenga, F. and Fred Wendorf
 1956 Excavations at the Ignacio, Colorado, Field Camp: Site LA2605. In Pipeline Archaeology, edited by F. Wendorf, Nancy Fox, and C.L. Lewis, pp. 207-214. Laboratory of Anthropology and Museum of Northern Arizona, Santa Fe.
- Fetterman, Jerry and Linda Honeycutt
 1982 Testing and Excavation Report, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwest Colorado. Woodward-Clyde Consultants, San Francisco.

- Fewkes, J. Walter
 1919 Prehistoric Villages, Castles and Towers of Southwestern Colorado. Bureau of American Ethnology Bulletin 70, Washington.
- Flinn, Lynn, G. Turner Christy III and Alan Brew
 1976 Additional Evidence for Cannibalism in the Southwest: The Case of LA4528. American Antiquity 41(3):308-318.
- Ford, Richard I., Albert H. Schroeder, and Stewart L. Peckham
 1972 Three Perspectives on Puebloan Prehistory. In New Perspectives on the Pueblos, edited by Alfonso Ortiz, pp. 19-39. University of New Mexico Press, Albuquerque.
- Foster, Michael S.
 1983 Archaeological Investigations of Five Sites within the Cortez CO₂ Project Corridor near La Plata, New Mexico. Nickens and Associates, Montrose.
- Franciscan Fathers
 1910 An Ethnologic Dictionary of the Navajo Language. Saint Michaels, Arizona.
- Gerwitz, Susan
 1982a Site 5DL309: A Basketmaker III Habitation Site North of Dove Creek, Colorado. In Testing and Excavation Report, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwest Colorado, by Jerry Fetterman and Linda Honeycutt, pp. 6-77-6-133. Woodward-Clyde Consultants, San Francisco.
- 1982b Site 5DL318: A Lithic Scatter North of Dove Creek, Colorado. In Testing and Excavation Report, MAPCO's Rocky Mountain Liquid Hydrocarbons Pipeline, Southwest Colorado, by Jerry Fetterman and Linda Honeycutt, pp. 6-134-6-145. Woodward-Clyde Consultants, San Francisco.
- Gillespie, William B.
 1976 Culture Change at the Ute Canyon Site: a Study of the Pithouse Kiva Transition in the Mesa Verde Region. Unpublished M.A. thesis, Department of Anthropology, University of Colorado, Boulder.
- Gladwin, Winifred and Harold S. Gladwin
 1934 A Method for the Designation of Cultures and Their Variations. Gila Pueblo Medallion Papers No. 15. Globe.
- Gooding, John D. (editor)
 1980 The Durango South Project: Archaeological Salvage of Two Late Basketmaker III Sites in the Durango District. University of Arizona Anthropological Papers No. 34. Tucson.

- Gross, Timothy G.
 n.d. Cougar Springs Cave: a BMII Seasonal Site in the Dolores Canyon. Ms. in preparation, the Dolores Archaeological Program, Dolores.
- Gunnerson, James H.
 1960 An Introduction to Plains Apache Archaeology: The Dismal River Aspect. Bureau of American Ethnology, Bulletin 173, Washington.
- Guthe, Alfred K.
 1949 Preliminary Report on Excavations in Southwestern Colorado. American Antiquity 15(2):144-154.
- Halasi, Judith A.
 1979 Archeological Excavation at the Escalante Site, Dolores, Colorado, 1975 and 1976. In The Archeology and Stabilization of the Dominguez and Escalante Ruins, by Alan D. Reed, Judith Ann Halasi, Adrian S. White, and David A. Breternitz, pp. 197-425. Bureau of Land Management Cultural Resource Series 7.
- Hall, E.T., Jr.
 1944 Early Stockaded Settlements in the Gobernador, New Mexico. Studies in Archaeology and Ethnology, Vol. II, Part 1, Columbia University Press, New York.
- Haury, Emil W. (chairman)
 1956 An Archeological Approach to the Study of Cultural Stability. In Seminars in Archaeology: 1955, R. Wauchope, ed., pp. 31-57. Memoirs of the Society for American Archaeology, No. 11.
- Hayes, Alden C.
 1964 The Archeological Survey of Wetherill Mesa, Mesa Verde National Park, Colorado. National Park Service Publications in Archeology 7A, Washington.
- Hayes, Alden C. and James A. Lancaster
 1975 Badger House Community, Mesa Verde National Park, Colorado. National Park Service Publications in Archeology 7E, Washington.
- Heikes, Walt
 1979 A Preliminary Report on a Forked Stick Structure. Ms. report in possession of the author, Durango.
- Herold, Joyce
 1961 Prehistoric Settlement and Physical Environment in the Mesa Verde Area. University of Utah Anthropological Papers No. 53. Salt Lake City.
- Hester, James J.
 1962 Early Navajo Migrations and Acculturation in the Southwest. Museum of New Mexico Papers in Anthropology, No. 6, Museum of New Mexico Press, Santa Fe.

