

# The Basketmaker Communities Project Annual Report, 2013 Field Season

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## Introduction

In 2013, the Crow Canyon Archaeological Center conducted its third year of field research as part of the Basketmaker Communities Project, a multiyear study of early Pueblo community development in the central Mesa Verde region. The study focuses on a pivotal, but under-investigated, time in Pueblo history: the Basketmaker III period, which dates from A.D. 500 to 750. The focus of Crow Canyon's field research is a settlement cluster consisting of more than 100 Basketmaker sites located within a 4.9-km<sup>2</sup> area near the town of Cortez, in southwestern Colorado. In 2013, Crow Canyon conducted various combinations of remote-sensing survey, subsurface probing, and excavations at nine sites exhibiting evidence of a single Basketmaker III occupation.

Excavation continued at the Dillard site (5MT10647), a multi-habitation site that dates from the seventh century A.D. and includes a great kiva. Excavation, subsurface probing, and remote sensing was also conducted at three small habitation sites: the TJ Smith site (5MT10736), Shepherd site (5MT3875), and Switchback site (5MT2032). Also, remote-sensing surveys and subsurface probing were conducted at five additional sites during 2013. Understanding the relationship between the Dillard site and the many surrounding Basketmaker III sites in the study area is essential to our understanding of how early Pueblo communities formed and were organized.

This report summarizes progress on the Basketmaker Communities Project during the 2013 Crow Canyon field season, which ran from April through November. Fieldwork and related Crow Canyon education programs were conducted by members of the research and education staff, with assistance from seasonal interns. Remote-sensing data were collected by Crow Canyon field staff and post-processed and summarized by Mona Charles of Powderhorn Research, LLC. Field and laboratory work conducted by outside contractors is also summarized, including remote sensing at Site 5MT10637 by Fort Lewis College student Jane Cooper in 2012 and the revisiting of 71 Basketmaker III habitation sites in the Basketmaker Communities Project area by Woods Canyon Archaeological Consultants, Inc.

Upon completion of all fieldwork, laboratory analyses, and synthetic studies, Crow Canyon will publish detailed results of the Basketmaker Communities Project on its website ([www.crowcanyon.org](http://www.crowcanyon.org)).

### Project Area Location and Ownership

The Basketmaker Communities Project study area is located in the central Mesa Verde region ([Figure 1](#)) more specifically, in the McElmo drainage unit, which is defined as the lands in southwestern Colorado that are drained by McElmo Creek. The settlement cluster that is the focus of Crow Canyon's research lies north of the creek, on a dissected upland between Alkali Canyon to the west and the less-substantial Crow Canyon to the east, just over 6 km (about 4 mi) northwest of Cortez, Colorado.

The project area is defined by the property boundaries of Indian Camp Ranch, a 1,200-acre, 31-lot private residential community developed in the late 1980s and early 1990s. There are 208 known archaeological sites in the Ranch (Ortman et al. 2011); evidence visible on the modern ground surface indicates that 107 sites date from the Basketmaker III period. [Figure 2](#) shows the

boundaries of Indian Camp Ranch and individual lots, as well as the locations of the known or suspected Basketmaker III sites. Lots outlined in bold are those for which Crow Canyon has obtained permission from the individual landowners to conduct field investigations (see following section).

### **Permits and Permissions**

Excavations, testing, and survey were conducted under State of Colorado archaeological permits 2013-47 and 2013-48 and with the permission of the Indian Camp Ranch Homeowners Association and individual landowners. Both the bylaws and covenants of Indian Camp Ranch were crafted to promote the preservation and research of archaeological sites (Indian Camp Ranch Homeowners Association 2007). In 2010, the homeowners association granted Crow Canyon permission to conduct field research at Basketmaker sites located within the Ranch, subject only to restrictions imposed by individual landowners and provided that the work complied with the professional and ethical standards established by the Society for American Archaeology and the Register of Professional Archaeologists.

Since that time, eight individual contracts between Indian Camp Ranch landowners and the Crow Canyon Archaeological Center have been signed. These contracts limit Crow Canyon activities on particular properties; two prohibit testing and excavation but permit surface mapping and remote sensing; a third permits less than 10 m<sup>2</sup> of excavation at two separate sites, which limits our work to test excavations at those sites. Five other contracts give permission for excavations at Basketmaker III sites on the landowners' lots.

### **Public Involvement**

A diverse segment of the public benefitted from Crow Canyon's research during the 2013 field season. Through Crow Canyon's research and education programs, 403 people ranging in age from middle school through adult assisted in excavations at the Dillard site. Crow Canyon partnered with Earthwatch Institute for the first time in 2013, bringing participants from all over the Americas and Europe to take part in the project ([Figure 3](#)). At least 577 additional individuals participated in formal tours offered as part of single-day field trips, multiday non-excavation school-group programs, or other Crow Canyon-sponsored activities. The total number of people served reflects not only Crow Canyon's commitment to involving the public in its research but also the level of public interest in the ancient past of the Mesa Verde region.

The Basketmaker Communities Project was highlighted in several public venues in 2013. The History Colorado Center incorporated photographs of Crow Canyon archaeologists at work into its new Living West exhibit. CNN filmed participants in our Archaeology Research Program excavating at the Dillard site in September 2013 for a travel segment to be aired in U.S. airports during the winter of 2013/2014. In June 2012, Oregon Public Broadcasting conducted filming at the Dillard site for a one-hour episode of *Time Team America*, a popular PBS science-archaeology series. This episode is scheduled to air in the spring of 2014 and could be viewed by approximately 3 million people. Through public outreach products such as these, Crow Canyon aims to widen its audience and spread the message of an inclusive American past and the application of science to its study.

## **American Indian Involvement**

American Indians were involved in the Basketmaker Communities Project in several ways during 2013. Scholarship funds totaling \$25,264 were disbursed to 43 American Indian students. Scholarships were provided to American Indian students attending Crow Canyon's Middle School Archaeology Camp, High School Field School, and High School Archaeology Camp. Additional American Indian students attended programs at the Center with school groups supported by Crow Canyon. These school groups included students from Southern Ute Montessori and the Southern Ute Reservation. These students are affiliated with a variety of Native American tribes including Zia, Laguna, Navajo, Ute Mountain Ute, Southern Ute, and Oglala Sioux.

As part of Crow Canyon's ongoing Pueblo Farming Project, Hopi farmers visited campus in 2013 to consult on our experimental gardens. During their stay, these advisors visited the Dillard site, sang a blessing for the ancestors and the archaeological work, and discussed their perspective on dryland farming with the field crew.

Crow Canyon's Native American Advisory Group contributed to the project in several ways. The Group met four times in 2013, and the primary focus was to update the Crow Canyon Archaeological Center Policy on the Treatment of Human Remains and Associated Funerary Artifacts by incorporating procedures regarding analysis of human biochemical residues. The updated version of the policy was approved and adopted by the Crow Canyon Board of Directors in October 2013. Throughout the year, Director of American Indian Initiatives Marjorie Connolly consulted with particular members of our Native American Advisory Group on issues such as culturally sensitive items and a burial found during excavation at the Dillard site. Finally, during Crow Canyon's October board meeting, our Native American Advisory Group visited the Dillard site and heard updates on progress made during the 2013 field season.

Throughout these activities, the insights and perspectives shared by American Indians informed Crow Canyon's research and enriched the experience of participants enrolled in the Center's education programs. We intend to build on our relationships with American Indians by providing scholarships for field programs and through continued consultation with the Native American Advisory Group and other interested parties as the Basketmaker Communities Project progresses.

## **Environmental Setting**

The Basketmaker Communities Project study area consists of gently rolling uplands where varying thicknesses of eolian silt loam overlie Dakota Sandstone. The elevation at the center of the project area is about 1890 m (6200 ft). Approximately 100 million years of geologic history dating from the late Triassic/Jurassic through the middle Cretaceous are exposed to the west in Alkali Canyon. The various geologic strata provided Pueblo people with construction stone and raw material for tools, and the permeable layers form a high-quality aquifer that gives rise to numerous springs at the interfaces between fine sandstone beds and less-permeable mudstones.

Indian Camp Ranch was probably once completely covered by pinyon-juniper woodland dominated by pinyon pine and Utah juniper, with an understory of bunch grasses, yucca, and prickly pear cactus. Today, remnants of this woodland can be found in the northwest and south-

central portions of the Ranch, but elsewhere the native vegetation has been replaced (in the past 100 years) by rangeland and farm fields. Properties in the western one-third of the Ranch have been cultivated and are planted in winter wheat. Rangelands, including a portion of the tract on which the Dillard site is located, are dominated by big sagebrush, rabbitbrush, and bunch grasses.

