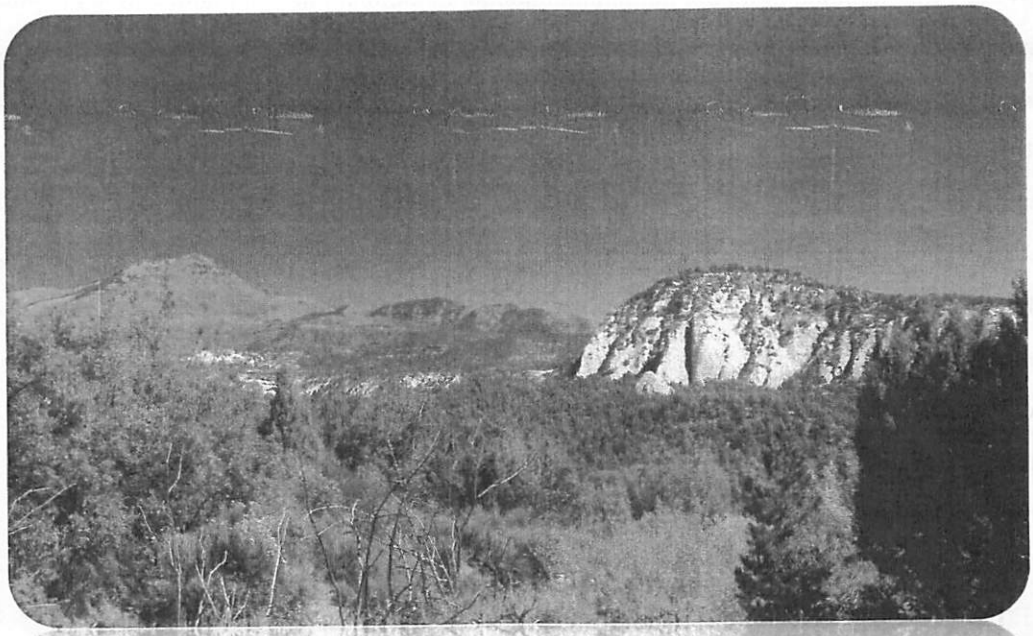
GARDENERS AND GATEKEEPERS: AN INVESTIGATION OF A PUEBLO I COMMUNITY IN ALLEN CANYON, MONTICELLO RANGER DISTRICT, MANTI-LA SAL NATIONAL FOREST



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February 2012

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INTRODUCTION

The Manti-La Sal National Forest Heritage program conducted a cultural resource investigation in Allen Canyon between May and October 2011. This investigation was conducted in compliance with Section 110 of the National Historic Preservation Act of 1966, as amended (PL-91-852). The Manti-La Sal National Forest Heritage program has partnered with the Canyonlands Natural History Association (CNHA) in order to study the Pueblo I community in Allen Canyon on the Monticello Ranger District. The goal of this study is to investigate the Pueblo I period Ancestral Puebloan community in Allen Canyon on the Monticello Ranger District, Manti-La Sal National Forest. Since the early 1970s, it has been recognized that the largest concentration of Pueblo I period sites in Southeast Utah are found on the Monticello Ranger District; however, no formal attempts have been made to investigate or synthesize the volumes of survey data collected since that time. Consequently, this important suite of information has not been bought forward or integrated into the growing body of regional information.

Initial analysis of the 1970s era surveys and data were geared toward predictive modeling to facilitate land management activities and understanding the relationship between prehistoric occupations and the environment (Debloois 1975; DeBloois and Green 1978; Green 1971). Preliminary analyses suggested the Pueblo I period occupation was primarily small field house and small habitation sites that were seasonal in nature. However, recent inventory work on the District has indicated that the Pueblo I occupation is more complex than previously recognized. In portions of the District, small villages with associated multiple and single-residence households have been identified that suggest a higher order of social complexity existed on the Forest during the Pueblo I period.

Recent work suggests that a similar degree of complexity may exist within the Allen Canyon area; however, additional data are needed to investigate this Pueblo I community. The principle aim of this project is to collect additional field data from a selection of important Pueblo I sites in Allen Canyon and to investigate the development and nature of the Pueblo I community in the Allen Canyon area. This study focuses on a group of eight sites that are clustered in the middle Allen Canyon area (Table 1; Figure 1). These sites were initially documented in the early 1970s when a location on a map and scant information about the sites was collected. From this documentation, it was discerned that most of the sites dated to the Pueblo I period and two of the sites, Sites 718 and 719, were of moderate-to-large size. Site 718 was described as containing 17+ rooms and 719 was described as containing 7 or more rooms. An initial visit to these sites in 2009 indicated that both sites collectively had as many as 30+ rooms. The study focuses on updating these two known Pueblo I sites in the middle Allen Canyon area that appear to be the center of the Pueblo I community in the canyon and investigate the contemporary satellite sites in order to understand this portion of the Pueblo I period community in the canyon.

RESEARCH DESIGN

Three principal research domains shall be investigated during the course of this research: (1) Chronology, (2) Settlement and Economy, and (3) Social Interaction. These research domains provide a fundamental context for evaluating the Pueblo I community in the upper South Cottonwood watershed.

map
not
available
for
public

Table 1. Sites updated in Allen Canyon.

State Number	Agency Number	Site Type	Temporal Affiliation
42SA12391	713	Habitation	Pueblo I
42SA12394	716	Habitation	Pueblo II
42SA12395	717	Artifact scatter	Undated
42SA12396	718	Habitation	Basketmaker III-possible Pueblo I
42SA12397	719	Habitation	Pueblo I
42SA12399	721	Habitation	Basketmaker III-possible Pueblo I
42SA12400	722	Habitation	Pueblo I-Pueblo II
42SA12405	727	Habitation	Pueblo I

Chronology

Assessing when sites were occupied is a primary research question. For our purposes, establishing the chronological placement for sites provides a basis for addressing the other two research domains. With a temporal framework, studies that consider changes in settlement locations, differences in resource use, or varying alliances between groups are enabled.

A variety of methods can be used to date a site that may be classed into absolute and relative dating methods. Clearly, excavated data are the best and are most reliable because a number of absolute dating methods can be used, such as tree ring dating, obsidian hydration, radiocarbon, and archaeomagnetic methods; however, these methods are not applicable to studies based on surface survey. Of primary importance to this project are relative methods that can be used during survey and evaluation projects to place sites within a general, yet precise enough, temporal framework for further analyses.

Relative methods of dating that can be used include cross-dating artifacts, comparative differences in artifact attributes and feature morphology. Artifacts, such as projectile points and ceramic sherds, are temporally sensitive. These artifacts have been cross-dated with tree ring dates from excavated assemblages across the region and provide important information on when sites were occupied. Toward these ends, ceramic ware and type data, along with projectile point type data, documented at sites will provide a relative temporal framework for this study.

Settlement and Economy

Recognition of settlement and economic patterns is contingent on the identification of a number of lines of evidence including site type and location, feature types and frequency, artifact assemblages, and the spatial organization of sites types of a given temporal period.

Site Function or Use. Site function or site use is fundamental to any study of settlement patterns. Site use can be assessed by examining the range of artifact and feature types present, the density and diversity of materials present, the arrangement of features and artifacts within and between sites, and the placement of the site in the larger settlement pattern and temporal framework. Variation between sites is related to differences in site use, the intensity with which these activities were conducted, and the number of people or groups participating. The diversity,

spatial layout, variations, and density of artifacts and features present on a site are the basic building blocks used to address this research theme.

Economy and Subsistence. Detailed analysis of surface artifact assemblages, feature morphology and placement provide valuable data for examining issues of subsistence, resource procurement, and seasonality. Such studies are aided by analysis of ceramic and flaked-stone artifacts, sourcing non-local artifacts, and through the analysis of form, construction, and location of features.

Social Interaction

If we can use relative dating to place individual sites or site use episodes within a temporal framework, and identify the activities that occur at individual sites, we can explore the relation of the site to large communities that occupied the project area. Studies of social interaction form the basis to understanding how social groups organized and integrated themselves at local and regional levels.

Interaction between groups may be indicated by exchange of utilitarian or non-utilitarian items. Exchange of these utilitarian and non-utilitarian items may have provided means for securing needed resources for subsistence, as well as marriage, religious, and political relationships and networks.

Additionally, when a series of distinct sites occur near one another, they are descriptively noted as being clustered. Site clustering is not uncommon in the archaeological record and has important implications for boundary definition relative to interaction between groups. Site clustering is often used as a proxy measure for describing prehistoric communities. An important question, then, is whether these clusters represent individual communities or if spatially clustered sites are part of a larger community. It is critically important to characterize the nature of the site clusters in order to understand larger dimensions of prehistoric community and interaction.

RESULTS

The results of the study are presented below. The discussion is organized by three principal areas of inquiry: chronology, settlement and economy, and social interaction.

CHRONOLOGY

Assessing when sites were occupied is a primary research question. For our purposes, establishing the chronological placement for sites provides a basis for addressing the other two research domains. With a temporal framework, studies that consider changes in settlement locations, differences in resource use, or varying alliances between groups are enabled.

Ceramic cross-dating

Ceramic cross-dating is a powerful chronological tool used to date Ancestral Puebloan sites in the region. Although chronometric dating (dendrochronology, archaeomagnetic dating, and radiocarbon) is well established in the Mesa Verde region, these anchors are few in the southeastern Utah area. Nevertheless, the foundations of the overall ceramic chronology are

solid and allow for a temporal ordering of the sites through solid excavation and chronometric dating. Table 2 summarizes the common ceramic types found in the region and the date ranges proposed for each ceramic type (e.g., Irwin et al. 2000; Ortman et al. 2005; Wilson and Blinman 1995). Table 3 depicts composite results of in-field analysis, field collections, and museum collections from the sites within the study area. From this data, several patterns are noteworthy.

Table 2. Common ceramic types in the region with date ranges.

Ceramic Type	Date Range
Chapin Gray	A.D. 575-900
Moccasin Gray	A.D. 775-900
Mancos Gray	A.D. 875-950
Indeterminate Corrugated	A.D. 900-1300
Chapin Black-on-white	A.D. 575-900
Piedra Black-on-white	A.D. 750-900
White Mesa Black-on-white	A.D. 750-1000
Mancos Black-on-white	A.D. 900-1150
Early White Ware	A.D. 600-900
Late White Ware	A.D. 900-1150
Abajo Red-on-orange	A.D. 700-850
Bluff Black-on-red	A.D. 750-900
Deadman's Black-on-red	A.D. 850-950/1050
Indeterminate unslipped Red Ware	A.D. 700-900
Indeterminate slipped Red Ware	A.D. 700-1050

Site 713 has mostly Pueblo I ceramic types along with two Mancos B/W (A.D. 900-1150) and 11 "late White Ware" sherds. Misclassification of the latter types during the in-field analysis is a possibility or, perhaps these sherds representing a Pueblo II "pot drop" intrusive to the site. The assemblage contains abundant plain gray body sherds along with Chapin Gray (A.D. 575-900), Moccsasin Gray (A.D. 775-900), Chapin B/W (A.D. 575-900), White Mesa B/W (A.D. 750-1000), Bluff B/R (A.D. 750-900), and Deadman's B/R (A.D. 850-950/1050).

Site 716 has a unique assemblage within the study area more indicative of a Pueblo II period occupation than that of Pueblo I period occupation. Of the sites that were updated, this ceramic assemblage is unique. Plain gray body sherds (16.4 %) do not dominate the assemblage. Corrugated gray body sherds (21.3 %), Deadman's B/R (36.1%), Mancos B/W (9.8%) dominate along with lesser numbers of sherds more common in Pueblo I assemblages, such as plain gray body sherds (16.4 %) Mancos Gray (4.9 %), unslipped red wares (6.6 %). Mancos B/W (A.D. 900-1150), Deadman's B/R (A.D. 850-950/1050), Mancos Gray (A.D. 875-950) overlap suggesting an early-to-middle Pueblo II date. The absence of Pueblo I diagnostic ceramics such as Moccasin Gray, Bluff B/R, White Mesa B/W, and Piedra B/W support this conclusion.

Site 717 is an undated lithic scatter. No ceramic artifacts were identified in the field or in collections made by the 1970s surveys.

Site 718 ceramic data is a composite of in-field artifact analysis and analysis of collections made in the 1970s housed at EOC museum. The data indicate a strong association with ceramic types

Table 3. Ceramic type counts from the updated Allen Canyon sites.

