THE WYOMING
Archaeologist

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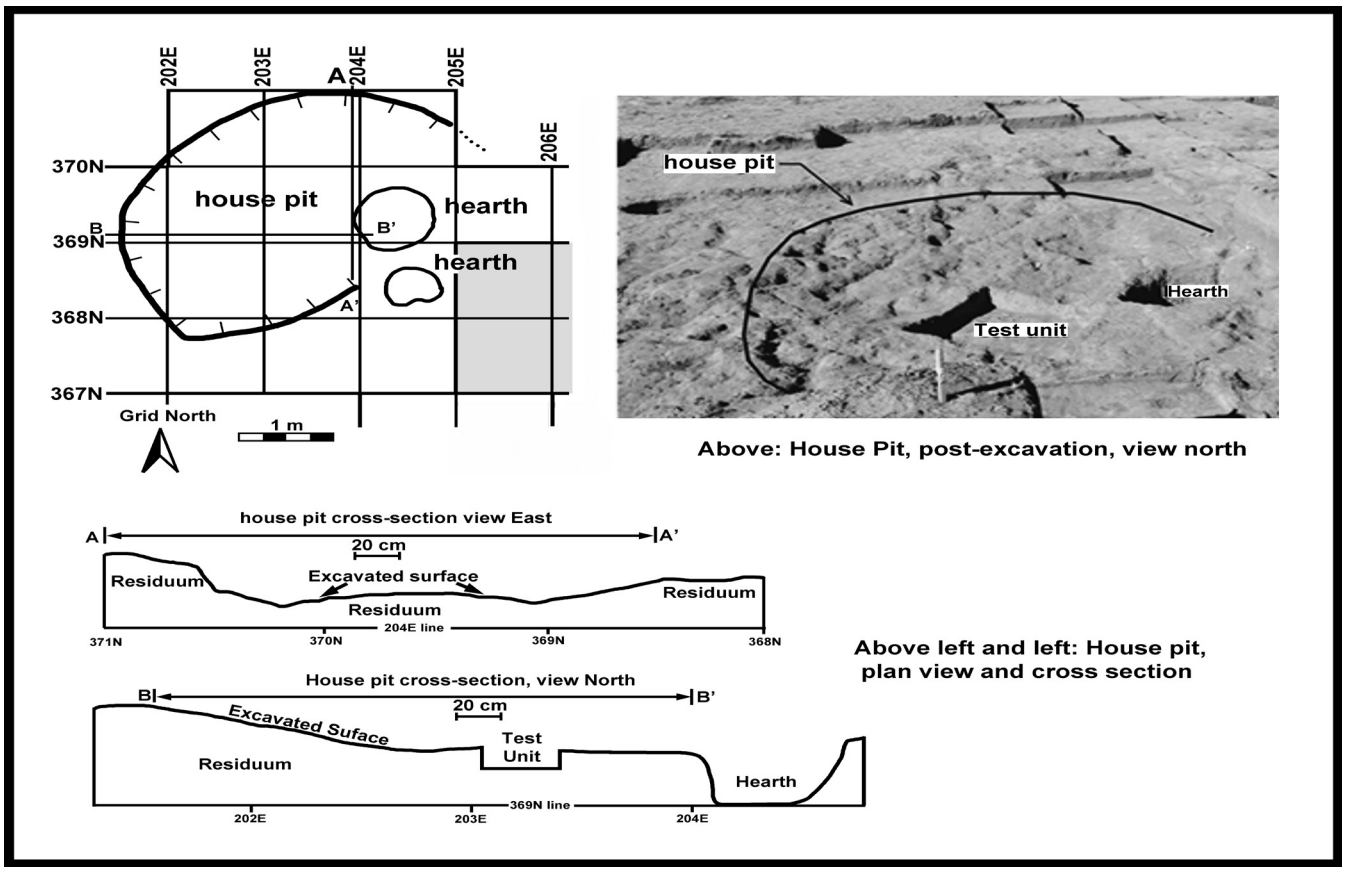

Above: House Pit, post-excavation, view north

Above left and left: House pit, plan view and cross section

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THE WYOMING Archaeologist

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On the Cover:

House pit plan and cross-sections, Beaucoup de Vent site (48LN1301), this issue.

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Authors submitting manuscripts for consideration should follow the style guidelines of the journal *AMERICAN ANTIQUITY* as revised in June 2017 and updated in July 2018. These guidelines can be found at www.SAA.org. Complete instructions for authors were published in *THE WYOMING ARCHAEOLOGIST*, Volume 62(1), 2018. Deadline for submission of copy for spring issues is January 1 and for fall issues is July 1. Reports and articles received by the Editor after those dates will be held for a following issue.

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THE WYOMING ARCHAEOLOGIST
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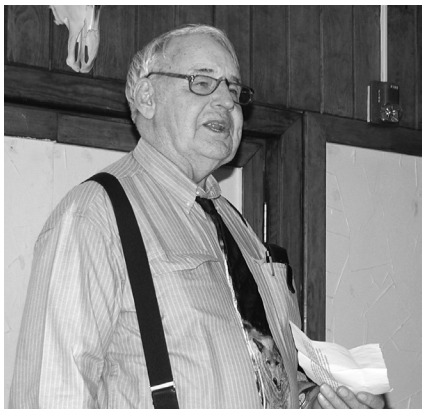
IN MEMORIUM GEORGE CARR FRISON, 1924 – 2020



Every life is unique, but some are more unique than others. The life of George Carr Frison was one of those.

With George's passing on September 7, 2020, two months shy of his 96th birthday, the field of Paleoindian archaeology lost not just one of its giants, but also, figuratively and literally, one of the tallest among them; and many of us lost a kind, quiet, generous, unassuming friend and colleague. George's many professional accomplishments are enumerated in his autobiography, *Rancher-Archaeologist* (2014, Univ of Utah Press), which I highly recommend. Here, I want to focus on George as a person. But let me give a quick summary: He started college at the age of 37, after a life in ranching (sheep for much of that time, but always some cattle to "maintain respectability"). He completed his BA at the University of Wyoming (UW) in two years (1964), and then went to the University of Michigan, the top school at the time, where, in an unbelievable three years (it normally takes seven), he finished his PhD in 1967. More unbelievable, he returned to the UW that year to become the first head of the newly-created Department of Anthropology, and, soon thereafter, Wyoming's first state archaeologist, positions he held for some 20 years. He authored his first book, *Prehistoric Hunters of the High Plains*, in 1978, at the age of 54 – and he would go on to publish another dozen books or so, along with over 100 professional papers. He trained dozens of students and traveled widely: Europe, Africa, South America, Russia, China. He was elected to the National Academy of Sciences in 1997 and is still the *only* faculty member at the University of Wyoming in any field *ever* to achieve that honor. He was president of the Plains Anthropological Society and later of the Society for American Archaeology (SAA), the primary professional organization of archaeologists in the western hemisphere. He received the SAA Lifetime Achievement Award, as well as the American Quaternary Association Distin-

EDITOR'S NOTE: This eulogy for Doctor Frison was written by Dr. Robert L. Kelly, University of Wyoming, at the request of *The Mammoth Trumpet*. will appear in *The Mammoth Trumpet* in the Spring 2021 issue, and is reprinted here with the kind permission of Jim and Char Chandler, editors of *The Mammoth Trumpet.*

guished Career Award, the Asa Hill Award of the Nebraska Historical Society, the UW George Duke Humphrey Distinguished Faculty Award, the Distinguished Service Award of the Plains Anthropological Society, the UW Distinguished Former Faculty Award, the Wyoming Archaeological Society Golden Trowel Award, and was inducted into the Wyoming Outdoor Council Hall of Fame.

And yet, to many who knew him, he was simply "Doc."

George was born November 11, 1924 in Worland, Wyoming. He described his earliest days in a short paragraph in his autobiography: Three months before his birth, his father, George S. Frison, died in a hunting accident. His mother remarried when George was three years old, and his paternal grandparents "convinced her to let me live with them on the ranch." And that was it; his autobiography never mentions his parents again. I don't mean to imply George was unfeeling, not at all. But some people might have spent much of their life angry at being abandoned. Not George. I think there were many events in his life – like the kamikaze attack in World War II that injured him (in his autobiography he simply says he received a minor back injury while in the Navy) – that to him were just things that happened; no need to dwell on them.

The day he arrived at his grandparents' house he was put on a horse. He would spend long hours in the saddle for many years after that. He found his first arrowhead at the age of five – spying it from horseback. He shot his first deer at 9, and his first elk at 13. Looking for arrowheads and hunting: these would be much of what his life was about. George was highly intelligent, and he became a keen observer of nature, especially of animal behavior. Growing up on the western side of the Bighorn Mountains, part of traditional Apsáalooke (Crow) territory, he was exposed from an early age to Native American culture. Chasing down cattle, he encountered hunting parties as a boy, as well as "war lodges," travois poles, discarded or lost equipment, crevice and tree-platform burials. For a while he rode a horse his grandfather acquired in trade with a Crow party. George once showed me his ranch guest book; the last signature was that of Joe Medicine Crow (1913-2016), an Apsáalooke war chief, historian, and author (and a man with his own fascinating life story).

George's first school was the classic one-room schoolhouse with an outhouse and a small stove for heat (it gets cold in Wyoming, and not just in the winter). He was an avid reader. He told me that when quite young his grandmother caught him reading a book – some dime store novel of boyhood adventure – that included a scene of a boy being bitten by a rattlesnake. "That's not the sort of thing you should read," his grandmother said, taking the book away from him. But it did not stop George from reading. When he was in his early 90s, I found him in his office reading a textbook on mineralogy. "I need to know about this," he explained.

After finding that first arrowhead George always kept his eye on the ground (often to the annoyance of his grandfather). With no professional training he excavated sites (he dug Daugherty Cave in 1957, the year I was born!). Today we'd say he looted them – but George kept notes and later published those – Daugherty Cave and Spring Creek Cave among them. Many others he visited as a boy or young man, logging them away in his memory and returning to them as a professional. As a teenager George joined ranch hands to drive cattle from Ten Sleep to Worland, where the animals were loaded onto a train for market. The crew watered the cattle at the only waterhole between the two towns – a spring where George would later excavate the Colby mammoth kill.

The probability of leaving ranch life in Ten Sleep was low. But George wanted an education and he left the ranch for the University of Wyoming after graduating from high school in 1942. After a semester, though, duty called, and he joined the Navy to help in the war effort. (My

father and he apparently served in some of the same places in the Pacific.) Like many vets, he didn't speak much about the war. When I asked him about it, he simply said, "too much water." (This was not due to a fear of drowning. Unlike many Wyoming kids, George could swim; he learned to do so in Ten Sleep creek. I've put my toe in that frigid, rocky creek and wondered: how the heck did he learn to swim in this?)

George returned to the ranch after the war and, when his grandfather passed away, took over its operation with his two uncles. He also re-connected with a high school acquaintance, Carolyn June Glanville. They married in 1946 and had a legendarily happy 65-year marriage until June's death in 2011. June often served as cook on George's field projects, and accompanied him everywhere he went, always with books to read in the shade while George dug. She supported George, but she was never subservient. In 1998, after George was elected to the National Academy of Sciences, the Wyoming legislature declared a "George Frison Day" (how many archaeologists can claim that honor?). He and June stood before a joint session and George acknowledged people who had helped him along the way. He finished by thanking June, claiming that he could never have done anything without her. June leaned out to the legislators and in a stage whisper said, "that's true, you know." The legislators roared. George beamed.

Sometime after June had passed, I went into George's office and he handed me a yellowed letter, addressed to June Glanville. "Look at that," he said. It took me a moment before the post mark registered on me: November 21, 1941, U.S.S. Arizona. "My God, two weeks before Pearl Harbor!" I looked at the name with the return address. "Did he die there?" George nodded. "Was he a suitor?" George nodded. "And you got June?" Again he nodded, with moist eyes.

It wasn't unusual to walk into George's office and have him launch into some tirade – on just about anything: Once it was: "I don't know why people think camp cooks are jolly, friendly fellows. I never met one who wasn't a bigger SOB than the last one." That was a prelude to a story of a camp cook, the fellow's lost pipe, a large pot of coffee, and a kicking horse. Another time it was about the college dean – who had retired decades earlier (Maybe George forgave slights, I don't know, but he did not forget them). More often than not, though, it was about Clovis points or chert or bison bones – and for the last few years it was about Powars II, the ochre mine whose use dates back to Clovis. George's office was awash in the site's chert samples, artifacts, notes, maps, early 20th century photographs – and everything was stained red.

He was enthusiastic and hands-on involved, right to the end. He published on Powars II in 2017 in *American Antiquity*, and a week before he passed, a paper on which he was co-author (about the La Prele mammoth kill site), appeared in print in the same journal.

The list of sites he worked at and reported on is a who's who of paleoindian archaeology: Agate Basin, Hanson, Hell Gap, Horner, Casper, Carter/Kerr-McGee, Sheaman, Mill Iron, the Fenn cache, the Colby mammoth kill. He literally wrote the book on Wyoming archaeology, Prehistoric Hunters of the High Plains (1978; now in a third edition with Marcel Kornfeld and Mary Lou Larson, Prehistoric Hunter-Gatherers of the High Plains and Rocky Mountains, 2010), and published on all facets of Wyoming prehistory, including excavations at Medicine Lodge Creek, Leigh Cave, Rice Cave, Paint Rock V, Beehive, Piney Creek, Wedding of the Waters . . . the list goes on. George approached archaeology like it was ranch work: just git'er done (but take notes). He had no problem with moving large volumes of dirt ("if you want to make an omelette, you got to break some eggs"), and he loved working with a backhoe.

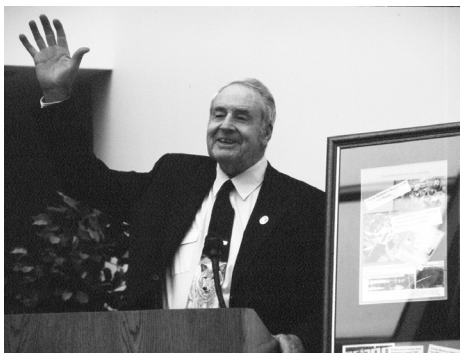
In 2000, when George was 75, he returned to the Agate Basin site. The crew exposed a profile

at the Brewster locality, as George had done at many other sites, and while he was examining it, the wall of sediment collapsed, burying him completely. Students jumped in, digging wildly. They managed to drag him out and get him to an ambulance. George survived with a few cracked ribs.

He had a classic Wyoming sense of humor about these things, these things that just happen. At the time of his Agate Basin work, I was excavating the Pine Spring site in southwest Wyoming. I had dropped a 50-gallon drum of water on my foot and hobbled into the department as soon as I arrived in town. George was the first person I saw, and in those ancient, pre-cell phone days, I knew nothing about the previous week's near-death experience. "What happened to you?" he asked, noticing my limp. I explained and he said, "Is that all?" and walked away.

In 1982, I excavated a cave site with George on the North Fork of the Shoshone River, outside Cody. It was perched far above the river, at the top of a steep talus slope. None of us in the crew expected to find anything (we were right). George and I excavated a large, deep test unit just outside the entrance. By deep I mean George was excavating at the bottom, throwing the dirt up to the level I stood on, where I shoveled it out, above my head. We dug and dug. But then George stopped, and with a finger to his lips indicated I should be quiet. He slowly pointed to the top of the excavation. There, perched on the edge, was a small bird, cocking its head, letting out an occasional chirp. George smiled, and we stood there for the few minutes that the bird found us interesting, appreciating a small, brief moment of the natural world's beauty.

George cared deeply about where he came from, about June, and about archaeology. So it's fitting that his cremated remains were spread in the beautiful Ten Sleep Canyon, where June's ashes were spread, and also near his and June's tombstones in the Ten Sleep cemetery, and finally at the base of the highway sign on Route 16 that marks the nearby Colby mammoth kill site. Next time you drive between Worland and Ten Sleep, stop at the sign and say hello.



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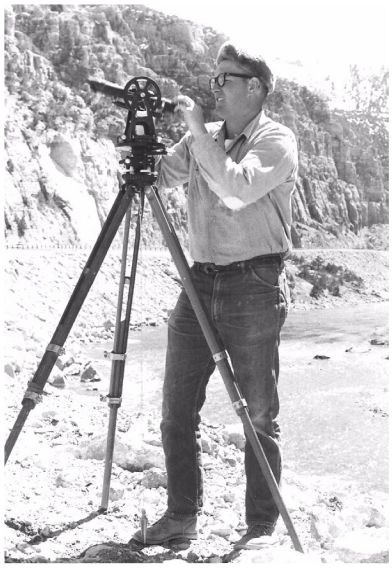

TOM HARLESS
1935 - 2020

Tom Harless, 85, died at his home on April 21, 2020 surrounded by his family.

He was born in Chamberlin, South Dakota July 29, 1935. When he was less than a year old, he came with his family to Basin, Wyoming. He was in scouting and an accomplished athlete. He loved camping, fishing, and hunting in the Bighorn Mountains.

In 1956 he married Margaret Frison, they had three children in Basin, Wyoming, where he was a licensed surveyor and worked for the Wyoming Highway Department. As a young adult, he started a Cub Scout Pack and was the Pack Leader. In 1968, he moved his family to Riverton to help oversee the construction of the Gas Hills Road, and his fourth son was born. He was a little league coach for many years, and had a beautiful singing voice and enjoyed signing in the church choir.

When he retired after 35 years with the Wyoming Highway Department, he walked the top of the Bighorn Mountains from north of Waltman to the Montana boarder, a little at a time over two summers. He spent many weekends camping, fishing, and hunting with his four sons. He particularly loved hunting and was an expert marksmen.

He is survived by his wife of 63 years Margaret; four sons and their spouses, Steve (Deborah), Dave (Sharon), Tim (Helen), and Rob (Heather); grandchildren, Charlie (Kirby), Thomas, Kyle, Jacob, Emily, and Sam; great grandchildren, Kale and Layn; siblings, Ron, Lenore, Cain, Dorisann, Herner; brothers and sisters-in-law, Bill Frison, Dave Frison, Jeanne Vetch, Dan Frison, and Rick Frison.

He was preceded in death by his parents, Ralph and Doris; father and mother-in-law, Ted and Maurine Frison; daughter-in-law, Susie; brother-in-law Larry; and sister-in-law, Dorthy.

He was well liked level-headed person who never did a mean or unkind thing.

A Celebration of Life will be held at a later date. On-line condolences may be made to the family at www.TheDavisFuneralHome.com.

(Courtesy of Davis Funeral Home Inc., 2203 West Main Street, Riverton, Wyoming 82501).

A LATE PREHISTORIC LITHIC REDUCTION LOCALE: SITE 48LN2043 IN THE WESTERN GREEN RIVER BASIN

by
NICOLE SAUVAGEAU COMBS

ABSTRACT

Metcalf Archaeological Consultants, Inc. performed phased data recovery at site 48LN2043 in the summer of 2010. Subsurface cultural materials recovered from the targeted, buried cultural level include almost 8,000 pieces of debitage, dispersed fire-cracked rock, and two bifaces, one of which is a nearly complete Rose Spring projectile point, suggesting a Late Prehistoric age for the cultural level. Pipeline construction monitoring resulted in the discovery of three additional buried features—two amorphous stains and one hearth—though they could not be stratigraphically linked to the cultural level. A charcoal sample from one of the stains was submitted for AMS dating and returned an age of 1500 ± 30 BP (Beta-327067). Although the period of site use ranges from at least the Archaic to Late Prehistoric periods based on diagnostic artifacts discovered both on and below the site surface, the buried assemblage represents a limited range of activities, corresponding with Binford's (1980) characterization of a logistical station associated with a collector strategy. This follows the expectations described by Binford (2001) where the modern effective temperature range calculated for the site area should correspond to use of a collector strategy, rather than a foraging strategy.

INTRODUCTION

Site 48LN2043 is a large prehistoric open camp and historic can scatter encompassing nearly 40 acres (156,720 sq m) on private land and public land managed by the Bureau of Land Management's (BLM) Kemmerer Field Office. The prehistoric component of the site includes projectile points diagnostic of the Archaic and Late Prehistoric periods. A possible Paleoindian point was previously collected from the site surface (Jepson 1990).

To fulfill the BLM's responsibility under Section 106 of the National Historic Preservation Act (NHPA), Metcalf Archaeological Consultants, Inc. (Metcalf) was contracted to mitigate adverse effects to the site before construction of the Ruby Pipeline, performing phased data recovery in 2010. Metcalf excavated 17 test units to a maximum depth of 180 centimeters below surface (cmbs), targeting a potential cultural level noted during previous testing by Environmental Planning Group (EPG) in 2009. Although the targeted cultural level was revealed in Metcalf's excavations, mitigation did not progress beyond a testing phase because further excavation was not likely to provide additional information.

Cultural materials recovered from Metcalf's excavations consist of 9,739 pieces of debitage, seven bifaces, 34 flake tools, two cores, two pieces of tested raw material (TRM), dispersed fire-cracked rock (FCR), and a stone pendant made of jet (a dense, black lignite which can take a polish). The only diagnostic artifact recovered from a subsurface context is a nearly complete Rose Spring projectile point found in the targeted cultural level. Faunal remains recovered from the excavation units were interpreted to be noncultural, consisting primarily of rodents and rabbits. Although no features were identified in the excavations, two amorphous stains and one buried hearth were discovered during archaeological monitoring of the pipeline construction. These features could not be stratigraphically linked to the targeted cultural level in the excavation block, and the relationship between the components, if any, is unclear. Samples collected from the site include charcoal submitted for species identification and radiocarbon dating and a flotation sample for macrofloral identification. Charcoal recovered from one of the buried features returned an age of 1500 ± 30 BP (Beta-327076).

The goals of data recovery were "to gain some understanding of the activities undertaken by the sites' inhabitants; to place those activities (where possible) in the contexts of their cultural and natural environments; and to chronicle meaningful cultural change -- as measured and inferred from the recovered archaeological materials and the sites' natural settings" (O'Brien et al. 2010:9-10). Potential research topics included seasonality, mobility, diet breadth, group size, and food storage, all viewed from the framework of evolutionary ecology and Binford's (1980) forager-collector model of hunter-gatherer mobility. This article summarizes the site excavatioms, focusing on the interpretable buried cultural level; additional data

are available in the technical report (Sauvageau 2015).

SITE SETTING

Site 48LN2043 is situated in a shallow basin on a broad plain between south- to southeast-flowing, intermittent tributaries of Dry Muddy Creek (Figure 1). The site lies in the Green River Basin, just east of the Overthrust Foothills. The generally north/south-trending Oyster Ridge lies seven miles west, with the town of Opal being about seven miles northeast. The Hams Fork River, about five miles north, is an east- to southeast-flowing tributary of the Green River and currently the nearest permanent water to the site.

