

# THE WYOMING ARCHAEOLOGIST



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# THE WYOMING ARCHAEOLOGIST

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# THE WYOMING ARCHAEOLOGIST

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# ANNOUNCEMENTS

## 1999 SPRING MEETING ANNOUNCEMENT

The Wyoming Archaeological Society's Spring Meeting will meet in conjunction with the Wyoming Association of Professional Archaeologists in Sundance, Wyoming, hosted by Ancient Trails Archaeological Society of North-eastern Wyoming. The conference is tentatively scheduled for April 23-25. WAPA will hold their meeting at the Sundance High School Auditorium on Friday, April 23.

On Saturday there will be an opportunity for papers to be presented, in addition to the spring business meeting of the WAS at the High School. Late afternoon, time will be given for people to make their way to Ranch A where a hog roast will be held in place of a banquet. The Community Jazz Band will play prior to the meal and speaker who is Dr. Ken Karsmizki of the Museum of the Rockies, who will be talking on the Lewis and Clark expedition. Dr. Charles Reher has agreed to host tours at the Vore Buffalo Jump and at the rock shelter the university has been excavating near Sand Creek.

Sunday the Hell Gap Foundation will meet. If there is good weather, additional site tours will be held at sites yet to be determined.

Subjects that will be addressed at the business meeting include creation of a web page, Archaeology Month activities, election of officers and other items. We would like to have discussion on how the distribution of materials during Archaeology month whet in 1998 and suggestions of what can be done this fall. Because of our growing interest in the Internet, we would also like local societies to bring their members e-mail address to be published in The Wyoming Archaeologist similar to they way they are in Montana. If you have anything else to add to the agenda, please contact Carolyn Buff, 1617 Westridge Terrace, Casper, WY 82604-3305.

Ancient Trails Archaeological Society, the Wyoming Association of Professional Archaeologists, and the Wyoming Archaeological Society cordially invite the members of the

Montana and South Dakota Archaeological Societies to join us at this meeting. This confirmation, along with registration information and other details will be sent as soon as possible.

Please do not hesitate to contact us if you have questions. We hope to make you all most welcome.

Sincerely,

Cher Burgess, State President  
Wyoming Archaeological Society  
201 South 21<sup>st</sup> Street  
Box 562  
Sundance, WY 82729-0562

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## WYOMING ARCHAEOLOGY AWARENESS MONTH SEPTEMBER 1999

It is time once again to begin planning public activities for Wyoming Archaeology Awareness Month. This year the Archaeology Awareness Month planning committee has chosen to focus on historical archaeology in Wyoming and has selected *Saga of the Frontier: Archaeology of the West* as the theme. We will soon be preparing the calendar of summer/fall events, field trips, lectures, excavations, WAS chapter meetings, and other public programs. The calendar will be published in a brochure and via the Internet, and will include events from May 1 to October 31, 1999. The brochure will be distributed to local chambers of commerce, tourism boards, museums, parks, libraries, and schools. We appreciate the past support you have given Wyoming Archaeology Awareness Month and hope you will again participate by sponsoring an activity that will bring Wyoming archaeology to the attention of the public. Although this year's theme features historical archaeology, please do not feel limited to activities related to the historic era. Our goal, as always, is to inform and educate the public about the value and importance of Wyoming's cultural heritage.

Thank you for your interest in and contributions to Wyoming Archaeology Awareness Month. Please contact Ranel Capron, Bureau of Land Management, Wyoming State Office, P.O. Box 1828, Cheyenne, WY 82003 (Telephone: 307-775-6108; FAX: 307-775-6082), for forms to use for listing your activity in the brochure. All activity notice forms have to be returned to her office by April 1, 1999.

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**SMITHSONIAN ANTHROPOLOGIST  
NEW RAWLINS HIGH SCHOOL  
HALL OF FAMER**

Rawlins (by Tori Adams, Rawlins Times Staff Writer, from the Rawlins Times, May 23, 1998).

A self-proclaimed former "loner" and "geek" was inducted into the Rawlins High School Hall of Fame Friday [May 22, 1998] afternoon, joining 14 politicians, athletes, federal officials, military officers and genuine heroes.

Noted anthropologist Dennis Stanford is the 15<sup>th</sup> inductee in the school's Hall of Fame, which honors graduates who have reached the top of their professions or done heroic deeds.

District 1 School Board member Don Blakeslee who nominated Stanford, called him a Rawlins High School graduate who has found great success in his occupation as an anthropologist."

Stanford works to solve the cosmic questions about the meaning of life. The 1961 graduate "began that search right here in the hills around town," Blakeslee said.

Stanford, who wasn't one of RHS's honor graduates, is chairman of the Smithsonian Institution's Department of Anthropology, where he has worked for 26 years, Blakeslee told an audience of students during an assembly in the Fine Arts Auditorium.

Stanford told the students he remembered being in similar audiences years ago and "wishing the guy up there would just shut up so I could get out of there."

He said during high school he was a "loner" and a "geek" and a very poor student, who preferred being out in the country looking for

rocks, fossils and artifacts along the many historic trails that pass through the area.

His main friends were elderly people who knew the area's history. The parents of many of them had come here on the Oregon, Mormon and Overland trails.

He credits his elderly friends with instilling in him "a love of archaeology" and of nature. He also learned from them "no matter what you do, be the best and never compromise your integrity.

He credited two RHS teachers with helping him squeak by through high school and his elderly and forgetful eighth grade teacher with instilling in him a love of science.

As punishment in her class, he would be sent to stand outdoors in all weather. The teacher would usually forget he was outside and her poor memory allowed him to get back to the rocks and the hills that were his first love.

He knew he would be an anthropologist after seeing Harvard scientists excavate a mammoth from the Chicken Springs site south of Rawlins.

Stanford said the University of Wyoming had to accept him despite his poor grades because it is a land grant school that accepts all state high school graduates.

At UW, Stanford found mentors in noted anthropologist C. Vance Haynes and archaeologist George Frison, who is the only Wyoming scientist ever inducted into the National Academy of Sciences. He called Frison, who attended the induction ceremony, "a fine example of somebody off the farm in Wyoming, who's made an international success of himself."

When Stanford's father wouldn't pay for him to study anthropology, he worked his way through college at the old Foxpark Lumber Mill and washing dishes and cooking in the dorms. He went on to earn master's and doctorate degrees in anthropology from the University of New Mexico and immediately joined the Smithsonian.

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**GEORGE FRISON FINALIST IN  
WYOMING CITIZEN OF THE  
CENTURY COMPETITION**

The University of Wyoming American

Heritage Center (AHC) has established the Wyoming Citizen of the Century program, designed to recognize outstanding Wyoming citizens whose accomplishments shaped twentieth-century Wyoming. Individuals who have made significant contributions in a specific field of endeavor were nominated in the following categories: Agriculture, Business, Education, Fine and Performing Arts, Government & Public Service/Law/Volunteerism, Healthcare, Science & Technology, Minerals, Oil & Gas, Military, Religion, and Sports.

Honorary co-chairmen of the Wyoming Citizen of the Century program are Wyoming Governor Jim Geringer and former Wyoming U.S. Senator Al Simpson. The Council, chaired by Win Hickey, is comprised of Reverend Carl Beavers, Marlene Brodrick, Judy Catchpole, Bill Dubois, Don Hunton, Lisa Kinney, Gordon Mickelson, John Ostlund, Mary Ostlund, Paul Roach, Terry Roark, Peg Shreve, Tom Stroock, Jane Sullivan, Lili Turnell, and Charles Wing. One representative each from the Wyoming Senate and House of Representatives also serve rotating terms on the Council.

Each of the ten committees reviewed the nominees in their category, selecting ten semi-finalists for the consideration of the Wyoming Citizen of the Century Council. The Council then selected one finalist from each category. The names of the ten finalists were made public in January of 1999. Wyoming's Citizen of the Century, chosen from among the finalists, will be announced later in 1999.

**NOMINATION/ELIGIBILITY CRITERIA:**

The candidates were nominated based on the following considerations:

- \* Candidate must have lived in the state during the 20th century, but need not have been born in Wyoming.

- \* Candidate may be living or deceased at the time of the nomination.

- \* Candidate must have made a significant, lasting, and positive contribution benefitting the state of Wyoming.

- \* Candidate may be nominated in more than one category, if appropriate.

- \* Candidate's nomination must include as

complete a biography as possible.

**FINALISTS:** The finalists for Wyoming's Citizen of the Century Program, sponsored by the American Heritage Center at the University of Wyoming have been chosen. Conceived of as a way for Wyoming to celebrate the millennium, almost 200 nominations were received from the public. Committees, made up of volunteers from across the state, reviewed all of the nominations and selected the finalists and winners in each category. Win Hickey, chair of the Citizen of the Century Council, notes "It is a honor to even be nominated." All of the nominees are people who brought honor to the state of Wyoming and those who were selected as finalists should feel especially proud of their accomplishments.

The finalists in the ten categories are: Agriculture: H.A. "Dave" True; Business: H.A. "Dave" True; Community Service; Olaus and Margaret; Education: George Frison; Fine and Performing Arts: Peggy Simson Curry; Government & Public Service: Alan Simpson; Healthcare, Science & Technology: Samuel Knight; Military: Rhodolph Leslie Esmay; Minerals, Oil & Gas: John Wold; Religion: John Roberts; and Sports: Milward Simpson.

The nomination of George Frison read as follows:

George Frison was chosen as the winner in the Education Category. A Wyoming native, he was raised on the family ranch near Ten Sleep, at the base of the Big Horn Mountains. As a rancher and amateur archaeologist, Frison made several important discoveries and at the age of thirty-eight he decided to pursue a degree in archaeology at the University of Wyoming. After completing his bachelor's degree in two years, he went on to the University of Michigan, earning a master's degree and a doctorate in anthropology in three years.

Frison served as state archaeologist and as head of the Anthropology Department at the University of Wyoming for nearly twenty years. During his long career he received recognition for excellence in teaching and positively influenced thousands of students. As the state archaeologist, he visited every part of Wyoming, assisting in archaeological excavations, presenting programs about his work, and helping local museums to build and maintain their displays.

Frison has authored seven books, including Prehistoric Hunters of the High Plains, which

relates the prehistory of the Northwestern Plains, with an emphasis on Wyoming. Considered his most popular work, it been credited with bringing an appreciation of the past and an understanding of the importance of protecting archaeological resources to thousands of Wyoming residents. He is the only Wyomingite ever inducted into the National Academy of Sciences.