Site No.	Ceramic Type	Count	Percentage
713	Plain Gray	79	73.2
	Chapin Gray	2	1.9
	Moccasin Gray	9	8.3
	Mancos Gray		
	Indeterminate Neck-banded Gray Ware		
	Indeterminate Corrugated Gray Ware		
	Chapin B/W	1	0.9
	White Mesa B/W	1	0.9
	Piedra B/W		
	Mancos B/W	2	1.9
	Early White Ware	1	0.9
	Late White Ware	11	10.2
	Indeterminate Unslipped Red Ware		
	Abajo R/O		
	Bluff B/R	1	0.9
	Deadman's B/R	1	0.9
	Total	**108**	**100.0**
716	Plain Gray	10	16.4
	Chapin Gray		
	Moccasin Gray		
	Mancos Gray	3	4.9
	Indeterminate Neck-banded Gray Ware		
	Indeterminate Corrugated Gray Ware	13	21.3
	Chapin B/W		
	White Mesa B/W		
	Piedra B/W		
	Mancos B/W	6	9.8
	Early White Ware		
	Late White Ware	3	4.9
	Indeterminate Unslipped Red Ware	4	6.6
	Abajo R/O		
	Bluff B/R		
	Deadman's B/R	22	36.1
	Total	**61**	**100.0**
718	Plain Gray	290	88.4
	Chapin Gray	6	1.8
	Moccasin Gray		
	Mancos Gray	1	0.3
	Indeterminate Neck-banded Gray Ware		
	Indeterminate Corrugated Gray Ware		
	Chapin B/W	16	4.9
	White Mesa B/W	1	0.3
	Piedra B/W		
	Mancos B/W		
	Early White Ware	14	4.3
	Late White Ware		
	Indeterminate Unslipped Red Ware		

	Abajo R/O		
	Bluff B/R		
	Deadman's B/R		
	Total	**328**	**100.0**
719	Plain Gray	1274	76.4
	Chapin Gray	1	0.05
	Moccasin Gray	71	2.3
	Mancos Gray	118	7.1
	Indeterminate Neck-banded Gray Ware	4	0.2
	Indeterminate Corrugated Gray Ware	2	0.1
	Chapin B/W	9	0.5
	White Mesa B/W	41	2.5
	Piedra B/W	3	0.1
	Mancos B/W		
	Early White Ware	18	1.1
	Late White Ware		
	Indeterminate Unslipped Red Ware	80	4.8
	Indeterminate slipped Red Ware	3	0.2
	Abajo R/O	6	0.4
	Bluff B/R	36	2.2
	Deadman's B/R	1	0.05
	Total	**1667**	**100.0**
721	Plain Gray	5	83.3
	Chapin Gray		
	Moccasin Gray	1	16.7
	Mancos Gray		
	Indeterminate Neck-banded Gray Ware		
	Indeterminate Corrugated Gray Ware		
	Chapin B/W		
	White Mesa B/W		
	Piedra B/W		
	Mancos B/W		
	Early White Ware		
	Late White Ware		
	Indeterminate Unslipped Red Ware		
	Abajo R/O		
	Bluff B/R		
	Deadman's B/R		
	Total	**6**	**100.0**
722	Plain Gray	44	77.2
	Chapin Gray		
	Moccasin Gray		
	Mancos Gray	3	5.3
	Indeterminate Neck-banded Gray Ware		
	Indeterminate Corrugated Gray Ware	1	1.7
	Chapin B/W		
	White Mesa B/W		
	Piedra B/W		

	Mancos B/W	4	7.0
	Early White Ware	2	3.5
	Late White Ware		
	Indeterminate Unslipped Red Ware		
	Abajo R/O		
	Bluff B/R	3	5.3
	Deadman's B/R		
	Total	**57**	**100.0**
727	Plain Gray	616	80.2
	Chapin Gray	5	0.7
	Moccasin Gray	46	6.0
	Mancos Gray	31	4.0
	Indeterminate Neck-banded Gray Ware	2	0.2
	Indeterminate Corrugated Gray Ware		
	Chapin B/W		
	White Mesa B/W	13	1.7
	Piedra B/W		
	Mancos B/W	1	0.1
	Early White Ware	3	0.4
	Late White Ware		
	Indeterminate Unslipped Red Ware	22	2.9
	Abajo R/O	4	0.5
	Bluff B/R	25	3.3
	Deadman's B/R		
	Total	**768**	**100.0**

that dominate the Basketmaker III period, but persist into the Pueblo I period. Chapin Gray (A.D. 575-900) and Chapin B/W Chapin B/W (A.D. 575-900) diagnostics prevail at the site along with a plethora of plain gray body sherds. Two pieces of Pueblo I pottery, a White Mesa B/W and a Mancos Gray sherd, may be incidental incorporations in the site; however, as architectural data discussed below, it is likely that the site has an early Pueblo I component.

Site 719 ceramic data is a composite of in-field artifact analysis, 2011 collections, and analysis of collections made in the 1970s housed at EOC museum. The site assemblage has sherds common to the Pueblo I period. Typical of Pueblo I sites on the Forest, plain gray body sherds (76.4 %) dominate along with lesser numbers of diagnostic types. Early Pueblo I occupation is suggested by the association of Chapin B/W (A.D. 575-900), Abajo R/O (A.D. 700-850), and Moccasin Gray (A.D. 775-900), but the primary occupation of the site is likely later in time. Abundant Moccasin Gray (2.3 %), Mancos Gray (7.1 %), White Mesa B/W (2.5 %), Piedra B/W (0.1 %), Bluff B/R (2.2 %) are present in well-represented numbers. Moccsasin Gray (A.D. 775-900), White Mesa B/W (A.D. 750-1000), Bluff B/R (A.D. 750-900), Mancos Gray (A.D. 875-950), Piedra B/W (A.D. 750-900) are commonly found on middle-to-late Pueblo I sites on the Forest and elsewhere in the region.

Hurst (personal communication 2012) identifies a distinction in the Mancos Gray type that is of temporal importance. Mancos Gray is distinguished from Moccasin Gray by narrower neck-bands and distinctive clapboard style. Hurst indicates that, during the terminal Pueblo I period (roughly post A.D. 880), there is a tendency toward narrow neck-bands that are more rounded

and evidence of tooling. Analysis of these sherds indicates that flat, clapboard Mancos Gray constitutes 69 percent of the assemblage, while the later variant constitutes 31 percent of the Mancos Gray sherds.

At site 721, the ceramic assemblage at this site is notably small (n=6). The six sherds present include five plain gray body sherds and one Moccasin Gray sherd. A Pueblo I date is inferred.

As with other Pueblo I period sites in the study area, plain gray body sherds (80.2%) dominate the ceramic assemblage at Site 722. Other Pueblo I types such as Mancos Gray (A.D. 875-950) and Bluff B/R (A.D. 750-900) are present along with Mancos B/W (A.D. 900-1150) and unidentified red ware sherds. The absence of Chapin Gray, Moccasin Gray, or Abajo R/O suggests the assemblage is more typical of a later Pueblo I occupation.

At Site 727, the dominance of plain gray sherds (80.2%) with lesser numbers of diagnostic types is typical of a Pueblo I occupation. Chapin Gray (A.D. 575-900), Abajo R/O (A.D. 700-850), and abundant Moccasin Gray (A.D. 775-900) sherds may signify an initial occupation during the early-to-middle Pueblo I period, but the dominant character of the assemblage consisting of Moccasin Gray (A.D. 775-900), Mancos Gray (A.D. 875-950), White Mesa B/W (A.D. 750-1000), and Bluff B/R (A.D. 750-900) are more common in the middle-to-late Pueblo I period sites on the Forest. The division in Mancos Gray discussed above indicates that early Mancos Gray variants comprise 63 percent and later variants comprise 37 percent of the Mancos Gray sample from the site.

Ceramic Complexes

A second way of looking at dating at the sites, based on ceramic assemblages, is to group ceramic assemblages into complexes of co-occurring types that occur in a given temporal period. The complexes have been subjectively developed based on previous work on the Forest (Irwin et al. 2000) and conversations with local expertise (Hurst personal communication).

Complex 1

Complex 1 consists of primarily plain gray body sherds, Chapin Gray (A.D. 575-900), and Chapin B/W (A.D. 575-900) sherds. These sherds date sites to the Basketmaker III-Pueblo I period (A.D. 575-700/750). In this complex, the absence of diagnostic sherds dating to the early Pueblo I period, such as Moccasin Gray and Abajo R/O, places the assemblage closer to the A.D. 700 end of the scale than later in the Pueblo I period when neck-banded gray wares and red wares become much more common.

Complex 2

Plain gray body sherds dominate this complex along with lesser numbers of Chapin B/W (A.D. 575-900), Chapin Gray (A.D. 575-900), Moccasin Gray (A.D. 775-900), and Abajo R/O (A.D. 700-850). Bluff B/R (A.D. 750-900), White Mesa B/W (A.D. 750-1000), Piedra B/W (A.D. 750-900) may be present in the later portion of this occupation. This complex is indicative of an early-to-middle Pueblo I period occupation, roughly between A.D. 700-850.

Complex 3

Complex 3 is also dominated by plain gray body sherds along with Chapin Gray (A.D. 575-900), Moccasin Gray (A.D. 775-900), Mancos Gray (A.D. 875-950), White Mesa B/W (A.D. 750-1000), Piedra B/W (A.D. 750-900), Bluff B/R (A.D. 750-900), Deadman's B/R (A.D. 850-950/1050). This complex is typical of mid-to-late Pueblo I period occupations, roughly between A.D. 850-920. Trace amounts of indeterminate corrugated Gray Ware and Mancos B/W (A.D. 900-1150) have been observed on sites dating to this period on the Forest.

Complex 4

Undifferentiated plain gray body sherds, Mancos Gray (A.D. 875-950), Deadman's B/R (A.D. 850-950/1050), Mancos Corrugated (A.D. 900-1200), undifferentiated corrugated body sherds, and Mancos B/W (A.D. 900-1150) occur in this complex. This complex is considered to be representative of early-to-mid Pueblo II occupations (roughly A.D. 900-1050) and is distinguished by an absence of diagnostic types typical of the Pueblo I period on the Forest, such as Chapin Gray, Abajo R/O, Moccasin Gray, Bluff B/R, Piedra B/W, and White Mesa B/W.

The dominant character of ceramic assemblage at Site 713 falls within Complex 2, the early-to-middle Pueblo I roughly between A.D. 700-850 (Table 4). Plain gray body sherds dominate this complex along with lesser numbers of Chapin Gray (A.D. 575-900), Chapin B/W (A.D. 575-900), Moccasin Gray (A.D. 775-900), Bluff B/R (A.D. 750-900), and White Mesa B/W (A.D. 750-1000). Small numbers of Mancos B/W (n=2) and sherds classified as late white wares and Deadman's B/R may signify a reuse of the site during the Pueblo II period or possibly misclassification during the in-field analysis.

Site 718, initially thought to be contemporary with the nearby Site 719, appears to have a ceramic assemblage dominated by Complex 1, placing the site earlier within the temporal framework than the other sites (Table 4). The assemblage consists primarily plain gray body sherds, Chapin Gray (A.D. 575-900), and Chapin B/W (A.D. 575-900) sherds along with only two Pueblo I era sherds. The assemblage is much more characteristic of the Basketmaker III period, but these ceramic types do persist into the Pueblo I period. Architecture, discussed below, does suggest a Pueblo I component at the site.

Sites 719, 721, and 727 also express Complex 2 characteristics within the ceramic assemblage (Table 4). Plain gray body sherds along with lesser numbers of Chapin B/W (A.D. 575-900), Chapin Gray (A.D. 575-900), Moccasin Gray (A.D. 775-900), and Abajo R/O (A.D. 700-850) sherds potentially indicates an early-to-middle Pueblo I occupation at these sites. Complex 2 is thought to be indicative of an early-to-middle Pueblo I period occupation, roughly between A.D. 700-850.

Middle-to-late Pueblo I occupation, roughly between A.D. 850 and 920, is evident at Sites 719, 722, and 727 by the dominance of Complex 3 ceramics. Sites 719 and 727 appear to be contemporaneously occupied with initial occupation occurring earlier in the Pueblo I period and persisting into the late A.D. 800s. Site 722, in contrast, appears to initiate in the late Pueblo I period and possibly extend into the early Pueblo II period, as indicated by indented corrugated and Mancos B/W sherds.