The central and western portions of the site are characterized by low dunes, with deflated areas on the eastern side. Surface sediments consist of very fine, grayish-brown aeolian sand with depositional depths greater than 1.5 m in the dunal areas. Aeolian deposition is underlain by a thin layer of fine sand residuum, which may have originated in the Holocene and Eocene-age regolith (Mayer et al. 2015). Vegetation in this area is characteristic of the sagebrush community and consists of low sage, bunchgrasses, rabbitbrush, and prickly pear cactus.

Most of the site has been significantly impacted by erosion and deflation, which have left artifacts diagnostic of a range of time periods lying on the surface in the deflated areas. Some excavated portions of the site show evidence of alternating periods of sediment deflation and deposition in the form of gravel lenses within aeolian sand deposits. Within the dunal deposition, a considerable amount of disturbance has also been caused by the activity of burrowing animals. Previous pipeline construction projects and establishment of a two-track road in the pipeline corridor along the site's southern edge have caused significant disturbances to that area of the site.

EXCAVATION RESULTS

Investigations focused on areas with aeolian deposition in the southwest part of the site. Seventeen units were placed within the proposed treatment area. The excavation block included 15 units (Figure 2), placed in deep (≥ 160 cm thick), fine-grained aeolian deposits on top of the dune where an auger probe from earlier testing by EPG (Dobschuetz et al. 2010) had produced six flakes between roughly 110 and 150 cmbs.

Excavation of a 7 m-long hand-excavated trench on the 180E line from the crest of the dune on the west (350 E) to near its eastern edge (356 E), and four adjacent units, resulted in definition of a gently east-sloping cultural level ranging from a high of at least 950 flakes in 180N 352E

Figure 1: Site 48LN2043 overview west from southeast end of site; excavation area indicated by arrow.

to a low of 41 flakes in 180N 355E. The defined cultural level is visible in profile as brownish-gray to grayish-brown compact sand in a carbonate-rich zone between 120 and 140 cmbs. The maximum depth of Metcalf's excavations reached 180 cmbs, and a bucket auger probe encountered eroding bedrock about 40 cm below the floor of excavations (at ca. 220 cmbs on the dune). While artifacts were recovered from nearly all excavation levels above the targeted cultural level in these units, rodent disturbance was extensive above the targeted level and any potential cultural levels or occupations higher in the deposits were not distinguishable because of the heavy disturbance.

The heavily disturbed deposits above the targeted cultural level were defined as AU1 (Analytical Unit); one of three AUs defined for the site based on factors including soil stratigraphy, level of disturbance, and artifact counts. Artifacts associated with this AU include two bifaces, eight flake tools, one piece of TRM, and 1,793 pieces of debitage, as well as 179 pieces of scattered, potentially heat-altered stone, weighing 4,460 g, and an ovoid pendant made from jet. The pendant appears to have been broken in the course of drilling a hole in one end, since the hole only extends about 80 percent of the way through the piece where it is broken (Figure 3). This was the only decorative item, and the only non-chipped stone artifact, recovered from 48LN2043. AU1 could not be directly dated, though it must post-date the underlying targeted cultural level, which has been associated with the Late Prehistoric period.

AU2 comprises the targeted cultural level observed between depths as high as 120 cmbs in some units and extending to 180 cmbs in the southern half of the excavation block, within which there was a marked increase in artifact density associated with more compact, darker gray sands (Figure 4). This AU is located beneath AU1 in the southern half of the excavation block and is identified by a higher density of charcoal flecking within the soil, increased compactness, and an increase in carbonate content, as well as a significant increase in artifact density. This level is interpreted as a single cultural level. Artifacts analyzed from this AU include two bifaces, 26 flake tools, one piece of TRM, two cores, and 7,915 pieces of debitage, along with scattered heat-altered stone. Unmodified faunal remains were present in this AU, but they were determined to be noncultural.

Although an optically stimulated luminescence (OSL) dating sample collected from AU2 by Western GeoArch Research returned an age of 690 ± 80 years since the sample was last exposed to sunlight, the date is not believed to accurately date the deposit because the sample demonstrated greater statistical dispersion than expected (~ 147 percent), likely from inclusion of younger grains in the sample (Mayer et al. 2015). The only date for AU2 is provided by the Rose Spring projectile point recovered from the AU. The diagnostic period for this point type is generally defined as starting around 1650 BP and continuing until around 950 BP in the Great Basin (Holmer 1986:106–107), which coincides with the Uinta Phase of the Late Prehistoric period in southwest Wyoming (Thompson and Pastor 1995). This artifact was recovered about 140 to 150 cmbs in the main trench of the excavation block.

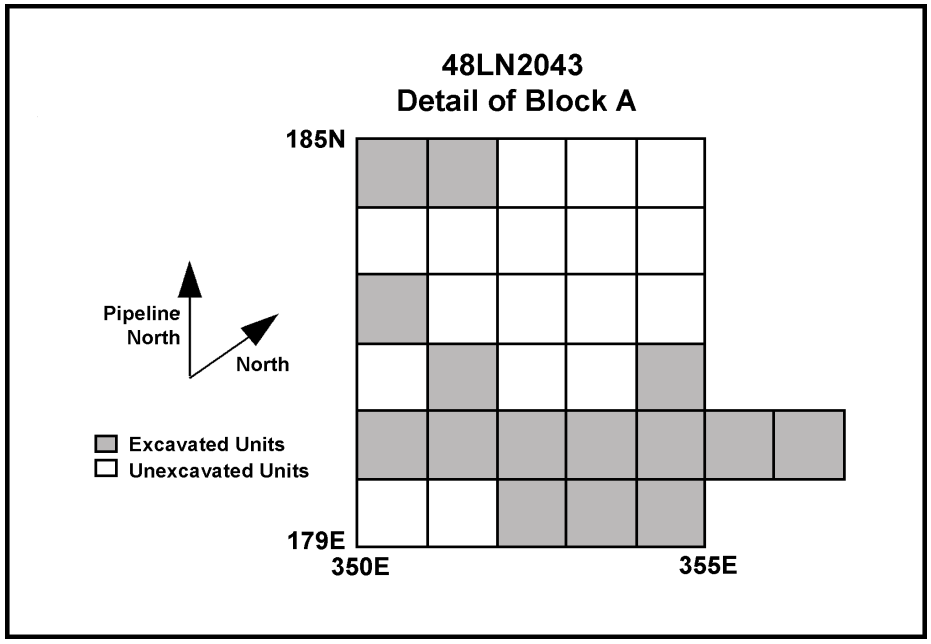

Figure 2: Excavation block plan map.

Figure 3: Stone pendant.

AU3 was defined to include artifacts identified in two units excavated outside the main excavation block and those artifacts and features discovered during construction monitoring, and collected surface artifacts found outside the excavation block. Outlying units were excavated in areas of aeolian deposition similar to the block, except these deposits were far shallower (< 65 cm thick) and included gravel lenses representing deflation episodes, which were not encountered in the main excavation block. Stratigraphy is not traceable across all the excavated portions of the site because of variations in depositional and erosional processes. Because of their context and low artifact density, these units, two amorphous charcoal stains, and a single hearth have minimal value in site interpretation. All artifacts recovered from this AU are chipped stone, limited to three bifaces and 31 pieces of debitage. The projectile point discovered on the site surface and apparently associated with this AU is not similar to a diagnostic type, though it does resemble dart-sized points typical of the Archaic period.

A radiocarbon sample from one of the charcoal stains discovered in the Ruby Pipeline right-of-way (ROW) returned an age of 1500 ± 30 BP (Beta-327076) (Table 1), which is within the date range of the diagnostic projectile point recovered from AU2. The charcoal sample sent for radiocarbon dating was identified as *Artemisia* (sagebrush) by PaleoResearch Institute (Puseman and Kováčik 2015). The sample was obtained from Discovery 386+50 (Williams et al. 2013). The date places the feature in the Uinta phase of the Late Prehistoric period, however this stain could not be related to a defined cultural level or hearth; nor could it be stratigraphically linked to the targeted cultural level identified in the excavation block.

The range of ages represented in AU3 supports the existing site chronology for possible Paleoindian through Late Prehistoric period use of the area. The discovery of the hearth and stains in the bladed ROW suggests potential for additional buried features in unexcavated portions of the dunal deposition. It is also notable macrobotanical analysis of a flotation sample from the single defined hearth (Discovery 386+65) resulted in the identification

Figure 4: Dune containing targeted cultural level. Stakes in background surround excavation block.

Table 1. Radiocarbon age.

FEATURE (F), SAMPLE NUMBER (S)	AU	SAMPLE DESCRIPTION	^{14}C AGE BP	∂^{13}C	CALIBRATED AGE RANGES BP (2-SIGMA) RANGES	RELATIVE PROBABILITIES FOR AGE RANGES	MEAN OF CALIBRATED AGE (CAL BP)	LAB NO.
F386+50, S1046	AU3 (outside) excavation block	sage charcoal[a]	1500 ± 30	-24.0‰	1312–1417 1466–1490	.93 .05	1365 1478	Beta-327076

Note: All dates are AMS. Calibrations were done using CALIB 6.1.1 with IntCal09 calibration curve (http://radiocarbon.pa.qub.ac.uk/calib/calib.html) and are presented as years before present (1950).

[a] Charcoal analyst, Peter Kováčik, PaleoResearch Institute.

of carbonized saltbush (*Atriplex* sp.) seeds and unburned Indian rice grass (*Achnatherum hymenoides*) seeds (Bach 2015). The presence of carbonized saltbush seeds is culturally significant and also rare (Bach 2015).

DISCUSSION

Only the targeted cultural level, AU2, is discussed further, as it is the only AU with interpretive value.

CHIPPED STONE

The two bifaces in the targeted cultural level are both Eocene chert. These include one biface interpreted as a knife (based on the presence of macroscopic use wear) and one projectile point. Both tools are fractured and interpreted as having been unusable at the time of discard. They were likely either broken during use or discarded during a retooling event which may have occurred at this site.

The projectile point is a Rose Spring type, which is diagnostic of the Late Prehistoric period (Figure 5). They are regarded as the pioneering points used for bow-and-arrow hunting (Holmer 1986:106–107).

The AU also includes 26 flake tools; five retouched flakes and 21 utilized flakes. In terms of the primary function identified for each of these tools, one is a spokeshave, 12 are general cutting tools, and 13 are general scraping tools. One of the retouched cutting tools also has a second, unretouched edge with a general cutting function.

One piece of TRM and two cores were recovered. All are Eocene chert. One of the cores is small and is presumed to have been discarded because of the limited utility remaining as a result of its size. This core had four prepared platforms. The other core is about twice the size of the other and had four unprepared platforms.

This AU includes 7,915 pieces of debitage (Table 2). All are cryptocrystalline materials, with the exception of ten quartzite flakes. Most of the cryptocrystalline debitage is Eocene chert, which is fairly homogenous in color and patina. Eighty-four pieces contain opalitic inclusions.

About 3.8 percent (n = 303) of the cryptocrystalline debitage retains cortex. This subset includes about 43 percent of the SG1 (Size Grade) flakes with significantly smaller proportions of the SG2 (13.3 percent), SG3 (5.4 percent), and SG4 (1.0 percent) flakes. SG1 artifacts are defined as those too large to pass through 25.0 mm mesh, SG2 will not pass through 12.5 mm mesh, SG3 are larger than 5.6 mm mesh, and SG4 are too large to pass through 2.8 mm mesh. The correlation between decreasing proportions of cortical flakes with decreasing flake size suggests some early stage cryptocrystalline cobble or biface reduction occurred on-site. However, the low proportion of SG1 and SG2 flakes in the assemblage overall—1.1 percent and 7.7 percent of the debitage, respectively—suggests most of the reduction occurring in the excavated area involved the reduction of moderately sized cores or middle stage bifaces for which the primary stages of reduction occurred elsewhere.

A distribution plot of the SG1 through SG4 debitage shows nearly half of the debitage (46.3 percent; n = 3,663) is clustered in just two excavation units: 180N 352E and 179N 352E (Figure 6). The debitage counts drop significantly in the units adjacent to these two, particularly among the smaller size grades. Adjacent unit 180N 353E has the highest proportion of SG1 through SG3 debitage but practically the lowest proportion of SG4. In fact, SG4 debitage comprises only 26 percent of the assemblage for 180N 353E, compared to about 60 percent of the assemblage in each of the surrounding units.

HEAT-ALTERED STONE

Although no features were identified in the excavated portions of the targeted cultural level, a small amount of scattered FCR (n = 47; mass = 1,170 g) was recovered. Most of these heat-altered stones were under 5 cm in size with an average weight of only 25 g each and were in units 179N 354E and 181N 354E. However, FCR

Figure 5: Rose Spring projectile point.

was dispersed throughout multiple 10-cm levels in each unit. Based on the distribution of the FCR and the lack of associated charcoal or staining, the stones were likely dispersed as a result of post-depositional processes, including trampling.

INTERPRETATIONS

Established behavioral models do not seem to account for the distribution of materials found in the targeted cultural level, specifically the anomalous differences noted in 180N 353E when compared to the units around it. Although Binford's (1978) model of drop and toss zones around hearth-centered activity areas and O'Connell's (1987) ethnoarchaeological observations regarding size sorting of debris through cleaning and use behavior could have some bearing, in both cases, there are aspects not compatible with other observations at site 48LN2043. It is more likely this pattern is the result of noncultural, post-depositional processes. Excavators noted rodent bedding was encountered within the targeted cultural level in 180N 353E. It is possible this area was, at one time, a larger rodent "den" as opposed to the simple burrows encountered throughout the excavation block. Increased rodent activity in this area may have carried away a significant proportion of the smaller, lighter debitage.

During the occupation represented by AU2, the primary activity in the excavated portion of the site was the reduction of Eocene chert cores or bifaces transported to the site, presumably for that purpose. This conclusion follows Ahler's (1989) experimental data, for which assemblages created through hard hammer cobble testing had a SG4 to SG1–SG3 flake ratio of about 1.62 ± .63. The debitage assemblage at 48LN2043 has a ratio of 1.46. Site 48LN2043 has a somewhat lower proportion of SG1 flakes when compared to Ahler's (1989) assemblage, but this may simply be from differences in raw material type and size since larger raw material nodules will produce more SG1 flakes.

Tools are limited to two bifaces, five retouched flakes, and 21 utilized flakes. There are, however, other processes shown to damage flake edges in ways are often interpreted as use wear, even by the most experienced archaeologists, including damage from soil movement or damage by human or animal trampling after discard (Young and Bamforth 1990:406). Both are likely to have occurred in the context of the targeted cultural level at 48LN2043, given the context of this AU within a sand dune and the level of fragmentation and dispersion of FCR in this attributed to these same processes.

The main component of the assemblage consists of debitage derived from probably locally available materials. The bifaces recovered are finished but rendered unusable by breakage. Given the amount of debitage, few cores are present. Those cores present are relatively small and were probably discarded when exhausted, suggesting useful cores were removed from the site. Although AU2 is the only portion of the excavated area of the site defined as a discrete occupation level, it is likely the site's function was fairly similar throughout the Late Prehistoric period given the similarities between the assemblages of the targeted cultural level and overlying AU1.

The presence of only two bifaces, the lack of any early stage bifaces, and the low percentage of small finishing or maintenance flakes suggests tool production and maintenance was not a significant activity in the targeted cultural level, though it may have occurred. The low diversity of tools and the absence of culturally derived faunal remains also suggest use of the site was short-term during this occupation. This AU seems to represent the type of logistically organized resource procurement defined by Binford (1980) as part of a collector strategy. The cultural remains are specific to a narrow range of activity, specifically lithic reduction, with minimal evidence of other activities.

The targeted cultural level, AU2, is dated to the Uinta Phase of the Late Prehistoric period, based on the

Table 2. Distribution of debitage in AU2, by material type and size grade.

MATERIAL	SG 1		SG 2		SG 3		SG 4		Total	
	n	%	n	%	n	%	n	%	n	%
CCS	86	1.1	608	7.7	2,522	31.9	4,689	59.3	7,905	99.9
Quartzite	--	--	--	--	3	30.0	7	70.0	10	0.1
Total	86	1.1	608	7.7	2,525	31.9	4,696	59.3	7,915	100.0

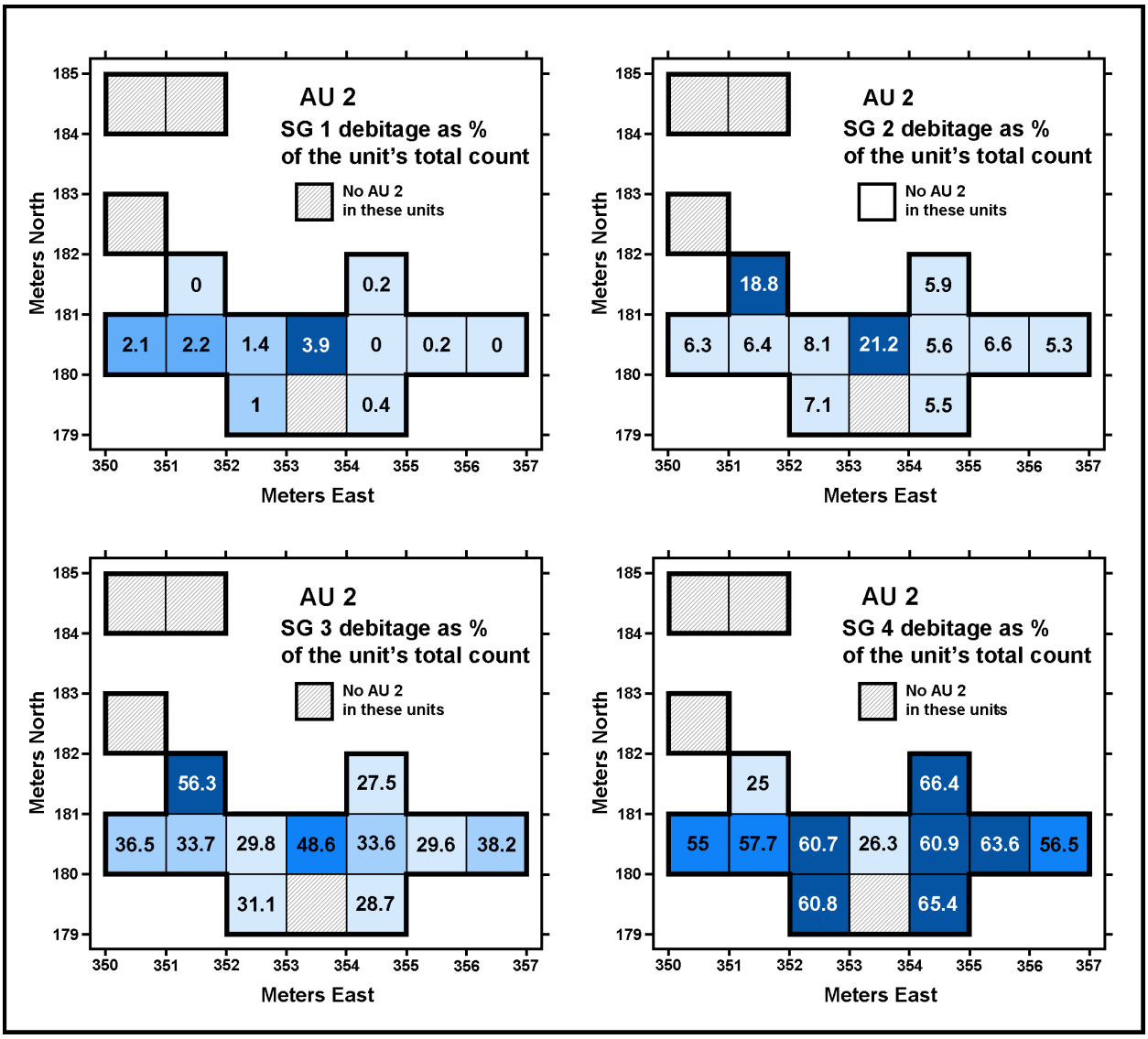

Figure 6: Distribution of debitage by size grade.

association of a Rose Spring projectile point with the AU. No other datable or diagnostic materials were found in the excavations within this cultural level. A wide range of use dates for the site as a whole is indicated by the Archaic and Late Prehistoric projectile points as well as the Late Prehistoric radiocarbon age recovered during the current project. Further, previous investigations at the site have also yielded Late Prehistoric projectile points (Dobschuetz et al. 2010), Archaic point fragments (Dobschuetz et al. 2010; Jepson 1990), and a possible Paleoindian point fragment on the site surface (Jepson 1990). The targeted, deeply buried cultural level represents the only unmixed and possibly single use episode. An auger probe has shown about 40 additional cm of sterile deposition below the AU2 cultural level, and all Archaic and possible Paleoindian projectile points from 48LN2043 have been found on the site surface away from these deeper sands. Nearby soil development suggests a complex history of erosion and deposition with possibly older deposits composing some near-surface portions of the sand shadow (Mayer et al. 2015), though older buried deposits have not been identified to date.

CONCLUSIONS

The primary objective of data recovery at 48LN2043 was to identify areas of the site with potential to contribute to project research questions regarding the poorly understood Archaic time period (O'Brien et al. 2010) in the region. Although a buried Archaic component was not identified, other research objectives were met with the identification of the deeply buried, targeted cultural level designated as AU2 and the increased level of understand-

ing of the site's stratigraphy provided by excavation of the areas overlying the targeted cultural level (AU1) and the outlying areas of the site (AU3). In terms of chronology, the relatively intact buried cultural level identified as AU2, as well as the radiocarbon date from the buried cultural staining in AU3, place the most interpretable portions of the excavation within the Uinta phase of the Late Prehistoric period, one of the better understood periods in regional prehistory. The site may have been in use as early as the Paleoindian period based on the previous discovery of a possible Paleoindian projectile point on the surface (Jepson 1990), though it is not clear whether the site function may have changed over time.

The targeted cultural level functioned as a lithic reduction locale and was certainly in use for this purpose at least as late as the Late Prehistoric period. Given the amount of debitage present, the homogeneity of the material, the high likelihood the debitage represents cobble testing and early stages of reduction, and the difficulties associated with transporting stone in any quantity, it is likely Eocene Formation materials are present relatively near the site.

The chipped stone assemblage provides insight into lithic reduction strategies involving the secondary reduction of cores or bifaces which were then removed to another location. In addition, it highlights the almost exclusive use of what is likely local material in the Late Prehistoric component.