- Hester, James J. and Joel L. Shiner
 1963 Studies at Navajo Period Sites in the Navajo Reservoir District. Museum of New Mexico Papers in Anthropology, No. 9, Santa Fe.
- Hewett, Nancy S.
 1977 The Prehistory of the San Juan Basin. New Mexico Geological Society Guidebook: 65-75.
- Hibbets, Barry N. and Jeffery T. Wharton
 1980 Prehistoric Montane Adaptations in the Upper House Creek and West Dolores River Basins, Southwestern Colorado. Ms. on file at the U.S.D.A. Forest Service, Durango.
- Hicks, Patricia A.
 1975 Projectile Points: Hovenweep Archeological Surveys 1974 and 1975. In Hovenweep 1975, by Joseph C. Winter, pp. 44-50. Archeological Report No. 2. Department of Anthropology, San Jose State University.
- Hogan, Patrick
 1980 Excavations at LeMoc Shelter (Site 5MT2151), a Multiple-occupation Anasazi Site. Dolores Archaeological Program Technical Reports DAP-083. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Holmes, W.H.
 1876 A Notice of the Ancient Ruins of Southwestern Colorado, Examined during the Summer of 1875. U.S. Geological and Geographic Survey Bulletin 2:3-24.
- Hovezak, Mark J.
 1983 Excavations at Star Bead Shelter (Site 5MT5380), a Proto-historic Burial Site. Dolores Archaeological Program Technical Reports DAP-114. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Hull, Deborah A. and Douglas D. Scott
 1978 A Bibliography of the Archaeology of Southwestern Colorado: Archuleta, Dolores, La Plata, and Montezuma Counties. Bureau of Land Management, Colorado, Cultural Resource Series No. 5, Denver.
- Hunt, Alice
 1953 Archeological Survey of the La Sal Mountain Area. University of Utah Anthropological Papers No. 14, Salt Lake City.
- Hunt, Alice P. and Dallas Tanner
 1960 Early Man Sites Near Moab, Utah. American Antiquity 26: 110-117.
- Hurst, C.T. and V.F. Lotrich
 1932 An Unusual Mug from Yellow Jacket Canyon. El Palacio 33(21-22);195-198.

- Huse, Hannah, Bradley A. Noisat, and Judith A. Halasi
 1978 The Bisti-Star Lake Project: A Sample Survey of Cultural Resources in Northwestern New Mexico. Bureau of Land Management, Albuquerque.
- Irwin-Williams, Cynthia
 1967 Picoso: the Elementary Southwestern Culture. *American Antiquity* 32(4):441-457.
- 1973 The Oshara Tradition: Origins of Anasazi Culture. *Eastern New Mexico University Contributions in Anthropology* 5(1), Portales.
- 1979 Post-Pleistocene Archaeology, 7000-2000 BC. *Handbook of North American Indians, Southwest*, Vol. 9, edited by Alfonso Ortiz, pp. 31-42. Washington.
- Irwin-Williams, Cynthia and C. Vance Haynes
 1970 Climatic Change and Early Population Dynamics in the Southwestern United States. *Quaternary Research* 1:59-71.
- Jackson, William H.
 1876 Ancient Ruins in Southwestern Colorado. *Annual Report of the U.S. Geological Survey of the Territories*, 1874, pp. 367-381. Washington.
- James, Charles D. III
 1976 Historic Navajo Studies in Northeastern Arizona. Museum of Northern Arizona, MNA Research Paper 1, Flagstaff.
- Jeancon, J.A.
 1922 Archaeological Research in the Northeastern San Juan Basin of Colorado during the Summer of 1921. The State Historical and Natural History Society of Colorado and the University of Denver, Denver.
- Jennings, Jesse D.
 1957 Danger Cave. *Memoirs of the Society for American Archaeology* No. 14, Salt Lake City.
- 1974 *Prehistory of North America*. McGraw-Hill, New York.
- Jett, Stephen C. and Virginia E. Spencer
 1981 *Navajo Architecture*. University of Arizona Press, Tucson.
- Joint Management Plan
 1982 Chaco Archeological Protection Site Systems: New Mexico, Arizona, Colorado. National Park Service, Denver Service Center.
- Jorgenson, Joseph G.
 1972 *The Sun Dance Religion: Power for the Powerless*. University of Chicago Press, Chicago.