Finally, one site, Site 716, has a ceramic assemblage more typical of Complex 4 (Table 4). The assemblage contains undifferentiated plain gray body sherds, Mancos Gray (A.D. 875-950), but Deadman's B/R (A.D. 850-950/1050), undifferentiated corrugated body sherds, and Mancos B/W (A.D. 900-1150) dominate suggesting the assemblage best reflect Complex 4. This complex is considered to be representative of early-to-mid Pueblo II occupations (roughly A.D. 900-1050) and is distinguished by an absence of diagnostic types typical of the Pueblo I period on the Forest, such as Chapin Gray, Abajo R/O, Moccasin Gray, Bluff B/R, Piedra B/W, and White Mesa B/W.

Table 4. Ceramic complexes identified at the Allen Canyon Sites.

Site Number	Complex 1	Complex 2	Complex 3	Complex 4	Cultural Affiliation
713					Early-to-Mid Pueblo I; Pueblo II
716					Early Pueblo II
717					unknown
718					Basketmaker III-early Pueblo I
719					Early to Late Pueblo I
721					Early Pueblo I?
722					Late Pueblo I-early Pueblo II
727					Early to Late Pueblo I

Lithic Cross-dating

The primary tool available for relative dating is the projectile points. These tools may provide some information for evaluating temporal placements. The Abajo Stemmed point from Site 713 is typical of Pueblo I period sites on the Forest. Three points were identified at Site 718; two are non-diagnostic fragments and the third is a portion of an Archaic period Elko Eared type. Three points were found at Site 719. Two of the points are fragments of Pueblo I period Abajo Stemmed points and the third is a non-diagnostic preform. Site 727 has three projectile point fragments. Two are broken Elko Corner-notched types and one is a non-diagnostic fragment. Elko series points may reflect scavenging behavior and are likely unrelated to the temporal affiliation of these sites. The Abajo Stemmed points are typical of Pueblo I era site, but provide little information beyond this broad affiliation.

Features

Comparative data on feature morphology at the study area sites may also provide clues to the temporal affiliation of the occupations. Architectural forms in the region have been documented to change through time and may provide information important to temporal affiliation.

Ceramic data discussed above indicate that Site 718 dates to the Basketmaker III period to the early Pueblo I period. Regionally, the principal architectural form of the Basketmaker III period is the pit structure with a subrectangular main chamber often with an antechamber (Wilshusen 1999a: 178). At some Basketmaker III sites in the Four Corners Region, stockades, small covered cists, small, partly above ground storage rooms, and middens are found (Wilshusen (1999a: 177). On the Forest, small, circular pit structures lined with upright sandstone slabs are found at Basketmaker III sites. Feature 3 at Site 718 is a 2.2 m diameter, slab-lined pit structure

located in close proximity to the midden. The midden at the site contains Chapin Gray and Chapin B/W. It is likely of Basketmaker III origin suggesting the settlement was initially founded during that period.

Surface structures are also found at Sites 718. Feature 1 is a moderately large surface structure containing eight square and circular rooms. The structure is constructed using upright slabs and masonry suggesting it is of jacal construction. Feature 2 is a probable jacal surface structure as well. It is a 44 m long area of mounded soil with associated sandstone rubble. Wilshusen (1999b: 214) describes surface structures indicated by "areas of mounded earth, scattered rock rubble, upright slabs, and burned earthen building material" that are found on Pueblo I residential sites in southwest Colorado. A third feature, Feature 5, is a single-room surface structure indicated by mounded sandstone rubble. These structural forms are not typical of Basketmaker III construction and are more likely to represent a Pueblo I period occupation. Although two Pueblo I period sherds found at the site, they may be incidental incorporations from the nearby Pueblo I site (Site 719); however, the substantial jacal architecture using upright slabs and sandstone rubble found at 718 strongly suggest a post-A.D. 700 component. This construction technique is much more typical of the early Pueblo I period and the paucity of ceramic evidence for this period may be deceiving.

Site 713, ceramically dated to the early-to-middle Pueblo I period, contains individual surface rooms with single-course masonry footers, a pit structure with associated sandstone slabs, and a moderately large multiple room structure consisting of upright slab and masonry construction. The slabs line rooms with masonry footers outside and, presumably, jacal wall construction. This technique is common to the Pueblo I period throughout the region (Wilshusen 1999b). The pit structure is located about 60m south of other the other features. It is unknown if this pit structure is contemporary with these features or if it may be of Basketmaker III origin.

Site 721 was dated using ceramic cross-dating to the early-to-middle Pueblo I period. The contains a small surface structure indicated by a low rubble mound and three potential pit structures utilizing upright slab construction or insubstantial masonry elements. This latter type of architecture is commonly noted at Basketmaker III period sites while the surface structure with low, masonry footer and jacal architecture is common to the Pueblo I period.

Sites 719 and 727 have been dated using ceramic cross-dating primarily to the middle-to-late Pueblo I period. Substantial use of coursed masonry is found at Sites 719 and 727. During the middle-to-late Pueblo I, many sites observed on the Forest have substantive use of coursed masonry footers with jacal wall construction (e.g., Fetterman, Honeycutt, and Kuckleman 1988; Hurst et al. 2004; Irwin et al. 2000). This development in middle-to-late Pueblo I surface architecture has been observed elsewhere in the region (Wilshusen 1999b). Commonly, these structures incorporate upright slab construction as well. This architectural style is often used in conjunction with subterranean pit structures, as is seen at Site 719 and, possibly, 727.

Site 722 has substantial amounts of sandstone rubble and upright slabs indicating rooms. It is likely that the inhabitants of this site may have continued use of the style of architecture noted at Sites 719 and 727. Some evidence suggests the L-shaped architecture noted at Site 719 may also be present at Site 722; however, abundant, dense Gambel oak, and structural deterioration and erosion do not permit definitive conclusions based on surface evidence. The structure appears to

be of similar masonry and jacal construction that is typical of the middle-to-late Pueblo I period on the Forest.

Site 716 has been dated to the Pueblo II period using ceramic cross-dating. The site contains a small surface masonry structure. The amount of rubble does not suggest a full-height masonry structure, but a structure constructed of masonry and jacal. This form of architecture begins in the Pueblo I period and continues into the Pueblo II period.

SETTLEMENT AND ECONOMY

Three primary areas are considered in the study of settlement and economy presented below. First, the site function and use is considered. This leads to a discussion on economy and subsistence. Finally, settlement patterns are investigated.

SITE FUNCTION AND USE

The function and use of a site is investigated through the kinds and numbers of features and artifact categories represented. Behaviorally, three aspects are important to investigating site function: activity type, activity diversity, and occupation duration (e.g. Geib 1996; Hurt 2001; Irwin 2001; Irwin et al. 2000). The constellation of features and artifacts are used to investigate these aspects.

Features

The numbers and kinds of features present at sites may provide important clues to how a site functioned within a settlement system. Features are differentially represented at the sites within the study area (Table 5). Site 717 lacks features indicating it is a place where a limited range of activities were conducted. In contrast, the substantial architectural construction at Sites 713, 718, 719, 722, and 727 stands out. Less substantial architectural development occurs at Sites 716 and 721.

Site 713 contains a moderately large, jacal and masonry, surface structure of 10 or more rooms, two single-room structures, a pit structure, 3 rock alignments, two cists, and a rock concentration. The site is found on a bench along the west sited of Allen Canyon and most of the features are found on the east-facing slope directly above the creek. Feature 8, a single-room structure is found on the ridge top. Feature 7, the multiple room structure lies on the northern end of the east-facing slope with a series of cists, rock alignments, and rock concentration to the north of the structure. Trash is concentrated on the slope to the south-southeast of the multiple-room structure. The pit structure lies approximately 60 m to the south of the other features. This constellation of features is indicative of residential, storage, and agricultural activities. The substantial investment in features is indicative of year round habitation although the absence of a well-developed midden may indicate the occupation was short-lived. Wilshusen (1999b) has suggested that jacal structures may have only had a 20 year use-life.

Site 718 contains two moderately large, jacal and masonry surface structure, pit structures, a single room surface structure, a midden, rock alignments/check dams, two cists, and a rock concentration. The site is situated on a gently, east-sloping ridge along the west side of Allen

Table 5. Features located at the updated Allen Canyon sites.

Site No.	Multiple-room Structure	Single-room structure	Pit structure	Rock Alignment/Check Dam	Cist	Midden	Rock Concentration
713	1 (10+ rooms)	2	1	3	2		1
716		1 (2 rooms?)					
717							
718	2 (8 rooms/10+ rooms)	1	1	3	1	1	1
719	1 (10-15 rooms)		1		2	1	
721		1	3	1			
722	1 (6-10? rooms)				1		
727	1 (6-10 rooms)	1				1	

Canyon. The layout of the site is generally compact with isolated rock alignment, rock concentration, and single room structure outlying the main concentration of habitation features. The core area layout has two moderately large jacal surface structures forming a rough L-shape. This L-shaped configuration is fronted by at least one, 4 m diameter circular room or pit structure and an open area that likely contains additional subterranean pit structures and/or open space used in communal activities. An isolated pit structure of potential Basketmaker III affiliation lies to the southwest along with a midden containing dark gray, ashy sediments and ceramic and lithic artifacts. Artifact analyses suggest the midden is of Basketmaker III affiliation. The outlying features include check dam features adjacent to a prominent was suggesting nearby agricultural production utilizing runoff. The single room structure may also be related to these activities and functioned as a field house where resources were gathered and initially processed before transport to the core site area. Other functions for this isolated structure are also possible, but surface evidence prohibits definitive functional determination. These features imply residential, storage, and agricultural activities were important at the site.

Site 719 is a substantial habitation consisting of a moderately large, L-shaped surface structure, at least one pit structure, two cists, and a well-developed midden. The site is located on a moderately level bench immediately west of Allen Canyon. The artifact scatter surrounding the core of the site is broadly distributed along the ridge and a lithic concentration/activity area was noted to the south of the main habitation area. The scatter merges with the site (Site 718) immediately west of this site.

The L-shaped surface structure contains at least nine rooms along its east-west leg and three to five rooms along the shorter, north-south leg. Within the open area formed by the L-shaped structure, at least one large depressed area, 10 m in diameter, suggests the presence of one or more pit structures. The area is poorly defined along the south edge where the slope falls off to the south and southeast. The large size (10 m diameter) of the depression is intriguing and may indicate the presence of an over-sized pit structure that may have been used in ritual and community gatherings in addition to household domestic activities (e.g., Wilshusen 1989).

Lightfoot (1994: 124) summarizes studies that indicate specialized facilities for ceremonial use are only likely to occur at villages or communities with more than 200 people while at multiple-residence sites like Site 719 it is more likely that pit structures were used for those activities. Additional subsurface data is needed to understand this feature in its proper function. A second potential pit structure depression may be present at the southern terminus of the east leg of the L-shaped roomblock, but it is poorly defined. A large, moderately dense midden area with dark gray, ashy sediments and numerous artifacts covers the slope area below the structures to the south and southeast. Immediately north of the L-shaped structure, two slab-lined, circular cist features are present suggesting a storage area for foodstuff. Residential and storage activities are indicated. The substantial investment in architecture and well-development midden suggests year-round occupation and relatively long-term use.

Site 722 contains a multiple-room structure and a slab-lined cist. Below the structure is a concentration of artifacts, but no well-developed midden was noted. The size and substantial investment in the architecture is indicative of a multiple-residence habitation, but it may be that the occupation was short-lived and not conducive to midden development. The size of the structure, with the rubble area covering a 22 x 15 m area, suggests it contains as many as 6-10 rooms. Residential and storage activities are implied by the features indicative of year-round use, but, like Site 713, the occupation may have been short-lived.

Site 727 consists of a moderate size surface structure, a slab-lined pit structure or cist, and a well-developed midden. The site is located on a small knoll immediately south of a prominent drainage that separates it from Site 719. The surface structure consists of a large rubble mound and surrounding scatter of rubble. Three rooms are clearly demarcated, but the size of the rubble scatter suggests as many as six to ten rooms may be present, as well as terracing used to level the structural area. Additional rubble was observed in the dense Gamble oak and duff to the east of the structure and additional rooms may be concealed, but this cannot be determined at this time. Immediately down the slope from the structure to the east, moderate densities of trash is evident and a deep midden area is found about 20 m down slope to the east along a cut bank adjacent to the stream. The midden consists of dark gray, ashy sediments and numerous artifacts with at least 50-60 cm of accumulation evident in the cut bank. The pit structure or large cist feature lies to the southwest of the roomblock and a relatively open, level area lies to the west of the roomblock and north of the slab-lined features. Additional subterranean features and/or activity areas may be present in the open area, but surface evidence does not allow for positive identification. Residential and storage activities are indicted by the features. Long-term, year-round occupation is suggested by the substantial architecture and the well-developed midden.