The main contribution to the understanding of regional prehistory provided by the excavations at 48LN2043, however, is in the areas of settlement and mobility strategy as these relate to Binford's (1980) forager–collector model. The artifact assemblage of the site as a whole is comprised almost entirely of chipped stone artifacts, with one non-chipped stone artifact identified. Even within the chipped stone category, the range of artifact types is limited. Most of the assemblage was debitage. The only formal tools recovered are fragments of broken, unusable finished bifaces, and the only non-chipped stone artifact, a pendant, was also discarded because it was broken. The limited range of activities suggested by this assemblage fits Binford's (1980) characterization of a logistical station associated with a collector strategy, confirming the hypothesis of "a collector strategy should be favored over a foraging strategy" (O'Brien et al. 2010:9) based on the modern effective temperature range calculated for the site area and the associated expectations described by Binford (2001).

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BEAUCOUP DE VENT (48LN1301): A STRATIFIED PREHISTORIC SITE IN SOUTHWESTERN WYOMING

by
John M. Scott

ABSTRACT

The Beaucoup de Vent site (48LN1301) is located in the Hogsback of the Overthrust Belt in southwestern Wyoming and contains multiple cultural components radiocarbon dated to the Late Prehistoric Uinta phase, the Late Archaic Pine Spring phase, and the Early Archaic Opal phase. Excavations were conducted at the site in 2010 and 2011 by Metcalf Archaeological Consultants, Inc. (Metcalf) for Ruby Pipeline, LLC. Results of this study indicated the upper strata containing Late Prehistoric and Late Archaic material culture were extensively mixed because of sediment redeposition, bioturbation, an uneven depositional context, and repeated human occupation. A relatively intact Opal phase component consisted of a shallow house pit in association with adjacent, complex activity areas. Opal phase features and much of the associated material culture at this site compared favorably to Opal phase deposits identified by Wheeler (2002; Wheeler et al. 1986) in the nearby Shute Creek area. The current study analyzed Beaucoup de Vent's individual components but also synthesized the site's material culture into a single totality within a prehistoric system of settlement and resource exploitation as defined in Binford's "archaeology of place" (1982) and landscape archaeology (Ashmore and Knapp 1999).

INTRODUCTION

Beaucoup de Vent (48LN1301) is an extensive site situated south of the Hams Fork River and just east of Oyster Ridge in southwestern Wyoming. It lies on and around a small knoll at the northern end of a north-south oriented ridge (Figure 1). This particular ridge is one of a series of north-south trending bedrock interfluves in the Overthrust Foothills forming a major topographic barrier. Oyster Ridge is the most prominent feature of the region's landscape, and, except for a few narrow gaps in this north-south sandstone ridge, it is a substantial barrier to both human and animal east-west movement. Little Muddy Creek is the nearest permanent flowing water to the Beaucoup de Vent site and cuts through one of these gaps near the site. This cut, known as Cumberland Gap, funnels and facilitates east-west movement of both human and animals (particularly pronghorn) through Oyster Ridge and the Hogsback fault. Important to understanding the site's function and that it is a "place" within a prehistoric cultural landscape is the fact the knoll around which the site is situated is a prominent regional vantage point. This vantage point provides strategic views for scanning and scrutinizing the terrain, from Little Muddy Creek in the foreground to the Uinta Mountains in the background.

Excavations were conducted in a relatively discrete area of the site on the northeastern shoulder of the ridge just northeast of and below the high point. This area of the site was selected for excavation because of the planned impacts of the Ruby Pipeline construction. Divided between a large block of 193 units and 18 scattered units, 211 sq m were excavated. The pipeline corridor crossed northeast-southwest through the north shoulder of the ridge and impacted less than one-third of the site. This portion of the site is covered by a mid to late Holocene sand shadow formed on the crest and leeward slope of the ridge's lower northwestern shoulder. The depth of this aeolian deposit within the excavated areas varied from less than 10 cm on the northwest windward side to more than a meter on the east and southeast leeward side. Bedrock below the sand shadow consisted of fine hard-packed silty sand and stone.

MATERIAL CULTURE OVERVIEW

Material culture was recovered from subsurface contexts in all excavated units and includes temporally diagnostic projectile points from both the Early and Late Archaic periods and the Late Prehistoric period. The association of the recovered material culture with these temporal periods was confirmed by nine radiocarbon dates (Table 1). Recovered material culture (excluding burned stone) was 483 bifaces, 244 flake tools, 77 cores, 22 pieces of tested raw material (TRM), 58,478 pieces of debitage, 57 non-chipped stone tools, one stone bead fragment, a possible bone bead, 12 manuports, 11 pieces of burned earth, many pieces of unmodified red or yellow ocher, three bivalves, and 4015.1g of faunal material including five pieces of worked bone. The bifaces include 164 projectile points, with only 73 are sufficiently

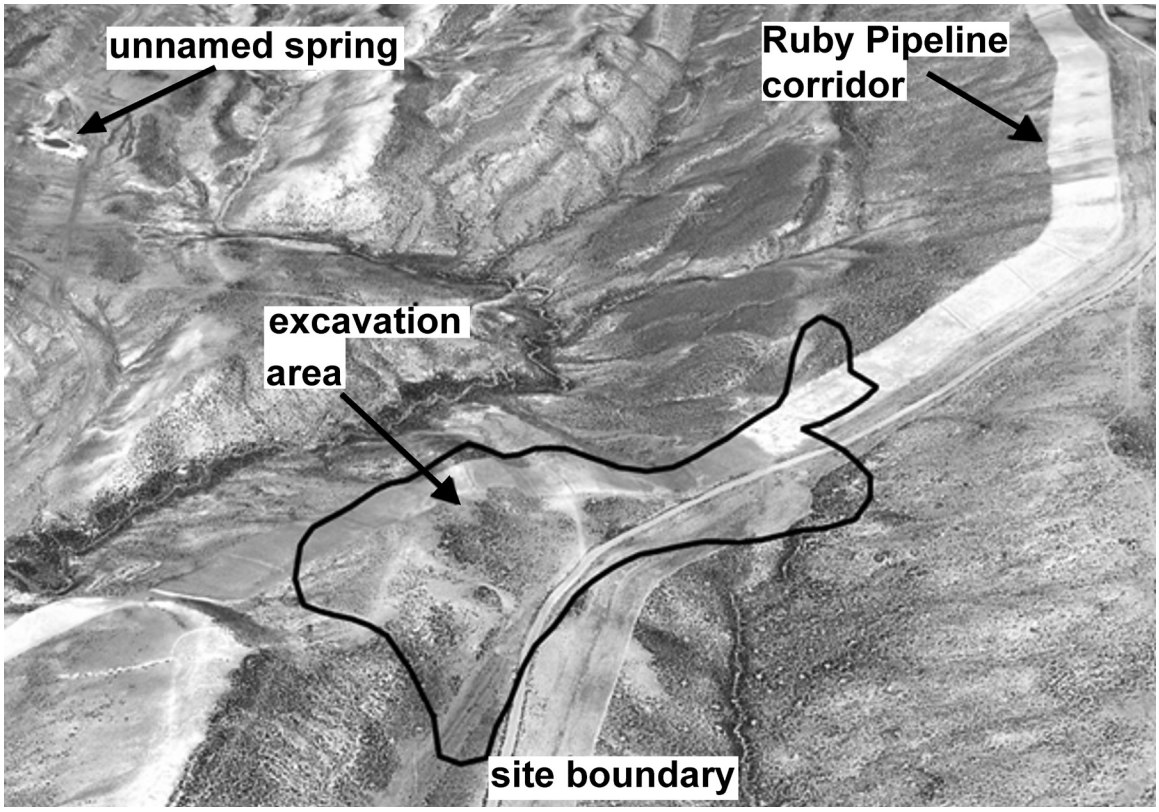

Figure 1: View of Beaucoup de Vent on a Google Earth satellite image. North is to top of figure.

complete to be identified to a named type. Point types include Northern Side-notched, Elko Side-notched, Elko Corner-notched, Duncan-Hanna, and Rose Spring.

Fifty-eight small features were excavated, along with three large areas of staining and one small house pit. Within and surrounding these features were 29,579 pieces of fire-cracked rock (FCR) with a mass of 1,609 kg, nearly 1.75 tons of rock. The small features consisted of rock-filled hearths (including two slab-lined or rock-lined features), non-hearth pits identified as "other" basin features, FCR concentrations, and amorphous stains. Rock-filled hearths and "other" basins were the most common features.

ANALYSIS

To facilitate site characterization and functional understanding of the recovered material, three data groups or analytical units (AU) were created. Two consisted of data from the main excavation block, with each representing a distinct context including remains from the Late Prehistoric and Archaic periods (AU1) and an Opal phase cultural level (AU2). Scattered units, shovel probes, and three surface features make up the third data group (AU3). Only remains associated with the two distinct, dated contexts will be discussed below.

LATE PREHISTORIC AND ARCHAIC PERIODS

Material Culture

The Late Prehistoric and Archaic periods component encompassed the most material of all the data groups (Figure 2), representing material culture found across the excavation block. It included 70 percent of all FCR and debitage, 74 percent of fauna, 80 percent of stone tools, and 72 percent of the excavated features. Four radiocarbon dates were obtained from features in this context and indicated most of this material was deposited during the Late Archaic Pine Spring phase and the Late Prehistoric Uinta phase. Unfortunately, material culture from these periods was jumbled and included tools from the lower Opal phase component as well.

Extensive disturbance to all but the deepest strata in the southern end of the excavation block was due in large part to the loose nature of the aeolian sand comprising the targeted portion of the site. Adding to the instability of this loose sediment was the sloping and uneven underlying bedrock which made the sediment matrix more susceptible to uneven accumulation and erosion. The sediments associated with material culture from these periods had suffered extensive redeposition over a long period of time. Prevailing westerly winds have continually deflated and redeposited the site's sands, which in turn has created

Table 1. Beaucoup de Vent site radiocarbon dates.

AU	Sample Description[a]	14C Age B.P.	$\partial^{13}C$	Cal BP ages 2-σ ≥ .05 probability	Relative Probabilities for Age Ranges	Mean Cal BP Age Ranges	Lab Beta #
3	*Artemisia* (sagebrush) charcoal	1070±30	-26.3‰	929-1014 1025-1055	0.78 0.22	972 1040	294302
3	*Artemisia* (sagebrush) charcoal	1220±30	-25.3‰	1063-1186 1201-1258	0.788 0.212	1125 1230	317794
1	*Artemisia* (sagebrush) charcoal	1450±30	-21.7‰	1299-1389	1	1344	334181
1	*Artemisia* (sagebrush) charcoal	1550±30	-22.5‰	1375-1524	1	1450	334179
1	*Artemisia* (sagebrush) charcoal	3810±40	-22.7‰	4086-4300 4324-4356	0.908 0.046	4193 4340	294301
1	*Artemisia* (sagebrush) charcoal	3860±30	-23.0‰	4177-4202	0.08	4190	334182
2	*Artemisia* (sagebrush) charcoal	5420±40	-23.4‰	6119-6149 6177-6300	0.048 0.944	6134 6239	317795
2	*Artemisia* (sagebrush) charcoal	5770±40	-26.3‰	6473-6666	1	6570	294303
2	*Artemisia* (sagebrush) charcoal	5870±30	-23.1‰	6635-6752	0.982	6694	334180

Note: All calibrations were done using CALIB 6.0.2 with IntCal09 calibration curve and are presented as years before present (1950) (http://radiocarbon.pa.qub.ac.uk/calib/calib.html).

[a]Charcoal analyst: Kathy Puseman, PaleoResearch Institute.

an attractive habitat for burrowing rodents. Extensive burrowing and harborage was encountered. Additionally, successive prehistoric occupants further mixed the deposits through trampling, scuffage, and the construction of their own features into the older material culture. It is also likely later prehistoric people recovered and reused the tools, toolstone, and FCR deposited by previous occupants.

Projectile point types were also mixed. The diagnostic styles matching the two radiocarbon dated cultural periods include side-notched dart points of the Duncan-Hanna group, associated with the Late Archaic Pine Spring phase, and Rose Spring arrow points, associated with the Uinta phase. These projectile points were further mixed with Northern Side-notched and Elko Side-notched points, corresponding to the deeper Opal phase and clearly out of context in this data group.

Pronghorn, rabbit, and bison were the most frequently used food animals, and pronghorn bone was most common with at least four individuals represented. A burned fox tarsal may also have been culturally deposited, as well as a fish tooth which appeared burned and freshwater mussel shells of different types, one of which exhibits a cut mark (Figure 3). Although not burned, a beaver phalanx near the site's surface may also reflect human usage. Most of the reptile and rodent remains, however, were likely intrusive into the cultural deposits based on a lack of clear human modification. Osseous matter was dominated by small fragments, likely due in part to abundant small animal taxa but also from extensive cultural processing of larger mammal bone. Around one-third of faunal material was burned, and a few concentrations of these charred remains were found across the area encompassed by this analytical unit.

Fetal pronghorn remains were found suggesting spring mortality, and their recovery from a relatively deep vertical provenience hints at association with Archaic occupation(s). However, with regard to using these fetal remains as seasonality indicators, Adams et al. (1999) found Archaic pronghorn fetuses may have been up to eight percent larger than they are today. Hence, the comparison of Archaic-age fetal remains to modern collections, which was done for this analysis, could result in erroneous seasonality assessments, and the mortality date may be earlier than it appears (Lee 2015).

Features

Nearly 80 percent of the 44 excavated features from the mixed Late Prehistoric and Archaic level were hearths, with 64 percent containing substantial amounts of burned stone. The rest were six other basin features, two FCR concentrations, and a large stain. The different feature types appeared to be randomly spread across the excavated area, with no individual feature type clustering in any particular area or depth.

The large stain measured 2.75 m (N-S) by 3.45 m (E-W) and varied in thickness from 5 to 10 cm. FCR in the stain included 54 pieces, with the largest mass occurring in an 80-cm long north-south alignment along the feature's western half. Artifacts were jumbled, with diagnostic points present from both the Early and Late Archaic periods. Charcoal from the center of the stain produced a radiocarbon age of 3860±30 BP, placing it

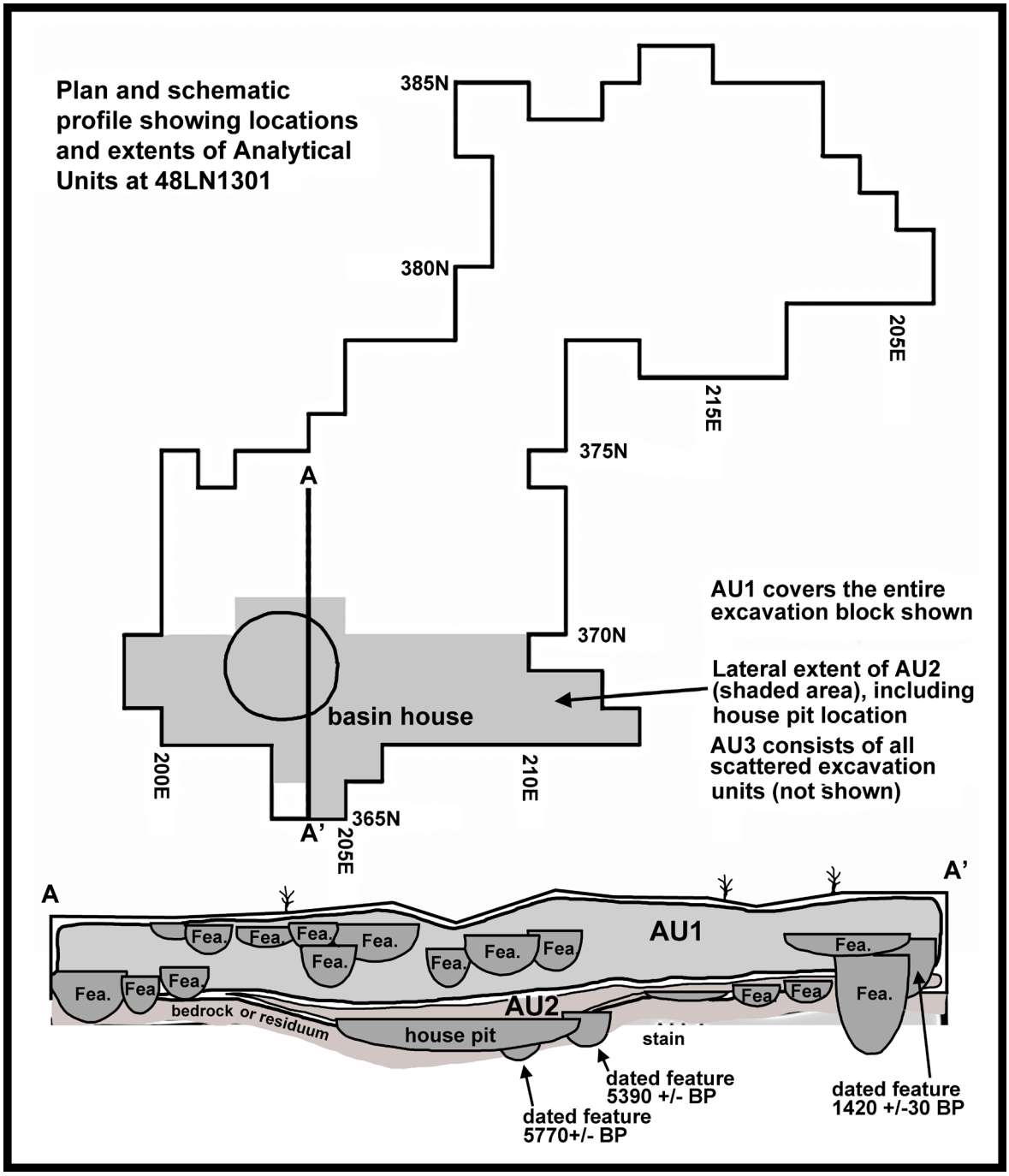

Figure 2: Schematic depiction of analytical units. Features shown on schematic profile are representative sample of all features in southern part of excavation area, not just those along profile line A-A'. All features shown in approximate relative stratigraphic position.

in the Pine Spring phase, but the mixed sediments and diagnostic tools added uncertainty to the association of the dated charcoal and the stain. The feature's lack of integrity made it difficult to define it as an activity area associated with surrounding tools and features, including a shallower hearth three meters southwest with an overlapping radiocarbon date range.

Macrofloral analysis was conducted on samples from all features in this data group, with 36 percent returning positive results. These results included 25 seeds and eight fragments of potentially edible material. Twelve seeds were carbonized and included two Indian rice grass (*Achnatherum hymenoides*) seeds, three goosefoot (*Chenopodium* sp.) seeds, three chokecherry (*Prunus*

Figure 3: Scored groove on dorsal margin and ligament area of right valve of mussel shell Margaritifera falcata.

virginiana) seed fragments, and four possible bastard toadflax (*Comandra* sp.) seeds. These meager results suggest the processing of seeds was not a major activity on Beaucoup de Vent during the Late Prehistoric and Late Archaic periods. However, lipid analysis of burned stone from five hearths indicated both plant and animal products were processed in the hearths with plant materials dominant in all. One hearth specifically retained evidence of seed processing (seed oil), and two had high fat residue from both plant and animals.

OPAL PHASE

Material culture in this data group represented at least two and possibly four use episodes dating to the Opal Phase. These deposits were relatively intact and characterized a significant portion of an Early Archaic living space reflecting several activities. The deposit was identified in 43 sq m at the southern end of the excavation block (Figure 2) and varied in thickness from a minimum of 10 cm along its western edge to a maximum of 40 cm at its center. Fourteen features consisted of a house pit or hut-like shelter footprint surrounded by 13 outdoor features (Figure 4; Figure 5).

The living space was divided into five activity areas (Figure 6) for this study, and four are discussed within the context of the house or hut-anchored living space. Activity Area 1 (AA1) was the habitation, including the house interior and an hearth located at its entrance. AA2 through AA4 included the associated features and material culture, all apparent food processing areas exterior to the habitation. The 2-sigma calibrated date range (6473-6666 cal BP) for the AA1 hearth overlapped dates from a hearth in AA2 (6635-6752 cal BP). The AA2 hearth had the oldest radiocarbon date in the excavation. Because AA5 included a single hearth with the youngest date range (6177-6300 cal BP) of the Opal phase features, it was treated separately from the shelter and other activity areas. All these features and their surrounding space were locations where Early Archaic people created, worked in, and moved between in their everyday activities to support and reproduce their lifeways.

The Opal phase deposit is the deepest intact and oldest dated cultural component on Beaucoup de Vent. As noted earlier, the deposit varied in thickness, but it also mimicked the slope of the underlying bedrock, measuring 40 cm deep on the northwest and up to 80 cm deep on the south. It was leeward of and well below the crest of the ridge and appeared not to have been heavily affected by the wind which blasts the ridge's windward side, redepositing sand in a northwest to southeast wedge-like deposit with the thick end of the wedge to the east and southeast. These mixed and redeposited aeolian sands contained the southern material culture associated with the Late Prehistoric and Archaic periods and overlaid the Opal phase deposit. An indurate residuum served as the Opal phase base stratum, with most of the features excavated into this durable sediment matrix. Uneven mixing at the contact between the Opal phase anthrosol and the looser, jumbled Uinta and Pine Spring phase deposits was noted in several locations, and a few out of context projectile points suggested additional mixing of the deposits from the two data groups, probably from rodent burrowing.

Features and Burned Stone. Among the 14 features, the largest category (43 percent) was "other basin features," with no clear evidence of burning and little or no associated rock. This feature type was generally considered to have an unknown function, but at least some were probably single use or possibly heavily eroded hearths. Unique among this type of feature was a small basin containing a cache of five cores, two pieces of TRM, and a large flake, all gray silicified sediment (Figure 7). With the exception of this cache, flotation samples were collected from these features, but none contained charred macrobotanical remains. However, two of the three radiocarbon dates from this analytical unit were processed from sparse sagebrush charcoal obtained from these non-hearth features.