Kane, Allen E.

- 1975a Archaeological Resources in Great Cut Dike-Dove Creek Area. Dolores River Project: Report of the 1974 Season. Submitted to Midwest Archeological Center, National Park Service, Lincoln.
- 1975b Archaeological Resources of the Dolores River Project: Report of the 1975 Field Season. Ms. on file, Interagency Archaeological Services, National Park Service, Denver.
- 1977 Archaeological Resources in the Proposed Shell CO₂ Project Area. Ms. on file at the Dolores Archaeological Project, Dolores.
- 1981a Introduction to Field Investigations and Analysis. Dolores Archaeological Program Technical Reports DAP-001. Final report submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- 1981b The Prehistory of the Dolores Project Area. In Dolores Archaeological Program synthetic report, 1978-1981 DAP-055, pp. 49-138. Final report submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- 1983a Fieldwork and Systematics. Dolores Archaeological Program Technical Reports DAP-058. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- 1983b Trajectories in Anasazi Culture: the View from Dolores. Paper presented at the 2nd Anasazi Symposium, 1983, Farmington.

Kent, Kate Peck

- 1983 Prehistoric Textiles of the Southwest. University of New Mexico Press, Albuquerque.

Keur, Dorothy L.

- 1941 Big Bead Mesa. Memoirs of the Society for American Archaeology, No. 1.
- 1944 A Chapter in Navajo-Pueblo Relations. American Antiquity, Vol. 10:75-86.

Kidder, Alfred V.

- 1927 Southwestern Archaeological Conference. Science 66 (1716): 489-491.

Kleidon, James H.

- 1983 Excavations at Aldea Alfareros (Site 5MT4479), a Pueblo I Habitation Site. Dolores Archaeological Program Technical Reports DAP-100. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.

- Kleiden, James H. and Mark A. Stiger
n.d. Site 5MT2731, a Lithic Scatter in the Dolores Project Area.
Ms. in preparation at the Dolores Archaeological Program,
Dolores.
- Kluckhohn, C., W.W. Hill, and Lucy W. Kluckhohn
1971 Navajo Material Culture. Harvard University Press, Cambridge.
- Kuckelman, Kristin A.
1983a Excavations at Mesa Negra (5MT4477): a PI Habitation Site. Ms.
on file, Dolores Archaeological Program, Dolores.

1983b Excavations at Pinyon House (5MT4751): a PII Seasonal Site.
Ms. on file, Dolores Archaeological Program, Dolores.
- Leh, Leonard L.
1938 Some Surprises at the Wilson Ruins in San Juan County, Utah.
Southwestern Lore 3(4):66-73.

1939 Further Studies at the Wilson Ruins. Southwestern Lore 4(4):
68-72.

1940 A Prehistoric Population Center in the Southwest. Southwestern
Lore 6(2):21-25.

1942 A Preliminary Report on the Monument Ruin in San Juan County,
Utah. University of Colorado Studies, Series C. 1(3):261-295,
Boulder.
- Leidy, L. Kent
1976 Archaeological Resources of the Animas La Plata Project: Report
on the 1975 Season. Interagency Archaeological Services,
National Park Service, San Francisco.
- Lindsay, LaMar
1976 Unusual or Enigmatic Stone Artifacts: Pots, Pipes, Paints and
Pendants from Utah. Antiquities Section Selected Papers No. 8.
Salt Lake City.
- Lipe, William D., Allen E. Kane, Kenneth L. Peterson, Carl Phagan, Eric
Blinman and Timothy Grass
1983 Models of Prehistoric Sociocultural Change in the Dolores
Valley, Southwestern Colorado. Ms. on file at the Dolores
Archaeological Program, Dolores.
- Lipe, William D., A.E. Kane, C.K. Robinson
1983 Modeling Prehistoric Sociocultural Change in the Dolores
Valley, Southwestern Colorado: Phase III. Ms. on file at the
Dolores Archaeological Program, Dolores.
- Lipe, William D. and Richard G. Matson
1971 Human Settlement and Resources in the Cedar Mesa Area, SE Utah.
In The Distribution of Prehistoric Population Aggregates,
edited by George J. Gumerman. Prescott College Anthropological
Reports 1:126-151.