Five of the sites (Sites 713, 718, 719, 722, and 727) contain evidence of multiple-room structures. Well-developed middens present at Sites 718, 719, and 727. These sites with well-developed middens are thought to represent year-round habitation and long-term use. Two other sites, Sites 713 and 722, appear to also be year-round occupations, but may have been a shorter-duration occupation. In addition to these multiple-room structures and middens, the presence of probable pit structures, storage features (cists), rock alignments, and other features suggests these sites functioned as multiple-residence habitations or hamlets. Wilshusen (1999: 213) notes that these residential hamlets generally possess a primary residential area, food-processing or food storage areas, and an area for trash or waste.

Ethnographic and archeological evidence suggests that multiple-residence habitations or hamlets were occupied from between 20-25 years (Wilshusen 1999b: 214). The ceramic discussion above describes potentially early foundation populations present at Sites 713, 721, 718, 719, and 727 during the early-to-middle Pueblo I period, but more substantial occupation is indicated by features at two sites (Site 719 and 727) during the middle-to-late Pueblo I period. This may suggest growth of these settlements through reproduction or migration/consolidation. Site 722 appears like it may be occupied slightly later than these sites and may be a shorter-duration occupation possibly indicating a population in decline.

Wilshusen (199b:213-214) discusses multiple-residence hamlets found in southwest Colorado. He suggests they vary from one to up to nine households and suggests that the average household size in the ethnographic record may have been around 7 people per household. Lightfoot (1994) estimated 5-8 people per household at the Pueblo I Duckfoot site in southwest Colorado. It is reasonable to assume the occupation of households included an extended family and an average of 7 people per household may be adequate for describing Pueblo I households at Pueblo I hamlets. Wilshusen (1999b: 214) suggests multiple-residence hamlets may contain between two to nine households based on the number of pit structures present. In the case of the study area, surface observation does not permit accurate identification of pit structures. At Site 719, two pit structure depressions are present; one may be an over-sized pit structure. The surface structure contains between 15 and 20 rooms. The site is of comparable size to the Duckfoot site excavated in Colorado where four pit structures were unearthed in association with a similar size surface roomblock (Lightfoot 1994). These data suggest the site may have had between two and four households with as many as 14 to 28 people living at the site. Site 718 has as many as 18 or more rooms and may have had a comparable level of occupation. Sites 713, 722, and 727 are smaller with six to ten rooms. An estimate of one or two households is more likely at these sites with a population estimate of seven to 14 people living at these sites. Although speculative, it is reasonable to assume, given the complexity in temporal affiliations of sites in this cluster, that the population never exceeded between 21-42 people at any given time.

Site 717 is an undated lithic scatter. This site contains not datable material and no features. This kind of site is generally referred to as a limited activity locus and likely functioned as a resource procurement and processing area used by nearby residents.

Site 716 contains one surface structure and associated artifact scatter. The site is found on an east-trending ridge to the west of Allen Canyon. The surface structure consists of a low rubble mound measuring 6 x 5 m. The structure may contain two rooms, but no definitive wall alignments are identifiable. The artifact scatter associated with the structure is moderately dense, but no well-defined midden areas are present. The features are aligned along a northwest-southeast axis along the ridge with the rock alignment potentially diverting water running off above one of the possible pit structures. There is a low density artifact scatter surrounding the features and no clearly defined midden present.

Site 721 consists of one surface structure, a slab-lined pit structure, two possible pit structure depressions, and a rock alignment. The site lies on a bench along the western slope of Allen Canyon. The small, masonry structure consists of a 30 cm high rubble mound suggesting a masonry and jacal construction. One pit structure has upright slabs defining its boundary and is 2.5 m in diameter. The other two possible pit structures are small, 2.5 to 3.5 m depressions with

limited amounts of sandstone associated. The rock alignment consists of four stones forming a 2.5 m long linear feature.

In contrast to the larger sites, Sites 716 and 721 appear to be less substantive and are likely to be what might be termed single-residence hamlets or farmsteads/field houses. Smaller, 1-2 room surface structures and possible pit structures are present at these sites, but associated food storage areas and middens are lacking, possibly indicating a shorter-term occupation or seasonal use of these sites. Although Wilshusen (1999b: 221) indicates that farmsteads/field houses are not commonly defined in the Pueblo I period, they become commonly recognized during Pueblo II period. As discussed in the next paragraphs, the limited repertoire of ceramic artifacts and stone tools present at these sites indicates a more limited range of activities consistent with a field house/farmstead interpretation rather than the more substantial small hamlets. In contrast to the data from southwest Colorado, numerous Pueblo I farmsteads/field houses are found on the Forest in association with the Pueblo I period (DeBloois 1975; Irwin et al. 2000; Hurst et al. 2004).

Artifacts Assemblages

Artifact assemblages provide important indicators of activities conducted at sites. The numbers and the kinds of ceramic vessels and lithic tools provide direct evidence of the sorts of activities that were conducted.

Ceramics

Utility wares clearly dominate the ceramic assemblages at all of the sites. Ethnographic and archaeological studies indicate utility wares are used for cooking, food storage, and water containers while decorated bowls are generally used for food mixing, service, and consumption types of activities and decorated jars are generally associated with storage and transport of products, primarily food (Bunzel 1929; Habicht-Mauche 1995; Hurt 2001). The composite ceramic data available for the sites in the study area combine in-field analysis, 2011 collections, and collections available at EOC museum (Table 6). These data indicate several patterns of note.

At Site 713, 83.3 percent of the sample represents utility wares. These vessels are generally used for food storage, water containers, and cooking vessels. The remaining 16.7 percent is decorated ceramics typical of food service, and storage and transport vessels. Of these, approximately 27 percent are bowls while the remainder is jars. The data are likely skewed by the inclusion of 11 "late white ware" sherds that may be misclassified or intrusive to the sites occupation. If the Pueblo II intrusive pottery is omitted from consideration, 60 percent of the decorated pottery are bowls (n=3) and 40 percent are jars (n=2). In actuality, very few vessels are represented in the assemblage and household level food service and consumption is indicated. These data may suggest this site may have had a fairly limited population and short-lived occupation.

At Site 716, in contrast to the other sites, 42.6 percent of the assemblage is utility jars and 57.4 percent is decorated ceramics. Interestingly, only 20 percent of the decorated vessels are bowls showing very low rates of mixing, service, and consumption at the site. The stronger representation of decorated jars is more indicative of storage and transport vessels. These patterns likely indicate an emphasis the cooking, storage, and transport of food, water, and other

products in comparison to other activities. This is consistent with the site function as a field house/farmstead.

Table 6. Ceramic counts by vessel shape.

Site No.	Ceramic Type	Bowl	Jar	Unknown Body	Other	Total
713	Plain Gray			79		79
	Chapin Gray		1		1	2
	Moccasin Gray		9			9
	Mancos Gray					
	Indeterminate Neck-banded Gray Ware					
	Indeterminate Corrugated Gray Ware					
	Chapin B/W	1				1
	White Mesa B/W		1			1
	Piedra B/W					
	Mancos B/W	2				2
	Early White Ware		1			1
	Late White Ware		11			11
	Indeterminate Unslipped Red Ware					
	Abajo R/O					
	Bluff B/R	1				1
	Deadman's B/R	1				1
	Total	**5**	**23**	**79**	**1**	**108**
716	Plain Gray		9	1		10
	Chapin Gray					
	Moccasin Gray					
	Mancos Gray		3			3
	Indeterminate Neck-banded Gray Ware					
	Indeterminate Corrugated Gray Ware		13			13
	Chapin B/W					
	White Mesa B/W					
	Piedra B/W					
	Mancos B/W		6			6
	Early White Ware					
	Late White Ware	1	2			3
	Indeterminate Unslipped Red Ware			4		4
	Abajo R/O					
	Bluff B/R					
	Deadman's B/R	6	2	14		22
	Total	**7**	**34**	**19**		**61**
718	Plain Gray		5	285		290
	Chapin Gray		6			6
	Moccasin Gray					
	Mancos Gray		1			1
	Indeterminate Neck-banded Gray Ware					
	Indeterminate					

	Corrugated Gray Ware					
	Chapin B/W	15		1		16
	White Mesa B/W	1				1
	Piedra B/W					
	Mancos B/W					
	Early White Ware	12		2		14
	Late White Ware					
	Indeterminate Unslipped Red Ware					
	Abajo R/O					
	Bluff B/R					
	Deadman's B/R					
	Total	**28**	**12**	**288**		**328**
719	Plain Gray	3	2	1255	14	1274
	Chapin Gray		1			1
	Moccasin Gray		71			71
	Mancos Gray		118			118
	Indeterminate Neck-banded Gray Ware		4			4
	Indeterminate Corrugated Gray Ware			2		2
	Chapin B/W	9				9
	White Mesa B/W	38	3			41
	Piedra B/W	2		1		3
	Mancos B/W					
	Early White Ware	11	1	5	1	18
	Late White Ware					
	Indeterminate Unslipped Red Ware	31	16	33		80
	Indeterminate slipped Red Ware	2	1			3
	Abajo R/O	2	4			6
	Bluff B/R	25	10		1	36
	Deadman's B/R			1		1
	Total	**123**	**231**	**1297**	**16**	**1667**
721	Plain Gray			5		5
	Chapin Gray					
	Moccasin Gray		1			1
	Mancos Gray					
	Indeterminate Neck-banded Gray Ware					
	Indeterminate Corrugated Gray Ware					
	Chapin B/W					
	White Mesa B/W					
	Piedra B/W					
	Mancos B/W					
	Early White Ware					
	Late White Ware					
	Indeterminate Unslipped Red Ware					
	Abajo R/O					

	Bluff B/R					
	Deadman's B/R					
	Total		**1**	**5**		**6**
722	Plain Gray			43	1	44
	Chapin Gray					
	Moccasin Gray					
	Mancos Gray		3			3
	Indeterminate Neck-banded Gray Ware					
	Indeterminate Corrugated Gray Ware		1			1
	Chapin B/W					
	White Mesa B/W					
	Piedra B/W					
	Mancos B/W	4				4
	Early White Ware	1	1			2
	Late White Ware					
	Indeterminate Unslipped Red Ware					
	Abajo R/O					
	Bluff B/R	3				3
	Deadman's B/R					
	Total	**8**	**5**	**43**	**1**	**57**
727	Plain Gray			611	5	616
	Chapin Gray		5			5
	Moccasin Gray		46			46
	Mancos Gray		31			31
	Indeterminate Neck-banded Gray Ware		2			2
	Indeterminate Corrugated Gray Ware					
	Chapin B/W					
	White Mesa B/W	10	3			13
	Piedra B/W					
	Mancos B/W		1			1
	Early White Ware	3				3
	Late White Ware					
	Indeterminate Unslipped Red Ware		6	16		22
	Abajo R/O	2	2			4
	Bluff B/R	14	11			25
	Deadman's B/R					
	Total	**29**	**107**	**627**		**768**

Site 718 has 90.5 percent utility wares and 9.5 percent decorated sherds. Of the latter, 90.3 percent is bowls. This indicates decorated wares were nearly all used for service and consumption. The large number of utility jars in the assemblage demonstrates an emphasis on cooking and storage of food products along with use as water containers. These patterns indicate domestic activities and imply a residential function for the site.

Site 719 also has a high percentage of utility vessels (88.2 %) represented in the assemblage. Lesser numbers of decorated forms (11.8 %) are represented. Of these decorated forms, 31.9 percent of these vessels are bowls. These forms represent the mixing, service, and consumption of food. Decorated jar sherds appears to be well-resented in the assemblage when compared to other sites possibly indicating transport and storage of processed products, presumably food. The moderate levels of food service and consumption likely reflects the multiple-household occupation and larger resident population. However, the elevated levels of decorated jars may indicate the transport of food to the site for community scale activities such as feasting and ritual exchange, or ceremony. The potential over-sized pit structure may have served as a nexus for these integrating activities

Site 721 has an extremely small sample of ceramics. All are utility wares indicting the procurement of resources and storage of products was the primary focus of the site.

At Site 722, 84.2 percent of the ceramic assemblage is utility wares; 15.8 percent is decorated forms. Nearly all of the decorated sherds (88.9 %) are from bowls. As with other residential sites, cooking and storage of food resources dominate at the site. The data appear to indicate high rates of food service and consumption, as reflected by the elevated decorated bowl counts; however, a glimpse at the frequencies of decorated ceramics indicate that very few vessels are actually represented at the site and household scale food consumption is the most likely scenario.