Thirty-six percent of features were round-bottomed hearths, defined by evidence of in situ burning and their basal shape. These features contained far less stone than most of the similar hearths from the Late Archaic/Late Prehistoric component, and none could be considered rock-filled or rock-lined. No charred plant remains were found within them. One pieces of FCR produced lipid residues indicative of borderline high and high fat content residue (Malainey and Figol 2015), indicating both plant and animal resources dominated by plant material were processed. Radiocarbon dating of sagebrush charcoal

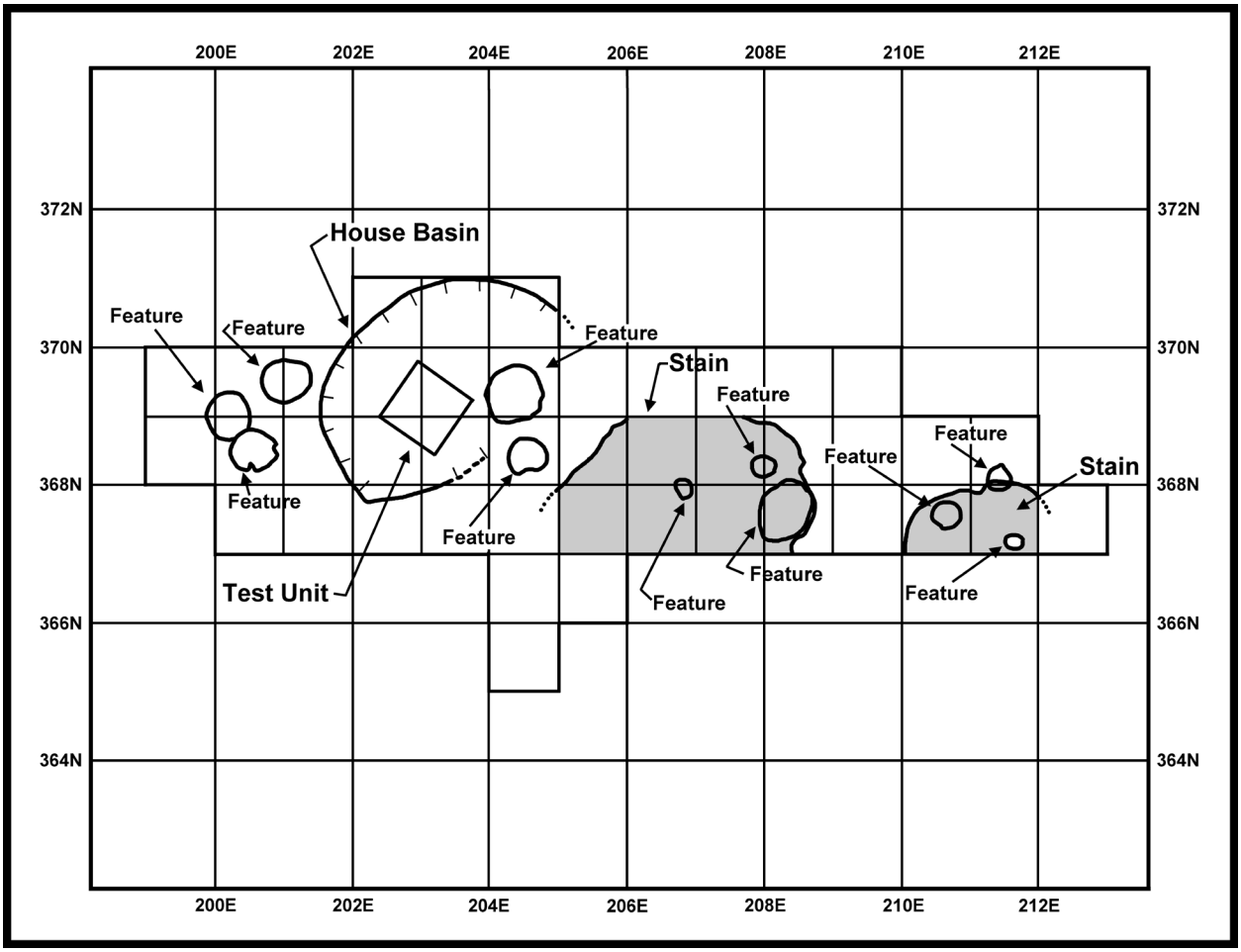

Figure 4: Opal phase component plan map.

from one of these hearths in AA2 resulted in an age of 5770±40 BP. As mentioned, its 2-sigma calibrated age range overlapped the hearth in AA1 and suggested concurrent use of the two activity areas.

Nearly all Opal phase FCR (77.76 kg) was found outside of features and averaged about 1.8 kg per grid unit. Only one-quarter of the heat-altered rock measured smaller than 5 cm in maximum length. Also and importantly, no FCR concentrations or rock-filled hearths were identified. The lack of small FCR combined with the lack of FCR concentrations suggests a short-term use of hearths.

Material Culture

Cultural material recoverd from the Opal phase component includes 74 bifaces, 24 flake tools, 18 cores, three pieces of TRM, 13,665 pieces of debitage, five non-chipped stone artifacts consisting of two pieces of ground stone, two pecking stones, and one bowl-shaped manuport, 1.2 kg of unworked faunal material, and one piece of worked bone. Most bifacial tools were manufactured from chert and other cryptocrystalline rock, with silicified sediment the next most abundant material. A few quartzite and obsidian tools were also found. No early stage bifaces were identified, and nearly half are Stage 6 finished, hafted tools. Most were considered unusable and probably broke during onsite production. Two obsidian indeterminate biface fragments were submitted for energy dispersive x-ray fluorescence analysis, which revealed one fragment sourced to Phillips Pass/Green River gravels and the other sourced to Packsaddle Creek, Idaho (Hughes 2015).

Twenty-four bifaces are projectile points. Twelve resemble a named type, and 10 are specifically associated with the Opal phase, including seven Northern Side-notched and three Elko Side-notched points. All are chert. Two of the Northern Side-notched points were found just south of the house pit, and a third was just outside the house's eastern edge. Three Northern Side-notched and three Elko Side-notched points were found in the large amorphous stain of AA2 located just east of the house footprint. The other two points, a Duncan-Hanna and a Rose Spring, were likely intrusive. Nine others are not classified as a named type, but they can be chronologically categorized by morphology, including seven prob-

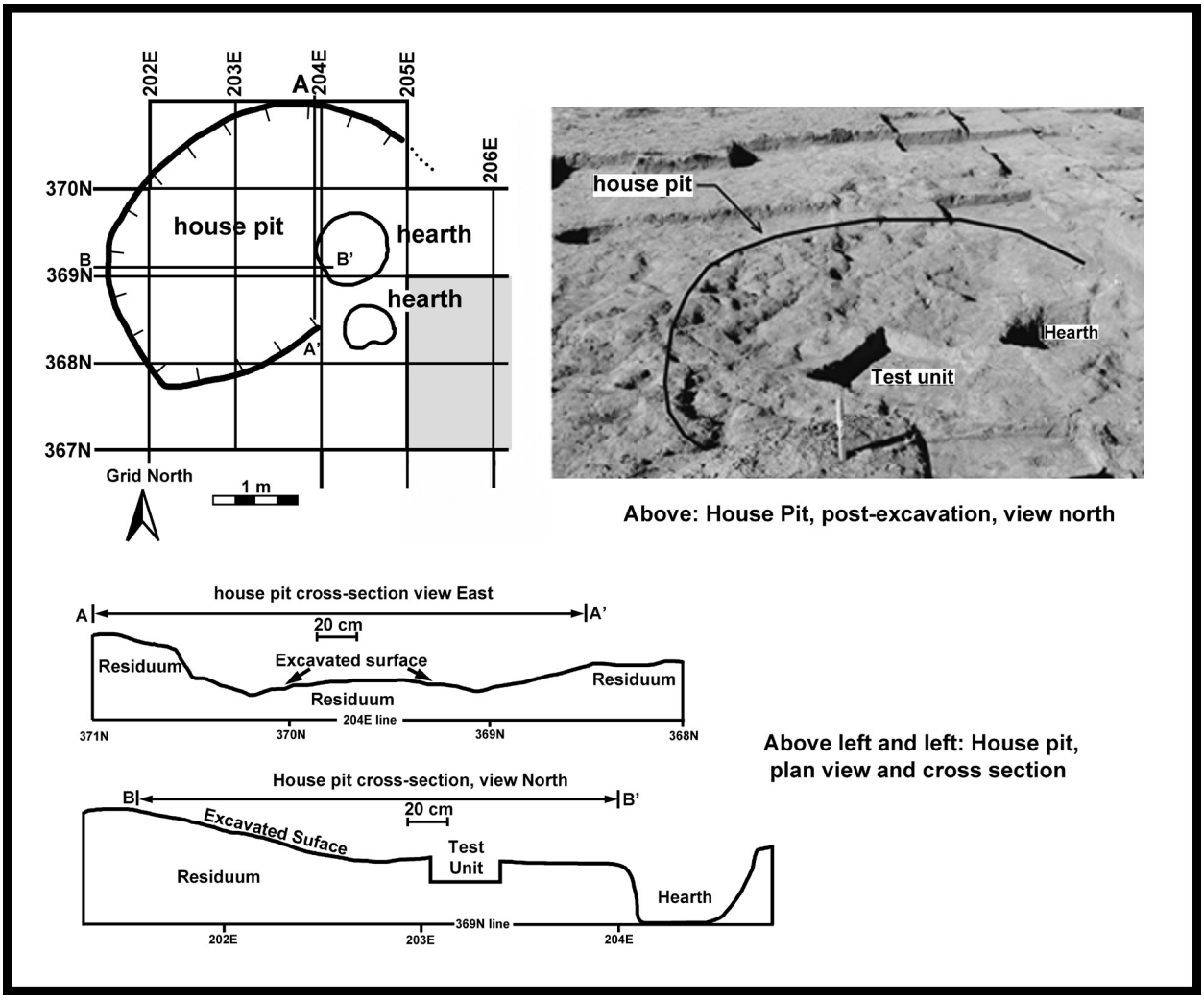

Figure 5: House pit plan and cross-sections.

able Archaic dart point fragments and two probable Late Prehistoric arrow points, clearly intrusive to the Opal phase deposits.

Several retouched or utilized flakes were found, but the only clearly patterned flake tools are a chert resharpened and exhausted disto-lateral scraper and a silicified sediment end scraper which appeared to be usable. The exhausted scraper was found just south of the house pit, and the usable end scraper was found a little further north near the house entrance.

Eighteen cores were recoverd from the Opal phase deposits, and roughly half (47 percent) are quartzite, 41 percent are silicified sediment, and the rest are chert. One-third of these cores were found in the AA2 cache, and the rest were distributed across the activity areas. The three cortical TRM cobbles are all silicified sediment.

When the core and TRM material types are compared to the biface and flake tool material types, a differing material use pattern is apparent. Over half the bifaces (60 percent) and flake tools (54 percent) are chert and other cryptocrystallines, while only 14 percent of the cores and TRM are chert or other cryptocrystallines. The most logical reason for the difference is chert and other cryptocrystallines were valued more for the production of patterned tools, and non-chert or other cryptocrystallines were valued more for expedient tools.

The Opal Phase component collection contained 13,665 pieces of debitage (2839.3 g; about 6.26 lbs). The collection was divided into five material categories matching those of the chipped stone tools including chert and other cryptocrystallines, obsidian, petrified wood, quartzite, and silicified sediment. Chert and other cryptocrystallines represent the dominant debitage material type (67 percent) and represent 81 percent of the bifaces. The second most prevalent debitage material is silicified sediment and quartzite, which occur in equal percentages (13 percent). Petrified wood and obsidian make up the remaining material. Most of the debitage was small flakes,

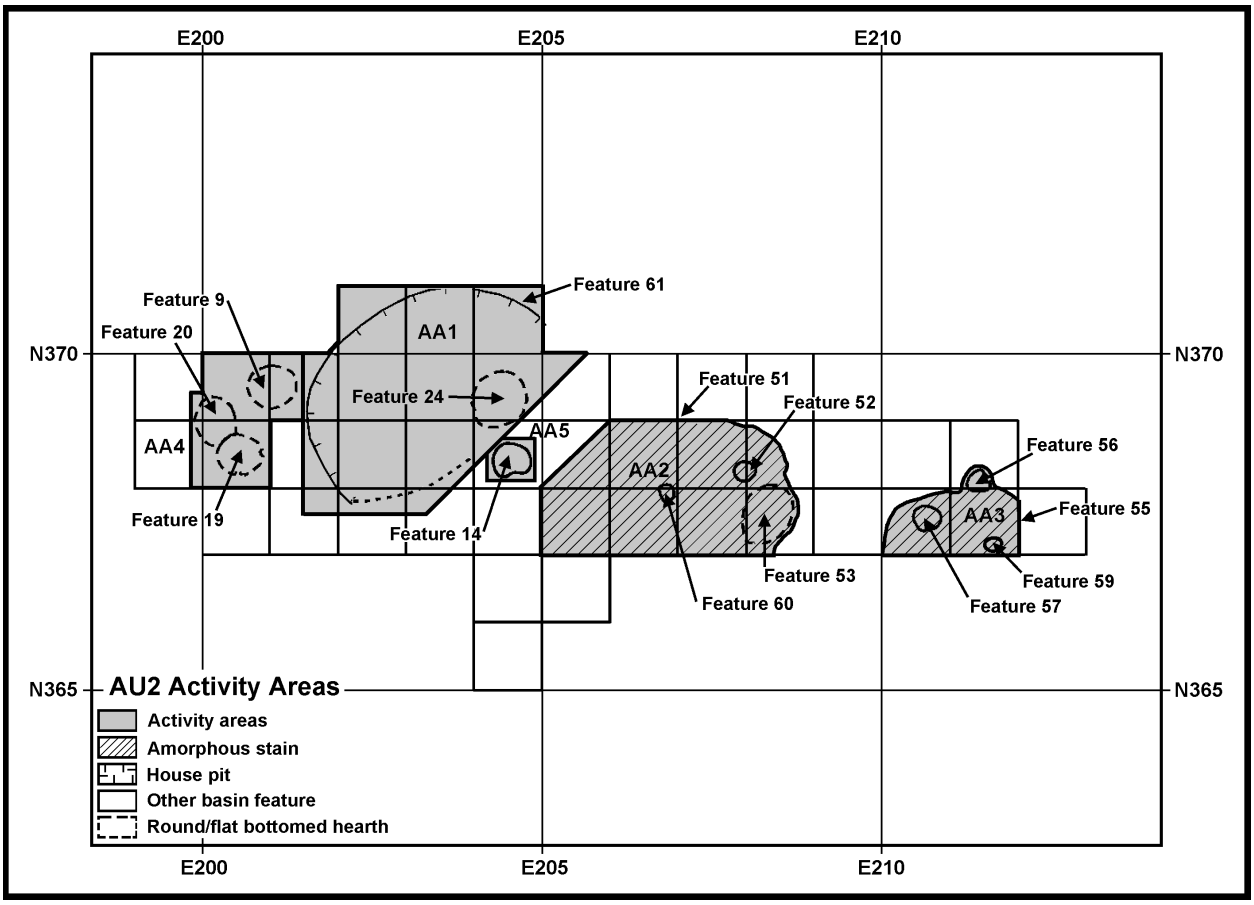

Figure 6: Opal phase component activity areas.

Figure 7: View north of cache pit, tape measure aligned east-west.

which suggests a strong emphasis on maintenance and the resharpening of tools.

Only five artifacts are non-chipped stone and include one mano fragment, one metate fragment, two pecking stone fragments, and a small unaltered bowl-shaped limestone concretion (Figure 8) classified as a manuport. Both the mano and metate fragments show intensive use, with the metate moderately worn and the mano heavily used. Only the limestone concretion was submitted for palynological and starch analysis with the results suggesting charcoal and Cheno-ams were processed in this bowl-like artifact, possibly to make pigment. However, Cheno-ams were prevalent in the sampled sediment for several Opal phase locations and may represent background pollen rather than economic use.

Three of the five non-chipped stone artifacts were in or near the house, and one of the pecking stone fragments was on the house floor. The mano fragment was recovered next to the hearth located just outside the possible entrance to the house. The bowl-shaped concretion was found east of the house at the northwest edge of the large stain in AA2. The other pecking stone fragment and the metate fragment, however, were relatively isolated.

Less than 1.5 kg of unworked bone was recovered, with 263 reptile, bird, and mammal remains identified to taxonomic class or mammal body size category. Most of the identifiable osseous material is pronghorn and ground squirrel. The remains of these two species are followed in frequency by rabbits and other small rodents. While bird, reptile, and rodent bone are likely intrusive, burning on some of the rabbit bone suggests human use. At least two

Figure 8: Plan (top) and profile (bottom) images of bowl-shaped manuport.

pronghorn were processed, as indicated by the presence of burned bone and spiral and conchoidal fractures on the bone. One proximal radius from a possible bison was found at the northern edge of AA2. It was fragmented and weathered, with a carbonate coating on all exposed surfaces. Several fractures were identified, but many were spiral fractures which occurred during post-excavation drying.

The single piece of worked bone was probably an expedient tool made on a spirally fractured medium artiodactyl bone. One end is worked and exhibits polish and abrasion from use. It could have been used as an awl or a gouge and was found just east of the hearth located at the entrance of the house.

Discussion

Three radiocarbon dates (5870±30 BP, 5770±40 BP, 5420±40 BP), two of which overlap in their 2-sigma calibrated age ranges (5770 BP, 5870 BP), suggest two Opal phase use episodes were preserved in the southern area of the excavation block. These three dates fall at the beginning and the middle of a climate interval (ca. 5800 to 4750 BP) correlated with the maximum period of aridity during the Middle Holocene across much of the region (Louderback et al. 2015). There is likely to have been "significant complexity of moisture patterns in the region [however,] and these patterns may have shifted northward and southward on a decadal to century scale, depending on the strength of a weak summer monsoon" (David Rhode, personal communication 2013).

The older of the two occupations appeared to have focused around the house pit or hut footprint, assumed to have been a hide-covered brush-frame structure (Figure 9) which served as an anchor or central location within a larger living space. Features similar in size and configuration to the hut footprint were likely used for a variety of activities in prehistory (Wills 2001:480), and they cannot always be assumed to have been the remains of dwellings. Ethnographic accounts and archaeology have identified some of these smaller house-like features as specialty structures such as sweat lodges or menstrual huts (Daifuku 1952; Wills 2001:480). These specialty structures, however, were likely to have been isolated from other activity areas, as was the case for some Plains Indians. Particularly in the case of sweat lodges, large amounts of rock and probably water would have been needed for their operation (Benedict 1992:10), and rock, particularly burned rock, could mark their former locations. Most of the characteristics of the Beaucoup de Vent house pit, as well as the features surrounding it and its lack of associated rock, indicated it was not a specialty structure. The house pit's limited interior space, the low number of associated artifacts, and the relatively large hearth in its entryway suggest AA1 was likely used by one and no more than two individuals for a relatively

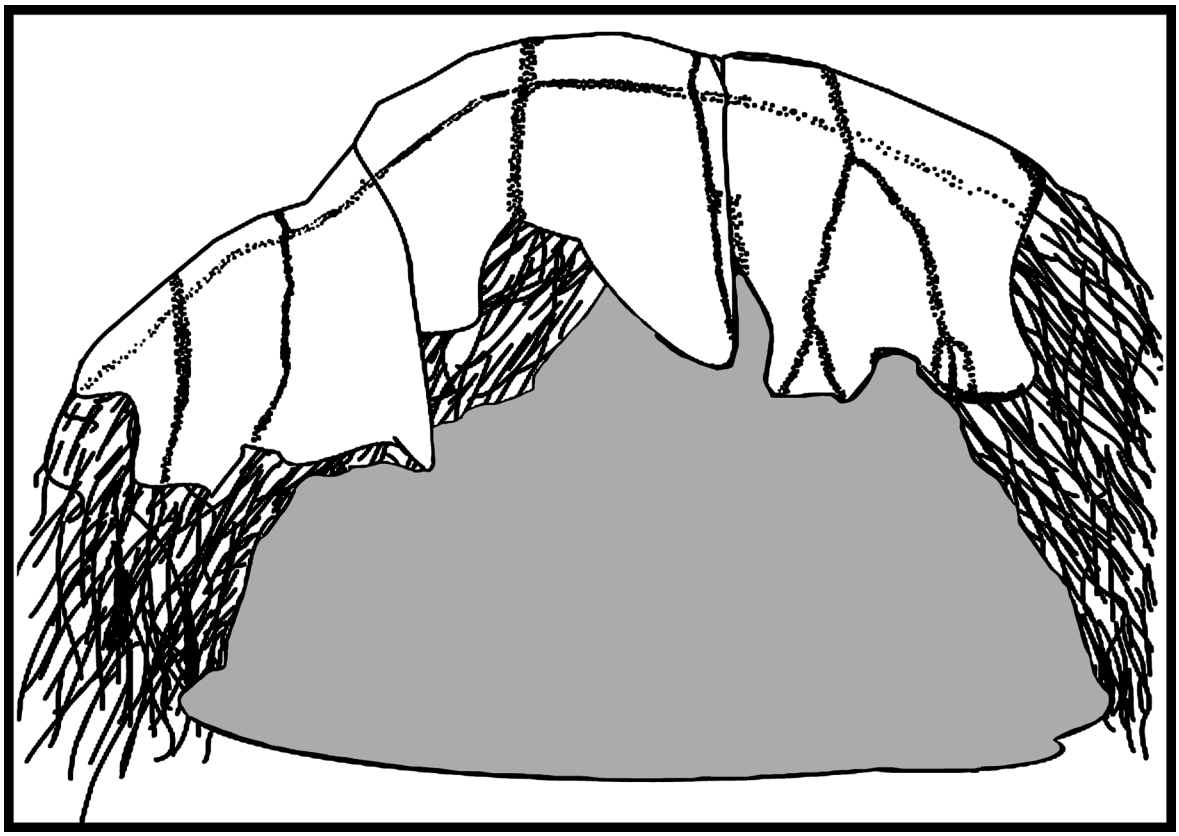

Figure 9: Artist's rendering of possible hide superstructure of house pit.

short period of time. Further, the lack of dense burned bone in the habitation area suggests food was not extensively processed immediately around the hearth or in the house, indicating the hut and the hearth were primarily constructed to provide comfort and shelter rather than a specific work location.

Located one to two meters east of the house pit, AA2 appears to have been at least in part an outdoor kitchen area for the small residence (Figure 6). It appears the house pit was focused toward this activity area to its east, possibly so food processing could be overseen from the dwelling. Cluttered with processed animal remains, three small features, scattered tools, tool maintenance debris, and a cache of cores, AA2 was a large and incompletely excavated stain containing the densest cluster of artifacts in the Opal phase deposits. The features were a pit dated to 5870 BP which could have been contemporaneous with house pit use, a cache pit, and a hearth in which burned pronghorn bone was found. The presence of fragmented bones, mostly from the lower portions of the hindquarters of two pronghorn, and high to high fat animal and plant oils found in the hearth suggested bone marrow was collected and processed with seeds or nuts into a concentrated and preserved food such as pemmican.