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### PUTTING THE BITE ON CRIME

As reported in *Common Ground* (Volume 3, Number 2/3, summer/fall 1998), those caught and convicted of Archeological Resources Protection Act (ARPA) and the Native American Graves Protection and Repatriation Act (NAGPRA) violations are receiving stiffer sentences. For example, Florida's penalty for looting has averaged about \$150. Until now, that is. The brothers Cochran, Arthur and Daniel, must pay nearly \$30,000 restitution for illegally digging a site in the Aucilla Wildlife Management Area, an archaeologically rich locality in northern Florida southeast of Tallahassee. The two were apprehended on March 31, 1997 by Game and Fresh Water Fish Commission officer Robert Daniels. He had spotted a truck near a recently looted site and found the brothers excavating Weeden Island period (ca. 1500 B.P.) stone and ceramic artifacts from the site

Arthur and Daniel plead guilty in state court to the charge of illegal excavation of an archaeological site. State law provides for up to five years imprisonment and a \$5,000 fine each for this offense. I wonder if they figure that they got off light?

\*\*\*\*\*

A bit closer to home, Andrew Fink and Ryan McDonough, both Colorado State University students, plead guilty to misdemeanor ARPA charges for gouging their names in the Peek-a-Boo petroglyph panel in Canyonlands National Park, Utah during the 1997 spring break. The petroglyphs are thought to have been left by Basketmaker people some 1,000 to 2,000 years ago.

One could properly ask if these two are college material. They gouged their names in the

panel, one signature in large block letters measuring 14 feet in length. Investigators matched these names with those on backcountry permits issued to Andrew and Ryan by Canyonlands rangers. Their act qualified as a felony under ARPA since damage to the rock art was assessed at well over \$500. They plead guilty to the lesser charge negotiated between their attorneys and the U. S. Attorney's office. In addition to paying for the cost of restoration of the rock art, more than \$10,000, both received one year of probation and 100 hours of cleaning graffiti from buildings in Denver.

\*\*\*\*\*

A swastika, Satanic symbols and three nicknames were discovered on a prehistoric rock art panel on Bureau of Land Management land near Kanab, Utah. Pleading guilty to a felony ARPA violation, Curtis Cox was sentenced to probation for three years and 50 hours community service and ordered to pay \$2,705 toward restitution. Audra Cox pled guilty to a misdemeanor ARPA violation and received three years' probation. Audra agreed to cooperate with authorities concerning the involvement of a third person named Caruso who's deeply gouged swastika caused the worst damage. Caruso pled guilty to a felony ARPA violation. He agreed to equal Cox's payment toward restitution and was to be sentenced as *Common Ground* went to press.

The photograph accompanying the article in *Common Ground* clearly shows the nickname Beavis at the right. Certainly this is not Audra and one wonders whether it's Curt or Caruso!

\*\*\*\*\*

Richard Lamb of Kanab, Utah sold a Native American skull to an undercover National Park Service (NPS) agent for \$200. He had been brought to the attention of NPS officials in 1995 by local police investigating a small-time drug operation. A confidential informant had told them that Lamb was offering the skull for sale. The informant introduced the NPS agent to Lamb, and the fat was in the fire!

Lamb pled guilty in federal court to one felony ARPA count and one misdemeanor NAG-

PRA count for the sale. He was just finishing a sentence of two years in prison for a drug distribution conviction at the time. The illegal sale cost Lamb probation for five years, 200 hours of community service and \$6,416, the latter to defray NPS costs of determining the right of control over the skull and reburying it.

\*\*\*\*\*

The FBI is investigating whether a group of Virginia archaeologists illegally dug up Indian burial sites for artifacts and jewelry. The Wytheville-based Reed Creek Archeological Society has been under investigation for two years, but the probe wasn't disclosed until Monday. Thomas Klatka, a Virginia Department of Historic Resources archaeologist, said researchers must obtain a permit from the department to conduct a dig. The Reed Creek group failed to get permits, authorities said. According to the search warrant, one witness told the FBI that the society didn't get permits because the requirements were "too difficult." Violators of the permit law face up to 10 years in prison and a \$100,000 fine.

<http://www.jrnl.com/news/98/Dec/jrn73021298.html>

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Charges are pending against three Hailey men cited for allegedly vandalizing a cave on U.S. Bureau of Land Management property in Blaine County. The trio's names have not been announced. Caves on public lands are our national treasures. Caves are nonrenewable resources containing a very fragile ecosystem. The impacts to them can last for thousands of years. Thoughtless acts of vandalism by a few people can permanently damage a cave's natural beauty, and create significant costs for cleanup and restoration efforts.

[<http://deseretnews.com:80/cit/091c5chs.htm> ]

\*\*\*\*\*

A legislative interim committee has endorsed a draft bill clarifying that prohibitions against desecration of bodies applies to ancient American Indian remains. The bill would toughen penalties

against looting of Anasazi sites. Meanwhile, the Utah Attorney General's Office has appealed a Monticello judge's dismissal of a felony grave-robbing charge in the case that prompted the critical look at how well state law protects remains of prehistoric peoples buried on state land.

[ <http://deseretnews.com:80/cit/0c0m8gj2.htm> ]

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John N. Walker and Jeffrey S. Blevins pleaded guilty in federal district court in Richmond, Virginia, to one felony count each of conspiracy to violate the Archaeological Resources Protection Act (ARPA) and were sentenced to four and five months in prison, respectively. They were arrested last April at Petersburg National Battlefield, a protected Civil War site in Virginia. In their possession were metal detectors, entrenching tools, and freshly dug artifacts. Search warrants and interviews led to the recovery of more than 2,000 looted Civil War artifacts from the two men, the largest ARPA violation on record.

After their release, the two will serve a year's probation, including a term of home incarceration equivalent to their jail time, to be monitored electronically. Substance-abuse treatment was ordered for Blevins. Each man was ordered to pay \$25,467.08 in damages to the Department of the Interior, plus \$100 to a crime victims' fund. In handing down the sentence, Judge Richard L. Williams observed that "Civil War buffs are a cult all their own," adding that he hoped "If those buffs who have a craving for artifacts [would] be tempered in the future" and that the sentences would deter those who wished "to invade protected territory."

<http://www.archaeology.org/9801/newsbriefs/looters.html>

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ANCIENT SITES FALL VICTIM TO BULLDOZER 11/25/98 06:06PM PHOENIX (AP)

Mesa anthropologist Jerry Howard's heart aches when he recalls the time a prehistoric Hohokam site outside here was bulldozed into oblivion. The site contained ruins of Hohokam



homes, a stone-lined handball court and a trash dump in the foothills of the Superstition Mountains. A tentative deal had been struck among the developer, the Pima County government and preservationists to preserve the site about 40 miles east of sprawling Phoenix. But the deal fell apart. "They bulldozed the site. It was a real disappointment," says Howard, curator of the Mesa Southwest Museum. "It was a beautiful handball court." Preservationists like Howard are accustomed to the bulldozer winning out over preserving Arizona's ancient past. Weak state laws coupled with strong property rights protections have allowed urban sprawl to destroy and threaten archaeological sites around the state. There's no requirement to protect such sites on private land in Arizona, except for burial areas and construction projects involving federal money or permits. If a site contains prehistoric human remains and burial goods, they must be turned over to Indian tribes for reburial. The state's historic preservation community is largely at the mercy of developers, who vary in their respect for ancient Indian sites and their need to make as much money as possible from their developments. Many of the sites that have been destroyed or at risk contain bits and pieces of the Hohokam civilization, farmers who vanished about 600 years ago after flourishing for 14 centuries. Many of the Hohokam had large pueblos near the Salt River in what is now the Phoenix metro area, where it was easy to irrigate crops. They also created a network of irrigation canals still in use today. "What was destroyed in Phoenix is heartbreaking," said Arizona State University archaeologist Glen Rice, referring to the Hohokam's once-extensive Phoenix area community. "It was one of the largest irrigation systems in the world." The outlook is improving, however. Many developers are becoming more sensitive and interested in helping to preserve Arizona's past, if they can afford to. Some developers also see preservation as a practical way to enhance the value of their subdivisions and office building projects. "Developers are more enlightened today," said Jim Walker, regional director of the Archaeological Conservancy in Santa Fe, N.M. "The developers have realized

that this is something they can deal with." Some developers are taking extra steps to study or save petroglyphs, bits of pottery, traces of canals and other clues. Some developers hire archaeologists to survey or monitor their projects, or remove items for lab or museum study. "It's a matter of education rather than creating new laws," said Tom Simplot, assistant director of the industry group Home Builders of Central Arizona. "As good citizens we recognize efforts to preserve our past while building our future." Both developers and preservationists agree that money, not a callous disregard for the past, is one of the main reasons for building on top of an ancient site. Many developers have outstanding loans that need to be paid off and hiring archaeologists can be expensive. To make matters worse, surveying a site can take too long and cause expensive delays in construction. Major developers can afford to hire experts to survey or perhaps collect artifacts from a site, efforts that can even delay work. "But it can be more problematic for smaller developers," said Ken Plonski, spokesman for the Del Webb Corp., one of Arizona's biggest developers. He said Del Webb's practice is to survey development sites ahead of time. "Sometimes we develop around those areas. Whenever practical, we would like to leave the site in its natural condition," Plonski said.

While many developers warm up to the preservation idea, a few cities are beefing up their rules. Scottsdale requires developers in the city's mountainous northern region to conduct a survey of the archaeological artifacts on their property, although they don't have to do anything about it. Gilbert has turned to using zoning ordinances to protect sites. Through zoning agreements, the city has begun getting pledges from developers to stop work around any archaeological or fossil finds to allow study or removal of the material. Pima County, struggling with the growth around Tucson, is often considered a national model. Developers who want zoning changes must look at archaeology, just as they consider drainage and other technical issues. And they're required to offset any impact the project will have on archaeological sites. Another preservation strategy that is being employed is to buy key sites.