Site 727 also has a high percentage of utility wares (91.4 %) along with lesser numbers of decorated vessels (8.6 %). Of the decorated sherds, 42.6 percent of the decorated vessels are bowls. The utility vessels were used as water containers, cooking, and storage activities; one small gray ware pitcher is also present. The moderately high number of decorated bowls suggests that food mixing, service, and consumption is well represented. Decorated jars comprise the remainder of the decorated vessels indicating that storage and transport activities were also important at the site. In contrast to the larger, contemporary residential site, Site 719, on the adjacent terrace, it is not likely that more than one or two households were present at this site. It may be that this site participated to a greater extent in community activities such as ritual exchange and feasting, or ceremonial activities although there is no evidence of ceremonial features. A more specialized role in food processing for social events at the larger site, Site 719, also cannot be precluded. The possible over-sized pit structure at Site 719 may have been an integrative feature used for community social and ritual activities. Decorated jars used for storage and transport are well-represented and may indicate this sort of role. The data are inconclusive, but intriguing. Data on vessel size from orifice diameters might be useful in distinguishing differences between household and ritual service and consumption, but these data are not available at this time.

Stone Artifacts

Flaked stone debitage and the tools represented at sites provide information on the kinds of activities conducted at sites. These tools were used in resource procurement and processing, craft production, and other activities and provide important indicators of what activities were conducted at each of the sites in the study area.

Debitage

Lithic debitage is the waste or by-products of the manufacturing process and may yield evidence of the sorts of production that took place at a site. The debitage provides an important compliment to tool analysis in this regard. Previous studies (Irwin 1997; Sullivan and Rozen 1985) have suggested that debitage breakage patterns are linked to lithic production systems. It has been hypothesized that core reduction activities produce greater quantities of complete flakes, broken flakes with intact striking platforms, and angular debris. Conversely, tool production produces more broken flakes, particularly distal fragments (Flake fragments), than core reduction. At the study area sites, the differing proportions of debitage suggest some differences in lithic production activities (Table 7).

Core reduction activities dominate at the sites, as may be somewhat expectable under a more sedentary settlement system. It has been argued (Andrefsky 1994; Irwin 2001) that under systems with a high degree of mobility, there is a greater emphasis on pre-planned, portable tools and production occurs in stages, potentially occurring across the cultural landscape. In contrast, with greater sedentism, more activities are conducted at habitation sites including the majority of lithic production and tools generally reflect a lesser degree of sophistication and planning, frequently relying on utilizing flakes without modification. In this case, tool stone may be procured during the course of other activities, such as plant gathering, and returned to the habitation where it is reduced as needed.

Although core reduction activities are not unexpectedly dominant, the levels tool production reflected by the proportions of flake fragments in the assemblage does vary. Site 713 has almost equal representation between core reduction (51.3%) and tool production (48.7%). Tool production activities are nearly as high at site 721 and moderately high at sites 716, 722, and 727. The lowest incidence of tool production is indicated at Sites 718 and 719.

Table 7. Lithic debitage counts from the updated Allen Canyon Sites.

Site No.	Average density #/sq. m	Complete Flakes	Broken Flakes	Flake fragments	Angular Debris	Debitage Total
713	15	16 13.7%	10 8.5%	57 48.7%	34 29.1%	117
716	10	13 19.4%	6 9.0%	24 35.8%	24 35.8%	67
717	20	1 20.0%	0	4 80.0%	0	5
718	4	20 57.1%	3 8.6%	3 8.6%	9 25.7%	35
719	6	31 32.3%	17 17.7%	3 3.1%	45 46.9%	96
721	1	5 16.6%	3 10.0%	14 46.7%	8 26.7%	30
722	10	13 31.7%	0	15 36.6%	13 31.7%	41
727	6	27 19.3%	33 23.6%	53 37.8%	27 19.3%	140

Stone Tools

Stone tools provide a direct measure of activities conducted at sites, but their representation is strongly affected by complex patterns of behavior. Some tools may be used in conjunction with one another or the same tool may be important to a variety of tasks. Additionally, tools may be removed from activity locations or sites for use at other locations, or reworked into different forms. This caution being said, tools represented at sites in the study area provide reliable indicators of the activities conducted at those locations. Table 8 depicts some relationships between activities and the tools used to perform the tasks.

The tools indicate a variety of activities are represented at the sites in the study area (Table 9). These include lithic production, resource processing, and craft production; however, these activities are differentially represented at sites suggesting differences in site function.

Sites 719 and 727 have few or no hammerstones and cores. It is likely this is the result of in-field analysis sampling methods employed rather than an absence of these activities. The large number of artifacts classified as hammerstones at Site 713 may reflect intensive core reduction and tool production, but it is as likely the result of groundstone tool maintenance where tool surfaces are "roughed up" to improve grinding efficiency.

Table 8. Lithic tool sets and their function.

Provisional Functional Interpretation	Expected Activity Sets	Expected Depositional Sets
Lithic Procurement	Testing and procurement of stone materials	Tested cobbles, cores, hammerstones, numerous cortical flakes, angular debris, no features
Lithic Production	Core reduction and tool production	Cores, bifaces, hammerstones, flake tools, abundant waste flakes
Resource processing	Killing/Butchering animals	Projectile points, bifaces, chopper/unifaces, scrapers, flake tools
	Milling seeds and grains	Manos, Metates, mortars, pestles, hammerstones
Craft production	Fiber production, jewelry production, wooden or bone implement manufacture, weaving, ceramic production	Core tools, hammerstones, scrapers, drills, knives, abraders, spindle whorls, loom weights, polishing stones

Plant processing activities are well represented at Sites 713, 718, 719, and 727. Sites 713 and 727 have the highest representation of these tools. This is not surprising given the residential nature of the sites. Plant processing tools are present at all the sites including the limited activity Site 717. Site 713 has a substantial number of complete and broken manos in comparison with other sites. Both one and two hand manos are represented suggesting processing of both corn and other seeds. This is also reflected in the metates with both trough and slab metates represented; all of these tools are broken. Trough metates and two-hand manos are specialized tools used almost exclusively for grinding corn. Similarly, Site 718 has slab and trough metates, all broken, along with one and two-hand manos. Site 719 has slab and trough metate forms and two two-hand mano forms. Interestingly, only four of these tools are present at the site given the potential size of the population. Site 722 has one and two-hand manos and one slab metate

Table 9. Stone tool counts from the updated Allen Canyon sites.

Site	Hammer-stone	Core	Biface	Drill	Utilized flake	Projectile point	Chopper	Uniface	Scraper	Mano	Metate	Unknown Groundstone	Total
713	12 25.0%	3 6.2%	3 6.2%	3 6.2%	1 2.1%	1 2.1%	2 4.2%	1 2.1%	2 4.2%	13 27.1 %	7 14.6%		48
716	2 18.2%	3 27.3%			3 27.3%				1 9.0%	2 18.2 %			11
717		1 10.0%	6 60.0%						1 10.0%		2 20.0%		10
718	2 8.3%	4 16.7%			1 4.2%	3 12.5%	1 4.16%		2 8.3%	3 12.5 %	4 16.7%	4 16.7%	24
719		2 15.3%		1 7.7%	1 7.7%	3 23.1%			2 15.3%	1 7.7%	2 15.3%	1 7.7%	13
721			1 33.3%								1 33.3%	1 33.3%	3
722	3 30.0%	1 10.0%	2 20.0%						1 10.0%	2 20.0 %	1 10.0%		10
727			2 10.0%	1 5.0%		3 15.0%		3 15.0%		3 15.0 %	8 40.0%		20
Total	19	14	14	5	6	10	3	4	9	24	25	6	139

represented. At Site 727, eight complete or nearly complete metates are present along with three two-hand manos. Five of the metates are large and have deep, worn troughs indicative of processing substantial amounts of corn. Three are slab metates that may have been used to process corn and other seeds. It is interesting that four times the number of metates are found at this site than the neighboring contemporary site, Site 719, that likely had two to four times the number of people occupying the site.

Game procurement and processing is indicated at Sites 713, 718, 719, and 722 by the presence of projectile points, bifaces, utilized flakes, unifaces, and scrapers differentially represented at these sites. Craft production is indicated at each of these sites as well, but the presence of drills at Sites 713, 719, and 727 stands out.

ECONOMY AND SUBSISTENCE

A central organizing aspect of any settlement system revolves around the economy and subsistence system of a particular population. We can expect very different systems of mobility, site and feature types, artifacts, and other aspects of a prehistoric settlement system with differences in the economy and subsistence system employed. Hunting and gathering wild plant foods and faunal resources requires a great deal of mobility, material portability, and group size that contrasts strongly with more sedentary agricultural groups that construct more substantial features and settlements, invest heavily in material goods, store food, and increase the number of people that can live together. It is well-known in the Southwest that Ancestral Puebloan people generally base their economy and subsistence on the agricultural production, but we now recognize that these systems vary greatly over time and space in many ways. Changes in natural and social environments result in changes in mobility, abandonments, reliance on different foods, change material exchange networks, social interaction, and many aspects of life. The economy and subsistence system of the sites is explored using data derived for features and artifacts.

As discussed, the range of activities represented at the sites varies indicating different functions of sites, even within similar site types. Five sites have been argued to be multiple-residence habitations or hamlets (Sites 713, 718, 719, 722, and 727). The presence of slab-lined cists and probable use of surface rooms for storage of agricultural commodities is likely at these larger sites. Lithic tools indicate a wider range of tool classes than the less substantial sites. There is no evidence of craft specialization at these sites, but drills and other tools suggest craft production at the larger sites was part of daily life. Hunting appears to have been an important element in the economy. This is evident from projectile points and game processing tools present at the multiple-residence sites (Sites 713, 718, 719, and 727). Ancestral Puebloan sites generally reflect an emphasis on agricultural production along with a mixture of wild resources to meet daily subsistence needs. An emphasis on plant processing is certainly evident. The amount of plant processing tools represented at sites 713, 718, and 727 stands out as being somewhat more prominent than the other sites, but grinding tools are well represented at all of the multiple-residence sites. Looking at these grinding tools, it is clear that both wild plant seeds and corn were processed at the sites. Trough metates and two-hand manos are generally associated with processing corn, while one-hand manos and slab metates may have been more general grinding implements used to process a variety of seeds as well as corn.

Ceramic assemblages at the multiple-residence hamlets contain large numbers of sherds from utility wares that were used for cooking, water containers, and storage. Decorated wares are differentially represented. As mentioned above, decorated jars are generally used for storage and transport while decorated bowls are used in food mixing, service, and consumption. Sites 718 has very high bowl representation among the decorated ceramics (93 %) and Site 722 also has mostly bowls (88 %) represented among decorated sherds indicating service and consumption of food. Site 713 has lower frequencies of decorated bowls (27 %) with more decorated jar sherds represented. The decorated jar sherds frequency is skewed by the possibly intrusive late white ware sherds (n=11).

Ceramic evidence from these two sites (Sites 719 and 727) contrasts with other multiple-household hamlets in the study area. Site 727 where bowls comprise approximately 43 percent of the decorated sherds and Site 719 has moderate representation of bowl forms (32 %). The moderately high levels of bowls at Sites 719 and 727 are probably partially indicative of service and consumption of food by the larger group size that inhabited these sites. There is a greater representation of decorated jars used to store and transport food and other products at these sites than other sites as well. Taken together with the large number of metates at Site 727, this pattern may suggest some degree of functional differentiation between these contemporary sites where larger amounts of corn is being processed at the smaller Site 727 and possibly transported to the larger Site 719 where larger social gatherings such as feasts or ceremonies may have occurred. The potential over-sized pit structure present at Site 719 may have functioned in social and ritual capacities. While speculative, these differences in the groundstone and ceramic assemblages and their meaning are intriguing.

In contrast, the smaller sites (Sites 716 and 721) have fewer tool classes indicating a more restrictive activity focus. These sites have far fewer ceramic artifacts represented. All of the ceramics from Site 721 are utility jars. As mentioned above, the representation of utility wares and decorated types at Site 716 is nearly equal and anomalous for the study area in this regard. However, the low percentage of service bowls is consistent with low levels of consumption at the sites. These patterns suggest the sites were more oriented toward agricultural production than residential use and they probably functioned as field houses or farmsteads.

SETTLEMENT PATTERNS

This section addresses the Pueblo I settlement patterns in the Allen Canyon project area. The human occupation of Allen Canyon dates back to the Archaic period; however, the canyon appears to have been more heavily occupied and used during Ancestral Puebloan times from the Basketmaker III to the Pueblo III periods. A total of 267 sites are located inside the project boundary. These sites were compiled into a GIS database that focused on site type and cultural affiliation. General interpretation of the data shows an increase in occupation of the project area from the Basketmaker III to Pueblo I period, and a decline in occupation of the canyon through Pueblo II and Pueblo III times (Figure 2). For the purpose of this study, all known sites in the project area culturally affiliated to the Pueblo I period were examined for obvious settlement patterns within the canyon. A total of 148 sites date to this period and are represented at habitation, limited activity, and food storage/processing sites.