## **History of Archaeological Investigations**

In 1984 and 1985, the Crow Canyon Archaeological Center recorded 11 sites on property that is now part of Indian Camp Ranch. The recorded sites are 5MT2032, 5MT3873, 5MT3875, 5MT3887, 5MT3890, 5MT3893, 5MT3906, 5MT3907, 5MT3911, 5MT3915, and 5MT3919. This documentation was part of the Center's early public-education initiative, and no formal report was generated (Mark Varien, personal communication 2013).

In the fall of 1989, Woods Canyon Archaeological Consultants, Inc., conducted a reconnaissance of the newly created Indian Camp Ranch. The goal of this survey was to identify and briefly describe sites within the 1,200-acre development and to plot the sites on an aerial photograph (Honeycutt and Fetterman 1991). From 1991 through 1993, Woods Canyon archaeologists formally recorded sites located during the reconnaissance, eventually documenting all 208 sites within Indian Camp Ranch, including the 11 sites recorded by Crow Canyon in the mid-1980s (Fetterman and Honeycutt 1994).

One of the most compelling features recorded during the survey by Woods Canyon was a 10-m-wide depression on a tract located in the far western portion of the development. The depression and immediately surrounding area were designated Site 5MT10647; Crow Canyon later named this the Dillard site, after the landowner who, in the meantime, had purchased the tract. In 1991, Woods Canyon archaeologists excavated a 12-m-long dog-leg trench through this prominent feature, revealing a large, circular but fairly shallow structure (Fetterman 1991). Multiple, layered adobe floors were found about 1 m below the modern ground surface, and a low bench was defined around the perimeter of the exposed portion of the building. All visible characteristics indicated that the structure was a great kiva. One large, partly burned upright post was located in the southwest quadrant, suggesting that the structure had a four-post roof-support system. The presence of this burned post and the discovery of charred and fragmentary wood in the fill above the floor suggest that the structure might have burned at or after abandonment. Though that post was not tree-ring dated, a scatter of Chapin Gray sherds on the floor, as well as the absence of sherds dating from a later period, suggested that the structure dated from the Basketmaker III period.

Evidence of a Basketmaker III presence has also been documented on adjacent lands to the south and east of Indian Camp Ranch. Approximately 300 ha (740 acres) south of the ranch were surveyed for a fuel-reduction project for Canyons of the Ancients National Monument (Fetterman 2004). Thirty-seven sites with Basketmaker III components were recorded, including single- and multiple-habitation sites, field houses, and activity areas. The nearby Crow Canyon Archaeological Center, located south and east of Indian Camp Ranch, recently surveyed its campus of approximately 70 ha, or 170 ac (Kuckelman and Powell 2009), and six Basketmaker III sites were recorded. Of these, three are single-habitation sites and three are limited-activity (probably resource-procurement) sites. The results of the Indian Camp Ranch, fuel-reduction, and Crow Canyon surveys indicate that a large Basketmaker III community once occupied more

than 800 ha (1,976 ac) between Crow and Alkali canyons. However, because there has been no comprehensive study of this settlement to date, the momentary population and exact nature of the community, as well as its relationship to neighboring communities, are mostly unknown.

## **Research Objectives**

The Basketmaker Communities Project is a study of seventh-century population growth and social organization in the central Mesa Verde region. Data generated as a result of Crow Canyon's field and laboratory research will lead to a better understanding of settlement changes that occurred as hunter-gatherer societies transitioned into agricultural economies across the northern Southwest (Varien and Diederichs 2011). In addition to being a time of marked population growth, the Basketmaker III period was also witness to great technological and social change, including the expansion of dry farming, the addition of cultivated beans and new varieties of corn to the diet, the replacement of the spear and atlatl with the bow and arrow, the first manufacture of pottery, and the initial construction of public architecture. Taken together, these characteristics form what Kohler and Varien (2010:44) call the "full Neolithic package," and the appearance of these changes kicked off the ancestral Pueblo "Neolithic Revolution" in the Four Corners area, including the Mesa Verde region.

The cluster of Basketmaker III sites in the study area is unique in its potential to shed light on the Pueblo Neolithic transition. First, the density of Basketmaker III sites across Indian Camp Ranch is fairly high (about one site per every 4 ha), indicating that the settlement was substantial. Second, the great kiva at the Dillard site is the only confirmed Basketmaker III great kiva in the central Mesa Verde region. The presence of this structure indicates that the site was a focal point for a burgeoning population and may constitute some of the earliest evidence of non-kin social organization in the region. Finally, at least 77 of the Basketmaker III sites in Indian Camp Ranch are single component, including the Dillard site. These sites are especially suitable for the study of Basketmaker III settlement patterns, because architectural and other material remains are not obscured by later Pueblo components with substantial masonry construction.

The research goals of the Basketmaker Communities Project are fourfold: (1) to date Basketmaker III households and public architecture across Indian Camp Ranch to determine the contemporaneity of sites in the settlement and calculate momentary-population estimates; (2) to determine the relationships among different households in the settlement and between sites with public architecture and those without; (3) to assemble data on imported cultural material and traditions; and (4) to identify the subsistence technologies and strategies employed by the Basketmaker III inhabitants. The results of our research will be used to examine three important questions. First, what was the source population for the Basketmaker III immigrants to the study area? Second, is there an identifiable community represented by the Indian Camp Ranch Basketmaker III settlement, and, if so, how was it organized? Third, what was the nature of the Neolithic transition during the Basketmaker III period, and what technological changes made the transition possible?

Research at the Dillard site and surrounding Basketmaker III sites will address these important questions as well as issues of general anthropological interest, including the nature of leadership, the development of, and/or resistance to, social inequality, and the role of public architecture in

social complexity. The Basketmaker Communities Project research design is presented in detail in Ortman et al. (2011).

## **Field Methods**

The ephemeral nature of Basketmaker III surface remains at open sites presents a special challenge to field archaeologists. As a result, Crow Canyon employed several tactics to locate, delineate, and test structures, activity areas, and middens in the project area. Field methods used during the 2013 field season included (1) site mapping, (2) remote-sensing survey combined with soil probing, (3) trowel- and shovel-stripping block areas in 2-x-2-m units, (4) excavating structures and structure chambers in quadrants (up to one-half the area of an individual structure), and (5) random testing of midden areas with 1-x-1-m units.

A detailed description of Crow Canyon's field methods and provenience system can be found in our online field manual ([www.crowcanyon.org](http://www.crowcanyon.org)). In addition, project-specific methods are outlined in the project research proposal (Ortman et al. 2011).

### **Testing vs. Intensive Excavations**

The research design for the Basketmaker Communities Project calls for both testing and intensive excavations. Test excavation, as defined by the Colorado State Historic Preservation Office, is limited excavation of noncontiguous units totaling less than 10 m<sup>2</sup> at any given site; intensive excavation is excavation that exceeds 10 m<sup>2</sup> (Office of Archaeology and Historic Preservation 2011). In 2013, we conducted only intensive excavations, whereas both test excavations and intensive excavations were implemented in previous seasons.

### **Structure-Numbering Conventions**

Crow Canyon's field-recording system requires detailed documentation of all architecture exposed in the course of excavation. For structures, that documentation includes recording the following: structure stratigraphy, length, width, height/depth, and diameter; specific characteristics of individual walls and surfaces; and detailed information about features. Basketmaker III pithouses pose a particular challenge for recording because the typical structure consists of two chambers— a main chamber and an antechamber— and the architectural characteristics of the two can be quite different. For example, floors of many main chambers are deeper than floors of the associated antechamber, a bench may be present in one chamber but not the other, and the construction of the walls and floors can differ markedly between the two parts of the pithouse. Therefore, although the main chamber and antechamber constitute a single domicile, our recording system requires that we document them as separate structures. Throughout this report, and in all related field records and databases, we have assigned two structure numbers to each pithouse that has an antechamber: one number is assigned to the main chamber, and the other number is assigned to the antechamber. Both numbers are provided on maps and the first time a given structure is presented in text— for example, Structure 205 (main chamber) and Structure 226 (antechamber). Thereafter, the structure is referred to in the singular as "the pithouse," "the structure," or as a hyphenated compound (in this example, Structure 205-226), to make clear that the discussion refers to just one pithouse.

## **Non-Excavation Fieldwork in 2013**

### **Temperature Monitoring**

In 2011, two monitors were installed to record temperature data in the western portion of the project area. These electronic monitors are very precise and can operate unattended for months at a time. The monitors were placed at two geographically distinct sites. One monitor was installed at a small habitation site, Site 5MT2032, which sits on a ridge top at an elevation of 1932 m (6340 ft). The second monitor was installed in the center of the Dillard site at 1925 m (6315 ft). Five other comparable monitors are recording data on experimental farm plots across Crow Canyon's campus, 3 km to the east, to determine the maize productivity of particular environmental settings. The electronic monitors on Indian Camp Ranch have been downloaded once each year to confirm that they are in working order and to establish a backup record. With the data from these monitors, we hope to determine if temperatures and growing-season length are currently adequate for maize farming at particular locales in and near the Basketmaker Communities Project study area.