Mesa purchased a 5-acre site containing the ruins of a Hohokam village and platform mound for use as a tourist attraction. "We are losing a lot we don't know about," said Carol Griffith, deputy director of the State Historic Preservation Office. "If we can get developers to survey up front, that's half the battle." To save those sites the state knows about, it comes down to education and promotion, Griffith said. The state already runs a few programs that has volunteers watching over sites while collecting data. Other programs urge cities and towns to turn the sites into tourist attractions. "I think people recognize the value of heritage tourism," Griffith said. "It's a really good source of economic development, especially in rural communities." [see also

<http://www.dallasnews.com/texas-southwest-nf/tsw70.htm>]

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MAN TURNS OVER BASKETS STOLEN 20 YEARS AGO, SUES TO GET THEM BACK  
11/29/98 04:26 PM TUCSON, Ariz. (AP)

A Tucson art dealer who turned over two rare baskets when he learned they were stolen is suing to get them back. Four baskets made by a renowned Washo Indian weaver were taken 20 years ago from the Nevada Historical Society in Reno. The society's director estimates the pieces are worth hundreds of thousands of dollars apiece. Paul Shepard, owner of Primitive Arts Ltd., bought three of the baskets last year. But he turned them over to the FBI after an expert on Washo art recognized them as the ones stolen from the historical society on the University of Nevada-Reno campus. While FBI agents try to find out where the baskets have been for the last 20 years, Shepard is suing the historical society to be declared the baskets' rightful owner. "Mr. Shepard is a good-faith purchaser of the baskets," his attorney, Donn Alpert, told The Arizona Daily Star. "He paid good money for the baskets and there's a legal question whether or not the original owner, the Nevada Historical Society, has a superior claim." Shepard declined to comment. Mark Ghan, an attorney for the state of Nevada, said the civil case could be resolved in two weeks if the Nevada Board of Examiners, the governor,

the attorney general and the secretary of state, approves a \$55,000 settlement with Shepard. The art dealer paid about \$45,000 for the baskets, Ghan said. Steve Martinez, an FBI supervisory special agent, said no arrests have been made in the case and no other pieces of art have been recovered. He declined to discuss who sold the baskets to Shepard. The baskets, each about a foot tall and 15 inches in diameter, were taken from unsecured plastic display cases and somehow smuggled out of the building, police reports say. The historical society recovered the fourth basket in 1980 after an anonymous person returned it for a \$2,500 finder's fee, Ghan said. The baskets were made by Dat So La Lee, who lived from about 1850 to 1925. She made about 120 such baskets in her lifetime from willow branches, roots and bark. Some of the baskets took almost a year to weave. Nevada bought 10 Dat So La Lee baskets in 1945 and put them on display, said Peter Bandurraga, director of the Nevada Historical Society. Since there are so few Dat So La Lee baskets on the market, Bandurraga estimated each one would fetch \$250,000 to \$300,000. Court documents indicate Shepard bought the last three missing baskets in December 1997, but do not give any hints to the source. "It's not appropriate for Mr. Shepard to talk about how he came into possession of the baskets," Alpert said. "Once he discovered there was a pending investigation, he voluntarily turned over the baskets to law enforcement." The FBI took custody of the baskets in January, and had Nevada Historical Society officials store them in their collection storage building. "Right now they (the baskets) are under lock and key," Bandurraga said.

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ARPA SENTENCING JUDGE FLAYS \$\$  
VALUES OF LOOTED ARTIFACTS,  
11/16/1998, 10:18 a.m. MT By Joe Costanzo  
Deseret News staff writer.

Item: A dozen Fremont arrowheads and a partial spear point - \$11,661.

Item: The skeletal remains of an Anasazi infant wrapped in a ceremonial burial blanket - \$137,200.

Those are examples of the "value" that experts attached to unrelated archaeological looting incidents in recent years. But are such price tags meaningful? They are to convicted looters, whose prison sentences are based in part on the estimated dollar value of the loss. And archaeologists say they represent a reasonable attempt to quantify intangible losses. But at least one federal judge has gone on the record calling the calculations "absurd." "These speculative estimates are simply inadequate to measure the true cultural, scientific and spiritual harm such an act causes," U.S. District Senior Judge Bruce S. Jenkins wrote in a strongly worded memorandum opinion released this week. Jenkins addressed the issue while affirming a 10-month prison sentence for John C. Hunter, who recently pleaded guilty in two separate cases involving violations of the Archaeological Resources Protection Act. Hunter and two co-defendants, Kelby T. Chadburn and Linden B. Stucki, were indicted on Nov. 19, 1997, on charges they excavated and damaged an archaeological site at the Santa Clara River Gorge in the Dixie National Forest in the summer of 1995. Earlier this year, Hunter was indicted a second time on charges involving an excavation at the Big Round Valley site in the Dixie Resource Management Area. In all, five to 15 arrowheads and a partial spear point were taken from the sites.

At a sentencing hearing last month, Jenkins was asked to determine whether Hunter was a "leader" or "organizer" of the criminal activity and also apply a dollar amount to the "loss." Those elements figure into federal sentencing guidelines. Jenkins said there was doubt about Hunter's leadership role and refused to increase his sentence level on that score. He then turned his attention to measuring the loss, devoting 14 pages of his 20-page opinion to the subject. Government lawyers put the cost of restoration and repair of the two sites at \$9,661 and added \$34,238 in "archaeological value," for a total loss of \$43,895. As defined by the Secretary of the Interior, archaeological value is the "value of the information associated with the archaeological resource." In other words, it's what it would have cost the government to conduct a complete archaeological dig at the site.

The 10th Circuit Court of Appeals upheld the use of archaeological values in sentencing calculations last year in a case involving one of Utah's most notorious pot hunters, Earl K. Shumway. He was accused of excavating the skeletal remains of an Anasazi infant, taking the burial blanket and leaving the damaged remains on the ground. In the Shumway case, the appeals judges said the "paltry sum of \$9,122" for the restoration and repair of the site failed to adequately reflect the true damage. Based on that finding, they affirmed U.S. District Judge David Winder's calculation, which included an archaeological loss of \$137,200.

Unlike Shumway, however, Hunter didn't disturb a burial site or remove any items of great archaeological importance, Jenkins said. In fact, the judge noted that if Hunter had removed arrowheads from the surface of the ground instead of digging for them, he could not have been prosecuted under the Archaeological Resources Protection Act. But that's not to say that the damage caused by Hunter is limited to the \$9,661 cost of restoration and repair of the site, Jenkins said. "Although the United States can backfill the holes dug by Hunter and grade the site to reflect their pre-excavation topography, because the sites are no longer in pristine condition, they have been diminished," the judge said. With that, Jenkins tacked an additional \$2,000 on to the value of the loss for "aesthetic diminishment," which he said represented his own admittedly subjective estimate. It also represents a first in archaeological damage calculations in Utah. However, Jenkins rejected the government's archaeological value estimate of \$34,238, even though several nationally recognized archaeologists endorsed it as an accurate assessment of what was lost. According to the judge, such estimates are unreliable. For example, Jenkins recalled that Chadburn was sentenced to eight months in prison based on a calculated archaeological value loss of \$15,645. Meanwhile, Stucki, who pleaded guilty to the same offense as Chadburn, received 36 months probation based in part on a loss estimate of \$2,107. "This difference highlights what the court considers the less than reliable nature of some of

these valuations," Jenkins said. Archaeological value estimates present a "fiction" based on what it would have cost to excavate the site and study the artifacts if the site had never been disturbed. "The problem with this fiction is that it does not reflect reality. The reality is that the site was excavated, albeit unlawfully, and all that was uncovered were some arrowheads," Jenkins said.

But the value goes beyond the arrowheads, which Hunter turned over to the government along with his entire personal (and legally acquired) archaeological collection, the judge added. "In the court's view, what has been lost is the context in which the arrowheads were found. In other words, what the United States has lost is the information concerning the location of the arrowheads to one another, their exact location at the sites when uncovered, and whether they were recovered with or nearby any other items of archaeological import." And in such cases, "sentencing a defendant based on the estimated dollar value of the loss, however calculated, is absurd," Jenkins said. "How can one ever quantify the harm to a native people whose ancestral burial grounds may have been desecrated?" A better approach, according to Jenkins, would be to leave the sentencing decision to the judge, "who may then measure the harm in terms of his or her experience and common sense, rather than asking the judge to rely on speculative assessments and fictional scholarship in an attempt to quantify the harm in a way that bears little or no relationship to the true damage."

Kevin T. Jones, archaeologist for the Utah Division of State History, said he agrees with some of the sentiments expressed in the opinion but not the conclusions. "The subjective aspect is real," Jones said. "I truly consider these as priceless, priceless treasures from the past. It's very painful to see people destroy them for personal gain without a second thought." Most of the stolen, damaged or destroyed artifacts are irreplaceable at any cost, Jones said. And there is no way to put a price on the loss of "context" that Jenkins spoke of. "We'll never know what else was at the site. Part of the story is lost forever." At the same time, the law requires some sort of measure of the damage, and assigning archaeological value is a "reasonable way" to do

that, Jones said. "It's not fictional," he said. "As archaeologists, we prepare dollar estimates all the time on the cost of excavation and the associated work. We know how much it will cost to do a dig." In Utah, there are about 50 archaeological consultants who regularly calculate the cost of scientific digs or excavations related to construction activity. The methods used are "systematic and repeatable," Jones said. "If I made an estimate, another archaeologist coming from the same perspective would arrive at a similar value," he said. Jones said leaving the assessment to individual judges, as Jenkins suggests, could make matters worse because one judge might highly value archaeological sites while another considers them insignificant. "That's the problem with subjective measures; you never know what you're going to get," he said.

[ <http://www.swanet.org/caliche.html> ]

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#### STOLEN DINOSAUR FOOTPRINT RECOVERED IN AUSTRALIA

January 7, 1999; Web posted at: 2:59 a.m. EST  
(0759 GMT)

PERTH, Australia (AP) A stolen 120 million year old dinosaur footprint has been recovered by police, a year after it was hacked from a slab of rock in one of Australia's most significant fossil sites.

Police in Broome, on Western Australia's northwest coast, recovered the print believed to be that of a Stegosaurus on December 30.

"We know there have been some attempts to sell it in Asia, but perhaps because of its size and weight or for whatever reason they've been unsuccessful," Broome's Senior Police Sgt. Geoff Fuller said Thursday.

He refused to say how police came across the fossil. Each of the three toes of the large print measures six inches (15 cm). The 66 pound (30 kilo) block of rock in which the print is embedded measures 23 inches (60 cm) by 15 1/2 inches (40 cm) and is five inches (13 cm) deep.

Two Broome men were arrested in November after local Aborigines reported the dinosaur print and three 7,000 year old human footprints missing from sacred sites at Crab Creek and Lombardina,

both near Broome.

"They've been cut out of the rock with an angle grinder, and because it's layered rock, they just had to smack it on the bottom and it would have dislodged," Fuller said.

Although the dinosaur print had yet to be examined and verified, Western Australia Museum curator of vertebrate paleontology Dr. John Long believed it could be one of a series of prints forming the only known stegosaurus track in the world.

"For dinosaur prints this is one of the two most important sites in Australia. They fill in a big blank in Australia's dinosaur diversity that you don't get from the scant skeletal remains," Long said.

"It's also of great significance to the local Aborigines; the footprints are known as the footprints of 'the giant emu man' from their dreamtime."

The human footprint fossils remain missing.  
[From CNN Interactive:  
<http://cnn.com:80/WORLD/asiapcf/9901/07/fringe/stolen.fossil.ap/> ]

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#### CHAPTER PROGRAMS AVAILABLE

Each year several requests come into the Wyoming State Archaeologist's office regarding possible programs for monthly chapter meetings. This year we have prepared a list of some of the current research topics that various people are working on, which your membership may be interested in, although it is not an exhaustive list of what may be available from Laramie. These presentations generally include slides and last from 45-60 minutes.

If your chapter is interested in a particular program for an upcoming meeting, please call one of these presenters at the phone number provided. Please also be prepared to discuss any arrangements for audio-visual equipment and funding or travel expenses. Some of these presenters are students with limited resources and often they have no financial support for their research. It is anticipated that you will make all necessary arrangements with the presenter during

your phone conversation.

Thank you for your continued interest in the research activities in Laramie. Best of luck with your meeting schedule for 1998-1999.