- Lister, Robert H.
 1953 The Stemmed, Indented Base Point: a Possible Horizon Marker. *American Antiquity* 18(3):264-265.
- 1964 Contributions to Mesa Verde Archaeology I, Site 499, Mesa Verde National Park, Colorado. University of Colorado Studies, Series in Anthropology 9, Boulder.
- Lister, Robert H. (editor)
 1966 Contributions to Mesa Verde Archaeology III, Site 866 and the Cultural Sequence at Four Villages in the Far View Group, Mesa Verde National Park, Colorado. University of Colorado Studies Series in Anthropology 12, Boulder
- Luebben, Ralph A.
 1982 Two Pueblo III Kiva Complexes Associated with Subterranean Rooms, Southwestern Colorado. *Kiva* 48:63-81.
- Luebben, Ralph A. and Paul R. Nickens
 1982 A Mass Interment in an Early Pueblo III Kiva in Southwestern Colorado. *Journal of Intermountain Archaeology* 1:66-79.
- Madsen, David B.
 1975 Dating Paiute-Shoshone Expansion in the Great Basin. *American Antiquity* 40:82-86.
- Marshall, Michael P. and John R. Stein
 1978 Archaeological Investigations in the Squaw Springs District of the Ute Mountains Ute Indian Reservation, Northwestern New Mexico. Bureau of Indian Affairs, Albuquerque Area Office, Albuquerque.
- Martin, Paul Sidney
 1929 The 1928 Archaeological Expedition of the State Historical Society of Colorado. *Colorado Magazine* 6(1):1-35.
- 1930 Archaeological Expedition of the State Historical Society of Colorado in Cooperation with the Smithsonian Institution. *Colorado Magazine* 7(1):1-40.
- 1963 *The Last 10,000 Years*. University of Arizona Press, Tucson.
- Martin, Paul S., Lawrence Roys, and Gerhardt Von Bonin
 1936 Lowry Ruin in Southwestern Colorado. *Field Museum of Natural History Anthropological Series* 23(1).
- Martin, Paul S., Carl Lloyd and Alexander Spoehr
 1938 Archaeological Work in the Ackmen-Lowry Area, Southwestern Colorado, 1937. *Field Museum of Natural History* 23(2).
- Morgan, L.H.
 1881 Houses and House Life of the American Aborigines. *Contributions to North American Ethnology* 10:72. Washington.

- Morley, Sylvannus G.
 1908 The Excavation of the Cannonball Ruins in Southwestern Colorado. *American Anthropologist* 10(4):596-610.
- Morris, Earl H.
 1919 Preliminary Account of the Antiquities of the Region between the Mancos and La Plata River in Southwestern Colorado. Bureau of American Ethnology, 33rd Annual Report:155-206.
 1939 Archaeological Studies in the LaPlata District, Southwestern Colorado and Northwestern New Mexico. Carnegie Institute, Publication 519. Washington.
- Morris, E.H. and Robert F. Burgh
 1941 Anasazi Basketry BMIII-PIII: A Study Based on Specimens from the San Juan River. Carnegie Institute, Publication 535. Washington.
 1954 Basketmaker II Sites near Durango, Colorado. Carnegie Institute, Publication 604. Washington.
- Morris, Maxine M.
 1983 Excavations at Southview House (Site 5MT2241), an Anasazi Seasonal Use Site. Dolores Archaeological Program Technical Reports DAP-110. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Nickens, Paul R.
 1976 An Archaeological Survey of the Johnson Canyon Area, Southwestern Colorado. Johnson-Lion Canyon Project: Report of Investigation II. Bureau of Indian Affairs, Albuquerque.
 1978 Archaeological Resources of the La Plata River Drainage, Colorado and New Mexico: Cultural Resources Evaluation for the Animas-La Plata Project. Bureau of Reclamation, Salt Lake City.
 1981 Pueblo III Communities in Transition: Environment and Adaptation in Johnson Canyon. *Memoirs of the Colorado Archaeological Society*, No. 2. Boulder.
 1982 Archaeological Resources of Southwestern Colorado: an Overview of the Bureau of Land Management's San Juan Resource Area. In *Archaeological Resources in Southwestern Colorado*, by Susan Eininger, et al., pp. 1-307. Colorado State Office, Bureau of Land Management Cultural Resources Series 13. Denver.
- Nickens, Paul R. and Susan M. Chandler
 1981 Cultural Resource Evaluation of Bodo Canyon Area E, Durango, Colorado. Nickens and Associates, Montrose.
- Nickens, Paul R., Signa L. Larralde, and Gordon C. Tucker, Jr.
 1981 A Survey of Vandalism to Archaeological Resources in Southwestern Colorado. Colorado State Office, Bureau of Land Management Cultural Resources Series 2, Denver.