The stain associated with AA3 also extended into unexcavated deposits and contained the cluster of features farthest from the house pit. Similar to AA2, it was a relatively large stain encompassing two other basin features and was adjacent to a third. No hearth was uncovered in conjunction with this cluster, but one may well be present in unexcavated sediments to the south.

Differing from AA2 and AA3 in its lack of staining, AA4 consisted of three undated hearths constructed into residuum in a 3 sq m area immediately west of the house pit. Similar to all other Opal phase features, little to no FCR was associated but oxidation indicated their use as hearths. Outside of the hearths, almost no FCR and only sparse debitage were found. This lack of artifacts and FCR along with the hearths completely confined to the residuum suggests a strong likelihood this area had been heavily eroded. Although these features were at the same level as the northwestern rim of the house, they were about 25 to 30 cm higher in the sediment and west of the other features; it is possible they were not contemporary with the house pit.

In summary, the house pit was the nucleus of the Opal phase deposit exposed by excavations. The presence of this shelter with associated activity areas suggests it was something more than an expedient short-term camp, perhaps a residential or a base camp. A radiocarbon date from an associated feature suggests the house was used during a time of maximum aridity, compared to earlier

and later climate intervals. It is also associated with the cultural period in which house pits appear to have been most abundant in the Wyoming Basin (Buenger and Goodrick 2015). House pits, along with slab-lined hearths and side-notched projectile points, are considered by Thompson and Pastor (1995) to be the main traits of Early Archaic Opal phase material culture. The Opal phase component at this site does not contain features with a substantial amount of rock, let alone slab-lined hearths, and it is most similar to the Opal phase sites identified by Wheeler et al. (1986) and Wheeler (2002) during the Shute Creek archaeological project. Opal phase sites on that project, located about 80 km (50 miles) northeast of Beaucoup de Vent, also generally lacked both slab-lined hearths and FCR (Wheeler 2002).

DISCUSSION OF EXCAVATION RESULTS

Radiocarbon dates and projectile point styles indicate the Beaucoup de Vent site contains cultural deposits representing use of this location for intermittent camping by prehistoric hunter-gatherers for over 4,800 years. The Pine Spring and Uinta phase use episodes appear to have been short-term camps, while the Opal phase occupations were longer term or more likely camps with a different function.

All cultural deposits suffered some mixing, and this mixing was extensive for the Pine Spring and Uinta phases and relatively minor for the Opal phase. Material culture of the Pine Spring and Uinta phase deposits therefore lacked integrity, but when viewed as a single component, it appears to contain relatively homogenous features, tools, and functions suggesting the location was used intermittently as a special purpose site. Binford (1978) defines special purpose sites as those locations used multiple times for the same purpose, leaving densely accumulated and redundant cultural material. Binford also associates specialty camps with logistically dependent collectors who set up base camps and sent groups out from these camps to exploit multiple areas of the landscape, returning to base camp for distribution of resources to the group.

The relatively intact Opal phase component contained a small house pit and at least two associated activity areas where food was likely to have been produced. Characteristics of the Opal phase food processing areas were similar to those of the younger mixed deposits. They contained fragmented bone as well as the remains of plant oils and animal fat, suggesting the production of a concentrated food similar to the younger occupations. Differing from the younger deposits, however, most of the Opal phase hearths generally lacked stone, suggesting a different technological approach to food processing. The lack of burned stone as well as the presence of the house pit in the Opal phase component indicates not only a different thermal feature technology but a different social organization than in the later site occupations. The cache of silicified sediment cores and TRM in one of the Opal phase activity areas indicated the possibility the occupants had planned to return or they identified the location as a special place within the landscape with the placing of the cache there. The younger occupations contained abundant FCR both inside and outside features but lacked evidence of house pits.

The Opal phase people may have been some of the first Archaic people to exploit the region and were probably the first to camp at Beaucoup de Vent, based on current excavations. They appear to have used a foraging technique in which they "mapped on" to a landscape (*sensu* Binford 1978) by moving base camps often and to the location of exploitable resources. This adaptation contrasts with the younger represented occupations, which seem to have been those of logistically dependent collectors. A shift in subsistence technology seems to have occurred between the Opal and the Pine Spring phases.

When taken as a whole, Beaucoup de Vent material culture fits somewhere between Binford's (1978, 1980) prehistoric station and field camp. The site might have been a station for information gathering (i.e., a vantage point); a field camp for hunters, trappers, or fishermen; or it could have functioned as both a station and a field camp. Whether they were organized as foragers or collectors, prehistoric people used the entire landscape, which is not just a background to daily life but is integrated into all human activity (David and Thomas 2008). Economically, "landscapes" are not single subsistence catchment areas. Instead, they include multiple catchment areas which can be redefined with a single movement of a base camp, and they include contacts with competing predators or other hunter-gatherer groups (Wobst 1978).

The concept of landscape and landscape archaeology views the environment not just as a food pantry for hunter-gatherers but also as part of a group's identity, cosmology, symbolism, and value, which is taken from and imparted to the landscape (Ashmore and Knapp 1999; Bender 2001; Head 2010; Hirsch and O'Hanlon 1995; Varien 1999). People and landscape are understood to be linked, and they are linked dialectically with people imparting meaning to and taking meaning from the landscape. Smith and McNees (1999) approach an understanding of and use of the concept of landscape in the Wyoming Basin by observing intensive and redundant use of particular locations and may represent what they called "institutionalized communal knowledge."

Many high points are present on the ridges and hills around Beaucoup de Vent, but a particular point (previously mentioned) located 200 m south of the excavated area is easily accessed from the prehistoric activity area

preserved on its northern shoulder. The broad views of the landscape as far southward as the Uinta Mountains from this high place, as well as the dense and relatively homogenous material culture, suggest the prehistoric people who camped here highly valued this location and may have ascribed significant meaning to it.

METHODOLOGICAL APPROACHES TO INTERPRETATION

Generally, prehistoric cultures of the Northwestern Plains and Rocky Mountains have been described and analyzed in the context of a nomadic lifestyle economically based on broad spectrum hunting and gathering (Kornfeld et al. 2010). North American archaeologists, particularly those in the the field of cultural resource management, tailor their research designs to investigate the hunter-gatherer mode of production but also to generally analyze the cultural remains solely from an ecological causal-based interpretation (cultural ecology approach e.g., Steward [1938]). This perspective investigates prehistoric culture almost solely in adaptive economic and utilitarian terms. In their model of climate change and correlated prehistoric human adaptive changes in the region, for instance, Metcalf and McFaul (2006) take this view and specifically look for changes in subsistence, organization of technology, and patterns of group mobility within the remains of prehistoric material culture. When these changes are discernible, they attempt to correlate them through bridging statements to demonstrable climatic regime changes.

An ecological causal-based interpretation investigates and describes only a part of prehistoric lifeways (Varien 1999:41; Yesner 2008:40), however, because it examines only the forces of production (e.g., resources, the labor process, and tools or objects (Bettinger 1991) within the hunter-gatherer mode of production. The human mode of production is not an isolated economic structure and process; rather, it is dialectically connected with the social relations and hierarchical structures of the human group, and if any of these social formations are analyzed without understanding or perceiving a connection to the others, the analysis is incomplete for understanding lifeways, whether they are modern or prehistoric.

This function-centric approach sees hunter-gatherers as only adaptive, with any social change occurring apparently only in response to the overarching structure of the environment. Little attempt is made to understand that social change can come from contradictions and conflict within a group (emic causation). The approach fuels neo-functionalist and the now old "new archaeologists" in their "search for order and homeostasis" (Bettinger 1991:143), with any change in this order or homeostasis seen by them to be ultimately generated in response to environmental pressures and environmental changes (etic causation). Analytically, this formalist concept leaves little room for an understanding of prehistoric people and their material culture beyond a basic level of the oldest hominid (Bettinger 1991:75; Gamble and Porr 2005). It certainly does not take into account any human capacity to knowingly participate in their own culture through the creation of cultural identity, meaning, and memory by social interaction with objects, places, and landscape. Currently, most analysis of prehistoric material culture within the field of cultural resource management remains at the level of documenting adaptive level change.

ARCHAEOLOGY OF "PLACE" AND THE ARCHAEOLOGY OF LANDSCAPE

Binford's (1982:6) scheme of identifying individual places with similar categories of material culture spread across a geographic area or landscape is described in "The Archaeology of Place" (Binford 1982). A "place" for Binford was clearly defined in the context of landscape and resembled a type of landscape archaeology. He advocated the material remains of prehistoric hunter-gatherer groups can be identified and understood when situated within a system of collecting or foraging using many resource locations spread across the landscape. According to Binford, prehistoric people interacted with their environment based on adaptation and universally applicable "rational" decisions (Gamble and Gaudzinski 2005; Halperin 1994), thus making their remains comparable and understandable. However, it must be stated Binford's analysis rarely went beyond the level of function and adaptation into the realm of cultural identity, culturally produced memory, or the sacred. Binford appeared to ignore evidence of any type of meaning beyond a subsistence level imparted by people to a place or landscape. However, his documentation did make note of human social and symbolic space, with the identification of the need for Nunamiut hunters to consult shamans and their acknowledgement of "special rules" for treating animals "so the spirits would not get mad" (Binford 1978:413). He briefly mentioned there were locations of special shrines (places) in the landscape for placing offerings and amulets to ameliorate these spirits (Binford 1978:413).

The Beaucoup de Vent site's long-term use, topographic position, and viewshed suggest it is a "place" in a landscape which was part of the identity, social processes, and cosmology of its occupants beyond of adaptation and rationality (David and Thomas 2008). The site's topographic position at the foot of a ridge high point suggests it functioned as a support locale for a major vantage point used to observe people and animals passing through nearby drainages or through Cumberland Gap and along Little Muddy Creek. Views from the excavation area were generally limited and were blocked to the

immediate south toward Little Muddy Creek by the high point of the ridge.

Only one good view existed from the excavation block, and it looks south-southwest down a narrow drainage which trends southward along the ridge's western base. From the western edge of the excavation area, this drainage draws one's gaze to the southwest. The view terminates at the Bathtub site (48LN3997), easily seen from the southwestern edge of the excavation block. One of the Uinta phase hearths from that site dated to the same age as a hearth on Beaucoup de Vent. The view of site 48LN3997 from Beaucoup de Vent and the identical dates indicate a relationship within the landscape between the two sites.

From the high point of the ridge to the south, good but broken views are available of Little Muddy Creek and the upper sandstone sides of the gap in Oyster Ridge, with outstanding views of some of the floodplain areas on either side of Little Muddy Creek (Figure 10). Continuous views of the drainage to the west toward 48LN3997 are also clear from this high point. The excellent view to the south from the vantage point is dominated by the Uinta Mountains, and the many topographic formations between these mountains and this high point can be clearly seen. From this vantage point, it would be easy to plan movements through the landscape from this site on the north to the Uinta Mountains on the south.

Long-term prehistoric use of the Wyoming Basin landscape has previously been identified by the presence of individual sites exhibiting repeated use from over a few years to over thousands of years (Smith and McNees 1999), similar to Beaucoup de Vent. Smith and McNees (1999) have discussed long-term use of landscape by prehistoric hunter-gatherers within southwestern Wyoming, and they have identified several locations with repeated use. They feel strongly when prehistoric people are drawn back to specific areas for resource exploitation, they will choose to inhabit places where existing facilities are visible (Smith and McNees 1999). This repeated use of certain places may have constituted a form of institutionalized communal knowledge signaling the incorporation of the landscape into the prehistoric population's identify and cosmology.

Following Binford's "The Archaeology of Place" with its emphasis on settlement and subsistence, the current study suggests Beaucoup de Vent's material culture represents the use of this location over four and a half millennia as a place where prehistoric people temporarily camped near a vantage point (station), probably for observing animals and people. This vantage point and the associated temporary camp were likely to have been a complex place where the logistics of foraging and collecting could have been planned and where a cultural cosmology could have been defined, explained, and explored from a distance. Such a hypothesized use of the location is within the definition of landscape given by Ballée (1998) and Crumley (1994) (both strong Historical Ecology proponents), who define landscape "as the spatial manifestation of the relations between humans and their environment" (Ballée 1998:xiii). They imply, however, it is more than a rational or functional relationship but one which is also dialectical (Ballée 1998:9).

Similarly, Knapp and Ashmore (1999) also view landscape as much more than a one-to-one relationship between people and nature. They see it as an interactive relationship in which each affects the other with a continual reshaping of culture and society as well as the landscape. In anthropological archaeology, physiographic features are increasingly understood to be the "source and subjects of symbols, often linked to ancestral beings" (Knapp and Ashmore 1999:8). Landscape has come to be understood by archaeologists as an actively inhabited space which contains not only the remains of the day-to-day activities of humans but also the remains of their ritual or ceremonial activities (Knapp and Ashmore 1999) (also see Alcock 1993; Lekson 1996; Thomas 1993).

In *Material Culture and Sacred Landscape: The Anthropology of the Siberian Khanty*, Jordan (2003) attempts to broaden the exclusive ecological approach of neo-functionalism toward hunter-gatherers and presents a study in which he identifies the "internal web of meanings" used by the communities of the semi-nomadic Siberian Khanty in their day-to-day existence. It is this "emic" knowledge, ignored by functionalists, which allows communities to remain dynamic in their response to external changes. He attempts to bring the approaches of ecology and social meaning and memory together in an integrative approach and states "ecological adaptations are also cultural adaptations" (Jordan 2003:22), on par with the idea the landscape is shaped by people and in turn the landscape shapes people. In his study of the Khanty, Jordan finds mobile communities such as hunter-gatherers have a complex and symbolic relationship with their inhabited landscape and landscape is as much a part of material culture as are objects/artifacts, and more. For the Khanty, and likely also for the inhabitants of Beaucoup de Vent, an essential, rich, and complex relationship exists between the symbolic meaning of their deposited material culture within the landscape and the assignment of meaning to landscape features (Jordan 2003:275). Part of the depositing of material and the development of meaning involves the repeated visitation and the continual accumulation of material at a location (Toren 1995). "Visits rescribe the place within inhabited maps of the world and material deposits form the media of communication through which the relationships with deities are tended" (Jordan 2003:281). Jordan (2003) makes it clear what also must be taken into account with

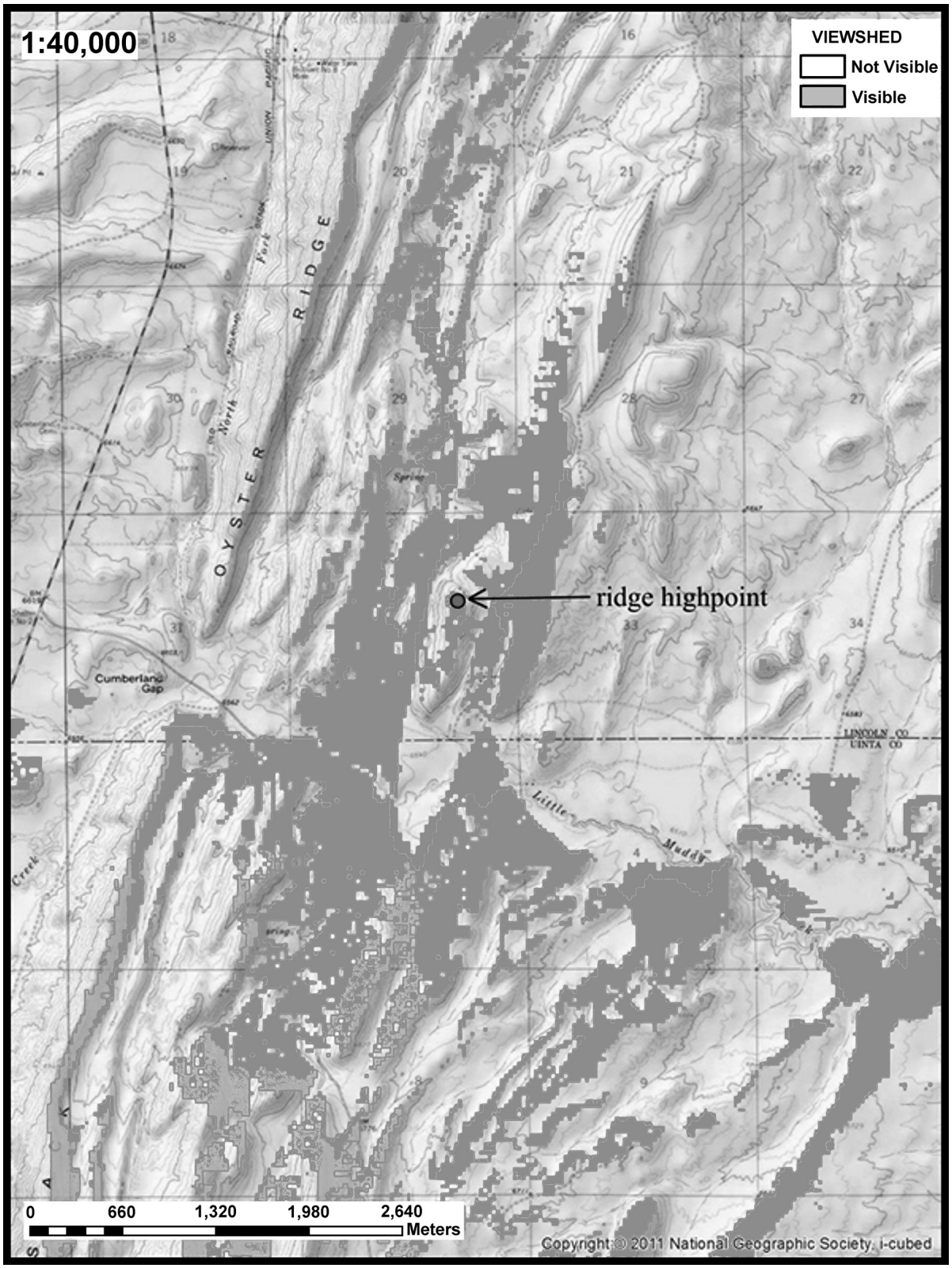

Figure 10: Topographic map showing generalized and localized viewshed from high point of ridge on south edge of Beaucoup de Vent site. Areas in dark gray are visible from high point.

regard to places of exceptional meaning or sacred places is the success in other areas of life such as hunting, marriage, and childbirth, brought about by proper conduct at sacred places.

When viewed within a concept of landscape in which the forces of production (tools and resources) are found and the relations of production (social structure and processes) are produced and reproduced with imparted meaning and identity to "places," material culture from Beaucoup de Vent exhibits the characteristics of more than just a prehistoric temporary campsite with a vantage point. Its reuse for over 4,800 years with the repeated deposition of relatively homogenous cultural material suggests the construction of meaning and the assignment of meaning to the place by many generations of prehistoric people. The nearby vantage point could have been used by prehistoric people to examine the landscape between this site and the Uinta Mountains and to see how they could successfully move through the landscape to reproduce their lifeways and to explore cosmological ideas and stories to explain their culture and travels. The repeated but short-term use of the location and an apparent successful outcome of the site's use by prehistoric populations indicate a value greater than a base camp, station, location, or cache, and suggest a sacred aspect to the landscape of Beaucoup de Vent.

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RESULTS OF ARCHAEOLOGICAL EXCAVATIONS AT SITE 48CR9459

by
WADE HAAKENSON

ABSTRACT

Data recovery excavation at Site 48CR9459 was undertaken pursuant to cultural resource requirements stipulated for the Warren Exploration and Production Inc. Sun Dog to Brown Cow Pipeline project and completed by Western Archaeological Services during the 2013 field season. Two blocks were excavated; Block 1 contained 26 1x1 m units and Block 2 contained 28 1x1 m units. Fifty-four m² of sediment was excavated during this data recovery project, which yielded one buried prehistoric cultural component with four occupations. Component 1 was dated to the Uinta phase of the Late Prehistoric period, at 1120±30 years B.P. Occupation 2 was radiocarbon dated to 1240±30 years B.P. and 1280±30 years B.P. while Occupation 3 was radiocarbon dated to 1490±30 years B.P. The fourth occupation described here was considered an Unassigned Occupation but contained Rose Springs projectile points. Component 1 represents a relatively well-preserved hunting camp in which at least one jack rabbit, one pronghorn, and one bison were procured. Stone tools and flaking debris recovered from the excavation suggest plant processing, hide preparation, and stone tool production occurred at the site. Each of the occupations is indicative of small groups of highly mobile hunter-gatherers conducting basic subsistence activities within the context of a foothill/mountain ecozone, perhaps as the result of seasonally conditioned adaptive strategies.

INTRODUCTION

Site 48CR9459 is located in Carbon County, about 16 mi north of Baggs, Wyoming on land administered by the Bureau of Land Management, Rawlins Field Office (BLM RFO). The site area is located amongst the rolling upland ridges along the eastern margin of the Washakie Basin. More specifically, 48CR9459 is located on a large north/south trending finger ridge derived from a larger east/west trending ridge system. The site is at an elevation of 6640 ft above sea level. Prominent physical features within the surrounding area include Doty Mountain to the northwest, Flat Top Mountain to the southwest, Wild Horse Butte to the south, and the Park Range of the Sierra Madre Mountains to the southeast (Figure 1).

Wild Cow Creek is 0.75 mi north of the site area. Springs and seeps along Wild Cow Creek one mi northwest of the site area may have provided fresh water for inhabitants of Site 48CR9459. Wild Cow Creek trends east/west, flowing west and emptying into Muddy Creek. Muddy Creek trends north/south and is a large tributary of the Little Snake River.

Surface geology on and near the site area includes colluvial and eolian deposits. The site is located in a small eolian deposit along the crest of a large flat north/south trending finger ridge. The western exposure of the finger ridge is heavily eroded with sandy clay soils mixed with calcite, quartzite pebbles, and quartz cobbles. The ridge crest and eastern slope have greyish tan silty sand mixed with an occasional quartzite pebble or quartz cobble. Vegetation on the western slope of the ridge consists of a few grasses, phlox, salt brush, onion, and biscuit root. The vegetation noted on the ridge crest and eastern slope includes sagebrush, prickly pear, phlox, biscuit root, sego lily, winter fat, onion, rice grass and other bunch grasses. In the higher elevations within 1.5 mile of the site, wild rose, service berry, chokecherry, and pine trees were noted.

Site 48CR9459 was discovered during the Sun Dog to Brown Cow Pipeline construction monitor. The discovery consisted of component staining in the trench walls (Ficenec 2009). Shortly after the discoveries, Anadarko Exploration and Production Company sold the lease for this area to Warren Exploration and Production Inc. In doing so, Warren Exploration and Production Inc. assumed all responsibilities for the adverse effects to Site 458CR9459 and the subsequent data recovery excavation.