### **Mapping**

During the 2013 field season, selected sites were mapped using a Topcon GTS-203 electronic total station surveying instrument in combination with AutoCAD LT and Adobe Acrobat software. In addition to mapping site boundaries, we also mapped structures, middens, and rock concentrations discernible on the modern ground surface. The resulting maps were then used to delineate architectural blocks. An architectural block consists of spatially related buildings, middens, and extramural spaces. Because most Basketmaker III structures cannot be detected on the modern ground surface, we defined architectural blocks primarily on the basis of other evidence visible on the surface, such as concentrations of artifacts and possible construction stone. As we discovered in Block 200 at the Dillard site, a single block may encompass many structures and features. Using numerous instrument-established datums, we also mapped the marker pole that had been placed at each site during the development of Indian Camp Ranch, and we relocated and mapped the limits of the Woods Canyon excavations at the Dillard site. In addition, we used the total station to set in excavation units.

### **Geophysical Survey and Subsurface Probing**

Seven sites were surveyed with geophysical imaging during 2013. An additional site, Site 5MT10673, was surveyed in 2012 and is also summarized in this report. This work had two primary objectives: (1) to locate subsurface structures and activity areas and (2) to help develop plans for future targeted excavations. A detailed report of geophysical survey methods and results is available (Charles 2013). The site surveys summarized in this report include the multiple-habitation Windrow Ruin, five possible single-habitation hamlets, and a multi-component Basketmaker III hamlet and PII complex ([Figure 4](#)). Sites excavated in 2013 are shown in [Figure 5](#).

Over the course of the 2013 field season a total of 30 grids measuring 20 x 20 m each (a total area of 12,000 m<sup>2</sup>) were surveyed. At the TJ Smith site, 5MT10736, two grids were surveyed in 2012, and four additional grids were surveyed in 2013. Another habitation, Site 5MT10637, was surveyed by Fort Lewis College student Jane Cooper and her team in the fall of 2012. In all, a total of 14,000 m<sup>2</sup> of geophysical sediment mapping is summarized in this report ([Table 1](#)). The

net result of all efforts was the identification of at least 10 probable pithouses and several other possible cultural anomalies.

To generate comparable data across the Basketmaker Communities Project study area, remote-sensing survey was conducted in a standard grid measuring 20-x-20 m. These remote-sensing blocks were laid out on a generally north-south axis, south of any probable storage features, in an effort to detect pit structures and extramural activity areas. Anomalies that on the basis of preliminary data seemed most likely to indicate the presence of pit structures were probed with a 1-inch-diameter soil auger. The characteristics of cultural deposits were described and the depth of the reddish loess that forms undisturbed native sediment was recorded.

### ***Standard Electrical-Resistivity Survey***

All sites except Site 5MT10637 were surveyed solely with a Geoscan RM-15 electrical-resistance meter. The twin-electrode-array configuration, at a 50-cm distance, was used throughout the survey. Samples were collected using a sample interval of 50 cm and a 1-m traverse interval in a zigzag mode.

#### Sites 5MT10651 and 5MT3882

Sites 5MT10651 and 5MT3882 are adjacent sites situated in a chained and brushed pinyon and juniper woodland. Whereas Site 5MT10651 appears to be a Basketmaker III hamlet, Site 5MT3882 contains a Basketmaker III component and a Pueblo II roomblock that encircles a kiva depression. A total of four 20-x-20-m grids was surveyed. Three ran north-south from the center of Site 5MT10651 to the north edge of Site 5MT3882 ([Figure 6](#)). In order to frame the Pueblo II roomblock within a single grid, the last grid was offset 4 m south and west from southwest corner of the contiguous units. No probable pit-structure anomalies were found in the northern three survey blocks, but the roomblock and enclosed kiva are apparent in the detached southwestern grid ([Figure 7](#)).

#### Sites 5MT10709 and 5MT10627

These are adjacent sites located on a ridge top near the center of the Indian Camp Ranch ([Figure 2](#) and [Figure 4](#)). In the 1980s, Woods Canyon Archaeological Consultants located a single pithouse using soil probes. Remnants of pin flags were found in these auger locations when the Crow Canyon field crew conducted work at the site in 2013. Four grids were surveyed with electrical resistivity. These grids encompass most of Site 5MT10709 and the southern portion of Site 5MT10627. The results of this survey were the least definitive data collected during the 2013 season. In fact, the pithouse that had been confirmed earlier with soil probes did not appear in the electrical-resistivity image. This is probably the result of shallow bedrock along the ridge top.

#### Site 5MT10736

Site 5MT10736, the TJ Smith site, is a small habitation site located in a plowed field at the eastern end of the Indian Camp Ranch development ([Figure 2](#) and [Figure 4](#)). Six 20-x-20-m grids, two in 2012 and four in 2013, were surveyed with electrical resistivity. The results of this survey were limited ([Figure 8](#)), but three anomalies of different sizes and intensities are identified in the data (Charles 2013). Through testing, one of these anomalies has been identified as a pit structure and a second identified as a series of pit rooms. The third anomaly was probed

and inferred to be a natural geologic deposit. High-resistance readings in the southern portion of the survey are most likely caused by the natural geology.

#### Site 5MT3875

Site 5MT3875, the Shepherd site, is located along the eastern border of the Indian Camp Ranch ([Figure 2](#) and [Figure 4](#)) and just up the ridge from the Crow Canyon Archaeological Center. Eight 20-x-20-m grids (a total of 3,200 m<sup>2</sup>) were surveyed at this site with the electrical-resistance meter. High-resistance anomalies on the east edge of the site could relate to rock concentrations, but the data are inconclusive. These anomalies will be augered and tested in the spring of 2014.

#### Site 5MT3890

Windrow Ruin ([Figure 10](#)) is the second largest Basketmaker III site in Indian Camp Ranch ([Figure 2](#) and [Figure 4](#)). It occupies 5 acres of a long north-south ridge just east of the Dillard site. A total of 12 electrical-resistivity grids (4,800 m<sup>2</sup>) was surveyed during 2013 ([Figure 9](#)). Electrical-resistance survey was very productive at this site. Four buried pit structures were located by the survey and confirmed with soil probes.

Near the north end of the site is an extraordinarily large Basketmaker III pithouse. This structure is clearly two chambered; the main chamber measures 8 m in diameter. Only a handful of over-size pithouses similar to this have been documented in the region. Arcing around the north side of the pithouse is a linear mound of earth, adobe, and small rock; the mound measures 30 m long and 10 m wide. Augering data suggest that this mound is the remains of an extensive early roomblock. Carbonized maize was recovered in a soil-auger sample from the roomblock. Crow Canyon will submit this sample for radiocarbon dating.

Three additional pithouses were also identified as a result of the resistivity survey. An average-size Basketmaker III pithouse was identified beneath the large roomblock; its vertical location suggests that it pre-dates the roomblock. Two more pithouses were found in the south half of the site. In 1995, Fetterman and Honeycutt recorded concentrations of adobe in these areas. Our 2013 fieldwork revealed that one of these adobe piles overlaps a pithouse antechamber, which suggests that the adobe is associated with buried pithouses rather than surface rooms.

#### ***Special Studies***

In October 2012, one day was spent at Site 5MT10637 collecting data for a senior-seminar thesis (Charles 2013). Jane Cooper, a student at Fort Lewis College, requested permission from Crow Canyon to conduct electrical-resistivity surveys and gradiometer surveys over a single grid (20-x-20 m) to determine the efficacy of different geophysical instruments using various survey methods.

Data collection consisted of surveying the same grid three times using different survey intervals. The electrical-resistivity surveys included intervals of:

1. Survey sampling interval at 1 sample per meter and a transect interval of 1 m, for a total of 400 samples per grid.

2. Survey sampling interval at 2 samples per meter and a transect interval of 1 m, for a total of 800 samples per grid.
3. Survey sampling interval at 2 samples per meter and a transect interval of .5 m, for a total of 1,600 samples per grid.

The study found that the first electrical-resistivity sampling method was too gross to aid in pithouse identification. Both of the more refined methods were useful in locating the buried pithouse found in the survey grid ([Figure 11](#)). However, the true outline and orientation of the building became clear only with the third, most intensive, survey method. Crow Canyon is currently using the second method of electrical-resistivity survey to locate structures. This study suggests that after pithouses are located, more intensive electrical-resistivity surveys could be used to collect some structure details without impacting intact deposits with excavation.

A magnetic gradiometry survey was conducted with a fluxgate gradiometer and using varying sampling intervals (Charles 2013).

1. Survey sampling interval at 8 samples per meter, 1 m transect interval, for a total of 3,200 samples per grid.
2. Survey sampling interval at 8 samples per meter, .5 m transect interval, for a total of 6,400 samples per grid.