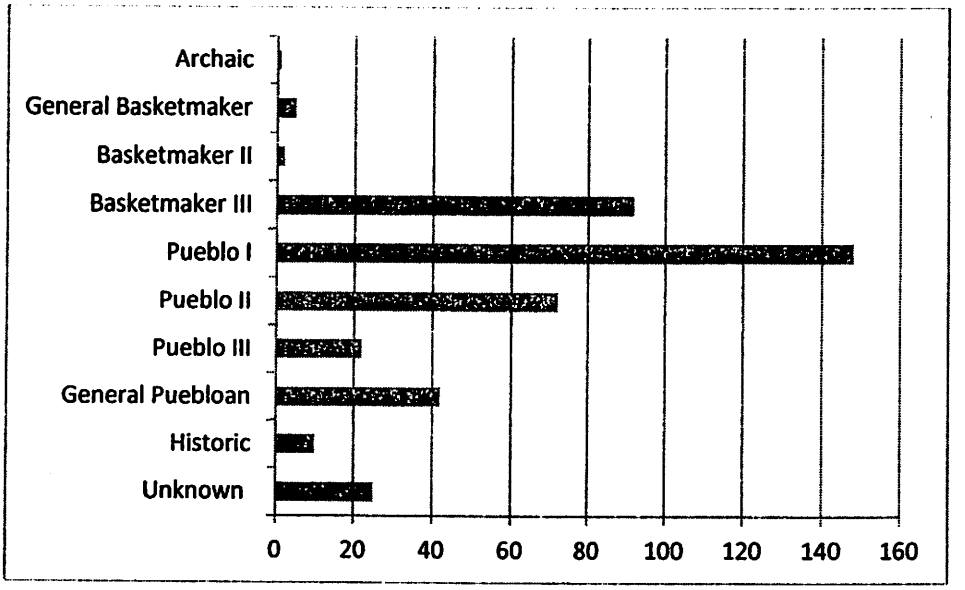

Figure 2. This graph represents the number of sites culturally affiliated to the various occupation periods in Allen Canyon.

Pueblo I Community Settlement Patterns in the SW and Allen Canyon Site Types

Pueblo I community settlement patterns vary across the southwest. These varied settlement patterns are evidenced across the border of Colorado and Utah, as discussed by Wilshusen (1999b) and Irwin (2000). The early Pueblo I period, or pre-825 A.D., in southwest Colorado sees populations settling throughout the landscape in dispersed multi-residence hamlets associated to a great kiva, or, more rarely, in large villages (Wilshusen 1999b:224). The large, Pueblo I period village known on Alkali Ridge in southeastern Utah dates to this period as well (Brew 1946). The villages typically contain multiple attached L-shaped structures or crescent-shaped complexes with multiple room blocks, pit structures, food storage and processing areas, and large middens. The villages were composed of 15-20 households. During the Late Pueblo I period (825-875 A.D.), large village sites were the typical habitation units for over half of the population with a Great Kiva typically located on the edge of the village (Wilshusen 1999:210). By the 870s, the population seems to decline in the southwest Colorado drainages.

Conversely, Irwin identifies a different pattern of Pueblo I occupation in areas such as Milk Ranch and upper Cottonwood Wash in the Abajo Mountains. Pueblo I organization in this area is based on large clusters of sites. These large clusters of sites are typically focused around a small-scaled village or large multiple-residence hamlets with associated single and multiple-residence sites, field houses, storage features, artifact scatters and agricultural features spread across the landscape. These communities lie adjacent to Allen Canyon. No evidence of great kivas is found in these Pueblo I clusters; however, oversized pit structures and plazas were identified as potential public gathering locations.

The Allen Canyon Pueblo I settlement pattern is similar to the patterning seen in the Milk Ranch and the upper Cottonwood Wash areas except at a much smaller scale. The Allen Canyon

project area contains several different site types including: habitation sites (aka hamlets), limited activity areas, storage features, field houses, and agricultural features (Table 10).

Table 10. Pueblo I sites separated by site type.

Site Type	Count
Agriculture	1
Habitation	2
Large Habitation	6
Limited Activity	33
Limited Activity with Feature	1
Moderate Habitation	19
Rock Alignment	1
Small Habitation	38
Single Room Habitation	28
Storage Feature with Scatter	18
Grand Total	**148**

Generally, all Pueblo I habitation sites have a residential living area, food processing or storage feature(s), and a midden area (Wilshusen 1999b: 214). The habitation sites located in Allen Canyon are separated into four different categories: large habitations, moderate habitations, small habitations, and single room habitations. Sites considered to be large habitations include 10 or more rooms, pit structures, food storage and/or processing features, and middens as seen in Sites 718 and 719. Moderate size habitations contain more than 5 rooms and less than 10 such as Sites 713, 722, and 727. Small habitations contain 2-4 rooms (Site 721), while single-room habitations contain just one room.

Habitations may be separated into long-term and short-term occupation categories, or permanent and temporary. Many of the habitation sites in the project area appear to have long-term use as evidenced by the presence of large artifact scatters and/or middens and storage features. These long-term habitations are what is referred to in the preceding sections as single and multiple-residence hamlets following Wilshusen (1999b).

Short-term use, or temporary habitations typically do not contain a well developed midden or artifact scatter, and typically contain few to no storage features. The short-term or seasonal use of a small or single room structures could be referred to as a field house as opposed to a habitation. A field house is typically a structure that is seasonally used as residences or temporary storage and processing facilities located close to agricultural areas. These structures typically have a lesser number of artifacts in relation to the more permanent residences and no storage features (cists). These types of sites are difficult to identify in the project area due to limited information provided on the original site forms referenced for this section.

Limited activity areas are another common site type during the Pueblo I era and in the Allen Canyon site complex. Limited activity sites are mostly referenced here as lithic scatters or artifact scatters with no features. Limited activity areas vary in size and typically represent areas of localized lithic tool procurement, food processing, and/or food gathering. Another common

site type is storage features. Storage features, in this study, are typically slab-lined cists or granaries. Storage features with no associated artifacts or features are often difficult to date to a specific time period. Agricultural features, like check dams and terraces, can also be difficult to date to without associated diagnostic features or artifacts. A majority of the Pueblo I sites in Allen Canyon are small habitation sites, followed by limited activity sites, single room habitations, moderate habitations and storage features (Table 1).

Pueblo I Occupation in Allen Canyon

The Allen Canyon project intensively investigated eight sites in the middle Allen Canyon area within context of the total available recorded data of 269 sites. The sites date between the Archaic period up through the Pueblo III and historic time frames. A total of 148 sites comprise the Pueblo I community in the Allen Canyon project area. Forty-six of these sites date solely to the PI period, while 73 sites also have a Basketmaker III component and 49 sites have Pueblo II period components. Additionally, nine Pueblo I sites have a Pueblo III component. Generally, the Allen Canyon project area can be divided up into four distinct areas based on clustering of sites around large multiple-residence habitations: The northwestern, central west, central east, and southern clusters (Figure 3). These clusters are differentiated from one another in terms of location, function, and site types.

Northwestern Cluster

The northwest portion of the project area lies in a tributary canyon to Allen Canyon along a multitude of ephemeral drainages and across wide, gently sloping ridges and benches. This area hosts the large habitation site Site 1276. This site consists of four sandstone, slab-lined circular rooms (>1.8 m diameter); a large, partially obscured room block (9 m x 12 m); two cists; and a midden. The site contains hundreds of lithic and ceramic artifacts, and at least 46 stone tools. The site lies at the head of a drainage in a side canyon to the west of Allen Canyon. The site sits relatively high above the canyon floor. Ceramic artifacts present at this site suggest Basketmaker III, Pueblo I, and Pueblo II components are present at the site.

Twenty-five sites lie within one-half mile to Site 1276 including one moderate-size habitation, 10 small habitations, two single-room habitations, five limited activity areas, and seven storage features. Six additional undated storage features are located to the east and northeast of the site. Most of these sites are culturally affiliated with the Pueblo I period, but Basketmaker III period components (n=19) and Pueblo II period components (n=6) are also indicted at the sites. This pattern supports the theory of increased occupation from the Basketmaker III period to the Pueblo I period in Allen Canyon, as well as a decrease in canyon occupation in later times.

The northwest portion of the project area appears to have one large habitation surrounded by multiple small habitations and associated storage features. Many of these smaller sites lie adjacent to ephemeral drainages flowing into Allen Canyon and along wide benches potentially suited for agriculture. A Pueblo I single-room habitation site with associated terracing and check dams lies within one mile of Site 1276. The data in this portion of the canyon suggests the presence of an agricultural site cluster with smaller households settling along the drainage and wide benches for farming purposes. When looking at the topography of the area, although higher

Map
not
available
for
public

in elevation, the abundance of drainages and gently sloping land may have been more conducive for farming. Re-examination of Site 1276 may enlighten this small residence farming cluster and assist in determining whether the small habitations were permanent residences or simply field houses.

Central West Cluster

The Central West site cluster consists of the sites updated during this project: Sites 713, 716, 718, 719, 721, 722, and 727. This grouping of sites is situated around two large habitation sites, Sites 718 and 719. Generally, Site 718 consists of ten features, including a multiple-room masonry structure, pit structures, slab-lined cists, two check dams, and an artifact scatter of Basketmaker III and Pueblo I cultural affiliation. Site 719 consists of a large multiple-room structure, an oversized pit structure, two cists and an associated artifact scatter culturally affiliated to the Pueblo I period.

Fifteen sites surround these two large habitations and include: five single room habitations, four small habitations, four moderate habitations, and two limited activity sites. Four undated storage features also lie within a half-mile radius. Of the fifteen sites, four are also associated to the Basketmaker III period, while only two sites also dated to the Pueblo II period. This follows suit with cultural affiliation patterning identified at the northwest cluster, and project area in general, where occupation of this particular location appears to increase during the Pueblo I period and decreases during the Pueblo II time period.

The analyses of ceramics and ground stone tools at Sites 727 and 719 provide insight into the function of this cluster of sites, that by solely looking at the site types is not evident. At a first glance this cluster of sites simply represents a small, centralized cluster of habitation sites with limited agricultural activity centered on two large hamlets. However, the analysis suggests that intensive processing of corn was likely to have occurred at site Site 727, and processed goods may have been carried over to Site 719 for food redistribution, or ceremonial feasting centered around the oversized pit structure. The centralized location of this suite of sites in the project area makes this a very viable theory as to the function of this cluster of sites to the larger Allen Canyon Pueblo I occupation.

Central East Cluster

The central east cluster lies along a ridge top separating Allen Canyon from a tributary canyon to the east. The cluster is based around Site 763. The site was originally recorded in 1971 and was described as a Pueblo I/Pueblo II habitation site consisting of 4+ rooms and two pit structures. At this time seven bags of artifacts were collected. The site was re-recorded in 1990. Although the 1990 site form contains more detailed descriptions of the features and counts of artifacts, the apparent lack of knowledge of Ancestral Puebloan site components is obvious in the ambiguity in typing the features and ceramics present at the site. Therefore, site interpretation is difficult at this time. However, the site does consist of three circular depressions, and two large and one small rock concentration. Two of the circular depressions measure 10 m and 15 m in diameter, and may represent the remains of oversized pit structures.

The 15 m depression (Feature 3) sits at the top of a ridge, and is slightly mounded with dirt and has cobbles and boulders encircling the feature. However, no evidence of a wall was observed. Pit structures of this size are commonly viewed as great kivas in the regional literature (Wilshusen 199b: 219) and are considered to function as social/ceremonial community integration facilities. The two large rock concentrations may represent multi-room block structures. The northern room block measures 9 m x 5.5 m, and the southern room block measures 11 m x 7 m.

Thirty-one sites lie within a half-mile of Site 763 and include seven moderate-size habitations, 10 small habitations, three single-room habitations, nine limited activity sites, and two storage features. Not many storage features are associated to this suite of sites, and the patterning of the habitations along the landscape suggests limited agricultural activities occurring at this location. However, the area does appear to have the densest population of small to moderate habitation sites potentially suggesting a central residential area or community center near a large pit structure(s) or great kiva. Of the 31 sites located in this part of the project area, 13 contain Basketmaker III period components, 11 have Pueblo II period components, and only two sites have Pueblo III components. As seen in the previous two communities, the area is occupied during the Basketmaker III period through Pueblo II, with the heaviest occupation during the Pueblo I time frame.