The northern component stain was noted in both walls of the pipeline trench and was about 25 meter long. It consisted of a 10-25 cm thick, mottled dark to light grey, charcoal stained sediment with fragments of burned sandstone and two possible housepit features (Features 1 and 2). The top of the component stain varied from 15-20 cm below the bladed surface. The bottom of the stain was as deep as 40 cm below the bladed surface. Auger testing conducted in the surrounding area indicated the component stain extended up to nine meters east and two meters west of the pipeline trench. The auger cores

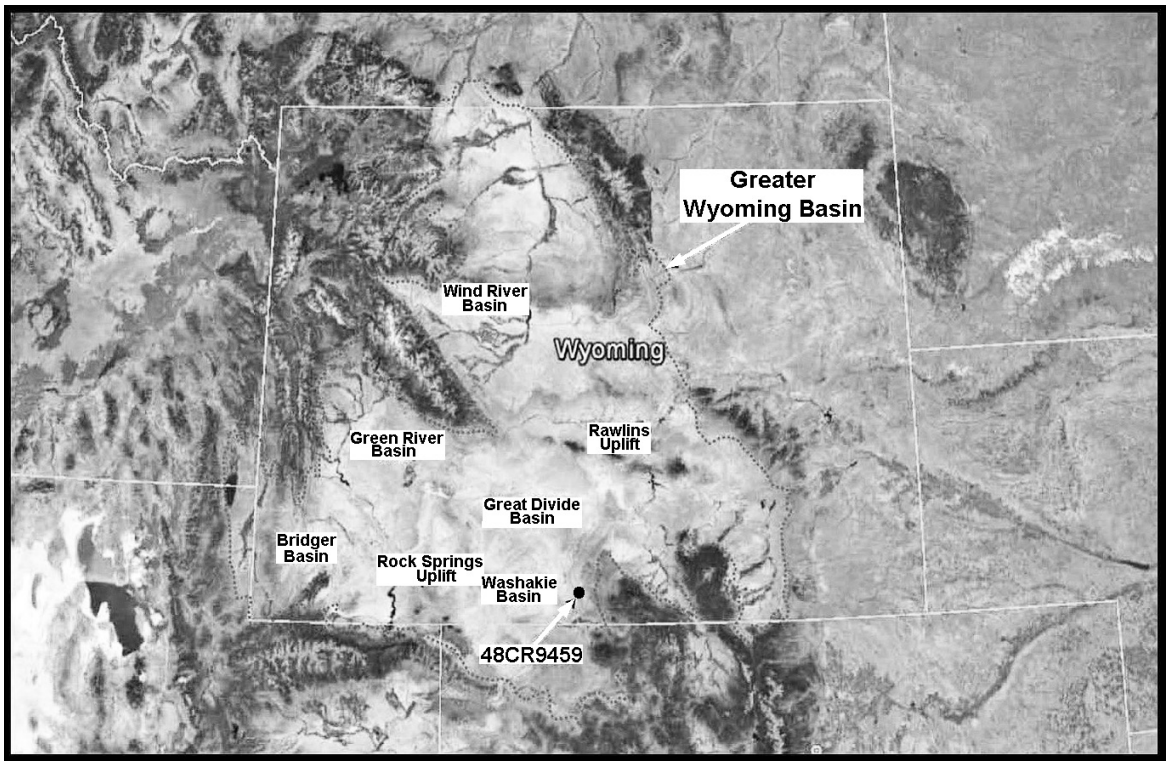

Figure 1: Aerial image showing location of Site 48CR9459 in relation to smaller basins within greater Wyoming Basin of southwestern Wyoming.

showed the staining was limited to a narrow area of eolian deposition along the ridge crest.

The southern component stain was located eleven meters south of the northern component stain. The southern component stain was six meters long and again was identified in both walls of the trench. The southern component stain consisted of a 10-25 cm thick lens of light grey charcoal-stained soil with fragments of burned sandstone. The top of the component stain varied from 15-20 cm below the bladed surface. The bottom of the stain was as deep as 40 cm below the bladed surface. Features 3 and 4 were identified within the southern component stain, both of which appear to be remnants of basin shaped hearths. Cultural materials noted on the surface of the site were limited to a core or tested cobble and two fragments of heat-fractured quartzite. The core was located along the eastern margin of the site and was a small quartzite cobble with several flakes removed from both lateral edges.

At discovery, Feature 1 was reported to consist of a large basin-shaped area of moderate to dark charcoal-stained sand measuring 2.30 m in length and 40 cm thick, in the eastern wall of the trench. The top of Feature 1 was reported to be at a depth of 30 to 35 cm below the bladed surface. No evidence of this feature was seen in the western trench wall. Roughly a quarter of the feature was believed to have been impacted by the construction. An area of darker staining in the northern portion of the large basin looked to represent an internal hearth feature. Two burned sandstone fragments were noted in the lower southern portion of the possible internal hearth. Feature 1 had been heavily disturbed by burrowing animals with a large burrow or den located in the central portion of the feature and small burrows scattered throughout the remainder of the feature. The pipeline trench appeared to have cut through the western edge of the feature and an estimated 50-70% of the feature was likely intact along the eastern margin of the trench. One excavation block was recommended to be excavated over Feature 1 (Ficenec 2009).

Feature 2 was located in the south-central portion of the northern component stain. At the time of discovery, it was reported to consist of a large basin-shaped area of dark grayish-black charcoal-stained soil measuring 3.0 m in length and 25 cm in thickness. The feature was found at a depth of 25-65 cm below the bladed surface and identified in both walls of the pipeline trench with the pipeline bisecting the central portion of the feature. The component stain continued roughly 13 meters south and 18 meters north of Feature 2. One excavation block was recommended to be excavated over Feature 2 (Ficenec 2009).

Feature 3 was located in the southern component stain. Feature 3 was located in the west wall of the trench. It was reported to be an oval shaped area of dark charcoal-stained soil measuring 40x28 cm. The top of the feature

was at a depth of 30 cm below the bladed ground surface. Feature 3 exhibited only light disturbances by burrowing animals. However, the pipeline trench was believed to have impacted a large portion of the feature. No evaluative testing was conducted on the feature and no samples were taken. Because of the disturbed nature of the feature and the limited area of associated component staining, no excavation was recommended to be conducted around Feature 3 (Ficenec 2009).

Feature 4 was located in the east wall of the trench in the southern component stain roughly three m south of Feature 3 and reported to consist of an oval shaped area of charcoal-stained soil measuring 72x25 cm. The top of the feature was at a depth of 23 cm below the bladed ground surface. The feature appeared to represent the remains of a basin hearth. Feature 4 exhibited only light disturbances by burrowing animals. However, the pipeline trench had impacted a large portion of the feature. No evaluative testing was conducted on the feature and no samples were taken. Because of the disturbed nature of the feature and the limited area of component staining associated with it, no excavation was recommended to be conducted on Feature 4.

RESULTS

Two excavation blocks (1 and 2) were excavated on Site 48CR9459 (Figure 2). Block 1 contained 26 1x1 m units and was placed over Feature 1. Block 2 contained 28 1x1 m units and was placed over Feature 2. Fifty-four m² of sediment were excavated (Figure 3). The excavated portion of 48CR9459 yielded one buried cultural component with three dated occupations and one unassigned occupation. Component 1 dates to the Uinta phase of the Late Prehistoric period. Samples from five features within Component 1 were submitted for radiocarbon analysis. Three of these samples were

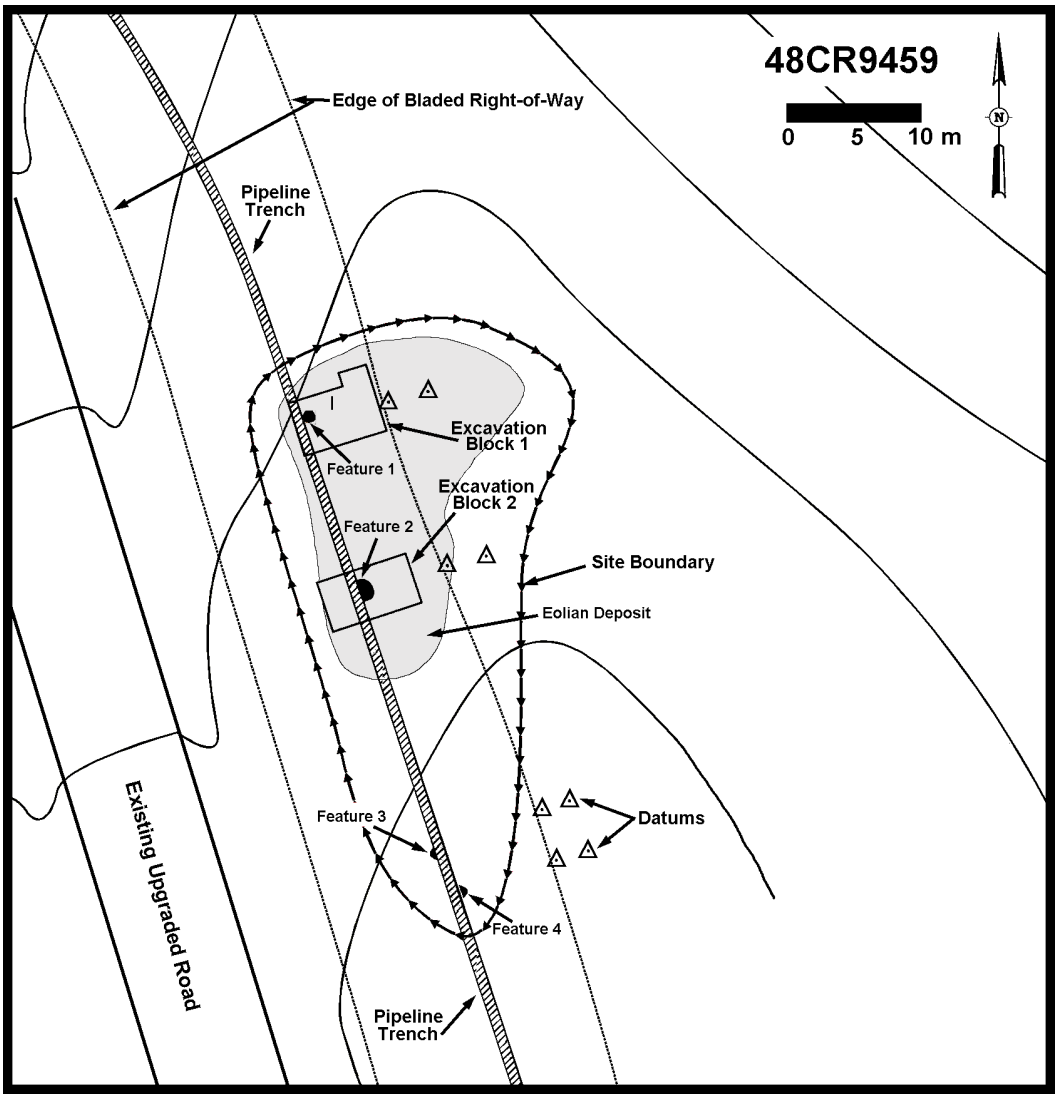

Figure 2: Sketch map of Site 48CR9459.

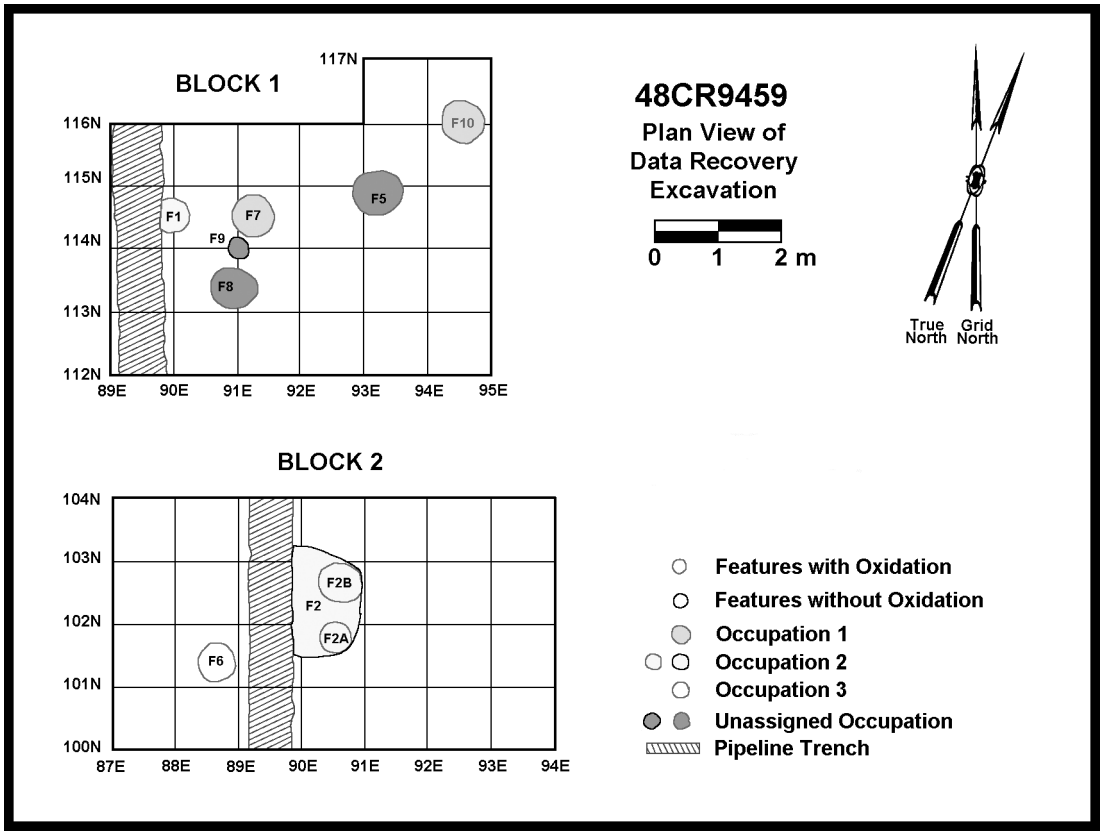

Figure 3: Plan view of excavation blocks at Site 48CR9459.

from Block 1 (Features 1, 7, and 10) and two samples were from Block 2 (Feature 2B and 6). Radiocarbon dates from these features define three occupations ranging from 1120±30 to 1490±30 years B.P. Occupation 1 was represented by radiocarbon dates from Feature 7 (1120±30 B.P., Beta–367551; charred material) and Feature 10 (1120±30 B.P., Beta–367552; charred material). Occupation 2 was represented by radiocarbon dates from Feature 1 (1240±30 B.P., Beta–367549; charred material) and Feature 2B (1280±30 B.P., Beta–367548; charred material). Occupation 3 is represented by Feature 6 which provided the earliest radiocarbon date of 1490±30 years B.P., (Beta–367550; charred material) (Table 1). The Unassigned Occupation includes the undated charcoal stained soil from Component 1 and Features 5, 8, and 9. Most cultural materials recovered during the excavation came from the Unassigned Occupation in Block 1.

In sum, the excavation resulted in the recovery of 612 pieces of lithic debitage, two utilized pebbles, three cores, two flake tools, one scraper, three final biface fragments, three Rose Spring projectile points, two pieces of groundstone, 3217 scattered pieces of thermally-altered rock, and 142 faunal specimens. Component 1 looks to be a uniform stratigraphic event composed of mottled light to dark grey charcoal-stained soil. All of the features from Occupation 1, Occupation 2, Occupation 3, and the unassigned features originate within Component 1 (Figure 3). However, none of these features became defined until Component 1 was removed. There were no subtle changes in soil to vertically differentiate the occupations within Component 1. All cultural material recovered from the general excavation of Blocks 1 and 2 not found within an assigned occupation feature is assigned to Component 1 (Unassigned). Most artifacts (83.53%) were not assigned to a specific occupation. This includes all of the tools, most of the debitage, and over half of the faunal remains. Occupation 1 contained 6.49%, Occupation 2 contained 6.09%, and Occupation 3 contained 3.89% of the total cultural material (Table 2).

COMPONENT 1, OCCUPATION 1

Component 1, Occupation 1, is the youngest Uinta Phase occupation at Site 48CR9459. This occupation is represented by two hearths (Features 7 and 10). Both of these features are located in Block 1 (Figure 3) and both were cylindrical with flat bottoms. The radiocarbon dates place this occupation at 1120±30 B.P. (Table 1).

Feature 7

Feature 7 was located in the western half of the Block 1. Feature 1 was 68 cm west and Feature 8 was 43 cm south of Feature 7. Feature 9 was located between Features 7 and 8 (Figure 3). When Feature 7 was first

Table 1: Summary of Features from Site 48CR9459

COMPONENT	OCCUPATION	FEATURE	FEATURE TYPE	DIMENSIONS	OXIDIZED RIND	CULTURAL MATERIAL	BETA SAMPLE NUMBER	SAMPLE TYPES	2 SIGMA CALIBRATION	CONVENTIONAL RADIOCARBON AGE (BP)
1	1	7	Cylindrical-shaped Hearth	50 x 45 x 26	Yes	3 FCR, 5 flakes, and 14 bone fragments	367551	Charred Material	1070 to 960 (BP) 880 to 990 (AD)	1120 +/- 30
1	1	10	Cylindrical-shaped Hearth	40 x 38 x 21	Yes	12 FCR, 13 flakes, and 18 bone fragments	367552	Charred Material	1070 to 960 (BP) 880 to 990 (AD)	1120 +/- 30
1	2	1	Cylindrical- shaped Hearth	62 x 34* x 24	Yes	8 FCR, 15 flakes, and 9 bone fragments	367548	Charred Material	1270 to 1070 (BP) 680 to 880 (AD)	1240 +/- 30
1	2	2	Basin -shaped Hearth	172 x 108* x 10	No	11 FCR, 18 flakes, and 2 bone fragments	---	---	---	---
1	2	2A	Basin-shaped Hearth	48 x 48 x 16	Yes	None	---	---	---	---
1	2	2B	Basin-shaped Hearth	64 x 62 x 18	Yes	107 FCR, 2 flakes, and 1 bone fragments	367549	Charred Material	1290 to 1170 (BP) 660 to 780 (AD)	1280 +/- 30
1	3	6	Cylindrical-shaped Hearth	60 x 57 x 31	Yes	248 FCR, 20 flakes, and 10 bone fragments	367550	Charred Material	1410 to 1310 (BP) 540 to 640 (AD)	1490 +/- 30
1	Unassigned	5	Basin-shaped Hearth	66 x 56 x 14	Yes	56 FCR, 49 flakes, and 41 bone fragments	---	---	---	---
1	Unassigned	8	Basin-shaped Hearth	64 x 66 x 25	Yes	44 FCR, 7 flakes, 6 bone fragments, 1 piece of groundstone	---	---	---	---
1	Unassigned	9	Basin-shaped Hearth	29 x 32 x 10	No	None		---	---	---

* Indicates partial measurement because feature was truncated by pipeline trench

exposed, it was believed to be a large ovoid shaped feature with a rodent run bisecting the feature. Excavation of Feature 7 showed the feature had a well-defined oxidized ring and the portion thought to have been bisected by a rodent burrow was in fact a smaller different feature (Feature 9).

Feature 7 was a cylindrical shaped hearth with straight walls and a flat base measuring 50x45x26 cm. The top four cm of feature fill was mottled light to medium grey charcoal-stained sediment. Below this was compact dark charcoal-stained sediment. Three pieces of FCR, five flakes, and fourteen faunal specimens were recovered from the feature fill. The walls of Feature 7 were defined by a rind of oxidized soil. The oxidized soil along the walls of Feature 7 was restricted to the dark compact fill. Along the east and west sides of Feature 7, the upper portions of the feature walls had sluffed in and were later filled with mottled light to medium grey, charcoal-stained sediment.

Feature 7 could have been lined with a paunch or hide and used as a boiling pit. However, Feature 7 did have an oxidized rind, indicating it was used as a thermal feature. Feature 7 could have been intentionally burned and oxidized to stabilized the feature walls (McNees et al. 1982) or it could have been used as a roasting pit and completely cleaned out for some other purpose.

Charred material from the feature fill produced a radiocarbon date of 1120±30 B.P. (Table 1). A sediment sample from the bottom of Feature 7 yielded a phytolith signature typical of a cool season grass biome. These grasses are believed to have grown in the feature fill after the feature was abandoned. Feature 7 also contained a few dicot phytoliths which may reflect small pieces of fuel mixed into the samples. No starch was observed in the sample from Feature 7.

Feature 10

Feature 10 was a hearth with straight walls and a flat bottom. This feature was located in the northeastern corner of Block 1 (Figure 3). During the excavation of Feature 10, it was discovered the western edge of the feature had a large rodent burrow. This rodent burrow was partially

Table 2: Recorded Cultural Material by Block and Occupation for Site 48CR9459

ARTIFACT	UNASSIGNED BLOCK 1	UNASSIGNED BLOCK 2	UNASSIGNED FEATURES	OCCUPATION 1	OCCUPATION 2	OCCUPATION 3	TOTAL
Projectile Points	2	1	--	--	--	--	3
Final Biface Fragments	3	--	--	--	--	--	3
Scraper	1	--	--	--	--	--	1
Flake Tools	2	--	--	--	--	--	2
Cores	2	1	--	--	--	--	3
Utilized							
Pebbles	1	1	--	--	--	--	2
Debitage	419	64	56	18	35	20	612
Groundstone	1	--	1	--	--	--	2
Faunal Specimens	32	4	52	32	12	10	142
Artifact Totals	463	71	109	50	47	30	770
Features			3	2	4	1	10

excavated with the thought it was part of the feature. The error was caught and the rodent burrow fill was screened separately. One piece of burned sandstone was recovered from the rodent burrow fill.

Feature 10 was a cylindrical shaped feature with straight walls and a flat base measuring 40x38x21 cm. The top 15-17 cm of the feature fill was mottled light to medium grey, charcoal-stained sediment. Below this was 3 to 6 cm of dark charcoal-stained sediment. Twelve pieces of FCR were recovered from the top of this feature. The walls of Feature 10 had a well-defined rind of oxidized sediment. Feature 10 could have been used as a rock-less oven similar to Feature 1 or it could have been a cleaned out rock filled oven.

Charred material from the dark grey charcoal-stained sediment at the bottom of Feature 10 produced a radiocarbon date of 1120±30 B.P. (Table 1). Cultural material recovered from the feature fill included twelve pieces of burnt sandstone, thirteen pieces of lithic debitage, and eighteen faunal specimens. A sediment sample from the bottom of Feature 10 yielded a phytolith signature typical of a cool season grass biome. These grasses are believed to have grown in the feature fill after the feature was abandoned. Feature 10 also contained a few dicot phytoliths which may reflect small pieces of fuel mixed into the samples. No starch was observed in the sample from Feature 10.