Both magnetic sampling intervals were able to detect the buried pithouse at Site 5MT10637. The difference in results between the two sampling techniques is minimal ([Figure 12](#)), indicating that magnetic survey is effective even at wide sampling intervals. Magnetic gradiometry surveys require much less field time than electrical-resistivity surveys, and they can effectively locate pithouses, especially burned structures, even when large sampling intervals are employed. Because of the enhanced efficiency of magnetic gradiometry survey, Crow Canyon may use this technique in the future to locate pit structures before targeting them with electrical resistivity imaging.

### ***Summary***

Remote sensing has been invaluable to our research during the first three years of the Basketmaker Communities Project. Even on pristine sites, Basketmaker III surface signatures are, by their nature, ephemeral and difficult to interpret; sites in disturbed settings, such as cultivated fields, can be nearly impossible to decipher. With remote-sensing technology, researchers are collecting site-size and site-layout information comparable to that obtained through pedestrian survey of later ancestral Pueblo sites. It has been proven that multiple methods of remote sensing lead to more accurate interpretations. In order to assemble a more accurate picture of the settlement and the distribution of sites within it, we plan to continue remote-sensing surveys in combination with subsurface probing at Basketmaker III sites in the project area wherever feasible.

### **Intensive Site Evaluation**

In 2013, the Crow Canyon Archaeological Center contracted with Woods Canyon Archaeological Consultants (Woods Canyon) of Cortez, Colorado, to conduct an intensive evaluation of 70 Basketmaker III habitations within Indian Camp Ranch. This sub-project is part

of the larger Basketmaker Communities Project and is funded by the National Science Foundation. The aim of this project is to create, on the basis of surface signatures, a relative chronology of all Basketmaker III habitations within the study area.

The intensive site evaluation consists of a tally of surface artifacts, an appraisal of site size, and a quantification of structures. The 70 sites included in this study were chosen on the basis of site forms completed during previous surveys of portions of Indian Camp Ranch conducted between 1965 and 2003 (Adams 1984; Fetterman 2004; Fetterman and Honeycutt 1994; Lightfoot 1985; Martin et al. 1971; Van West 1986). With a few exceptions, a complete tally of surface artifacts was completed at each site.

As of December 2013, Woods Canyon had completed the fieldwork for this intensive site evaluation sub-project. Although 70 sites were chosen for revisiting, only 68 were evaluated. The Dillard site (5MT10647) will be intensively studied, tested, and excavated by Crow Canyon, so it was excluded from Woods Canyon's sub-project. Two additional sites were excluded from the study as a result of recent disturbance or lack of evidence for a Basketmaker III component. And finally, one site not included within the initial list of 70 sites for study was added to the study on the basis of a field assessment of the site as a Basketmaker III activity area that might have served as a habitation. With the removal of three sites and the addition of one site from the initial list of 70, Woods Canyon evaluated a total of 68 sites.

As of the beginning of 2014, several tasks are planned for the completion of this project. Standard Office of Archaeology and Historic Preservation (OAHP) Cultural Resource Re-Visitation forms, with a specially prepared form of collected data, will be finalized and submitted to OAHP for inclusion in the Colorado State Historic Preservation records. A project report will be completed that includes the project specifics, a summary of results, and a preliminary synthesis of data. All data from the sub-project will be provided to Crow Canyon to add to our databases for future studies.

## **2013 Excavations**

Excavations during the 2013 field season were conducted at four sites: 5MT10647 (the Dillard site), 5MT2032 (the Switchback site), 5MT10736 (the TJ Smith site), and 5MT3875 (the Shepherd site). [Appendix A](#) provides a summary of all units that have been excavated thus far during the Basketmaker Communities Project, organized by site and architectural block. The table also specifies which units have been completed and which will be continued in 2014. As of December 2013, 254 excavation units, totaling 532.43 m<sup>2</sup>, have been opened during the project. Approximately 120.78 m<sup>3</sup> of sediment has been excavated during the past three field seasons. A total of 164 excavation units has been excavated, fully documented, and backfilled. Before backfilling, exposed walls and floors of structures were protected with Geocloth, a breathable synthetic fabric that does not deteriorate unless exposed to ultraviolet light. The backfilled sediment was tamped to reduce settling, and the ground surface was restored as much as possible to its original configuration. At the close of the 2013 field season, the 90 excavation units that are still in progress were covered with plywood and sealed with plastic sheeting. These measures were taken as a safety precaution and to protect the units from damage during the winter.

Many Basketmaker III structures in the Mesa Verde region have been fully excavated, but previous investigations have not emphasized the recovery of comparable data from multiple sites in one settlement cluster. The Basketmaker Communities Project is an opportunity to remedy this lack. First, we are examining multiple sites within a single large settlement cluster; second, we are using similar sampling strategies at all sites, which will ensure a high degree of comparability. These strategies include (1) exposing the shape and size of selected pit structures by stripping the postoccupational deposits from both above the structures and around their perimeters; (2) excavating a trench through selected structures to better define structure boundaries, expose stratigraphy, and locate floor features; and (3) excavating an additional one-quarter to one-half of the trenched structures to expose the hearth, ritual features, and intramural storage features.

The sampling strategy for the Basketmaker Communities Project also calls for the excavation of randomly selected 1-x-1-m units in concentrated extramural midden (refuse) deposits. The artifact-assemblage data for the middens will be used to (1) establish a basic site chronology, (2) identify the types of activities that occurred in different architectural blocks, (3) make inferences about ancient subsistence practices and exchange networks, and (4) reconstruct the past environment. The data will also be used in a variety of intrasite and intersite comparative studies.

#### **Site 5MT2032**

Approximately 250 m northwest of the Dillard site, on a north-south-trending ridge, is a cluster of sites that appears to date from Basketmaker III times. This includes Sites 5MT10711, 5MT10713, 5MT10714, and 5MT2032. Site 5MT2032, located on the east side of the ridge, was selected for sampling ([Figure 13](#)), and portions of the midden and pithouse were excavated in 2013. An alignment of nine slab-lined storage rooms crosses the slope just above the pithouse. At least one of the surface rooms will be investigated in 2014.

#### ***Structure 110***

A 2-x-2-m unit was excavated into the center of the pithouse Structure 110 ([Figure 14](#)). There was a high density of artifacts in the upper fill. This indicates that the pithouse depression might have been used as a refuse area by later occupants of the ridge top. Along with hundreds of gray ware pottery sherds and flaked-lithic artifacts were more specialized items including a shaped-bone object, an arrow point, a piece of raw lead or galena, and a shaped sandstone disc. The pithouse floor has not been exposed. Excavation will continue in 2014.

#### ***Nonstructures 101 and 102***

In order to sample three percent of the large midden at Site 5MT2032, 30 randomly selected 1-x-1-m units were excavated. Though the density of artifacts on the modern ground surface was very high, the midden deposit (Nonstructure101) is shallow. It is approximately 10 cm thick, and most of the artifacts were recovered within a few centimeters of the modern ground surface. Mechanical disturbance and modern burning episodes were evident in five of the units. Though mixed, these burned deposits (Nonstructure102) included midden refuse. Several hundred artifacts were collected from the midden at Site 5MT2032, and the assemblage is similar to midden assemblages from the Dillard site. The assemblage from Site 5MT2032 includes gray ware and early black-on-white pottery sherds, flaked-lithic artifacts of local and nonlocal

materials, gizzard stones, and fragments of ground-stone artifacts. All but two of the random-sample units were fully documented and backfilled in 2013.

Three rock-concentration features identified in the midden were also sampled in 2013; two were in 2-x-1-m units, and the third was in a 2-x-2-m unit. Two of the rock-concentration features appear to be dumps of fire-cracked rock from thermal features. A slab-lined feature was exposed below the rock concentration in the third unit. This feature will be investigated in 2014.

### **Site 5MT3875**

Site 5MT3875, the Shepherd site, occupies the east slope of a ridge that drops away into the Crow Canyon drainage system on the far eastern edge of the project area ([Figure 2](#) and [Figure 4](#)). It was first recorded in 1983 by Jo Berger, one of the original Crow Canyon directors, as part of an early Crow Canyon archaeology program. It was re-documented in 1991 by Woods Canyon Archaeological Consultants, who recorded a site with a large scatter of artifacts dating from the Basketmaker III period and that included 11 burned-rock concentrations ranging in size from 2-x-2 m to 10-x-4 m. Two small rubble mounds were also recorded.

During the spring of 2013, Crow Canyon conducted an electrical-resistivity survey of eight 20-x-20-m grids ([Figure 15](#)) across the Shepherd site to locate buried structures. A ninth remote-sensing grid in the southern portion of the site will be surveyed in 2014. Small circular anomalies were identified in the northeast portion of the site. Soil probing in these locations indicates that the anomalies may represent small pit structures. During 2013, Crow Canyon focused its excavation efforts in the western half of the site, sampling the two small rubble mounds (Structure 102 and Nonstructure 108) along with portions of three middens (Nonstructures 105, 109, and 112).