*Rich Adams* "Early Man and Rock Art in South Africa." Phone (307)766-5301.

*Rich Adams* "Central Siberian Archeology." Phone (307)766-5301.

*Rich Adams* "Pipes and Bowls: Soapstone Artifacts in Wyoming." Phone (307)766-5301.

*Rich Adams* "Stonewall Buttes: Prehistoric Structures in the Powder River Basin." Phone (307)766-5301.

*Rich Adams* "Natural Science is Not Just for Nerds." (for schools). Phone (307)766-5301.

*Judy A. Brown* "Archaeological Curation at the University of Wyoming Repository." Phone (307)766-5301.

*Cher Burgess* "Working With Middle School Kids on Historical Archaeology at the Muhlbauer Site in the Black Hills." (A Visit With Your WAS President) (307)283-1154 or (307)283-1200.

*Dan Eakin* "Archaeological Investigations on the North Fork of the Shoshone River." Phone(307)766-5301.

*Dr. Robert Kelly* "Ethnoarchaeology Among Mikea Hunter-Gatherers of Madagascar." Phone (307)766-5136.

*Dr. Marcel Kornfeld* "Paleoindian in the High Country: Middle Park, Colorado." Phone (307)766-5136.

*Dr. Marcel Kornfeld* "Hell Gap Revisited: Paleoindian Cultural Chronology and Other Problems." Phone (307)766-5136.

*Dr. Mark E. Miller* "Archaeology, History and the Wagon Box Fight of August 1867." Phone (307)766-5301.

*Dr. Mark E. Miller* "Early Archaic Pronghorn Hunting in the Upper Green River Basin, Wyoming." Phone (307)766-5301.

*Dr. Mark E. Miller* "Historical Archaeology at Fort Fred Steele, Wyoming." Phone (307)766-5301.

*Laura Niven* "Variability in Seasonality of Archaic Bison Kills." Phone (307)745-8210.

*Laura Niven* "1997 Excavations at Upper

Paleolithic Sites in the Russian Far East."  
Phone (307)745-8210.

*Dr. Danny N. Walker* "Archaeological  
Looting in Wyoming." Phone (307)766-5565.

*Dr. Danny N. Walker* "Excavations at the  
Baldwin Trading Post and Sand Draw Dump  
Sites. Phone (307)766-5565.

*Dr. Danny N. Walker* "Searching for Fort  
William on the Laramie." Phone (307)766-  
5565.

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# THE LEMBKE HOUSE AT SITE 48CO1712

by  
Kerry Lippincott

## ABSTRACT

The Lembke House at site 48CO1712 may be the first Plains Archaic Period house structure excavated in the Powder River Basin of eastern Wyoming. The structure's excavation provided an unparalleled opportunity to investigate prehistoric domestic architecture, settlement-subsistence systems, and geoarchaeology. The house was identified in late autumn, 1993 and excavated during late spring, 1994, through the cooperative efforts of the Kerr-McGee Corporation, the Bureau of Land Management, and Carl and Ethel Lembke, avocational archaeologists from Glenrock, WY. Feature 6 at the site was the partial remnant of a roughly 3.2 by 2.7 m structure with a charcoal-stained floor. Interior features included a portion of a shallow basin central hearth (Feature 9), three other deep, circular basin features (Features 3, 4, and 10), and several possible perimeter post molds. Two exterior features were only partially excavated. Artifacts were limited to an anvil stone, a chert tertiary flake from the house floor, and six micro flakes recovered during waterscreen processing of feature fill. Faunal materials were limited to lower limb elements of a pronghorn or deer, and other unidentifiable mammal bone fragments. Macrobotanical analysis of the feature fill identified *Artemisia* (sagebrush), *Sarcobatus* (greasewood), wood charcoal, and charred seeds of local plants. A pollen wash from the anvil stone yielded pollen from pine, sagebrush, greasewood, several members of the sunflower family, and grasses, among others. A blood residue analysis from the anvil stone tested positive for the presence of bear antiserum. Radiocarbon determinations indicate the structure was in use during the period between 3520 and 2570 B.C.

## INTRODUCTION

Site 48CO1712 was discovered on July 9, 1991 by Bureau of Land Management (BLM) personnel along the main access road leading to Kerr-McGee Corporation's Sand Draw central processing facility. Four charcoal-stained buried hearths were seen in the road's north barrow ditch and found to be within the access road permit area. Later (September 1991) inspection of a Belle Fourche Pipeline Company's open pipeline trench revealed three additional buried basin-shaped or lenticular features in the trench side walls. Because of damage to the site by two companies, the BLM determined mitigation responsibility for the two areas of the site would be shared by the two companies, each responsible for specific impacted portions of the site. Separate archaeological mitigation contracts were awarded by Belle Fourche Pipeline to Pronghorn Archaeological Associates and by Kerr-McGee Corporation to John Albanese. It was discovered during excavations by John Albanese, additional disturbance to the site had occurred when a buried telephone cable had been installed between the access road and the buried pipeline. Site 48CO1712 was far from "pristine."

## ENVIRONMENT

Site 48CO1712 is located within the Powder River Basin (Figure 1), a large geologic structural basin, 400 km NNW-SSE by 180 km WSW-ENE, which occupies northeastern Wyoming and southeastern Montana (Albanese 1990). The immediate project area is within the Pine Ridge physiographic zone. This zone consists of extensive northwest to southeast trending ridges extending from north of Glenrock to north of Kaycee, Wyoming (Phillips and Goss 1994). The

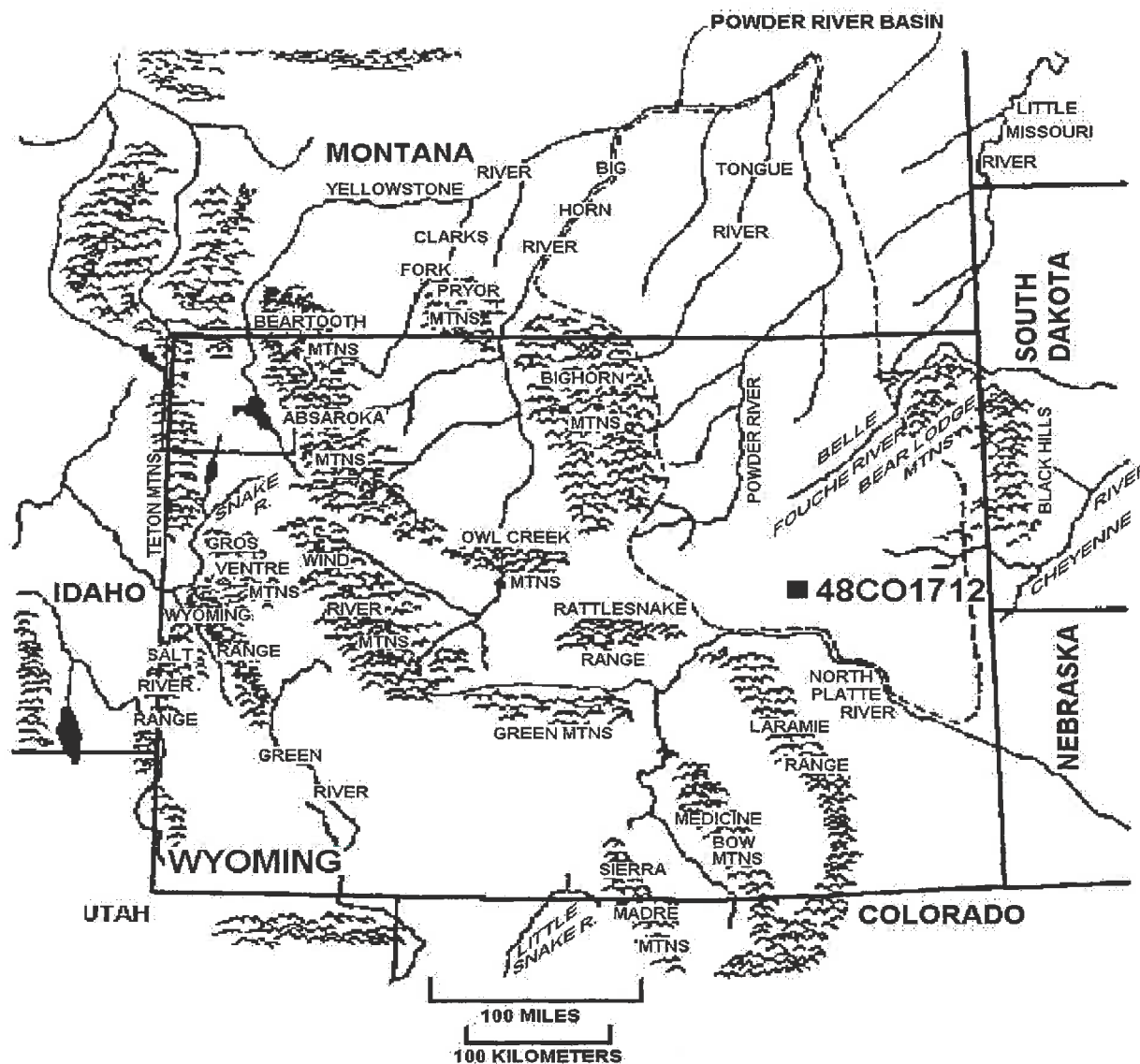


Figure 1: Location of site 48CO1712 within the Powder River Basin, Wyoming.

site itself is at the foot of a southeast facing slope of a southwest to northeast ridge. Site 48CO1712 lies within the valley of the South Fork of the Dry Fork of the Cheyenne River. The Cheyenne River flows eastward, through the southern end of the Black Hills, and joins the Missouri River in central South Dakota. Seasonal water may have been available in the South Fork of Dry Fork, but the nearest permanent water is in the North Platte River, some 20 km south.

Vegetation in the site area is dominated by sagebrush, prickly pear and various grasses, including needle-and-thread, western wheat grass, buffalo grass, and Indian ricegrass. Cheat grass is a recent, introduced species. Limber pine trees were noted on the next adjacent ridge south. Animal species observed or expected in the area included pronghorn, mule deer, jackrabbit and cottontail, coyote, fox, badger, and small rodents. Various songbirds, sage grouse, and small and large raptor species inhabit the general area on a



seasonal or permanent basis.