Southern Cluster

The southern cluster is situated at the confluence of a tributary canyon and Allen Canyon at the southernmost portion of the Allen Canyon project. Two large sites lie in the southern portion of the project area Sites 1341 and 1358. Site 1341, or Allen Canyon Village, appears to be a small village site. The site consists of a large, multiple-room structure, pit structures, a series of smaller rectangular and circular rock alignments, and at least three cists. Four midden areas and two rock-walled terraces were also observed. Another feature, described as an earthen terrace or sediment check dam, was also recorded.

The site sketch map depicts the site layout to be a U-shaped or crescent shaped complex. The open portion of the U faces to the northwest potentially toward the tributary canyon. A group of room blocks and a rubble mound extend off to the east of the structures. An additional pit structure and terracing are located to the east as well. If the sketch map is correct, over 20 rooms could be located in this complex, with evidence of agricultural activities occurring adjacent and surrounding the site. It is likely that multiple pit structures are also present at the site. This site, according to the ceramic assemblage located during the original 1972 recording, dates predominantly to the Basketmaker III and Pueblo I periods, with a very small amount of Pueblo III ceramics observed.

Site 1358 is located approximately one-half mile south of Site 1341 close to the Allen Canyon floor. The site consists of a large multiple-room masonry structure containing at least 12 rooms. The site sketch map depicts the room block forming a semi-circle toward the northwest with a depression, or pit structure, in the center. This large habitation site dates predominantly to the Basketmaker III and Pueblo I periods.

Nineteen sites dating to the Pueblo I period surround these two sites and include three storage features, five single-room habitations, one small habitation, four moderate-size habitations, and four limited activity areas. Three of the single-room habitations are located along the tributary canyon, and may represent field houses. Of the nineteen sites, nine have Basketmaker III period components, and four sites have Pueblo II period components. Again, this patterning suggests the potential for continual use of the area between the Basketmaker III and Pueblo II periods with higher occupation rate during the Pueblo I period.

The south Allen Canyon cluster has moderate agricultural and typical habitation activities occurring in this area. This cluster of sites may also represent the location of a main access route into Allen Canyon for surrounding communities. As such, this cluster may have had a "gatekeeper" sort of function, moderating access to the Allen Canyon community. Elsewhere on the Forest, lookout sites and other sites appear to be positioned at points that can observe or control access to an area (Donald Irwin, District Archaeologist, personal observation).

Allen Canyon Settlement Pattern Discussion

The analysis of the Allen Canyon settlement patterns suggests a complex series of spatially discrete site clusters defining the cultural landscape according to agricultural suitability, communal gathering locales, and by moderating access to the canyon and its resources. The Pueblo I site clusters in the Allen Canyon study area appears to be typified by large hamlets, discussed here as large habitation sites, consisting of multiple-room structures and pit structures surrounded by single-room and/or moderate-size habitations, storage and agricultural features, and limited activity areas. The four clusters are differentiated from each other by the site types associated with the four large habitation sites as well as their location on the landscape. Further investigation of the area is necessary to determine whether or not these clusters functioned as a single, unified entity, or were more familial based groupings with limited interactions.

Generally, the canyon appears to be occupied from the Basketmaker III periods through the Pueblo III period; however, an increase of population during Pueblo I period occurs that abruptly declines in the Pueblo II and Pueblo III periods. The data continually suggests the presence of a Basketmaker III community in Allen Canyon. Lack of concrete information regarding the exact occupation period of sites in the project area prevents us from understanding whether or not the Pueblo I occupation in Allen canyon grew from the existing canyon inhabitants, or whether people from southwest Colorado or northern New Mexico were moving into the area. At this point, both options seem probable, and are likely to contribute to the Allen Canyon Pueblo I population increase. Further investigation of Allen Canyon and surrounding communities may help address these questions.

SOCIAL INTERACTION

Relative dating has been used to place individual sites or site use episodes within a temporal framework, and identify the activities that occur at individual sites. Here, we explore the relation of sites within the greater Pueblo I community discussed in the preceding section.

Exchange

Interaction between groups may be indicated by exchange of utilitarian or non-utilitarian items. Exchange of these utilitarian and non-utilitarian items may have provided means for securing needed resources for subsistence, as well as marriage, religious, and political relationships and networks.

It is thought that utility wares are generally locally produced whereas trade in decorated ceramic types is regionally recognized and accepted. Previous Research has indicated that San Juan Red Wares are thought to be produced in southeastern Utah and these ceramics were being traded into the Mesa Verde core area in southwestern Colorado (Blinman and Wilson 1988). It has also been suggested that San Juan White Wares were primarily produced in the Mesa Verde core are and traded westward into Utah. Localized production of White Wares in southeastern Utah is demonstrable for White Mesa Black-on-white (Hurst et al. 1985), though, making this proposition difficult to verify for other white ware types in the assemblages.

Clearly locally produced gray wares dominate the site assemblages (Table 11). The proportions of San Juan White Wares in site assemblages is highly variable, ranging from 4.2 percent of the Site 719 assemblage to 14.8 percent of the Site 713 and 716 assemblages. No San Juan White Wares are present in the Site 721 assemblage. Sites 716 and 722 have 14.8 and 10.5 percent San Juan White Wares in their assemblages. No White Mesa B/W occurs in the Site 716 or 722 assemblages suggesting that white wares in the 716 and 722 assemblages were potentially traded in from the Mesa Verde core area. Only one sherd of White Mesa B/W is present in the Site 713 and the 718 assemblages, again potentially suggesting exchange with groups in the Mesa Verde core area in Colorado. Sites 719 and 727 have 4.2 and 2.2 percent San Juan White Wares in the ceramic assemblages. At Site 719, 58 percent of the San Juan White Ware represented is White Mesa B/W while 77 % of the San Juan White Ware sherds at Site 727 are the White Mesa B/W type potentially signaling a decrease in the amount of exchange with the Mesa Verde core area during the middle-to-late Pueblo I period.

Table 11. Ceramic counts of different utility wares identified at the updated Allen Canyon sites.

Site No.	San Juan Gray Ware	San Juan White Ware	San Juan Red Ware	Total
713	90 83.3%	16 14.8%	2 1.9%	108
716	26 42.6%	9 14.8%	26 42.6%	61
717	0	0	0	0
718	297 90.5%	31 9.5%	0	328
719	1470 88.2%	71 4.2%	126 7.6%	1667
721	6 100.0%	0	0	6
722	48 84.2%	6 10.5%	3 5.3%	57
727	700 91.2%	17 2.2%	51 6.6%	768
Total	2637	150	208	2995

San Juan Red Wares range from a low of 1.9 % of the Site 713 ceramic assemblage to a high of 42.6 percent of the Site 716 assemblage. Sites 719, 722, and 727 have between 7.6 percent, 5.3 percent, and 6.6 percent San Juan Red Wares represented. These data indicate participation in exchange networks operating within southeastern Utah. Further, the proportions of these red wares in assemblages show a trend toward increasing participation in southeastern Utah exchange networks over time at sites in the study area from a low in the early Pueblo I to the middle-to-late Pueblo I period, continuing into the early-to-middle Pueblo II period.

Taken together, data on San Juan White Wares and San Juan Red Wares indicate a shift from higher levels of trade with the Mesa Verde core area and low levels of participation in southeastern Utah exchange networks in the early Pueblo I period to a decrease in trade to the east in favor of southeastern Utah exchange networks by the middle-to-late Pueblo I period.

Similarly, exchange of some non-local source stone, such as obsidian, Brushy Basin chert, Honaker Trail chert, and other materials may indicate exchange. These materials are known for their quality and are traded in the region, primarily in down-the-line sorts of exchanges, particularly obsidian. Brushy Basin chert may have been traded in a more specialized capacity based on the proximity to sources and, perhaps, social ties. It is not known where the nearest source of the high quality Brushy Basin chert is to the Forest, but none of these materials have been observed in its natural form by Forest Heritage staff (Irwin, personal observation). Not surprisingly, obsidian is absent from the sites. Brushy Basin chert (n=6) is poorly represented as well, comprising only one percent of the overall materials documented at sites (n=531) with trace amounts found at Sites 716 and 722. Interestingly, these sites are the latest dated sites in the study area, possibly indicating some change in population interaction. One piece of Honaker trail chert was present at Site 718. Local sources appear to be the primary materials represented. Some degree of inter-drainage movement of raw materials is potentially indicated by the presence of gray/green siltstone derived from the Brushy Basin area to the east and Cedar Mesa/Chinle red chert from the drainages to the west of Allen Canyon, but it is not certain whether this might indicate interaction with other Pueblo I sites on the Forest or acquisition of stone embedded in other resource procurement activities.

Social Organization and Integration

Studies of social interaction form the basis to understanding how social groups organized and integrated themselves at local and regional levels. As discussed above, when a series of distinct sites occur near one another, they are descriptively noted as being clustered. Site clustering is not uncommon in the archaeological record and has important implications for boundary definition relative to interaction between groups. Site clustering is often used as a proxy measure for describing prehistoric communities. An important question, then, is whether these clusters represent individual communities or if spatially clustered sites are part of a larger community. It is critically important to characterize the nature of the site clusters in order to understand larger dimensions of prehistoric community and interaction.

In the discussion above on settlement patterns, small spatial clusters are present in Allen Canyon. The focus of this study is on the middle Allen Canyon cluster. The temporal placement of the study area sites allows for us to evaluate whether this clustering is the product of community

formation processes noted elsewhere on the forest. The evidence suggests that the sites do not represent a contemporaneous amalgamation of community formed around a central place, as is seen in the Milk Ranch and South Cottonwood communities. Rather, the sites appear to represent potential land tenure/familial/residential patterns that apparently grew and shifted through time. Originally thought to be contemporary sites forming a nucleus of the Pueblo I community, Sites 718 and 719 have been found to differ temporally. Site 718 appears to be a founding settlement during the Basketmaker III and early Pueblo I period. The middle Allen Canyon group appears to reorganize and expand during the early-to-middle Pueblo I period. Sites 713, 719, 721, and 727 appear to have components dating to this era. Following the mid-800s, the group once again reorganized and shifted concentrating primarily at Sites 719 and 727. Late in the period, possibly post-dating the occupations of Site 719 and 722, it appears Site 722 was founded. These patterns suggest a trend of increased population growth from the early A.D. 700s to approximately A.D. 880 or so followed by a period of decline in this locality. At its height, the contemporary Site 719 and 727 populations appears to have reached its zenith of less than 50 people combined.

Possible functional differentiation and integration of these two multiple-household hamlets has been suggested by the potential presence of an oversized pit structure at Site 719 and variation in the forms of decorated ceramics at Sites 719 and 727, as well as a strong emphasis on corn processing at Site 727. It is likely, given the integration, that this group in the middle Allen Canyon area participated in ceremonial and social interactions with other middle-to-late Pueblo I groups and communities on the Forest and adjacent areas. Shifts in exchange networks, discussed above, suggest an increase in local and sub-regional interaction by the middle-to-late A.D. 800s and a decrease in regional interaction to the east with the Mesa Verde core area. This signals a substantial reorganization of social systems as village centers in southwestern Colorado begin to collapse and population grows in the southeastern Utah area, principally on what is now the Monticello Ranger District of the Manti-La Sal National Forest.

Instead of the large villages often formed in association to great kivas found at McPhee Reservoir area in Colorado or a community of dispersed hamlets associated with a great kiva like the one documented by Wilshusen (1995) in the Cedar Hill, New Mexico area and elsewhere to the east, the community on the Forest appears to have a different organizational expression. Large Pueblo I communities in South Cottonwood and the Milk Ranch vicinities have been investigated in the recent years and provide insights that were previously unrecognized (Hurst et al. 2004; Irwin et al. 2000). It appears the Pueblo I communities explored on the Forest formed around small villages with surrounding single and multiple-residence hamlets, field houses/farmsteads, isolated storage areas, and agricultural facilities. Many areas exhibit numerous storage features and evidence of check dams and terraces suggesting an intensification of agricultural production. These communities do not have clear indications of community integrating great kivas, but plazas and over-size pit structures may have served that function.