### ***Structure 106***

The northern rubble mound (Structure 106) covers a 6-x-6-m area and is 20 cm tall. A 3-x-1-m trench was excavated into the northern end of the mound to determine the temporal relationship of this structure to the rest of the site. Excavations in the unit exposed the juncture of two masonry-wall foundations. One Mancos Black-on-white pottery sherd was found in the collapsed rubble, suggesting that the structure dates from the Pueblo II period. Excavation of the unit will continue in 2014.

### ***Nonstructure 105***

A low-density midden (Nonstructure 105) covers the central portion of the Shepherd site. Along with a light scatter of surface artifacts, six rock clusters were also mapped within the concentration. Three percent of the midden was sampled with 11 units measuring 1-x-1 m each. Midden deposits in all of the units were shallow, ranging from 3 to 20 cm deep. Artifact density was low but included pottery sherds, flaked-lithic artifacts, and ground-stone tool fragments.

### ***Nonstructure 108***

Nonstructure 108 is an L-shaped rock concentration measuring 10-x-6 m. The rocks range from 5 to 40 cm long; the concentration rises only slightly above the modern ground surface. A 2-x-2-m unit was excavated off the northwest edge of the concentration. Only a portion of the rubble has been removed from the unit. Excavation will continue in this location in 2014.

### ***Nonstructure 109***

South of the rock concentration Nonstructure 108 is a small midden measuring 8-x-8 m. The midden was sampled with six 1-x-1-m units. Similar to the other refuse deposits at the site, this midden is very shallow, averaging 12 cm deep. Nevertheless, the artifact density in this midden is higher than in other locations and yielded more than 100 pottery sherds, flaked-lithic artifacts, ground-stone fragments, and an arrow point.

### ***Nonstructure 112***

Six 1-x-1-m units are scheduled to be excavated in the easternmost midden (Nonstructure 112). This small but dense midden is associated with the possible pit structures identified through geophysical imaging. Excavations began in one of the six units in 2013, and will continue in 2014.

### **Site 5MT10647**

During the 2013 field season, excavation at the Dillard site continued south of the great kiva, in proximity to the great kiva, and directly north of the great kiva ([Figure 16](#)). Most cultural deposits at the Dillard site are shallow, ranging from 2 to 35 cm thick. This may indicate that the site has suffered sediment deflation since its occupation approximately 1,400 years ago. A distinct layer of pre-occupation, reddish-brown eolian loess underlies the cultural deposits at the site. Though additional sampling of this substrate is planned, most excavation units are terminated at this sediment horizon.

### ***Architectural Block 100***

#### **Structure 102**

During 2013, excavation continued in the northwest quarter and along the north-south trench of the great kiva (Structure 102). In addition, two artifact scatters, one to the southeast (Nonstructure 108) and one to the southwest (Nonstructure 109) of the great kiva were also sampled.

Large strides were made in the excavation of the great kiva in 2013. The northwest quarter of the building was excavated to 10 cm above the floor and bench. During most of the excavation, large construction stone continued to be exposed in the roofing material. To date, nearly 1,000 stones have been removed from the structure fill. In some areas, the masonry appears to have been stacked or shingled seven courses high on the roof of the building. The interior upper wall of the great kiva was also exposed in 2013. This wall is composed of undisturbed native sediment with no evidence of formal finishing or plaster. A 20-cm-wide ledge appears to have been carved into the face of this sediment about half way up the wall. We will investigate this shelf further next year, but it might have served to help support the super-structure of the building. Artifact density increased within 20 cm of the floor. Some of the more notable items recovered include several large pieces of flaked-lithic debris, one lithic core, 10 bowl or jar rim sherds, and a polished chalcedony sphere.

The southernmost 5 m of the north-south trench in the great kiva was completely excavated and then backfilled this year. This section was a priority, because the walls of the trench had become unstable as a result of their proximity to the 1991 trench, which had been filled with backdirt. Three distinct floors were encountered during excavation. The original floor of the great kiva

([Figure 17](#)) was 1.34 m below the prehistoric ground surface. A bench was also carved from the undisturbed native substrate. The bench measured 15 cm high and 70 cm wide. Unlike the bench sections exposed in the 1991 trench, this section of bench was not lined with stone. One pit feature and a scatter of charcoal were observed on the floor.

A layer of plaster had been applied to the original floor surface and its associated bench. This plaster is dark brown and as much as 3 cm thick. Green and brown sand was spread across the plaster surface and, in some areas, mixed into the plaster. A scatter of 40 pieces of flaked-lithic debris and an obsidian biface fragment were found on this second floor ([Figure 18](#)).

There is also evidence for a late remodeling event in the great kiva. Fifteen centimeters of redeposited native sediment and cultural fill covers the second, brown plastered floor. Similar to previous surfaces, a low sloping bench measuring 80 cm wide is associated with this floor. Both the bench and remodeled surface appear to be lightly plastered. This uppermost occupation surface is highly fire reddened ([Figure 19](#)), and an archaeomagnetic sample was extracted from an especially fire-reddened patch of the floor. A thin layer of sand and charcoal was found covering the surface, but the only artifacts associated were a few gray ware pottery sherds.

#### Nonstructures 108 and 109

Two light artifact scatters were noted south of the great kiva ([Figure 16](#)): one to the southeast (Nonstructure 108) and one to the southwest (Nonstructure 109). Each of the scatters measure approximately 15-x-15 m. Six random 1-x-1-m units were excavated into each artifact scatter in order to sample refuse that may be associated with the great kiva and to detect evidence of any other activities in these locations. The cultural deposits in both of these areas are shallow and contain low artifact densities. Artifacts collected include gray ware pottery sherds, flaked lithic debris, a small fragment of turquoise, and one stone bead. Possible features were identified in three of these units. These features will be investigated in 2014.

#### ***Architectural Block 200***

##### Structures 205 and 226

Structures 205 and 226 are the main chamber and antechamber, respectively, of one of the pithouses identified through electrical resistivity in 2011. This pithouse is located about 25 m south of the great kiva, along the western edge of the ridge ([Figure 16](#)). Despite the slight western aspect of this location, the structure is oriented northwest-southeast, with the antechamber southeast of the main chamber.

The outline of the pithouse was fully exposed in 2011, and the north half of the structure was targeted for excavation. Excavations exposed the floor of the antechamber in 2011, whereas 25 cm of fill was left in the main chamber at the end of that field season. In 2012, the main chamber was excavated to the floor. In 2013, floor features in both the antechamber and the main chamber were investigated ([Figure 20](#)). Though excavation in Structure 205-226 is nearly complete, this pithouse will remain open for educational site tours for the duration of the project.

The main chamber of the pithouse is large and sub-rectangular, measuring about 4.8 m long and 5.5 m wide. It is about 1 m deep, or 20 cm deeper than the antechamber. The main chamber was constructed without an encircling bench. Instead, a double row of small vertical posts were

erected along the interior perimeter to form the walls of the building. The field crew excavated 23 small postholes associated with this wall construction. The postholes averaged 10 cm in diameter and range from 5 to 22 cm deep. Two large postholes associated with the main roof-support system were also excavated in 2013. Both are located approximately 1 m from their respective corners, northwest and northeast, and measure about 35 cm in diameter and 75 cm deep. A cluster of small pit features that includes a couple of small postholes, a capped pit, and one sand-filled pit is associated with each posthole. Between the two main postholes is a large shallow depression and two additional postholes. A suite of domestic features runs along the central axis of Structure 205. These features include a deflector, possible ashpit, hearth, and two pits filled with clean sediment that might have served as a sipapu complex. All exposed features within Structure 205 have been investigated, and excavation is considered complete.

The antechamber, Structure 226, is fairly oval in plan. It measures 6.25 m long, 5 m wide, and 60 cm deep. Only about half of the approximately 15 features were excavated in 2013. Two of these are large shallow bins built against the wall. A substantial hearth and a sand-filled pit interpreted as a sipapu were also excavated. These domestic features are not common in antechambers and their presence suggests that this large room was used as an additional habitation.

#### Structures 220 and 234

Structures 220 and 234 are located directly east of Structure 205-226 ([Figure 16](#)). Structure 234 is a shallow antechamber attached to the southeast edge of Structure 220. In 2011, the sediments above and immediately surrounding these chambers were stripped to expose the shape and size of both structures. Stripping in 2012 exposed the entire outline of Structure 220 and the west half of Structure 234. Both structures were bisected on a northwest-southeast axis, and the southern half of each structure was targeted for excavation. In 2013, the floors of both structures were exposed ([Figure 21](#)), and a few interior features were investigated.