**HISTORY OF INVESTIGATIONS  
PRONGHORN ARCHAEOLOGICAL  
SERVICES TESTING, 1993-94**

Pronghorn Archaeological Services held the contract from Belle Fourche Pipeline Company to mitigate the buried pipeline's impacts to the northern portion of the site (Figure 2). Besides the three features exposed in the pipeline trench, four separate block excavation units exposed six more basin-shaped or irregular hearth features. Four features were identified in Block 1 (22 square meters), the western most excavation and five were from Block 4 (25 square meters), the eastern most excavation. No features were identified in Blocks

2 (eight square meters) and 3 (11 square meters), the central excavations. All of the features in Block 1 and four of the five in Block 4 were located at a depth of from 70 to 100 cm below the present ground surface. Lithic artifacts from Block 1 included a sandstone mano, a moss agate disc-shaped scraper, a brown chert crescent shaped biface, 13 pieces of chert and one piece of quartzite debitage. Artifacts from Block 4 were limited to 12 pieces of chert debitage. Flotation samples were taken from most of the features. Identifications of charred specimens included goosefoot and goosefoot seed embryos. Sagebrush and saltbush charcoal was also identified from the features. Radiocarbon samples were taken from all the features. Faunal remains

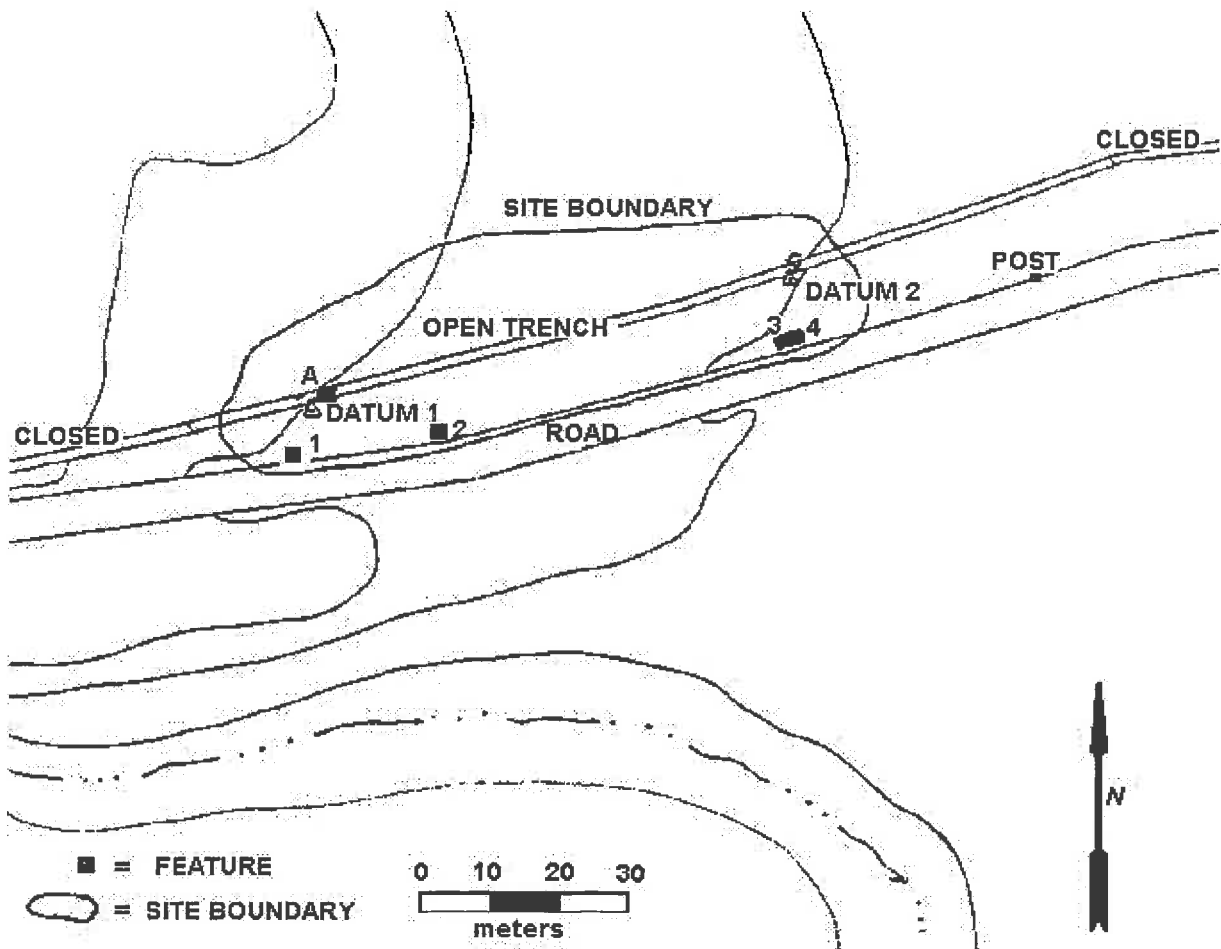


Figure 2: Location of pipeline trench and road impacts to 48CO1712.

were limited to fragmentary and fragile bone fragments. Only two out of 285 fragments were possibly identifiable. One was a distal metapodial from a large mammal, possibly bison, and the other was a tibia diaphysis fragment from a medium/large mammal, possibly deer or pronghorn, or, less likely, a bighorn sheep. Dates from features in the 70 to 90 cm stratum ranged from  $3030 \pm 70$  to  $5110 \pm 160$  B.P. (Phillips and Goss 1994). A time range for occupation from 4,000 to 3,000 B.P. was best represented from features in this portion of the site. The excavators felt the major occupation at the site was from the Middle Plains Archaic, 2,500 to 5,000 years B.P. (Phillips and Goss 1994).

#### ALBANESE TESTING 1993 AND 1994

Testing at Site 48CO1712 was begun in October 1993 to salvage four charcoal-stained features exposed in the road right-of-way (Figure 2). Features 1 and 2 were exposed and excavated. They were basin or pit-shaped, charcoal filled depressions. Upon excavation the two remaining features, Features 3 and 4, were found to be connected by a larger charcoal stain suspected to

be a buried basin or saucer shaped house floor, 3.0 to 4.0 m in diameter. Upon identification of the possible house floor, excavations were halted, the site covered for the winter and plans made for more complete excavations when weather permitted (Albanese and Lippincott 1994).

1994 excavations began on May 4 and were completed on May 27, 1994. The permanent excavators consisted of John Albanese and Kerry Lippincott with Carl and Ethel Lembke (Figure 3) serving as virtual full time volunteers. In order to acknowledge Carl and Ethel's contribution to these excavations, the excavated house floor was named after them, somewhat in the manner of Mug House or Spruce Tree House at Mesa Verde.

#### GRID SYSTEM

The grid system for the 1994 excavations was a continuation of the system used in 1993. It consisted of 1.0 x 1.0 m squares tied into the Pronghorn Archaeological Services grid system. The 1994 grid was a 5.0 x 5.0 m square centered directly over the limits of Feature 6 and extended from 79E/15S to 84E/15S and from 79E/19S to



Figure 3: Carl and Ethel Lembke, from Glenrock, Wyoming, at work during excavations at 48CO1712.

84E/19S. Not all of those squares were excavated. Only one excavation unit along the 17S line, unit 84E/17S, was excavated. Excavation along this line was discontinued after an intrusive, possible telephone cable trench, was encountered along the north edge of the unit.

**METHODOLOGY**

Excavations were conducted in ten cm levels as measured from the north (back) wall of the unit. All excavated materials were passed through a 1/4" shaker screen until slightly above the level of the suspected Feature 6, when a 1/8" screen insert was placed into the shaker screen framework. Notes were kept for each excavation level on standardized level forms. Floor plans were drawn when the floors exhibited distinctive color changes or patterns. Plans were made of the upper expression of the charcoal stain in each unit, the charcoal-stained sand was removed with trowels until culturally sterile brown sand was encountered and the excavated version of the floor plan was drawn again. Photographs were taken at each of these stages. Photographs were also taken of the excavations in progress and of individual features of interest. Soil samples were taken from individual excavation units when the Feature 6 house floor was reached. Feature fill from features 7, 8, 9 and 10 was collected as in toto bulk samples for macrobotanical analysis and water screening through 1/16" mesh window screen. Because of other commitments and reduction in funding, the waterscreening was not completed until about a year after the excavations.

Features and the possible post molds were excavated by means of initial surface troweling. A plan view was drawn and photographed, then

the features were cross sectioned, with the profile drawn and photographed. The remaining half was cross sectioned again, drawn and photographed. The final quarter of the possible feature was then removed and saved as a bulk sample. All excavated material was passed through the 1/8" screen. Notes and evaluations were made of the possible feature, its contents and possibilities for post mold status.

**EXCAVATION RESULTS**

**FEATURE 6**

Feature 6 was the designation given to an originally rather amorphous area of charcoal staining extending as a dish or basin shape in the north wall profile of units 81 through 83E/21S and as a charcoal-stained arc across the floor of unit 80E/20S (Figure 4). The feature was suspected to be a portion of a buried, charcoal-stained house floor when test excavations were completed in 1993 (Albanese and Lippincott 1994).

Excavations were undertaken in culturally

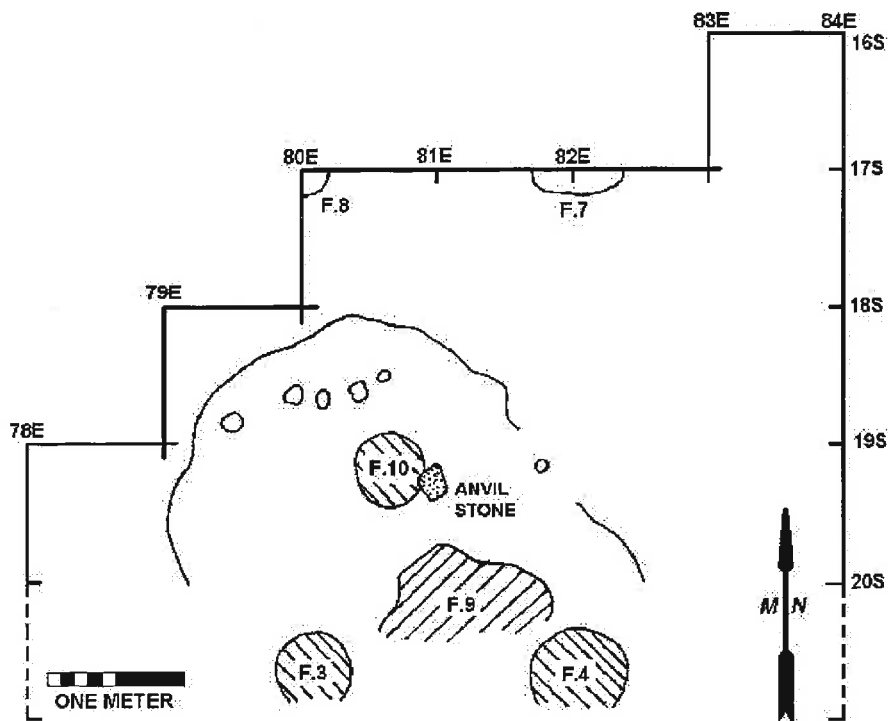


Figure 4: Area of excavation, Feature 6 (house floor) and other features .

sterile sand until the first hints of charcoal staining were encountered. This charcoal staining was a continuation of the charcoal-stained arc exposed in units 80E/19S. The perimeter of this arc continued in a well-defined manner through units 80-82E/19S and was less well defined in unit 83E/20S. When the perimeter had been identified, a stratigraphic cross section trench, 0.5 m wide, was excavated north-south along the 82E line to profile the house floor.