Summary of Cultural Material from Occupation 1

Lithic debris recovered from Features 7 and 10 included 18 flakes and represents 2.94% of the lithic assemblage recovered from the excavation. Flake stages include tertiary flakes (n=5, 27.78%) and finishing/maintenance flakes (n=13, 72.22%). The lack of initial primary and secondary reduction flakes and larger percentage of finishing/maintenance flakes suggest a focus on final tool production and maintenance. All of the semi-translucent chert flakes were finishing/maintenance flakes and all of these flakes exhibit thermal alteration.

The fauna remains recovered from Features 7 and 10 consist of 32 specimens, representing 22.53% of the fauna assemblage recovered from the excavation (Table 2). D/S/P (deer, sheep, or pronghorn), and artiodactyl-size specimens (e.g., Size Class V, V-VI, and IV-VI) make up 40.63% of the fauna from Component 1. The remaining 59.37% of the faunal remains from Occupation 1 are squirrel to rabbit-sized mammals (Class Size II-III) with one tooth identified as a jackrabbit tooth.

COMPONENT 1, OCCUPATION 2

Component 1, Occupation 2, is a Uinta Phase occupation. This occupation is represented by four hearths (Features 1, 2, 2A, and 2B) (Figure 3). Features 1 and 2 were originally discovered during an open trench inspection conducted by WAS in 2009 for the Anadarko Exploration and Production Company Sun Dog to Brown Cow Pipeline (Ficenec 2009). Feature 1 was located along the east side of the trench in Block 1. Feature 2 was located along the east side of the trench in Block 2. Features 2A and 2B were sub-features located within Feature 2. The radiocarbon dates place this occupation at 1240±30 B.P. to 1280±30 B.P. (Table 1).

Feature 1

Feature 1 was a hearth with straight walls and a slightly dished bottom. Feature 1 was 68 cm west of Feature 7 (Figure 3). Roughly half of Feature 1 was destroyed by the pipeline trench. While Feature 1 was easily seen in profile along the east trench wall, it was not visible in plan view until the charcoal-stained soil from Component 1 was removed.

Feature 1 measured 62x34x24 cm and was filled with homogenous medium to dark grey, charcoal-stained sediment. Oxidized soil was noted along the feature's walls and on the base. The oxidized rind in Feature 1 clearly shows this feature had held an inten-

sive fire at one time. This feature could have been used as a rock-less oven where a layer of coals was built up in the bottom of the feature and then covered with a layer of soil. Food material was added and then covered with another layer of soil (Thoms 2009). Ovens such as this were used to cook starch-rich plants and or lean meat for several hours or several days (Wandsnider 1997). Feature 1 could also have been cleaned out and later filled with Component 1 stained soil.

Charred material from the bottom of Feature1 produced a radiocarbon date of 1240±30 B.P. (Table 1). Cultural material recovered from the feature fill includes two small pieces of quartzite FCR, six small pieces of burned sandstone, fifteen pieces of lithic debitage, and nine faunal specimens. A sediment sample from the bottom of Feature 1 yielded a phytolith signature typical of a cool season grass biome. These grasses are believed to have grown in the feature fill after the feature was abandoned. Feature 1 also contained a few dicot phytoliths which may reflect small pieces of fuel mixed into the samples. No starch was observed in the sample from Feature 1.

Features 2, 2A, and 2B

Feature 2 was originally believed to be a possible housepit bisected by the construction of a pipeline trench (Ficenec 2009). During the excavation of Feature 2, it was determined this feature was a shallow, basin-shaped activity area with two smaller hearth features (Features 2A and 2B) along the eastern edge. Feature 2 was located along the eastern wall of the pipeline trench in Block 2. The western half of this feature was destroyed by the construction of the pipeline trench. Feature 6 was 88 cm west of Feature 2 in the east trench wall. If Feature 2 were intact, Feature 6 would have been roughly 30 cm of the southwestern edge of Feature 2 (Figure 3). The northern and southern edges of Feature 2 became defined at 99.85 cmbd while the eastern edge of Feature 2 was obscured by mottled remnants of Component 1. During the excavation of Feature 2, the western edges of Features 2A and 2B became defined at 99.80 cmbd.

The profile of Feature 2 shows a shallow basin shape with gracefully sloping walls. The deepest part of the feature was along the trench wall at 99.75 cmbd. This feature measured 172x108x10 cm. Feature 2 was not a cooking hearth; it represents an activity area associated with Features 2A and 2B. The area around Features 2A and 2B was trampled during human activity dispersing charcoal from Features 2A and 2B into the surrounding sediment. The Feature 2 fill was mottled light, medium, and dark grey charcoal-stained sediment mixed with small pieces of charcoal. Rodent burrows were also noted within the feature. Cultural material recovered from Feature 2 includes eleven pieces of burnt sandstone, eighteen pieces of lithic debitage, and two faunal specimens.

Feature 2A was located along the eastern edge of Feature 2, 34 cm south of Feature 2B (Figure 3). The top of Feature 2A originated within Feature 2 and the edges of Feature 2A were defined by oxidized soil. The northern edge of Feature 2A became defined at 99.82 cmbd while the western edge of the feature was defined at 99.80 cmbd while the southeastern edge blended into the edge of Feature 2. Feature 2A is a circular basin shaped hearth measuring 48x48x16 cm. The feature fill was mottled light grey charcoal-stained sediment mixed with pieces of sagebrush charcoal. No cultural material was recovered from this feature.

Feature 2B was located along the eastern edge of Feature 2, 34 cm north of Feature 2A. Feature 2B measured 64x62x18 cm (Figure 3). The top of Feature 2B originated within Feature 2 and the edges of Feature 2B were defined by oxidized soil. The northern and southern edges of Feature 2B became defined at 99.82, the western edge of the feature became defined at 99.80 cmbd while the eastern edge blended into the edge of Feature 2.

Feature 2B is a circular basin shaped hearth measuring 64x62x18 cm. The feature fill was mottled light grey charcoal-stained sediment overlaying a layer of burned sandstone mixed with dark gray charcoal-stained soil. Below the layer of burned sandstone was a layer of dark grey charcoal-stained sediment. The dark charcoal-stained sediment was mixed with small pieces of charcoal. A few small rodent burrows where also noted within the feature. Cultural material recovered from Feature 2B includes 107 pieces of burnt sandstone, two pieces of lithic debitage, and one faunal specimen.

Charred material from the dark grey charcoal-stained sediment at the bottom of Feature 2B produced a radiocarbon date of 1280±30 B.P. (Table 1). A sediment sample from the bottom of Feature 2B yielded a large quantity of dicot phytoliths. Dicot phytoliths are not considered to be diagnostic of specific groups or family of plants. Their presence suggests a mixing of charcoal with the submitted sample. The sample from Feature 2B did contain a single elongate dendritic phytolith. Dendriforms like this are typically part of the grass seed and the structure surrounding them. It is believed this single dendriform represents an environment signature rather than an economic activity. No starch was observed in the sample from Feature 2B.

Features 2A, and 2B probably had multiple functions and were intensely used leading to the development of Feature 2. This pair of features could have been a bone greasing or a plant boiling activity area. Feature 2B did contain 107 pieces of FCR and could have been used to heat rocks for boiling water. Feature 2A was void of cultural material and could have been lined with a paunch or hide and used as a boiling pit. However, Feature 2A did have an oxidized rind indicating it was

used as a thermal feature. Feature 2A could have been intentionally burned and oxidized to stabilized the feature walls (McNees et al. 1982) or it could have been used as a roasting pit and completely cleaned out for some other purpose. The structure of Feature 2B suggests it could have also been used as a roasting pit. The layer of rock in Feature 2B was placed over a layer of coals and heated. The layer of coals is now represented by the dark grey charcoal stained sediment at the bottom of the feature. A layer of plant material was placed over the heated rocks then the food stuff followed by another later of plant material and covered with soil (Wandsnider 1997).

Summary of Cultural Material from Occupation 2

Lithic debris recovered from Features 1, 2, 2A, and 2B includes 35 flakes (Table 2). Lithic debris from this occupation represents 5.72% of the lithic assemblage recovered from the excavation. Flake stages include primary flakes (n=2, 5.71%), secondary flakes (n=2, 5.71%), tertiary flakes (n=5, 14.29%), finishing/maintenance flakes (n=25, 71.43%), and flake fragments without cortex (n=1, 2.86). The initial primary and secondary reduction flakes are limited along with flake fragments without cortex, suggesting limited cobble reduction in association with this occupation. The larger percentage of finishing/maintenance flakes suggest a focus on final tool production and maintenance.

The fauna remains recovered from Features 1, 2, and 2B consist of 12 specimens (Table 2), representing 8.45% of the fauna assemblage recovered from the excavation. D/S/P (deer, sheep, or pronghorn), and artiodactyl-size specimens (e.g., Size Class V, V-VI, and IV-VI) make up 8.33% of the fauna from Component 2. Indeterminate bone fragments make up 16.67% of the assemblage from Occupation 2 and 75% of the faunal remains from Occupation 2 are squirrel to rabbit sized mammals (Class Size II-III). None of the faunal remains from Occupation 2 were identifiable elements.

COMPONENT 1, OCCUPATION 3

Component 1, Occupation 3, is the oldest Uinta Phase occupation at 48CR9459. This occupation is represented by one hearth (Feature 6). This feature was located west of the pipeline trench in Block 2. The radiocarbon date places this occupation at 1490±30 B.P. (Table 1 and Figure 3).

Feature 6

Feature 6 was a hearth with straight walls and undulating bottom. Feature 6 was located in the western half of Block 2 near the west wall of the pipeline trench (Figure 3). Feature 6 was 88 cm west of Feature 2 in the east trench wall. If Feature 2 were intact, Feature 6 would have been roughly 30 cm of the southwestern edge of Feature 2.

Feature 6 is a deep cylindrical shaped feature with straight to slightly sloping walls which measured 60x57x31 cm. The top five cm of the feature fill was medium to dark grey charcoal-stained sediment mixed with a few pieces of burned sandstone. Below this was dark charcoal-stained sediment packed with burned pieces of sandstone. The walls and portions of the base of Feature 6 had a well-defined rind of oxidized soil. Thoms (2009) has identified rock filled pits like this as earth ovens. Thoms goes on to describe the use of these rock filled pits:

> "Rock-filled earth ovens were clearly used to cook a variety of foods but they tend to be indicative of foods that require longer cooking times, especially geophytes. As discussed, rock heating elements also appear to be a characteristic of fuel-poor environments where it is often necessary to capture heat from flames generated by fast burning fuels (e.g., woody plants and brush species as opposed to trees in desert environments)" (Thoms 2009:587).

Charred material from the bottom of the feature produced a radiocarbon date of 1490±30 B.P. (Table 1). Cultural material recovered from the feature fill includes 248 pieces of burned sandstone, 20 pieces of lithic debitage, and ten faunal specimens. A sediment sample from the bottom of Feature 6 yielded a large quantity of dicot phytoliths. Dicot phytoliths are not considered to be diagnostic of specific groups or family of plants. Their presence suggests a mixing of charcoal with the submitted sample. No starch was observed in the sediment sample from Feature 6.

Summary of Cultural Material from Occupation 3

Lithic debris recovered from Feature 6 includes 20 flakes (Table 2) and represents 3.27% of the lithic assemblage recovered from the excavation. Flake stages include finishing/maintenance flakes (n=15, 75%) and flake fragments (n=5, 25%). The lack of initial primary and secondary reduction flakes and larger percentage of finishing/maintenance flakes suggest a focus on final tool production and maintenance.

The fauna remains recovered from Feature 6 consist of ten specimens, representing 7.04% of the fauna assemblage recovered from the excavation (Table 2). D/S/P (deer, sheep, or pronghorn), and artiodactyl-size specimens (e.g., Size Class V, V-VI, and IV-VI) make up 10% of the fauna from Component 3. The remaining 90% of the faunal remains from Occupation 3 are rabbit-sized mammals (Class Size III). None of the faunal remains from this occupation were identifiable elements.

COMPONENT 1, UNASSIGNED

Component 1, Unassigned, is represented by three features and all of the cultural material recovered from the general excavation of Blocks 1 and 2. The Component 1 stain and site stratigraphy were uniform across the site

area from Block 1 to Block 2. This can be seen in the block wall profiles and in the east trench wall during the open trench inspection and the discovery of the site (Ficenec 2009). Component 1 is a uniform stratigraphic event composed of mottled light to dark grey charcoal-stained soil. All of the features from Occupation 1, Occupation 2, Occupation 3, and the unassigned features originate within Component 1. There were no subtle changes in soil to vertically differentiate the occupations within Component 1. Therefore, all of the cultural material recovered from the general excavation of Blocks 1 and 2 and features not found within an assigned occupation feature were assigned to Component 1 Unassigned. The Unassigned features include Features 5, 8, and 9. All of these features are located in Block 1. The Unassigned cultural material includes 464 artifacts from Block 1 and 71 artifacts from Block 2 (Table 2).

Feature 5

Feature 5 was located in the northwestern corner of the Block 1, 90 cm southwest of Feature 10 (Figure 3) and was a shallow circular feature with straight walls and an undulating base which measured 66x56x14 cm. The feature fill was medium to dark grey charcoal-stained sediment with a few rodent burrows. The bottom of the feature had a slight dip in the middle. The bottom of the feature and the slight dip were filled with burned pieces of sandstone. The base and portions of the walls on Feature 5 were oxidized. The FCR in Feature 5 could have been heated in place and used as a heating element for a small earth oven (Thoms 2009). Thoms (2009) illustrates and describes several different feature types with FCR heated in place and used as the heat source for small ovens. No samples from Feature 5 were submitted for radiocarbon analysis or phytolith and starch analysis. Cultural material recovered from the feature fill includes 56 pieces of burned sandstone, 49 pieces of lithic debitage, and 41 faunal specimens.

Feature 8

Feature 8 was a hearth with straight and sloping walls and a flat bottom. Feature 8 was located in the western half of the Block 1. Feature 8 was 43 cm south of Feature 7. Feature 9 is located between Features 7 and 8 (Figure 3). Feature 8 measured 64x66x25 cm. The feature fill was medium to dark grey charcoal-stained sediment. Small burned pieces of sandstone were noted in the upper half of the feature fill. Larger pieces of burned sandstone were in a ten cm thick layer resting five cm above the base of the feature. The walls and portions of the base had a well-defined rind of oxidized soil. The structure of Feature 8 suggests it could have also been used as a roasting pit similarly to Feature 2A. No samples from Feature 8 were submitted for radiocarbon analysis or phytolith and starch analysis. Cultural material recovered from the feature fill includes 44 pieces of burned sandstone, seven pieces of lithic debitage, six faunal specimens, and one piece of groundstone (CR9459-144).

Feature 9

Feature 9 was a small shallow basin shaped hearth located in the western half of the Block 1 (Figure 3). Feature 9 was located between Features 7 and 8, two cm from Feature 7 and 14 cm from Feature 8. The top of Feature 9 originated within the Component 1 staining. When Feature 9 was first exposed, it was believed to be part of a larger ovoid shaped feature with a rodent run bisecting the feature. During the excavation of Feature 7, it was drtermined Feature 7 had a well-defined oxidized ring and the portion thought to have been bisected by a rodent burrow was in fact Feature 9. Since the top of Feature 9 wasn't visible until Component 1 was removed, it is unclear if Feature 9 is an auxiliary feature associated with Feature 7 or 8 or if it is the base of a larger feature from a different occupation. Therefore, it was placed in the unassigned occupation.

The profile of Feature 9 shows mottled light grey charcoal-stained sediment. One large rodent burrow was noted going from Feature 9 to Feature 8. The rodent burrow contained the same fill as Feature 9 and could not be detected within Feature 9. No oxidized soil was noted in Feature 9. Small pieces of charcoal were noted in the feature fill. One small piece of quartzite FCR was noted, no other cultural material was recovered from Feature 9. No samples from Feature 9 were submitted for radiocarbon analysis or phytolith and starch analysis.

SUMMARY OF CULTURAL MATERIAL FROM UNASSIGNED FEATURES

Lithic debris recovered from Features 5 and 8 includes 56 flakes (Table 2). Only seven flakes were recovered from Feature 8 and 49 flakes were recovered from Feature 5. Lithic debris from the Unassigned Features represents 9.15% of the lithic assemblage recovered from the excavation. Flake stages include Primary (n=3, 5.36%), Secondary (n=2, 3.57%), tertiary (n=4, 7.14%), finishing/maintenance flakes (n=38, 67.86%), and flake fragments (n=9, 16.07%). The primary and secondary reduction flakes suggest some initial reduction was taking place. The larger percentage of finishing/maintenance flakes suggests a focus on final tool production and maintenance (Table 2).

The faunal remains recovered from Features 5 and 8 consist of 52 specimens, representing 36.62% of the fauna assemblage recovered from the excavation (Table 2). D/S/P (deer, sheep, or pronghorn), and artiodactyl-size specimens (e.g., Size Class V, V-VI, and IV-VI) make up 32.69% of the fauna from the Unassigned Features. All of these remains came from Feature 5. Squirrel to rabbit-sized mammals (Class Size II-III) make up 67.31% of this assemblage. A fragment of a tarsal and a fragment of

a scapula were amongst these remains. These elements could not be identified beyond Class III size mammal.

SUMMARY OF CULTURAL MATERIAL FROM UNASSIGNED OCCUPATION BLOCKS 1 AND 2

Block 1 Debitage

The excavation resulted in the recovery of 419 flakes from outside of features dispersed across Block 1 (Table 2). The debitage from Block 1 represents 68.46% of the debitage recovered from the excavation. Flake stages include primary (n=30, 7.16%), secondary (n=71, 16.95%), tertiary (n=109, 26.01%), finishing/maintenance flakes (n=170, 40.57%), and flake fragments (n=39, 9.31%). The flake stages indicate reduction of the locally available lower quality lag cobbles was occurring at the site. While final tool production and maintenance focused on higher quality chert, The high frequency of flake fragments, tertiary flakes, and especially finishing/maintenance flakes, suggests the focus of lithic reduction was on finishing and maintenance of later stage tools.

Block 2 Debitage

The excavation resulted in the recovery of 64 flakes outside of the features dispersed across Block 2 (Table 2). The debitage from Block 2 represents 10.46% of the debitage recovered from the excavation. Flake stages include primary (n=5, 7.81%), secondary (n=18, 28.13%), tertiary (n=13, 20.31%), finishing/maintenance flakes (n=23, 35.94%), and flake fragments (n=5, 7.81%). The debitage from Block 2 reflects the same reduction strategy as Block 1. When looking at the lithic assemblage from individual occupations or at the site as a whole, the focus on finishing and maintenance of later stage tools is consistent across the site area.

Block 1 Faunal Remains

The faunal remains recovered from the Unassigned Occupation in Block 1 consist of 32 specimens, representing 22.54% of the fauna assemblage recovered from the excavation (Table 2). D/S/P (deer, sheep, or pronghorn), and artiodactyl-size specimens (e.g., Size Class V, V-VI, and IV-VI) make up 40.63% of the fauna from the Unassigned Occupation in Block 1. Squirrel to rabbit sized mammals (Class Size II-III) make up 59.37% of this assemblage. A bison molar, a fragment of a bison hyoid, and the distal end of a pronghorn metacarpal were amongst these remains.

Block 2 Faunal Remains

The faunal remains recovered from the Unassigned Occupation in Block 2 consist of 4 specimens, representing 2.82% of the faunal assemblage recovered from the excavation (Table 2). D/S/P (deer, sheep, or pronghorn), and artiodactyl-size specimens (e.g., Size Class V, V-VI, and IV-VI) make up 50% of the fauna from the Unassigned Occupation in Block 2. Squirrel to rabbit sized mammals (Class Size II-III) make up 50% of this assemblage. All of these remains were too fragmented to identify beyond Class Size.

FCR

Over 3200 pieces of FCR were recovered from the Unassigned Occupation in Block 1 and Block 2. Most FCR came from the lower half of the charcoal-stained soil containing Component 1. The FCR from Block 1 consists of 216 pieces of quartzite and 2212 pieces of burned sandstone. Most of the FCR in Block 1 came from the northeast quarter of the excavation block around Features 5 and 10. The FCR from Block 2 consists of 117 pieces of quartzite and 672 pieces of burned sandstone, coming from the immediate area above and around Feature 2, 2A, 2B, and 6. The quartzite is available from the local lag deposits. Tabular pieces of sandstone are available down-slope and east of the site area. A large outcrop can be seen along the east side of the seasonal drainage east of the site area.

Stone Tools

Sixteen stone tools were recovered from the data recovery excavation on site 48CR9459. All of these tools were assigned to the Unassigned Occupation. Only one of these tools (a piece of groundstone) was recovered from a feature (Feature 8). These tools include two utilized pebbles, three cores, two flake tools, one scraper, three final biface fragments, three projectile points, one miscellaneous piece of groundstone, and one metate fragment.

Utilized Pebbles

Two utilized quartzite pebbles (CR9459-13 and CR9459-14) were recovered from the excavation. Both of these utilized pebbles are of locally available coarse-grained white quartzite. Both specimens have a flaked edge with a slight point and on both specimens one side/edge of this slight point exhibits use-wear (Figure 4). While it is unclear what these tools were used for, the similarity between them suggests they were used for similar tasks.

Cores

Three cores (CR9459-10, CR9459-11, and CR9459-12) were recovered from the excavation. Specimen CR9459-10 is a unifacially flaked core made from locally available coarse-grained white quartzite cobble. One end of the cobble is lightly battered suggesting this core was used as a light duty hammer stone. After being flaked this core was burned. Specimen CR9459-11 is a unidirectional core made from locally available coarse-grained white quartzite large pebble/small cobble core. Specimen CR9459-12 is a multidirectional exhausted core made from locally available tan, brown, and grey banded chert.