The evidence, so far, from the Allen Canyon area suggests the Pueblo I community goes through cycles of growth and decline, but a trend toward increasing complexity in the middle-to-late A.D. 800s is indicated. Settlement pattern data discussed above suggests that four distinctive clusters of sites may be present in the Allen Canyon area. As discussed, the character of each of these clusters differs suggesting the overall Allen Canyon community is spatially and functionally differentiated to a larger extent that has been observed elsewhere on the Forest to

date. The southern cluster formed around a small village-scale site and another large habitation is similar to the communities that have recently been investigated in the South Cottonwood and Milk Ranch areas, but this cluster is smaller in size and population. The middle Allen Canyon cluster, investigated during this study, appears to be a small, residential enclave that changed through time and not simply a cluster of contemporary residences. The northernmost site cluster appears to have one large multiple-residence hamlet and a moderate-size analogous to the central Allen Canyon cluster, but has more extensive associated smaller residences, field houses, storage areas, agricultural features, and limited activity sites. The terrain and composition of this cluster suggests a strong orientation toward agricultural production. Although all of the clusters have agricultural aspects, none reach the expression observed in the northernmost cluster. The eastern cluster is composed of a dispersed area of moderate-size habitations, small habitations, single-room habitations, limited activity sites, and storage features. These are associated with a large multiple-residence hamlet with two pit structure depressions, measuring 10 m and 15 m diameter. The presence of what may be a great kiva in this cluster suggests a series of residential habitations or hamlets formed around a community integrating facility. This cluster is similar to the community described in the Cedar Hill, New Mexico area by Wilshusen (1995), though more compact. Taken together, these data indicate a very complex picture of the Pueblo I community in Allen Canyon. The spatial and functional differentiation recognized in this study provides an interesting contrast to previously studied Pueblo I communities on the Forest and greater Mesa Verde region.

CONCLUSIONS

In conclusion, the Manti-La Sal National Forest Heritage program has obtained a small grant from the Canyonlands Natural History Association (CNHA) in order to study the Pueblo I community in Allen Canyon on the Monticello Ranger District. The goal of this project is to investigate the Pueblo I period Ancestral Puebloan community in Allen Canyon on the Monticello Ranger District, Manti-La Sal National Forest.

Eight sites in the middle Allen Canyon area have been revisited and updated as part of this project. The intensive investigation of these sites has generated new information about the sites and the nature of the Pueblo I community. Initially thought to be a cluster of sites formed around a central place formed by two large L-shaped pueblos, the study has revealed a considerable amount of new information that paints a very different picture. The two sites thought to represent a nucleus of settlements that approached a small village complex turn out to be non-contemporary. Further, small sites documented in the study area during the early 1970s and described as having one-room structures and one three-room structure turned out to have considerably larger occupations.

What has been revealed is that the study area sites are a series of moderately large residential sites and smaller seasonally used sites that represent an occupation that changes through time in size and content. Founded in the Basketmaker III to early Pueblo I period, the occupation shifts spatially and develops a greater degree of complexity and population before declining. Perhaps most interesting is the relationship between the two sites (Sites 719 and 727) occupied during the late A.D. 800s. Here, the population concentrated and evidence for changing patterns of social interaction and possible functional differentiation in activities and roles may be noted. Regional

exchange patterns reflected by ceramics at the sites suggest a shift from long distance exchange with the Mesa Verde core area in Colorado to more sub-regional and local exchange within the southeastern Utah area. The proportions of decorated vessels and plant processing tools at the sites indicate a proliferation of plant processing activities, and transport and service/consumption vessels occurring at the smaller site (Site 727). It is likely that the larger site (Site 719) with a possible over-sized pit structure may have hosted social and ceremonial activities that involved feasting and food redistribution.

The overall Allen Canyon Pueblo I community has been explored using existing site data and Geographic Information Systems (GIS). The settlement pattern analysis has revealed a very complex picture. Four clusters of Pueblo I period sites were identified. These clusters are not only spatially distinct, but they appear to have different kinds of sites suggestive of functional differentiation within the greater canyon area. This differs from previously studied Pueblo I communities on the Forest. A great deal more investigation is needed to probe these tantalizing results further.

Problems associated to the proposed Pueblo I settlement pattern and occupation of Allen Canyon are exemplified in the suite of sites re-examined during this project. Most of the sites listed in the Heritage files and GIS database were recorded once during the 1970s. These original records contain limited site information. Sites re-recorded in the late 1980s and early 1990s appear to contain more descriptive prose of features and artifacts rather than actually defining feature and artifacts types. Also, the landscape has changed through vegetation die-off from pine beetles, natural erosion processes, and animal trampling through sites. These changes may allow for previously hidden features and artifacts to be exposed.

The 2011 visitations show that significant features or artifacts and important chronological and site function data has been missed. For example, whereas sites ML-718 and ML-719 (originally recorded in 1971) were correctly identified as large Puebloan habitations, sites such as Sites 713, 721, and 722 were recorded as one-room habitations. Similarly, three rooms were identified at Site 727. The re-recording of these sites identified them as much larger habitations than initially thought. When looking at the settlement patterns in the canyon, one must keep this example in mind. Over half of the sites have never been revisited, and the data that we are working with here is limited and potentially not correct. Further investigations through LIDAR, ground penetrating radar, and excavation could provide deeper, more detailed information and dating materials. Simply revisiting and re-documenting a site can provide a multitude of insights concerning settlement patterns and site functions in Allen Canyon. The benefits of re-documentation a site is evidenced in the discovery of more rooms in the structure at Site 722; the discovery of more rooms in the structure and the identification of specialized food processing activities occurring at Site 727; or the new identification of features such as the two check dams and additional pit structures at Site 718.

Another reason to more extensively investigate previously recorded sites, particularly through excavation, is to obtain better temporal dates. At the beginning of this research project, the two larger sites, Sties 718 and Sites 719, were, thought to be contemporaneous. However, after analyzing ceramics collected at the sites, Site 718 seems to contain a Basketmaker III assemblage while Site 719 dates to the Pueblo I period. However, the above ground masonry

multiple-room structures at Site 718 hint at an additional Pueblo I occupation at the site. Further investigation at Sites 718 and 719 and other ambiguous sites may help to reveal data that is not see on the ground surface.

Further research in each of the site clusters in Allen Canyon is needed to accurately document the sites, features, and artifacts. This is needed to determine temporal and functional associations to further explore the Pueblo I community. Many of the sites have very weak dating available in the existing data. Few have adequate feature identification and description. This first step in examining the Pueblo I community in Allen Canyon has provided valuable insights and serves as a basis for generating and investigating many new questions concerning the chronology, settlement and subsistence, and social interaction of Pueblo I period Ancestral Puebloans living in the canyon. Our gratitude to CNHA is extended for partnering with the Manti-La Sal Heritage program on this project.

REFERENCES CITED:

Andrefsky, W., Jr.
1994 Raw-Material Availability and the Organization of Technology. *American Antiquity* 59:21-34.

Blinman, E., and C.D. Wilson
1988 Overview of A.D. 600-800 Ceramic Production and Exchange in Dolores Project Area. In *Dolores Archaeological Program: Supporting Studies: Additive and Reductive Technologies,* complied by E. Blinman, D. J. Phagan, and R. H. Wilshusen, pp.395-423. United States Department of the Interior, Bureau of Reclamation, Engineering and Research Center, Denver.

Brew, J. O.
1946 *Archaeology of Alkali Ridge, Southeastern Utah.* Papers of the Peabody Museum of American Archaeology and Ethnology 21. Harvard university, Cambridge, MA.

Bunzel, R.
1929 *The Pueblo Potter: A Study of Creative Imagination in Primitive Art.* Dover, New York.

DeBloois, E.I.
1975 *The Elk Ridge Archaeological Project: A test of random sampling in archaeological survey.* USDA Forest Service Intermountain Region, Report No. 2, Ogden.

DeBloois, Evan I. and Dee Green
1978 SARG Research on the Elk Ridge Project, Manti-La Sal National Forest, Utah. In *Investigations of the Southwest Anthropological Research Group*, edited by R. Euler and G. Gumerman, pp. 1-12. Museum of Northern Arizona, Flagstaff. DeBloois and Green 1978

Fetterman, J., L. Honeycutt, and K. Kuckelman
1988 Salvage excavations of 42SA12209, a Pueblo I habitation site in Cottonwood Canyon, Manti-La Sal National Forest, southeastern Utah. Woods Canyon Archaeological Consultants, Inc., Yellow Jacket, CO.

Geib, Phil R.
1996 *Glen Canyon Revisited.* University of Utah Anthropological Papers No 119. University of Utah Press, Salt Lake City.

Green, Dee F.
1971 The Elk Ridge Archeological Project: Manti-La Sal National Forest: Summary of the 1971 Field Season. Ms. On file, Manti-La Sal National Forest, Monticello Ranger District, Monticello.

Habicht-Mauche, J.
1993 *The Pottery from Arroyo Hondo Pueblo, New Mexico: Tribalization and Trade in the Northern Rio Grande.* School of American Research Press, Santa Fe.

Hurst, Winston, Donald C. Irwin, Kim J. Lancaster
2004 *Volume I: Hammond BAER Project, San Juan County, Utah.* Ms. on file, Manti-La Sal National Forest, Monticello Ranger District, Monticello.

Hurst, Winston, M. Bond, and S.E.E. Schwindt
1985 Piedra Black-on-white, White Mesa Variety: Formal Description of Western Mesa Verde Anasazi Pueblo I White Ware Type. *Pottery Southwest* 12(3):1-6.

Hurt, Teresa D.
2001 Ceramic Studies. In *An Archaeological Survey of Natural Bridges National Monument, Southeastern Utah*, edited by Janet L. McVikar, pp. 89-132. Professional Paper No. 64, Intermountain Cultural Resources Management, National Park Service, Department of the Interior, Santa Fe.

Irwin, Donald C.
1997 Flaked Lithics. In *The Rio Puerco Bridge and Road 2007 Realignment Project: Phase I and Phase II Excavations at Sites AZ-P-61-74 and AZ-P-61-212, Apache County, Arizona*, pp. 193-219. Research Papers No. 2, La Plata Archaeological Consultants, Dolores, Colorado.

2001 Stone Tool manufacture and use. In *An Archaeological Survey of Natural Bridges National Monument, Southeastern Utah*, edited by Janet L. McVikar, pp. 133-184. Professional Paper No. 64, Intermountain Cultural Resources Management, National Park Service, Department of the Interior, Santa Fe.

Irwin, D.C., Bennett, L., and Seymour, D.J.
2000 *Cottonwood Wash Abandoned Mine Reclamation Cultural Resource Survey, San Juan County, Utah.* Lone Mountain Report No. 415. Albuquerque: Lone Mountain Archaeological Services.

Lightfoot, R. R.
1994 *The Duckfoot Site, Vol. 2: Archaeology of the House and Household.* Occasional Paper No. 4. Crow Canyon Archaeological Center, Cortez, CO.

Ortman, Scott. G., Erin L. Baxter, Carole L. Graham, G. Robin Lyle, Lew W. Matis, Jamie A. Merewether, R. David Satterwhite, and Jonathan D. Till
2005 *The Crow Canyon Archaeological Center Laboratory Manual, Version I.* Crow Canyon Archaeological Center.

Sullivan, A.P. and K. Rozen
1985 Debitage analysis and Archaeological Interpretation. *American Antiquity* 50:755-779.

Wilshusen, Richard H.
1989 Unstuffing the Estufa: Ritual Floor Features in Anasazi Pit Structures and Pueblo Kivas.

In *The Architecture of Social Integration in Prehistoric Pueblos*, edited by M. Hegmon and W. D. Lipe, pp. 89-111. Occasional Paper No. 1. Crow Canyon Archaeological Center, Cortez, CO

1995 *The Cedar Hill Special Treatment Project: Late Pueblo I, Early Navajo, and Historic Occupations in Northwestern New Mexico.* La Plata Archaeological Consultants. Dolores, Colorado.

1999a Basketmaker III (A.D. 500-750). Chapter 6 in *Colorado Prehistory: A Context for the Southern Colorado River Basin,* edited by William D. Lipe, Mark D. Varien and Richard H. Wilshusen, pp. 166-195. Colorado Council of Professional Archaeologists, Denver.

1999b Pueblo I (A.D. 750-900). Chapter 7 in *Colorado Prehistory: A Context for the Southern Colorado River Basin,* edited by William D. Lipe, Mark D. Varien and Richard H. Wilshusen, pp. 196-241. Colorado Council of Professional Archaeologists, Denver.

Wilson, C. D., and E. Blinman

1995 Sipapus, Ceremonial Vaults, and Foot Drums (or a Resounding Argument for Protokivas). In *Dolores Archaeological Program: Supporting Studies: Additive and Reductive Technologies,* complied by E. Blinman, D. J. Phagan, and R. H. Wilshusen, pp.649-671. United States Department of the Interior, Bureau of Reclamation, Engineering and Research Center, Denver.