Upon confirmation that Feature 6 was a house floor, excavations continued using only hand tools. Excavation showed the remaining house floor remnant was a rather oblong shape, measuring 3.2 m NW-SE by 2.7 m NE-SW. The NW-SE dimension is only a partial measurement since the southern portion of the house floor had obviously been removed by road construction. It was shown to have a flat, inclined floor, approximately 5.0 cm deep, curving up gently at the edges. Four interior features, a possible central charcoal-filled hearth (Feature 9), two charcoal-stained sand filled pits (Features 3 and 4), and a pit filled with fire fractured sandstone fragments in the upper half and a lower half filled with charcoal-stained sand (Feature 10) were located within the house floor perimeter.

### INTERIOR FEATURES

#### *Feature 3*

Feature 3 was the deepest interior feature and contained the largest volume of material (Figure 5a). It measured 53 cm E-W by 43 cm N-S at the surface and extended to a depth of 51 cm. The southern most portion had been partially removed by road grading. The surface expression was a dark gray to black soil stain in the drainage ditch sidewall.

*Level 1, 0-10 cm.* The matrix was a combination of dark, charcoal filled sand with occasional small inclusions of clean, light brown sand. The walls were close to vertical. There were some small completely charred twigs included within the matrix, plus small areas of orange, oxidized sand and a few small pebbles. Waterscreening the matrix produced three unidentifiable bone fragments.

*Level 2, 10- 20 cm.* The second level's matrix

was more completely composed of charcoal and sand. Bone fragments were encountered along the western wall. These were small, flat fragments with interior cancellous tissue, which appeared to be rib fragments, and a complete, although heavily surface eroded, patella. These fragments appeared to be from a medium to large mammal, possibly a deer or pronghorn. Waterscreening yielded an additional six unidentifiable bone fragments and a debitage micro-flake.

*Level 3, 20-30 cm.* The sidewalls began to be slightly undercut, with the beginning of the bell shape, as shown in the profile. The matrix continued as above. One fist sized and one half-fist sized piece of argillaceous sandstone were encountered along the western feature margin. The eastern margin had more oxidized (orange) sand along the edges. Waterscreening produced a possible artiodactyl rib fragment and six unidentifiable bone fragments.

*Level 4, 30-40 cm.* The sidewalls continued to expand along the west, while they began to contract along the east edge. The orange, oxidized sand was prevalent along the east wall. This oxidation zone was up to 1.0 cm in thickness but was not regular along the entire wall. Two small pieces of unidentifiable bone fragments came from waterscreening this level.

*Level 5, 40-51 cm.* Within the feature matrix, the materials were the darkest, most homogeneous black sand of any level of the feature. The walls began to slope gently toward the bottom. The feature bottom was a smooth, gently curving continuation of the sidewalls into the bottom. The feature bottomed out at 51 cm below the surface, but the additional 1.0 cm of matrix was included in the Level 5 bulk sample. No cultural materials were found when the matrix was waterscreened.

The marked undercutting of the sidewalls, as shown in the cut bank profile, proved to be an artifact of drainage ditch maintenance by a road grader or other heavy machinery. During excavation, vertically oriented strata showed as an outer smear of dark, charcoal-stained sand about 1.0 cm thick and an inner layer, about the same thickness, of sterile, medium brown sand. Both artificial, machine-made strata were pressed

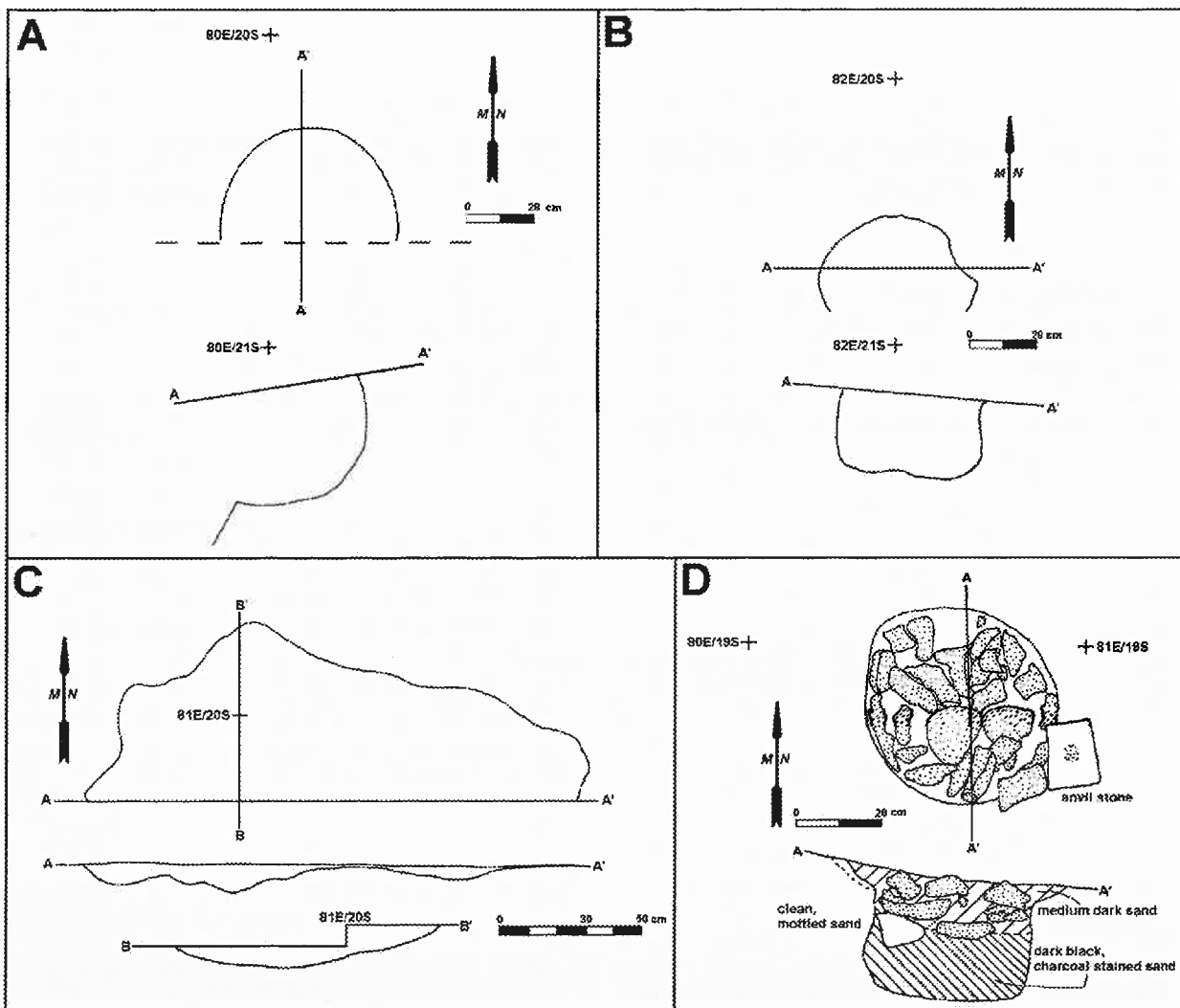


Figure 5: Plan view and cross-sections of features. A=feature 3; B=Feature 4; C=Feature 9; D=Feature 10.

against and into the original, dark black, charcoal-stained sand.

An eleven-liter sample from level 5 was processed for macrobotanical remains. The sample produced wood charcoal from *Artemisia* sp. (sagebrush) and *Sarcobatus vermiculatus* (greasewood). The latter was most likely used as fuel for the fire producing the charcoal. One charred seed was identified as *Artemisia tridentata* (big sagebrush) which most likely adhered to a branch of the firewood. The seeds of big sagebrush mature from early to mid fall. Three charred seeds were identified as *Chenopodium* sp.

(Goosefoot or Lamb's quarters). All seeds of this genus are basically edible and are known to have been an important food plant for aboriginal populations. Goosefoot is the most common charred seed recovered from fire pits in Wyoming and has been interpreted as a local prehistoric food staple. One other charred grass seed fragment, cf. *Bouteloua* sp., was recovered. This was identified as a possible grama grass fragment. The other botanical specimen was a possible *Opuntia* sp. spine fragment. *Opuntia*, or prickly pear, was a widely used prehistoric food item. The fleshy fruits, or tunas, seeds, and pads are all

recorded as food items in the area (Guernsey 1994).

#### Feature 4

Feature 4 was located only about 2.0 m east of Feature 3. While Feature 3 was divided by the north-south 80E grid line, Feature 4 was virtually bisected by the 82E line (Figure 5b). This feature had also been exposed during road ditch grading and was exposed in the sloping berm or road cut bank and in the vertical wall of the road drainage ditch. The surface expression of the feature was a roughly circular opening, 45 cm in east-west diameter and about 30 cm north-south as it sloped from the vertical cut bank up the berm. Depth was approximately 20 cm.

Excavation again took place in two parts, first in 82E/21S and second, in 83E/21S. The first excavated level was the portion of the feature from the exposed surface to about 11 cm below the surface. The matrix was a black, moist, charcoal laden sand with small pieces of twig charcoal. Waterscreening produced a tertiary or interior flake of black, grainy quartzite, a deer or pronghorn left central incisor, and a fragment of unidentifiable bone. There were a couple of small tabular rock fragments of local, argillaceous sandstone within the feature fill. The feature margin was slightly irregular in the northeastern quadrant but was otherwise readily defined.

The second level extended from 11 to 18 cm below the feature's surface origin. The feature matrix in the western half was the same as above, while the eastern side had more light brown sand mixed into the otherwise darkly charcoal-stained sand. There was also some possible reddened, oxidized sand around the northeastern periphery. The feature wall along the west side was vertical to slightly undercut, while the east wall appeared to have some original wall slumping or other irregularities.

Level 3 extended from 18 to 24 cm, the bottom of the feature. The matrix continued as a dense black charcoal and sand mixture in the central portion, with the beginnings of light to medium brown sand along the outer walls and floor bottom. The floor in the eastern half was about 2.0 cm deeper than in the western half. With the complete

excavation of the feature it was possible to determine the irregularity along the east sidewall originally interpreted as aboriginal slumping was actually caused by the recent auger or drill hole excavated for the placement of a protective pipe box around the feature.

Waterscreening the matrix from Level 3 produced four calcined, unidentifiable bone fragments. Eleven liters of hearth fill were floated and analyzed from Feature 4. Two samples were analyzed, one from Level 2 and the other from Level 3. The wood charcoal was mostly *Artemisia* sp. with smaller amounts of *Sarcobatus vermiculatus*. Charred remains included two seeds from *Bouteloua* sp., an *Opuntia* sp. spine fragment, and a spore case from a mycorrhizal fungus. Interpretation of the grama grass seed and prickly pear spine follows Feature 3, while the fungus spore case is recognized as common but of unknown significance (Guernsey 1994).