The antechamber, Structure 234, is very ephemeral. It is only 10 cm deep, is oval in plan, and measures approximately 3.55 m long and 2.50 m wide. At least five postholes have been identified around the perimeter of the structure. The floor of Structure 234 is not prepared, and no artifacts were found on the surface. The entryway into Structure 220 from Structure 234 appears to be ramped. This feature will be further investigated in 2014.

The main chamber, Structure 220, is sub-rectangular and measures 4.75 m northwest-southeast. Structure 220 was excavated to within 2 cm of the floor this season, and the bench and two bin features were fully excavated. A shallow, wide bench was exposed along the south and west walls. Several postholes were found in the bench surface, and two primary-support posts had been integrated into the slab-lined bins in the two exposed corners of the room. These bins are large; the westernmost bin measures 1.10-x-0.67 m, and the southernmost bin measures .90-x-.98 m. These features would have occupied much of the floor space inside the structure. These bins were constructed with 80-cm-tall slab-and-mortar walls ([Figure 22](#)). It is unclear whether either bin was roofed. There is evidence that Structure 220 burned intensively. In 2013, many large pieces of adobe with botanical impressions were collected from the collapsed roofing material from the structure, and at least seven burned maize cobs were found mounded on the southern bench of the structure. This burning also preserved 3-cm-thick plaster on the surrounding walls.

### Structure 232

In the south-central portion of Block 200 is Structure 232, which was identified as a result of the 2011 electrical-resistivity survey. Initial investigations—a series of soil probes and the excavation of a 3-x-1-m unit—revealed that Structure 232 is not a pithouse, but is, rather, a fairly shallow pit room. An additional 3-x-3-m unit opened in the northwest quadrant of this building during the 2012 field season was excavated to floor in 2013. Structure 232 appears to be a circular pit room that is 5 m in diameter and 45 cm deep ([Figure 23](#)). A wide, shallow bench encircles the structure. Several probable postholes were identified on the bench surface, and two more were identified in the structure floor. These will be excavated in 2014. Several artifacts were found in association with the floor, including unfired pieces of pottery, chipped-stone debris, more than 50 gray ware sherds, four arrow points, and several fragments of animal bone (probably turkey). In the center of the room is a large circular hearth filled with ash and charcoal from its final uses; the rim of the feature is highly fire reddened. An archaeomagnetic sample was taken from the hearth and should yield an abandonment date for the structure.

As with several other pit structures in Block 200, Structure 232 was covered with a layer of midden after the roof collapsed. This dense refuse is nearly 30 cm thick. Hundreds of pottery sherds have been collected from this deposit, along with chipped-stone debris, pigment, animal bone, an arrow point, and a dart point.

### Structure 236

Structure 236 was detected as an anomaly in the 2011 electrical-resistivity survey results. The north edge of the structure and collapsed construction material were identified in a 3-x-1-m unit during the 2012 field season. Excavation during 2013 exposed the floor of Structure 236 in this test unit. The arcing north wall of the building was exposed. No bench feature was incorporated into the construction. Structure 236 is 90 cm deep and has an unprepared floor surface. A layer of refuse appears to have been deposited on the floor before the roof collapsed. Artifacts from this deposit include nonhuman bone, a clump of raw clay, several possible gizzard stones, and more than 35 pottery sherds. A large hearth was exposed near what is probably the center of the structure. An archaeomagnetic sample was taken from the hearth and should yield an abandonment date for the structure.

### Nonstructure 241

Soil probes and a 3-x-1-m excavation unit were used to test an amorphous electrical-resistivity anomaly along the northwest edge of Block 200. In 2012, excavation revealed several prehistoric features on one or more surfaces above mixed deposits. The largest feature appears to be an ephemeral hearth or basin-shaped pit filled with charcoal-stained cultural deposits. Maize from this feature was radiocarbon dated in the spring of 2013. The results indicate that the feature dates from between A.D. 571 and 629, which suggests that it was contemporaneous with other Basketmaker III occupation of the Dillard site. Arcing northwest from this feature are at least four postholes spaced about 50 cm apart.

Excavation in 2013 revealed that redeposited, mixed sediments continued approximately 1 m below the occupation surface. This redeposited fill is composed of windblown loess mixed with lumps of caliche. A few flecks of charcoal were noted. This material grades into a solid caliche

layer, which suggests that the sediments were redeposited naturally rather than by human activity.

### Nonstructure 203

Two additional units were excavated in the west midden of Block 200 ([Figure 16](#)). One 1-x-1-m unit was excavated to complete the three-percent sampling of this midden. One lithic core, seven gray ware sherds, and six pieces of flaked-lithic debris were collected. In addition, a 2-x-2-m unit was excavated in order to investigate a burned-rock concentration ([Figure 24](#)) in the south-central portion of the midden. Excavation is in progress. There seems to be a concentration of artifacts in this location that includes pottery sherds, flaked-lithic debris, and ground-stone tool fragments.

### Nonstructures 207 and 208

Geophysical survey revealed an open area on the ridge top between pithouses south of the great kiva. This open area measures approximately 15-x-15 m. Two small anomalies less than 1 m in diameter each were revealed in the resistivity image. Three 2-x-2-m units were excavated east to west across this open area. Below a layer of refuse (Nonstructure 207), three features were identified on the prehistoric ground surface (Nonstructure 208).

The refuse deposit was present in the entire 2-x-6-m excavated area and averaged 20 cm thick. This layer is dark brown, moderately compact mottled silt. Mixed into the deposit are flecks of burned adobe and charcoal along with small pieces of burned sandstone. Artifact density is extremely high. Collected artifacts include hundreds of gray ware sherds and flaked-lithic artifacts, a few black-on-white pottery sherds, eight pieces of ground-stone tools, one arrow point, and one possible malachite fragment. The density of this deposit suggests that the open area between the structures in Block 200 was used as a midden .

Few artifacts were found on the prehistoric ground surface below the midden, but three features were identified in the surface. In the west portion of the sampling block is a wide, shallow depression. The edge of this depression arcs to the northwest towards Structure 205-226. The exposed portion of the feature measures 75-x-50 cm and 12 cm deep. The depression is filled with refuse deposits including a few gray ware sherds and flaked-lithic artifacts, as well as a dozen pieces of burned sandstone.

In the east portion of the sampling block, near Structure 220-234, is a smaller pit measuring 64-x-64 cm and 19 cm deep. The pit is a circular basin and was not burned. It appears to have filled with refuse, which suggests that it was left open at the end of its use.

Also in this block is a burial pit, Feature 2. The pit measures 1.7-x-1.0 m. Excavation was underway in the northern half of the pit when the burial was discovered. An osteologist analyzed the remains, and the burial was then backfilled. The few artifacts found in the fill of the burial indicate that it dates from the Basketmaker III period and is contemporaneous with an occupation of the site.

### ***Architectural Block 300***

Geophysical surveys conducted early in 2012 detected numerous anomalies in Block 300, directly north of the great kiva. Subsequent soil probing and testing has confirmed that at least four of these anomalies are pit structures. Two additional anomalies were probed in 2013. One appears to be a fifth pit structure in this cluster, whereas an anomaly on the west side of the cluster now appears to be a thick layer of refuse. In addition to anomaly testing, we continued to seek postholes associated with a possible fence in Block 300. A small slab-lined structure was exposed during this process.

#### Structure 311

A 1-x-3-m unit excavated into a geophysical anomaly 20 m north of the great kiva revealed the east edge of a pit structure (Structure 311). This unit has been excavated to within 10 cm of the floor of the building and will be completed in 2014. The vertical east wall of the building was revealed, and the structure appears to be 70 cm deep.

#### Structure 312

Structure 312 ([Figure 16](#)) is the largest geophysical anomaly north of the great kiva. The outline of the east half of what appeared to be a main chamber and antechamber was exposed with 2-x-2-m units in 2012. In 2013, a single 2-x-2-m unit was excavated into the center of the presumed main chamber. A portion of the floor and a large hearth were exposed in this excavation unit ([Figure 25](#)). Surprisingly, the floor of the structure is only 55 cm deep. This is only half as deep as the other pithouse main chambers tested at the Dillard site. Because of this unusual construction, two 2-x-2-m units to the north and two 2-x-2-m units to the south of the excavated unit will be excavated as a north-south trench across Structure 312 in 2014 to determine if this is a double-chambered pithouse or two unrelated but superimposed smaller structures.

#### Structure 313

Northeast of Structure 312 is Structure 313. Geophysical imaging and soil probing indicate that this building is 4 m in diameter and more than 1.40 m deep. The north end of Structure 313 was revealed in a 1-x-3-m unit, and an additional 2-x-2-m unit was added to extend the excavation trench south. The north wall of the structure was exposed in 2013, but the floor has not yet been defined.