- Noisat, Bradley A.
 1978 Navajo Archaeology and Settlement. In The Bisti-Star Lake Project: A Sample Survey of Cultural Resources in Northwestern New Mexico, by Hannah Huse, Bradley A. Noisat, and Judith A. Halasi, pp. 81-125, Bureau of Land Management, Albuquerque.
- Opler, Marvin K.
 1939 Southern Ute Pottery Types. The Masterkey 13:161-163.
- Peterson, Kenneth L.
 1977 Tabehuache and Elk Mountain Utes: A Historical Test of an Ecological Model. Southwestern Lore 43(4):5-21.
 1983 Reconstruction of Droughts and Summer Warmth for the Dolores Archaeological Project Area, Southwest Colorado: AD 550 to 950. Paper presented at the 2nd Anasazi Symposium, Farmington.
- Powers, Margaret, Penelope Whitten, Mark Ganas, Alan Reed, David Simons, Wayne Williams, and Meade Kemrer
 1980 Prehistoric and Historic Resources of the Westwater and Shumway Arroyos: Survey of the San Juan Mine Coal Lease. Division of Conservation Archaeology, Contributions to Anthropology Series No. 174. Farmington.
- Powers, Robert P., William B. Gillespie, and Stephen H. Lekson
 1983 The Outlier Survey: A Regional View of Settlement in the San Juan Basin. National Park Service, Division of Cultural Research. Reports of the Chaco Center No. 3, Albuquerque.
- Prudden, T. Mitchell
 1903 The Prehistoric Ruins of the San Juan Watershed in Utah, Arizona, Colorado, and New Mexico. American Anthropologist 5:224-288.
 1914 The Circular Kivas of Small Ruins in the San Juan Watershed. American Anthropologist 16:23-58.
 1918 A Further Study of Prehistoric Small House Ruins in the San Juan Watershed. American Anthropological Association, Memoir 5:3-50.
- Reed, Alan D.
 1978 The Tamarron Site, 5LP326. Southwestern Lore 44:1-47.
 1979 The Dominguez Ruin: a McElmo Phase Pueblo in Southwestern Colorado. In The Archeology and Stabilization of the Dominguez and Escalante ruins. Bureau of Land Management Cultural Resource Series 7:1-196. Colorado State Office, Denver.
 1982 The Anasazi Occupation of the Durango District. Ms. in possession of the author, Montrose.