Flake Tools

Two flake tools (CR9459-8 and CR9459-9) were recovered from the excavation. Specimen CR9459-8 is

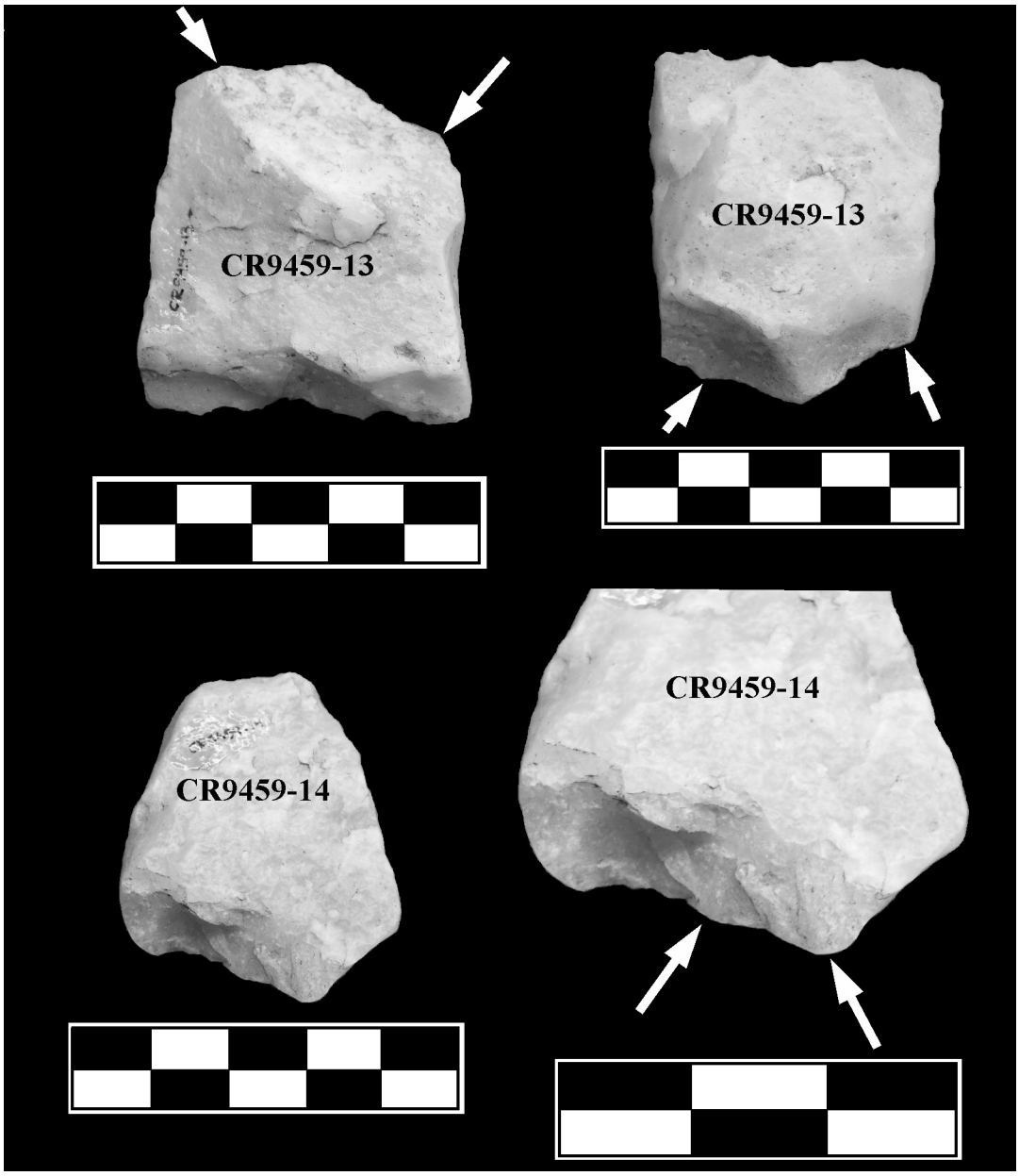

Figure 4: Utilized pebbles (CR9459-13 and 48CR9459-14) collected from Unassigned Occupation Block 1 and Block 2 (respectively) on Site 48CR9459.

a near complete secondary bioclastic chert flake. The lower half of the right lateral margin exhibits moderate use wear while the upper half of the right lateral margin exhibits moderate to heavy use polish. The lower half of the left lateral margin has been broken. The broken edge shows no sign of use wear or polish. It is unclear if the break was intentional. The upper half of the left lateral margin has a notch and minor retouching on the dorsal surface (Figure 5). This notched flake tool is similar to other notched flake tools recovered from Late Prehistoric sites (24BH1726, 48BH346, 48BH609, and 48CO309) in northeastern Wyoming and extreme southeastern Montana. These notched flakes are thought to have been used for sizing hides or striping down plant fibers and or sinew (Fredlund 1988; Frison 1988).

Specimen CR9459-9 is a complete primary quartzite flake made from locally available material. The distal margin has a short segment unifacially retouched on the dorsal surface (Figure 5). The ephemeral nature of the edge modification on CR9459-9 suggests this tool was used as an expedient tool.

End Scraper

One end scraper (CR9459-7) was made from a tabular coarse-grained quartzite pebble (Figure 6). Both lateral

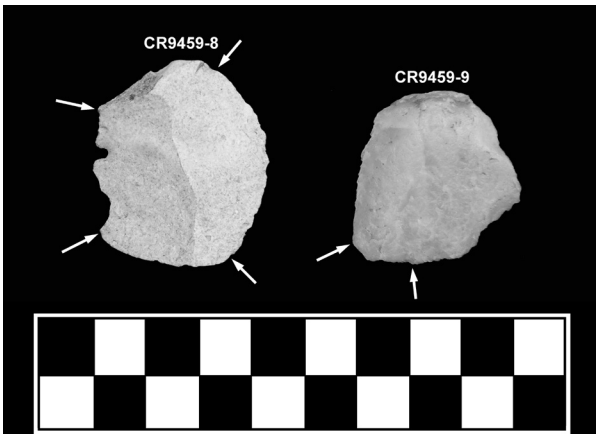

Figure 5: Flake tools (CR9459-8 and CR9459-9) collected from Unassigned Occupation Block 1 on Site 48CR9459.

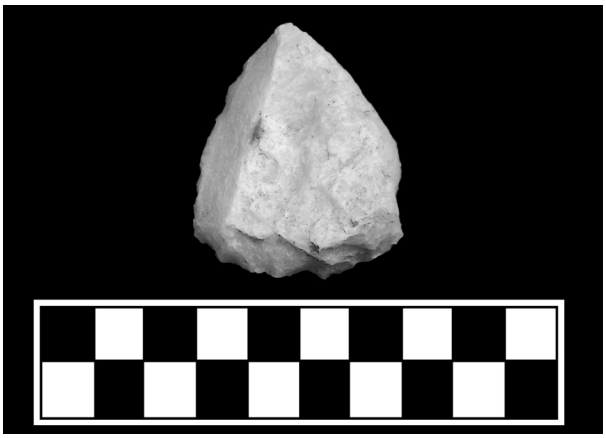

Figure 6: Scraper (CR9459-7) collected from Unassigned Occupation Block 1 on Site 48CR9459.

margins are unifacially flaked on the dorsal surface of the scraper. The right lateral margin has a shallow concavity or notch near the distal end. This notch does not exhibit any use wear/polish. The left lateral margin does exhibit some light use wear. The distal end has steep unifacial flaking on the dorsal surface. The right half of the distal margin has a uniform edge with light use wear/polish. The left half of the distal margin has an irregularly flaked edge and no use wear or polish. This suggests the scraper edge was being re-sharpened when the tool was discarded.

Final Bifaces (Stage IV)

Three final biface fragments (CR9459-4, CR9459-5, and CR9459-6) were recovered from Site 48CR9459 (Figure 7). Specimen CR9459-4 is a final biface tip made from thermally modified translucent grey chalcedony. Specimen CR9459-5 is a final biface tip made from chert. This specimen has turned grey from being burned, and identifying the lithic material used to make this tool is impossible. Specimen CR9459-6 is the lateral edge final biface made from brown semi translucent chert. This specimen has been burned and exhibits heat spalls on both faces. The size and manufacturing technology

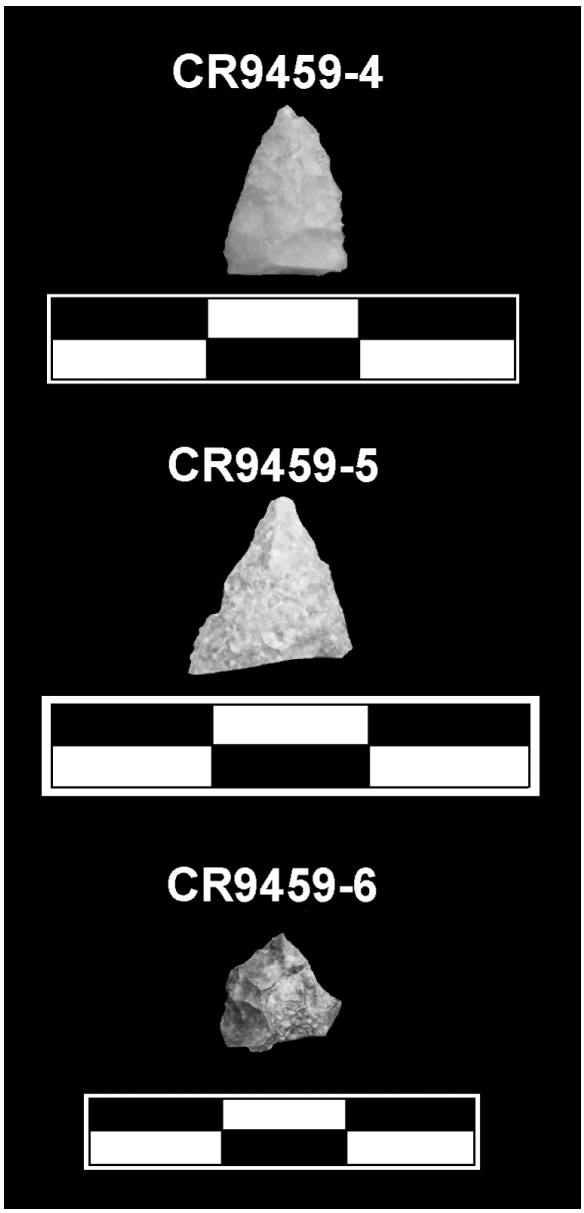

Figure 7: Final biface fragments (CR9459-4, CR9459-5, and CR9459-6) collected from Unassigned Occupation Block 1 on Site 48CR9459.

of these final biface fragments is similar to Rose Spring projectile points. However, in these fragmented conditions, identifying a function for these biface fragments is speculative.

Projectile Points

Three projectile points were recovered from Site 48CR9459 (Figure 8). The projectile points include one complete projectile point (CR9459-1), one near complete projectile point (CR9459-2), and one projectile point base (CR9459-2). Specimens CR9459-1 and CR9459-2 were recovered from Block 1 and Specimen CR9459-3 was recovered from Block 2. All of these projectile points have been identified as Rose Spring points and each is

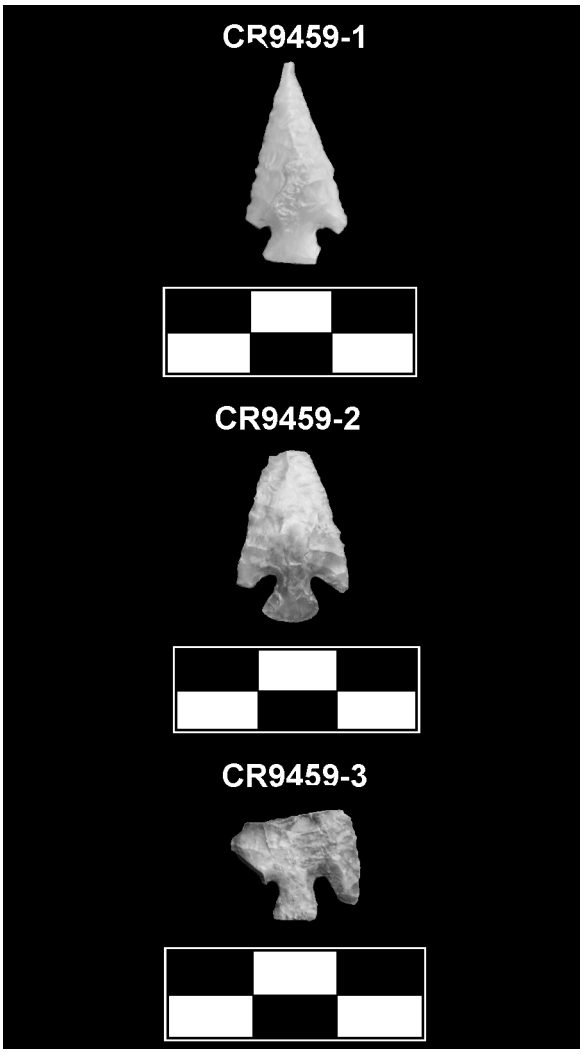

Figure 8: Rose Spring projectile points (CR9459-1, CR9459-2, and CR9459-3) collected from Unassigned Occupation Block 1 and Block 2 on Site 48CR9459.

made from thermally modified semi-translucent pebble chert. Rose Spring projectile points are considered to be one of the defining characteristics of the Uinta phase (Thompson and Pastor 1995).

Groundstone

The groundstone assemblage at Site 48CR9459 consists of one piece of groundstone (CR9459-144) and one metate fragment (CR9459-143). Both specimens are made from fine-grained tan sandstone. This same type of sandstone was used as hearth stones. Burned pieces of this sandstone were noted in both excavation blocks. Use-wear patterns on Specimen CR9459-144 suggest this tool may have been used to grain hides. Specimen CR9459-143 is a unifacially ground metate fragment. This artifact was found lying flat with the heavily used surface facing down. As a result, this surface has light calcium carbonate deposits starting to form.

ACTIVITY AREAS

During the excavation and analysis of cultural material it became obvious the activities conducted at Site 48CR9459 are centered around features. Most flaking debris (68.46%) and tools (75.00%) on site 48CR9459 were recovered from the Unassigned Occupation/general excavation of Component 1 in Block 1. Contour density maps were generated to provide perspective on the flaking debris recovered from the general excavation Block 1. Artifacts recovered from the features within Block 1 were excluded from the contour density maps. Density maps for general excavation faunal remains recovered from the Unassigned Occupation in Block 1 were not generated. Only 32 specimens were recovered from the general excavation of Block 1. Low amounts like this would not provide accurate data. For this same reason, density maps were not generated for Block 2.

Figure 9 illustrates the density of all flaking debris recovered from the Unassigned Component in Block 1. Tools recovered from the block were overlaid on the contour density map of Block 1. The tools were placed in the center of the excavation unit from which they were recovered, except for Specimens CR9459-2 and CR9459-143 which had more detailed locational information. The map shows a concentration of flaking debris on the southeast side of Features 5 and 7 and on the southwest side of Feature 8. The component staining on Site 48CR9459 exhibited no stratigraphic break allowing for a direct correlation to individual features. However, the flaking debris concentrations indicate two activity areas are potentially tethered to Features 5 and 8. Most tools from Block 1 also indicate hearth tethered activities. The FCR recovered from Block 1 also suggests a concentration of activity on the south and southeast side of Feature 5.

The concentration of lithic debitage, tools, and FCR from Block 1 suggest fairly intense feature tethered activities with minimal cleanup. Binford's (1983) model of drop and toss zones are expressed in the density of cultural material with debris concentrated around hearths where the activity took place.

SUMMARY

The data recovery project at Site 48CR9459 yielded one buried cultural component with four occupations. Component 1 dates to the Uinta phase of the Late Prehistoric period. Radiocarbon dates from these features define three occupations ranging from 1120±30 to 1490±30 years B.P. Rose Spring projectile points define the fourth Unassigned Occupation. Occupation 1 was represented by radiocarbon dates from Feature 7 (1120±30 B.P.) and

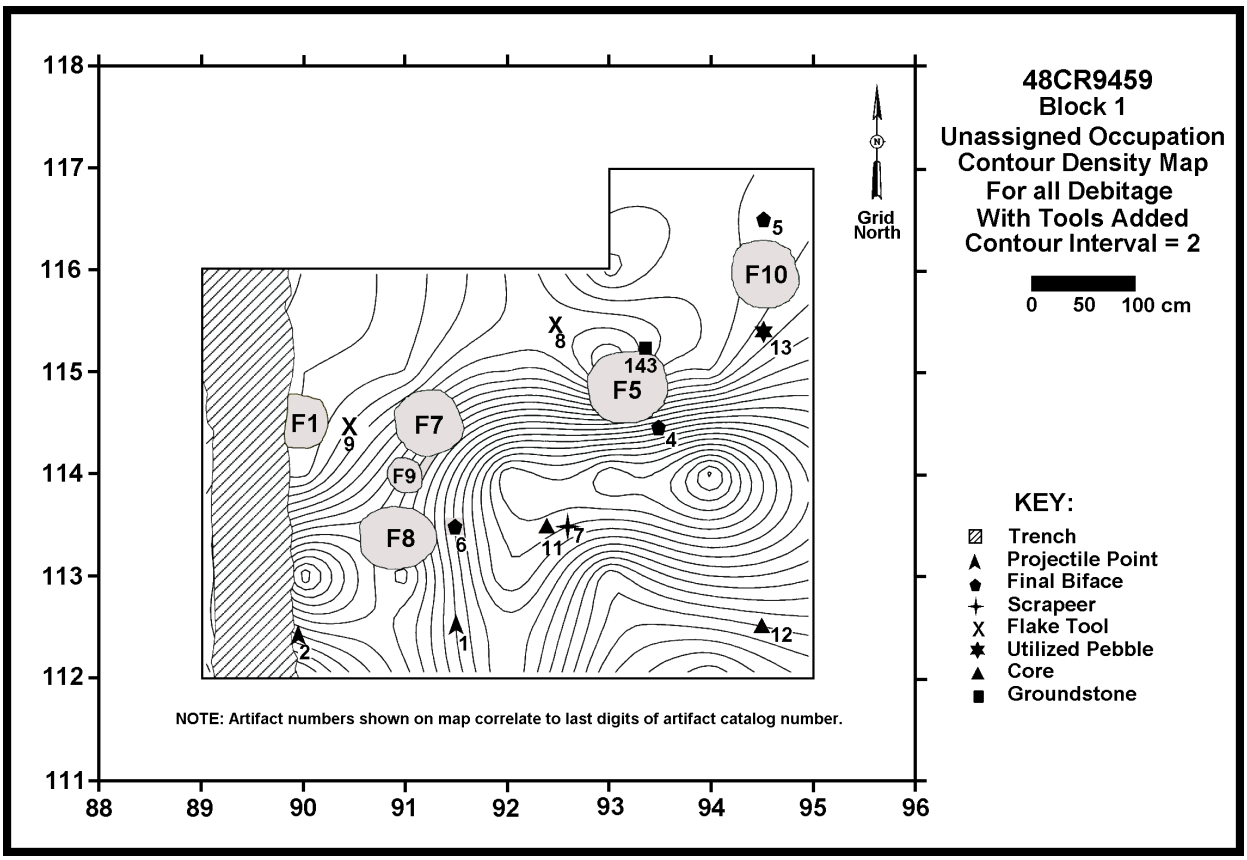

Figure 9: Contour density map for flaking debris recovered from Unassigned Occupation in Block 1 with tool locations added. Tools are plotted in center of 1x1 units in which they were found, with the exceptions of numbers 2 and 143 where more specific locations were known.

Feature 10 (1120±30 B.P). Occupation 2 was represented by radiocarbon dates from Feature 1 (1240±30 B.P.) and Feature 2B (1280±30 B.P). Occupation 3 is represented by Feature 6 which provided the earliest radiocarbon date of 1490±30 years B.P. Blocks 1 and 2 contained Rose Spring projectile points defining the Unassigned Occupation. Most cultural materials recovered during the excavation came from Block 1. In sum, the excavation at the site yielded 612 pieces of lithic debitage, 14 chipped stone tools, two pieces of ground stone, 142 faunal specimens, and ten features. Most cultural material was recovered from the Unassigned Occupation.

The cultural material from Component 1 at 48CR9459 suggests the site occupations consisted of short-term hunter-gatherer camps. Each of the occupations at the site is indicative of small groups of highly mobile hunter-gatherers conducting basic broad-spectrum and seasonally-conditioned subsistence activities as the result of adaptive strategies. These strategies were likely integral to hunter-gatherer life within the context of the high-altitude xeric environment of the Wyoming Basin. The location of 48CR9459 near perennial and seasonal water sources and an ecologically diverse foothill/mountain ecozone was likely a significant contributing factor conditioning the repeated occupation of the locality by Late Prehistoric hunter-gatherers.

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BOOK REVIEW

Strangers in a New Land by J. M. Adovasio and David Pedler. 348 pages, glossary, sources, bibliography and indexes. $49.95. ISBN-10: 1770853634. Firefly Books, Buffalo, New York. 2016.

Adovasio and Pedler's new book is an exciting, entertaining and absorbing account of the First Americans and Peopling of the Americas. It is divided into two parts, the first being a discussion of who the early Americans were, how they got here (or may have got here) and the disparate opinions contained therein. Part Two is divided into four chapters: Clovis and Folsom sites; Disputed Pre-Clovis sites; Legitimate Pre-Clovis sites and Controversial Pre-Clovis sites. Many old friends and some new acquaintances are found in these pages.

The Clovis and Folsom sites discussed include (among others) Folsom and Blackwater Draw in New Mexico, Lehner and Murray Springs in Arizona, Bonfire Shelter in Texas and sites in Pennsylvania, Missouri, several in Alaska and El Fin Del Mundo in Mexico. Disputed Pre-Clovis sites include (among others) Old Crow in the Yukon, the Calico Hills material in California and Pedra Furada in Brazil.

Legitimate Pre-Clovis sites include Meadowcroft Rock Shelter, Monte Verde, Cactus Hill and sites in Oregon, Wisconsin and Texas. Controversial Pre-Clovis sites discussed are Topper in South Carolina, Saltville in Virginia, the Bluefish Caves in the Yukon and sites in Venezuela and Columbia.

The coffee table sized volume has many positive attributes, not the least of which is a rich, colorful and extensive mountain of photographs of artifacts, sites, maps, profiles, illustrations and excavations. The volume is heavily illustrated; most all in color and this alone makes it a must have for anyone interested in Paleoindian studies and issues surrounding Peopling of the Americas. The site descriptions are clear, extensive and insightful. While several sites are well known, others may not be to the average reader, so the volume is an excellent compilation of archaeological data pertinent to the issues surrounding Peopling of the Americas. Want to know more about Pre-Clovis material? This is a book for you! The bibliography is an excellent source for additional resources. The radiocarbon date table is both interesting and intriguing. Personally, I would have liked to see some of Dennis Stanford's East Coast Paleoindian material included, but if one also has "***Across Atlantic Ice,***" you've got it all. ***Strangers in a New Land*** is written by world renowned specialists and the book is a delight to read, enjoy and learn from.

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