#### Nonstructure 302

Down slope to the east of Structures 309, 311, 312, and 313 is a midden measuring 20 m wide and 28 m long. Three percent of this midden was sampled in 2011 and 2012 with 12 randomly selected 1-x-1-m units. The midden is about 15 cm thick and contains numerous pottery sherds and chipped-stone fragments along with minerals, projectile points, and ground-stone tools.

In two of the randomly selected units, a series of postholes was found in the prehistoric ground surface below the midden deposits. Three 2-x-2-m units were excavated in adjacent areas to detect any additional postholes nearby. A total of seven postholes have now been documented below the midden across a 20 m area. They appear to be aligned north-south along the slope and probably were part of a fence encircling one or more structures to the west. A portion of a small slab-lined structure was also exposed in one of the 2-x-2-m units. We will continue to investigate the posthole alignment and the structure in 2014.

### Nonstructure 318

In 2011, an ephemeral anomaly was identified with geophysical imaging 5 m northeast of Structure 312. We probed this area with an auger and found that there were moderately deep cultural deposits. The anomaly was tested with a trench composed of a 3-x-1-m unit and a 2-x-1-m unit. This revealed that the anomaly is not a pit structure; rather, it is a 30-cm-thick buried cultural horizon. The deposit is grayish-brown, organically stained silt with small amounts of charcoal and adobe flecking. It contains a moderate density of artifacts including about 50 gray ware pottery sherds, some flaked-lithic debris, a few ground-stone tool fragments, and a concretion.

### ***Architectural Block 500***

Along the northwest edge of the Dillard site is a small but moderately dense artifact scatter and what appears to be an associated pithouse.

### Nonstructure 502

Six randomly selected 1-x-1-m units were excavated across the artifact scatter in Block 500, which measures 23-x-15 m. Most units yielded few artifacts from the 10-cm-thick cultural deposits resting on undisturbed native sediment. Five of these units were fully documented and backfilled in 2013.

### Structures 505 and 508

During the 2012 field season, the southern edge of a burned pit structure was exposed in the sixth randomly selected 1-x-1-m unit. Additional geophysical mapping identified an anomaly the size of a pit structure in this location, and soil probing revealed burned construction materials to a depth of 75 cm. A 3-x-1-m unit was extended off the south edge of the 1-x-1-m unit to investigate the anomaly. This revealed the outline of two attached rooms: Structure 505 to the north and Structure 508 to the south. Excavation will continue in both structures in 2014.

### **Site 5MT10736**

Site 5MT10736 (TJ Smith site) is a Basketmaker III site near the northeast edge of Indian Camp Ranch ([Figure 2](#) and [Figure 4](#)). Several features associated with the site were recorded during the construction of Indian Camp Road in the mid-1990s. The remnants of a circular, slab-lined surface room were exposed in an irrigation trench along the road in 2010. The remainder of the site is under active wheat cultivation ([Figure 26](#)) and has been severely disturbed by heavy equipment. The plow zone is about 20 cm thick, but excavation at the site has revealed that cultural deposits are intact below this zone.

In an attempt to identify buried pit structures, we surveyed six 20-x-20-m grids with electrical resistivity; two were surveyed in 2012 and four were surveyed in 2013. Two of the grids were also surveyed with magnetic gradient in 2012. The grids were positioned along the east edge of a rock scatter that may be the remains of surface rooms. Several ambiguous anomalies were identified, and soil probing confirmed that one of these is a pithouse, and another is possible surface rooms. In 2013, two surface rooms, the pithouse, and an associated midden were tested ([Figure 27](#)). All documentation was completed, and the excavations were backfilled at the end of

the season. An additional 2-x-2-m unit was laid out over a magnetic anomaly north of the pithouse. This unit will be excavated in 2014.

### ***Structures 108 and 109***

Structures 108 and 109 are contiguous, small, above-ground storage rooms directly south of the main chamber of the pithouse (Structure 111). In fact, Structure 109 might have been built over the antechamber of the pithouse, which would indicate that these surface rooms were constructed after Structure 111 was decommissioned and the pithouse depression filled. Small portions of both Structures 108 and 109 were exposed at the north end of a 3-x-1-m unit ([Figure 28](#)). The deposits above both structures were disturbed by plowing, but there are some intact deposits inside Structure 108.

Structure 108 appears to be circular and approximately 1 m in diameter. The room was excavated 8 cm into the prehistoric ground surface. Only one associated posthole was found. It is located south of the room on the surrounding surface. Despite this ephemeral signature, there is evidence that Structure 108 was roofed. The room depression was filled with melted adobe and burned beams measuring an average of 5 cm in diameter. No artifacts were found on the floor.

Though abutting Structure 108, Structure 109 was built in a different construction style. The room is more rectangular and was excavated 17 cm deep. The walls are lined with upright sandstone slabs. No postholes were found associated with the room. Construction material was found inside the room, but there was less evidence of burning than in Structure 108. As with Structure 108, the floor of Structure 109 was void of artifacts.

### ***Structure 111***

The pithouse anomaly was probed with an auger in a gridded pattern to determine its shape and size. The structure appears to have two chambers. The main chamber measures approximately 5.00 m long and 4.25 m wide, whereas the antechamber is approximately 2.75 m long and 2.75 m wide. The antechamber is approximately 80 cm deep, whereas the main chamber is 1.4 m deep.

A 3-x-1-m unit was excavated into the center of the main chamber of the pithouse (Structure 111). Four features were exposed on the plaster floor in this unit ([Figure 29](#) and [Figure 30](#)). They are aligned north-south and include a combined deflector and ashpit, hearth, sipapu, and an associated basin-shaped pit. Both the sipapu and the pit feature to the north of it were filled with clean sediment; a portion of a vessel and six pieces of flaked-lithic debris were found in the basin-shaped pit. A few artifacts were found on the floor of the pithouse, including a ladle handle, portions of a gray ware vessel, a biface, a few fragments of maize, and two small, burned fragments of twine. Radiocarbon dating of the maize from the floor provided two possible date ranges (A.D. 720–740 and 770–890) for the structure. The presence of an antechamber and the absence of later artifacts suggest that the structure was occupied during the earlier date range, late in the Basketmaker III period.

### ***Arbitrary Unit 101***

Six 1-x-1-m units were excavated in the dispersed midden southwest of the pithouse. Little intact midden was found below the plow zone, which averaged 20 cm thick. Approximately 200

pottery sherds, as well as flaked-lithic debitage, nonhuman bone, one mano, and a large biface were collected from the midden.

## **Analysis and Curation**

Crow Canyon researchers have processed and have begun analyzing much of the material collected during the 2011 through 2013 field seasons. During 2013, analytic results were obtained in the areas of dating, obsidian sourcing, macrobotanical identification, and pollen analysis.

### **Chronometric Results**

One of the primary objectives of the Basketmaker Communities Project is to create a Basketmaker III settlement history of the project area by collecting materials from both habitation and ancillary structures that yield absolute dates. Three dating methods are being applied; dendrochronology, archaeomagnetic dating, and radiocarbon accelerator mass spectrometry. Three dendrochronology samples were submitted to the Laboratory of Tree-Ring Research at the University of Arizona in the winter of 2012/2013, and we expect results in the spring of 2014. Results from archaeomagnetic and radiocarbon dating are discussed below.

#### ***Archaeomagnetic Dates***

To date, seven archaeomagnetic samples have been collected from hearth or burned floor contexts. Five of these samples are from Site 5MT10647, whereas the seventh sample was collected from Site 5MT10736. Two samples have been analyzed by the Archaeomagnetic Laboratory at the Illinois State Museum (Lengyel 2013). These samples were taken from the hearth collars in Structures 239 and 309. The Archaeomagnetic Laboratory reported that the magnetic quality of these samples was very good and that they are statistically indistinguishable from each other, suggesting that the features were roughly contemporaneous; they appear to date from the early- to mid-seventh century A.D. ([Table 2](#)).

#### ***Radiocarbon Accelerator Mass Spectrometry Dates***

Fourteen radiocarbon accelerator mass spectrometry samples have been analyzed for the Basketmaker Communities Project. All of the samples were composed of burned maize or maize cob fragments. Nine of these were processed by Mitzi de Martino at the University of Arizona AMS Laboratory in 2013. These dates were reported in an uncalibrated format. Crow Canyon's Laboratory Analysis Manager Kari Schleher calibrated these dates to a two-sigma, 95-percent-probability range using the University of Oxford OxCal online radiocarbon calibration program (see <https://c14.arch.ox.ac.uk/oxcal/OxCal.html>). The other five radiocarbon dates were processed by Darden Hood of Beta Analytic, and the results were reported in a two-sigma, 95-percent-probability range (two of these samples were analyzed and the dates reported in 2012).

Eleven radiocarbon samples were recovered from the Dillard site ([Table 3](#)). Seven of these were from structures and four were from extramural features or middens. The resulting dates demonstrate that the Dillard site was occupied from the late sixth century through the seventh century A.D. One structure each from three additional sites (Sites 5MT10718, 5MT3890, and 5MT10736) were also dated using radiocarbon dating ([Table 4](#)). The results show that the occupation at each of these sites probably post-dates the occupation at the Dillard site.