- 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, Bureau of Land Management, Cultural Resources Series, No. 10. Denver.
- Reed, Erik K.
 1949 Sources of Upper Rio Grande Pueblo Culture and Populations. *El Palacio* 56(6):163-184.
 1958 Excavations in Mancos Canyon, Colorado. University of Utah Anthropological Papers, No. 35. Salt Lake City.
- Reher, Charles A. (editor)
 1977 Settlement and Subsistence Along the Lower Chaco River: The CGP Survey. University of New Mexico Press, Albuquerque.
- Roberts, Frank H.H., Jr.
 1922 Report on the Work of the 1922 Season in the Piedra Parada Archaeological Field. University of Denver Bulletin 23(9), Denver.
 1925 Report on Archaeological Reconnaissance in Southwestern Colorado in the Summer of 1923. *Colorado Magazine* 2(2):3-80.
 1929 Shabik'eschee Village. Bureau of American Ethnology Bulletin 92. Washington.
 1930 Early Pueblo Ruins in the Piedra District, Southwestern Colorado. Bureau of American Ethnology, Bulletin 96, Washington.
 1935 A Survey of Southwestern Archaeology. *American Anthropologist* 37(1):1-35.
- Robinson, William and Bruce G. Harrill
 1974 Tree-Ring Dates from Colorado V: Mesa Verde. Laboratory of Tree-Ring Research, University of Arizona, Tucson.
- Rohn, Arthur H.
 1963 Prehistoric Soil and Water Conservation in Chapin Mesa. *American Antiquity* 29:441-455.
 1971 Mug House, Mesa Verde National Park, Colorado. National Park Service Publications in Archeology 7D, Washington.
 1974 Payne Site Investigations. *Southwestern Lore* 40:80-152.
 1975 A Stockaded Basketmaker III Village at Yellow Jacket, Colorado. *Kiva* 40:113-119.
 1977 Cultural Change and Continuity on Chapin Mesa. The Regents Press of Kansas, Lawrence.

- 1978 American Southwest. In *Chronologies in New World Archaeology*, edited by R.E. Taylor and C.W. Meighan, pp. 201-222, Academic Press, New York.
- Rowe, John Howland
 1962 Stages and Periods in Archaeological Interpretation. *Southwestern Journal of Anthropology* 18:40-54.
- Rudecoff, Christine A.
 1980 An Archaeological Survey in the Shiprock and Chinle Areas, Navajo Nation. *Navajo Nation Papers in Anthropology* No. 3. Navajo Nation Cultural Resource Management Program. Window Rock.
- Sahlins, Marshall D. and Elman R. Service
 1970 *Evolution and Culture*. The University of Michigan Press, Ann Arbor.
- Sayles, Edwin B. and Ernst Antevs
 1941 *The Cochise Culture*. Gila Pueblo, Medallion Paper 29, Globe.
- Schaafsma, Curtis F.
 1979 *The Cerrito Site (AR-4): a Piedra Lumbre Phase Settlement at Abiquiu Reservoir*. School of American Research, Santa Fe.
- Schoenwetter, James and Frank W. Eddy
 1964 *Alluvial and Palynological Reconstruction of Environments, Navajo Reservoir District*, Museum of New Mexico Papers in Anthropology, No. 13, Santa Fe.
- Schroeder, Albert H.
 1963 Navajo and Apache Relationships West of the Rio Grande. *El Palacio* 70:5-23.
- 1965 A Brief History of the Southern Utes. *Southwestern Lore* 30: 53-78.
- 1967 An Archaeological Survey Adjacent to Hovenweep National Monument. *Southwestern Lore* 33(3 and 4):61-94.
- Schroedl, Alan R.
 1977 The Paleo-Indian Period on the Colorado Plateau. *Southwestern Lore* 43(3):1-9.
- Sharrock, Floyd W. and Edward G. Keane
 1962 *Carnegie Museum Collection from Southeast Utah*. University of Utah Anthropological Papers, No. 57. Salt Lake City.
- Simmons, Alan H.
 1981 The "Other" Archaeology of Northwestern New Mexico: Perspectives on the Aceramic Occupation of the San Juan Basin. *Contract Abstracts and CRM Archaeology* 2(2).