#### Feature 9

A large, rather amorphous, heavily charcoal-stained feature that may have been a shallow basin-shaped central hearth was designated as Feature 9 (Figure 5c). It measured 170 cm E-W by 65 cm N-S. The N-S dimension is incomplete since the southern portion of the feature had been removed by the angled road berm. The upper surface of this feature was originally exposed during the 1993 testing but was not identified at that time. It wasn't until a larger area of the feature was exposed during the 1994 excavations that Feature 9 was distinguished from the general charcoal staining of the house floor. Feature 9 (Figure 5c) was generally bisected by the 81E grid line and by the 20E line.

Waterscreening the feature matrix produced two micro debitage flakes (a black grainy quartzite interior tertiary flake fragment and a brown chert interior tertiary flake fragment) from the northeastern quadrant, and three micro debitage flakes (a black grainy quartzite interior tertiary flake with a bulb of percussion, a red jasper-like chert biface trimming, or resharpening, flake with a bulb of percussion, and a light brown chert interior tertiary flake with a bulb of percussion) from the southeastern quadrant. A

deer or pronghorn (more likely pronghorn) left carpal cuneiform was recovered from the northeastern quadrant and a deer/pronghorn long bone fragment came from the southeastern quadrant. One unidentifiable bone fragment also came from the southeastern quadrant and five unidentifiable tooth fragments came from the southwestern quadrant.

#### *Feature 10*

Feature 10 was an intact rock filled pit located in the northeast corner of 81E/20S, north of Feature 9. The feature was first identified through the exposure of several of the oxidized sandstone, fire fractured rocks of its upper surface during the exposure of the Feature 6 house floor. When the house floor was fully exposed, Feature 10 developed into a heavily charcoal-stained, roughly circular area filled with fire fractured rock (Figure 5d). For excavation the feature was bisected and excavated in a west half and east half portion. Because of the extremely dense packing of fire fractured rock in the feature's upper half (129 rocks weighing over 38.5 kg) excavation levels were limited to 8.0 cm depths. The lower half, filled with heavily charcoal-stained sand, was much easier to excavate but the 8.0 cm levels were continued.

*Level 1, 0-8 cm.* This level was a combination of tightly packed fire fractured argillaceous, hematitic sandstone and an infilling of moderately dark charcoal-stained sand. As mentioned above, excavation was possible to only a depth of 8.0 cm because of the pervasiveness of the rocks. Twenty-three individual fragments weighing 6.9 kg were collected from both halves of the feature in this level. Five pieces of unidentifiable bone fragments were recovered from the waterscreen.

*Level 2, 8-16 cm.* This level was a continuation of the above situation, with excavation possible only after the protruding rock fragments of Level 1 had been removed. Charcoal-stained sand was in the minority while 48 rock fragments were recovered weighing 11.9 kg. Five pieces of unidentifiable bone were also waterscreened from this level. Excavating the western half of the feature, it seemed the rock fragments had been pushed and shoved into and

beyond the feature margins. Upon excavation of the eastern half, this was seen to be a dense infilling of the feature to its original margin, but the rock fragments had not been pushed beyond the feature limits.

*Level 3, 16-24 cm.* The upper portion of this level was a continuation of Levels 1 and 2, densely packed fire fractured rock, but at the bottom the rock fragments ceased and the matrix changed into a moist, heavily charcoal-stained black and dark brown sand. Fifty-six pieces, weighing 19.1 kg, were recovered from the east and west portions of this level. An irregular area in the northern portion was composed of reddened oxidized sand. The southern margin of the feature remained vertical but the northern margin expanded slightly. One small, identifiable bone was recovered from the bottom of this level. It was identified as an artiodactyl (*Antilocapra americana* or *Odocoileus hemionus*) proximal sesamoid. Two pieces of unidentifiable bone were also recovered.

*Level 4, 24-32 cm.* This level contained a matrix of solid, heavily charcoal-stained sand and two pieces of firecracked rock weighing about 0.5 kg. Completely charred twigs were noticeable in the matrix but were too fragile to preserve. The southern margin began to inslope slightly but the northern margin continued with the slight outslope mentioned above to a maximum diameter of 50 cm at 27 cm below surface.

*Level 5, 32-40 cm.* Matrix continued as above. Slight insloping continued on the southern margin, while the northern margin began a gentle but noticeable incurving.

*Level 6, 40-46 cm.* The matrix of this level was composed of heavily charcoal-stained sand and mottled sand. Matrix began to contain significantly more culturally sterile sand with the lower margin designated by mostly mottled light brown sand and charcoal-stained sand. Individual charred twigs were probably responsible for the discrete charcoal stains.

The bottom of the feature was flat but slightly upsloping from south to north. The floor met the sidewalls in a shape curve on the south side and a more gentle, rounded curve on the north side, a

continuation of the incurving north wall. The bottom of the feature was measured at 48 cm deep at the north edge and 45 cm at the south edge.

Three five-liter samples were analyzed for macrobotanical specimens, one from Level 1, E ½ and one from Level 4, E ½, and one from Level 5, E ½. The wood charcoal in all samples was identified as mostly *Artemisia* sp. and a small amount of Chenopodiaceae family wood from the Level 1 sample. In Wyoming, the Chenopodiaceae usually recovered is from *Sarcobatus vermiculatus* but it is possible wood could have come from other Chenopodiaceae species, such as *Atriplex confertifolia* (shadscale), *A. canescens* (four-wing saltbush), or *Grayia spinosa*. No charred seeds were recovered from the first sample. From the second sample, one charred seed, or "nutlet," was identified as most likely having come from *Prunella vulgaris* (selfheal or heal all). The seeds of this plant mature in August and it is most commonly used for medicinal purposes as a tea or infusion. The third sample produced four charred *Bouteloua* sp. seeds. Grama grasses produce seeds from late July through September. The seeds are edible or the stems may be used as a buffer or liner in earth oven construction (Guernsey 1995).

#### *Possible post molds*

Besides the interior features identified in the house floor, there were seven possible post stains near the outer margin of the house stain. These possible post stains were originally identified as relatively regularly spaced circular charcoal or mottled stains in the house floor. They were first noted during troweling of the house floor in unit 80E/19S and continued in a more irregular manner into 81E/19S. They were more ephemeral to nonexistent in unit 80E/20S.

*Possible Post Mold #1.* The first possible post mold had a charcoal surface stain 16 cm in E-W diameter which expanded to 23 cm when the surface was cleaned off. When cross sectioned, the profile showed an asymmetrical dip toward the east. The charcoal stain continued to a depth of 5.0 cm. Two small, unidentifiable bone fragments, small rounded pebbles and charcoal fragments were recovered in the screen. Because of the shallow depth and the asymmetrical expression of

the lower margin, this feature was given a moderate possibility of being an actual post mold.

*Possible Post Mold #2.* The second post mold-like feature also had a rather trapezoidal shaped, charcoal stain on the surface. It measured 18 cm E-W by 21 cm N-S. Upon cross sectioning it was profiled as 11 cm deep, but tilted toward the south at a 50° angle. One small, unidentifiable bone fragment, charcoal and small rounded pebbles were recovered in the 1/8" screen. This feature was given a good possibility of being a post mold.

*Possible Post Mold #3.* The surface expression of this stain was an irregular, roughly circular, moderate charcoal stain. It measured 15 cm N-S by 18 cm E-W. Upon retroweling, the surface expression changed to weak charcoal staining and mostly mottled sand. The E-W cross section profile was discontinuous and irregular. Material recovered in the screen consisted of only a few small rounded pebbles and charcoal. Because of the variable staining and the irregular profile, this stain was evaluated as probably not a post mold.

*Possible Post Mold #4.* The plan view of this suspected post mold was an oblong charcoal stain, with considerable light sand mottling around the edges. It measured 16 cm N-S by 13 cm E-W. A small flat sandstone fragment was in contact with the stain in the southwestern quadrant. An east-west cross section showed only a moderate charcoal stain 3.0 cm deep, with an irregular extension descending to the southeast. Screened materials consisted of three pieces of charcoal, small rounded pebbles and two small, unidentifiable bone fragments. Post mold probability was rated as fair.

*Possible Post Mold #5.* This was an oval area 16 cm SW-NE by 8 cm NW-SE. The plan view showed a good, dark charcoal stain. A SW to NE cross section revealed the material continued as a flattened hemispherical stain to a depth of 5.0 cm. Materials collected in the screen consisted of five small irregular charcoal fragments and small rounded pebbles. Post mold possibility was rated as moderate.

*Possible Post Mold #6.* The surface plan was



of a moderate charcoal stain within a culturally sterile, light brown sand. It measured 25 cm N-S and 16 cm E-W but the eastern portion was truncated by the edge of the stratigraphic cross trench. The cross trench wall was used as a profile which showed an increasingly faint charcoal stain to a depth of 5 cm. Two small, hollow bone fragments, possibly from a bird or a small rodent, were recovered from the water screening. The possibility this was an actual post mold was rated as only fair.

*Possible Post Mold #7.* Another possible post mold was recorded during the excavation of the stratigraphic cross trench. It was a moderately dense charcoal stain, 10 cm in diameter. The feature was not cross sectioned during the stratigraphic trench excavation but successive 2.0 cm shovel skims showed it extended to a depth of 4.0 cm below its original identification. Post mold possibility was rated as moderate.

#### EXTERIOR FEATURES

##### *Feature 7*

Feature 7 was an irregular, moderate to heavy charcoal stain in the northern portion and north wall of units 82-83E/18S. The feature was encountered at 76 cm below ground surface. The exposed portion of the feature extended 65 cm along the north wall and 12 cm into the unit. Maximum depth was 5.0 cm. The full extent of the feature is not known because the adjacent units containing the remainder of the feature were not excavated. The feature fill was collected as a bulk sample with those portions in 82E/18S kept separate from those in 83E/18S. Upon recognition of the upper surface of the feature, the surrounding area's matrix was screened through 1/8" screen but no cultural materials were recovered. Feature fill was a moderately dense charcoal-stained sand. The charcoal staining appeared to be heavier in the west end of the feature. The top of the feature was also more heavily stained than the bottom. The feature bottom was formed by a light to moderate charcoal mottling into a sterile matrix of medium to coarse, gray brown sand.

##### *Feature 8*

Feature 8 was a quarter circle portion of a sparse to moderate charcoal stain exposed in the

northwestern corner of unit 81E/18S at a depth of 70 cm below surface. The feature extended only 14 cm along the north wall and 13 cm along the west wall from the northwest corner. Upon excavation of the exposed portion the feature had a depth of 10 cm. The full extent of the feature is not known because the adjacent units containing the remainder of the feature were not excavated. The feature fill was collected as a bulk sample.