Approximately 23 samples collected during the 2013 field season from the Dillard site and other excavated sites will be dated in 2014.

### **Obsidian Sourcing**

Fifteen fragments of obsidian found at the Dillard site during previous field seasons were geologically sourced during 2013. Steve Shackley (2013) conducted an energy-dispersive x-ray fluorescence (XRF) analysis of obsidian artifacts from the Dillard site. The results of this analysis show that residents of the site used four different sources of obsidian. The four sources, consisting of two outcrops in the Jemez Mountains of north-central New Mexico, one outcrop on Government Mountain near Flagstaff, Arizona, and one outcrop on Mount Taylor near Gallup, New Mexico, are more diverse than those indicated at many earlier or later archaeological sites in the Four Corners area ([Figure 31](#)). This suggests that the residents of the Dillard site had a wide range of social networks that provided them with materials from these distant obsidian sources.

### **Pollen Analysis**

Susan Smith analyzed 23 pollen samples collected as part of the Basketmaker Communities Project during the 2011 and 2012 field seasons. The summary below is taken from the resulting report (Smith 2013).

Pollen samples were first sent to the Palynology Laboratory, Texas A&M University, where pollen grains were separated and concentrated utilizing protocols developed and tested by Vaughn Bryant, Jr. Eighteen of the samples are from the Dillard site (5MT10647), and three samples are from the smaller Site 5MT10718, located 20 m northeast of the Dillard site. Historic land management at the Dillard Site and vicinity included *ñchainingö* trees to improve grazing for cattle, which transformed the juniper woodland into dense sagebrush. A modern surface sample was collected at the Dillard Site to examine the pollen response to extreme disturbance, similar perhaps to catastrophic fire, and a second control was taken from pristine juniper woodland at Site 5MT10726 to approximate the prehistoric landscape at the Dillard Site.

The list of economic plant resources interpreted from the Indian Camp Ranch pollen samples includes maize and five native plants – prickly pear, cholla, beeweed, cattail, and carrot family. Spike values in specific samples suggest that additional native plants that probably contributed to subsistence include cheno-am, grass, juniper, pinyon, and sagebrush, and possibly Chicory tribe at Site 5MT10718. Carrot family (Apiaceae) pollen was found in several structures (Smith 2013). Most carrot-family plants grow in wet meadows or riparian borders, but there are dryland species, notably an ethnobotanical resource called wafer-parsnip or spring parsley (*Cymopterus* and *Pseudocymopterus*). Spring parsley roots were eaten raw or baked by several Southwest tribes and the aromatic leaves used widely as a spice.

Native resources provided not only food but an array of materials used for house construction, tools, medicines, art, and other practical products. High values of juniper pollen in the great kiva could result from use of juniper boughs, perhaps as roof thatch. Fuel wood is not predicted to leave a pollen signature.

Representation of maize in project features is relatively low; only 22 percent of the 18 archaeological samples from the Dillard site (5MT10647) recorded maize pollen, and no maize pollen was identified from Site 5MT10718. Clearly agriculture was part of the Dillard site economy, but possibly a small area was cultivated, occupations were of short duration, or only a few families at a time were farming.

Only one sample recorded cholla pollen, but the context, a bin inside the habitation Structure 205 at the Dillard site, suggests that cholla, possibly flower buds, were processed inside the structure. Cholla is rare in the project vicinity, and the pollen evidence could signal a resource brought into the site through trade or from collecting trips.

### **Macrobotanical Analysis**

The results of macrobotanical analysis by Karen Adams and Nikki Berkebile (Diederichs and Berkebile 2013) provide a glimpse of the subsistence strategies of the inhabitants of the Dillard site. Eighty-six samples were analyzed in 2013. The plant-use information discussed here is contained in a Crow Canyon online publication (Rainey and Adams 2004).

Two domesticates were identified: maize (*Zea mays*) and squash (*Cucurbita* sp.). Maize was found in nearly every context sampled at the site, and sections of burned cobs have been recovered. Other economics include goosefoot (*Chenopodium* sp.) and pigweed (*Amaranthus* sp.). The edible herbs of tansy mustard (*Descurainia* sp.) and purslane (*Portulaca* sp.) were recovered from pit room Structure 228; pollen from wild tobacco (*Nicotiana* sp.) was also found.

The wide variety of cultivated and wild plants that were utilized alongside the domesticated maize and squash at the Dillard site highlights how knowledgeable were the inhabitants of local resources and is a testament to their ability to exploit and cultivate resources at multiple levels of intensity.

### **Artifact Analysis**

In-house artifact cataloging and analysis for the Basketmaker Communities Project is ongoing. More than 2,800 bags of artifacts or samples were cataloged in 2013, and more than 9,000 flaked-lithic artifacts and pottery sherds were analyzed in 2013.

### **Curation**

Several discussions between the Anasazi Heritage Center and the Crow Canyon Archaeological Center have taken place regarding the final curation of the Basketmaker Communities Project collections. Details of the agreement are being negotiated, and we expect a final agreement to be signed in 2014.

## **Summary and Conclusions**

The third year of the Basketmaker Communities Project aimed to expand our understanding of the Dillard site and the settlements surrounding it. We undertook a multiple-method approach to investigating the settlement using intensive surface documentation, large-scale geophysical imaging, and targeted soil-probe and excavation sampling. Three sites peripheral to the occupation at the Dillard site were dated with absolute methods this year. We now know that all three of these sites were occupied later than the Dillard site, and that two sites date from the

Pueblo I period after A.D. 750. These results highlight the difficulty of dating sites with current dating methods. As the results from our multiple studies are generated in the spring of 2014, we will be able to propose new methods for assessing site composition and period of occupation for early Pueblo sites in the Mesa Verde region. These methods will, in turn, give us the ability to create a detailed settlement history for the study area.

Absolute dates from the Dillard site have confirmed that most of the structures at the site could be contemporaneous, and that the site was occupied in the late-sixth and early-seventh centuries A.D. There is now evidence that the great kiva was remodeled several times during its use-life. Eleven pit structures, seven to the south of the great kiva and four to the north, have been sampled. These neighborhoods are made up of a large variety of structure types and associated features. We have found evidence of activities including permanent habitation, temporary lodging, food storage and processing, and possibly communal cooking. This suggests that the Dillard site was simultaneously the permanent home of families organized into neighborhoods and a central gathering place for a larger community. These findings give us a glimpse into the social mechanisms humans have utilized to mitigate the transition to an agricultural lifeway and may help us understand similar social institutions functioning in the world today.

## **Plans for 2014**

Crow Canyon researchers will continue to conduct remote-sensing surveys and excavations across Indian Camp Ranch in 2014. Three additional Basketmaker III single-habitation sites will be sampled next season, which will bring the total of sites sampled to seven for the project. Excavation will be completed at the Dillard site in 2014. The bench and floor of the northwest quarter of the great kiva will be exposed and documented, and the test excavation of six other pit structures will be completed. In addition, an attempt will be made to determine the spatial and temporal extent of the community by conducting geophysical surveys and re-documentation of one or more sites on properties adjacent to Indian Camp Ranch.

Several analyses are also planned for 2014. A geomorphologist has been contracted to analyze construction material from several structures and to assess agricultural potential across the study area. Pollen, archaeomagnetic dating, and additional tree-ring samples have been selected and submitted to specialists. Also scheduled for 2014 is the analysis of nonhuman bone and additional obsidian.

In 2014, the Basketmaker Communities Project will be funded in part by a Colorado State Historical Fund grant.

## **Personnel, 2013 Field Season**

### **Crow Canyon Research Staff**

Shanna Diederichs, supervisory archaeologist and project director  
Steve Copeland, field/lab archaeologist  
Caitlin Sommer, field/lab archaeologist  
Grant Coffey, supervisory archaeologist  
Amanda Hernandez, seasonal archaeologist  
Michelle Turner, field intern  
Kelsey Reese, field intern  
Emilio Santiago, field intern  
Anna Dempsey, field intern  
David Hencman, temporary archaeologist  
Shirley Powell, vice president of programs  
Susan Ryan, supervisory archaeologist, Earthwatch coordinator  
Kristin Kuckelman, research publications manager  
Jamie Merewether, collections manager  
Kari Schleher, laboratory analysis manager  
Carole Graham, lab education coordinator  
Toby Austin, lab intern  
Jonathan Schwartz, lab intern  
Megan Smith, lab intern  
Cherise Bunn, lab intern

### **Crow Canyon Education Staff**

Kathy Stemmler, education director  
Paul Ermigiotti, educator  
Rebecca Hammond, educator  
Molly Englert, educator  
Beth Stone, educator

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