- Smith, Jack E.
 n.d. The Archaeological Resources of Mesa Verde National Park. Ms. report in possession of the author, Mesa Verde National Park.
- Stevenson, Joy Brown
 1975 Technological Analysis of Prehistoric Cotton Textiles from Mancos Canyon and Associated Environmental Considerations. In The 1974 Johnson-Lion Canyon Project: Report of Investigations I, assembled by Paul R. Nickens, pp. 91-141. Bureau of Indian Affairs, Albuquerque.
- Stewart, Omer C.
 1942 Culture Element Distributions: 18, Ute-Paiute. Anthropological Records 6(4). University of California Press, Berkeley.
 1966 Ute Indians: Before and After White Contact. Utah Historical Quarterly 34:38-61.
- Stiger, Mark A.
 n.d. Dolores Project Ac ceramic Site Resources: Scope and Research Potential. Ms. in preparation, Dolores Archaeological Program, Dolores.
- Stuart, David E. and Rory P. Gauthier
 1981 Prehistoric New Mexico: Background for Survey. New Mexico State Historic Preservation Bureau, Santa Fe.
- Swannack, Jervis D., Jr.
 1969 Big Juniper House, Mesa Verde National Park, Colorado. National Park Service Publications in Archeology 7C, Washington.
- Taylor, Walter W.
 1948 A Study of Archeology. Memoirs of the American Anthropological Association, No. 69.
- Toll, Henry W. III
 1977 Dolores River Archeology: Canyon Adaptations as Seen Through Survey. Bureau of Land Management Cultural Resource Series, No. 4. Denver.
- Tucker, Gordon C., Jr.
 1981 The Prehistoric Settlement System on Chimney Rock Mesa, South-central Colorado, AD 925-1125. Unpublished Ph.D dissertation, Department of Anthropology, University of Colorado, Boulder.
- Ware, John A.
 1981 Archaeological Investigations in the Durango District, Southwestern Colorado. Contract Abstracts and CRM Archeology 2(2):20-28.
 1982 Hunters and Gatherers in the Animas Valley. Ms. in possession of the author, Santa Fe.

- Wendorf, Fred and James J. Hester
 1962 Early Man's Utilization of the Great Plains. *American Antiquity* 28:159-171.
- Wendorf, Fred and Erik K. Reed
 1955 An Alternative Reconstruction of Northern Rio Grande Prehistory. *El Palacio* 62:131-173.
- Wheat, Joe Ben
 1955a Mogollon Culture Prior to AD 1000. *Memoirs of the American Anthropological Association* No.82.
- 1955b MT-1 Basketmaker III Site near Yellowjacket, Colorado. *Southwestern Lore* 21(2):18-26.
- 1980 Yellowjacket Canyon Archaeology. In *Insights into the Ancient Ones*, edited by Joanne H. Berger and Edward F. Berger, pp. 60-66. Crow Canyon School, Cortez.
- Wheeler, Sir Mortimer
 1964 *Archaeology from the Earth*. Pelican Books, Baltimore.
- White, Adrian S. and David A. Breternitz
 1976 *Stabilization of Lowry Ruins*. Bureau of Land Management Cultural Resource Series, No. 1. Denver.
- Wilke, Richard R. and William L. Rathje
 1982 Household Archaeology. *American Behavioral Scientist* 25: 617-639.
- Willey, Gordon R. and Phillip Phillips
 1958 *Method and Theory in American Archaeology*. The University of Chicago Press, Chicago.
- Wilshusen, Richard
 1981 Areas 3, 7 - Rio Vista Village (Site 5MT2182). Ms. on file, Dolores Archaeological Program, Dolores.
- 1982 Excavations at Marshview Hamlet (Site 5MT2235), a Pueblo III Habitation Site. Dolores Archaeological Program Technical Reports DAP-035. Final report submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- 1983 Excavations at Periman Hamlet (Site 5MT4671), Area I, a Pueblo I Habitation. Dolores Archaeological Program Technical Reports DAP-091. First draft submitted to the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City.
- Winter, Joseph C.
 1976 Hovenweep 1975. San Jose State University Archeological Report 2, San Jose.
- 1977 Hovenweep 1976. San Jose State University Archaeological Report No. 3, San Jose.

- Winter, Joseph E., William E. Reynolds, and John A. Ware, eds.
1981 The Cultural Resources of Ridges Basin and Upper Wildcat Canyon. ESCA-Tech Corporation, Albuquerque.
- Woodbury, Richard B.
1954 Prehistoric Stone Implements of Northeastern Arizona. Peabody Museum of American Archaeology and Ethnology Vol. 34. Cambridge.
1961 Prehistoric Agriculture at Point of Pines, Arizona. Society for American Archaeology, Memoir No. 17.
1979 Prehistory. In Handbook of North American Indians, Southwest, Vol. 9, edited by Alfonso Ortiz, pp. 22-30. Washington.
- Woodbury, Richard B. and Ezra B.W. Zubrow
1979 Agricultural Beginnings, 2000 BC-AD 500. Handbook of North American Indians, Southwest, Vol. 9, edited by Alfonso Ortiz, pp. 43-60. Washington.
- Wormington, H.M.
1947 Prehistoric Indians of the Southwest. The Colorado Museum of Natural History, Popular Series No. 7, Denver.