#### ARTIFACTS

##### *Anvil stone*

An anvil stone (approximately brick sized) was virtually the only artifact recovered from the house floor. The stone was located directly adjacent to Feature 10. It is made from a roughly broken piece of very fine to fine grained argillaceous, hematitic sandstone was most likely derived from a nearby Ft. Union Formation outcrop. The artifact measures 18.3 x 13.9 x 10.0 cm and weighs 3912.2 g. When first unearthed, an area about 6.0 cm in diameter slightly off center on the relatively flat upper surface was covered with a film ( $\pm$  1 mm thick) of white, pedogenic calcium carbonate. Because the calcium carbonate crust might have protected whatever had been pounded on the anvil and because of its potential for yielding additional information, this artifact was submitted for a pollen wash and blood residue analysis.

The results of the pollen wash showed pollen preservation was generally poor (Cummings and Puseman 1994). Included was pollen from *Pinus* (pine), *Artemisia*, several types of Asteraceae (sunflower family), *Cheno-ams*, *Sarcobatus*, Apiaceae (parsley family), and Poaceae (grasses). The recovered pollen was considered as representative of the local, surrounding vegetation, a typical Upper Sonoran life zone of sagebrush, cactus and short prairie grasses. Starch granules with hila were also noted in the sample, and were considered to be most comparable to grass starches. The anvil may have been used to pound grass seeds.

Results of the protein residue analysis were unexpected, yielding a positive result to bear antiserum. This suggests remains from a member of the bear family, Ursidae, were processed using

the anvil (Cummings and Puseman 1994:3). Possible bear species present in the prehistoric past include *Ursus americana* (black bear) and *Ursus arctos* (grizzly bear). Black bears still inhabit the nearby Laramie Range, no more than 60 km away, while the closest population of grizzly bears is in the area surrounding Yellowstone National Park. Bear remains are not common in archaeological sites (Walker 1987). The anvil may have been used to process any portion of the animal, since proteins are present in fat, tissue and fluids. The anvil may have been used to pound vegetable and animal products together to make pemmican, or a comparable food.

*Chipped Stone Debitage* (Table 1)

One reddish brown chert tertiary flake was recovered by means of screening the troweled fill of the Feature 6 house floor in excavation unit 80E/19S. This flake was retained in the 1/4" screen and after it was recovered the 1/8" mesh screen was used for all additional recovery. However, no additional flakes were recovered in the 1/8" screen.

Waterscreening the entire feature fill produced six additional flakes. Three (from Feature 4, Level 1; Feature 9, NE quadrant and Feature 9, SE quadrant) are of a distinctive black, grainy quartzite with quartz crystals formed around the sand grains. The quartzite may have come from a Cambrian formation in the Big Horn Mountains. One flake fragment is of a brown chert or chalcedony with interior black dendrites from Feature 9, NE quadrant. One small red jasper-like chert biface trimming flake with a bulb of percussion and an interior light brown chert tertiary

flake with bulb of percussion also came from Feature 9, SE quadrant. The two pieces of distinctive black, grainy quartzite in Feature 9 and the one piece of similar material in Feature 4 could be used to argue both of the features were in use at the same time. The red jasper-like chert biface trimming flake indicates biface resharpening was a part of the household activities even though no bifaces were recovered.

*Faunal materials*

Identifiable and unidentifiable bones and bone fragments were recovered during the course of excavations. Identifiable faunal elements were only recovered from within feature fill of Features 3, 4, 9, and 10. Feature 3, Level 2, 10-20 cm produced a complete, although surface eroded, patella and several small, flat bone fragments with interior cancellous tissue, probably rib fragments. Size of these materials suggests they may have come from a medium sized artiodactyl, like pronghorn or deer. Feature 4, Level 1 produced a deer or pronghorn central incisor. The northeastern quadrant of Feature 9 in 82E/20S contained a left carpal cuneiform, more likely from a pronghorn than a deer. A proximal sesamoid, also probably from either a pronghorn or mule deer, was recovered from Feature 10, Level 3, 16-24 cm.

The identified elements, a carpal cuneiform, a patella, and a sesamoid are located on an animal's lower leg, which is not usually considered as high preference or high meat value part of the animal. Ribs are, however, generally considered a choice meat portion. Unidentifiable bone fragments were recovered from a restricted

Table 1: Provenience, description, and measurements (in mm) of lithic debitage.

PROVENIENCE	DESCRIPTION	LENGTH	WIDTH	THICKNESS
Feature 6, house floor, 80E/19S	Reddish brown chert, tertiary flake	10.1	8.1	1.0
Feature 4, Level 1	Black, grainy quartzite, tertiary flake	16.6	10.8	4.0
Feature 9, NE quadrant	Black, grainy quartzite, tertiary flake fragment	15.0	10.4	3.0
Feature 9, NE quadrant	Brown chert, tertiary flake fragment	4.5	3.4	0.2
Feature 9, SE quadrant	Black grainy quartzite, tertiary flake	21.4	13.3	4.1
Feature 9, SE quadrant	Red jasperlike chert, biface trim flake	4.9	9.2	0.8
Feature 9, SE quadrant	Light brown chert, tertiary flake	6.8	3.3	0.4

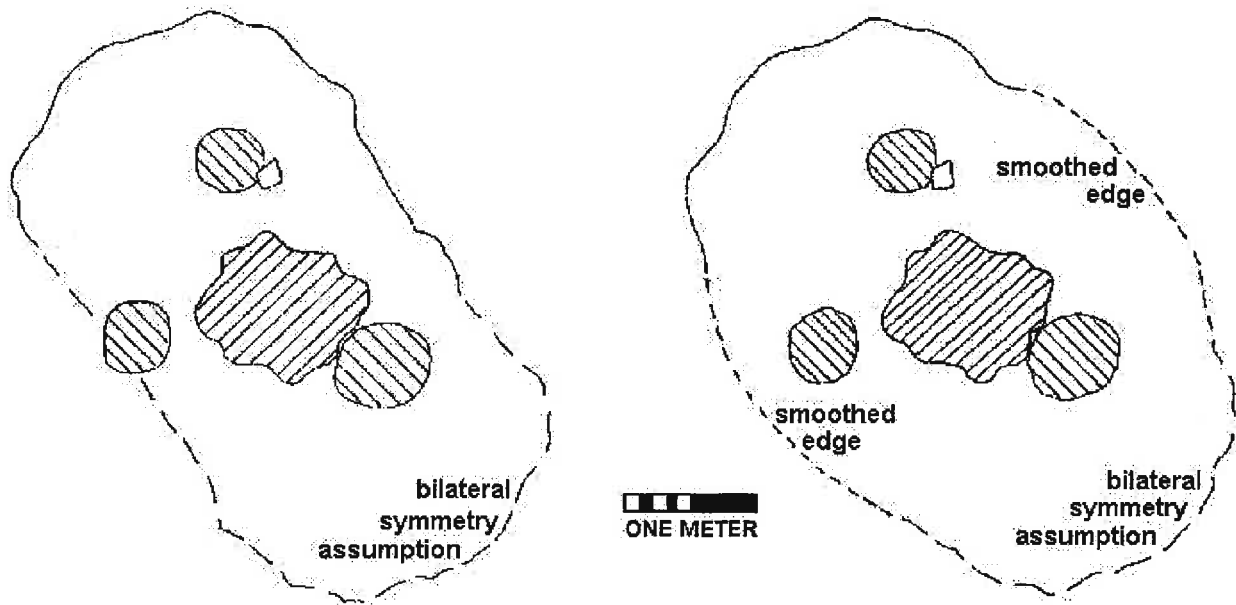


Figure 6: Reconstruction of floor area for Lembke at 48CO1712. Left: reconstruction with assumption of bilateral symmetry. Right: reconstruction with assumption of bilateral symmetry and smoothed edges.

area of the Feature 6 house floor and from fill of the interior features. The house floor fragments occurred in 80E/19S, 81E/19S and 82E/19S West half. The specimens from the first and third locations are medium to large mammal long bone fragments. They do not exceed 3.0 cm in their greatest dimension. The second specimen is also a long bone fragment retaining a small area of an articular surface. It may be a portion of a proximal metacarpal, metatarsal or tibia from a deer or pronghorn sized mammal. The bone's exterior walls are of medium thickness. The surfaces are really too small and eroded for anything more than a provisional estimate. It is also about 3.0 cm long. Unidentifiable bone fragments also came from various levels of the interior features -- 17 from Feature 3, five from Feature 4, six from Feature 9, and 12 from Feature 10.

Both pronghorn and mule deer can readily be seen in the site vicinity. Pronghorn are diurnal animals, most active during the day, weighing from 40 to 80 kg. On the average they may be estimated to produce 20 to 40 kg of edible meat (Means and

Moore 1996). Throughout the prehistoric past they have been a favorite human prey species, probably second in popularity only to bison. Mule deer are crepuscular animals, most active around sunrise and sunset. They weigh from 60 to 90 kg and could be estimated to produce 30 to 45 kg of meat (Means and Moore 1996). Both pronghorn and mule deer are creatures of varied habitats, but those habitats certainly include rolling grass and sagebrush prairies, such as those currently around the site.

#### RADIOCARBON DETERMINATIONS

Two radiocarbon determinations were obtained from Features 3 and 4, within the limits of the house floor. Beta 70930 and 70931 were derived from organic sediment submitted as in toto bulk samples. The conventional radiocarbon age for Beta 70930 was calculated at  $4590 \pm 70$  B.P. and for Beta 70931 at  $4190 \pm 70$  B.P. These calculations had exactly the same determinations for their C13 adjusted age.

For Beta 70930,  $4590 \pm 70$  B.P., the intercept of the radiocarbon age with the calibration curve

was 3350 B.C. and the 2 sigma (95% probability) intercept was from 3520 to 3080 B.C. For Beta 70931,  $4190 \pm 70$ , the intercepts of the radiocarbon age with the calibration curve were at 2870, 2800, and 2770 B.C., and the 2 sigma (95% probability) calibrated result ranged from 2910 to 2570 B.C. Since the two dates came from what are assumed to be closely contemporary features from within a structure with a short term occupation, some further interpretations could be made. The most conservative interpretation would be the features were used sometime between the outer limits of both radiocarbon dates, between 3520 and 2570 B.C. Such a 1000 year range is one allowing the greatest probability of the house occupation taking place within the span. The other, least conservative, position would be the house was most likely occupied within the middle of the two date ranges, approximately 3020 B.C.

#### HOUSE FLOOR AREA

House floor areas, the actual, calculated covered space available to individuals or social groups, can provide data for additional evidence for interpretations about such groups. Feature 6 is undoubtedly such a floor. House floor area calculations have been useful for estimating the size and composition of household membership (Naroll 1962). Naroll stated, from a sample of 18 ethnographic societies, a regression formula could be derived suggesting populations could be roughly estimated at one-tenth the floor area in square meters. Other refinements of the estimations have been added since then by both ethnologists and archaeologists. One of the most recent estimates relates directly to large earth lodges in the Central Plains and their archaeological precedents (Wedel 1979).

The house floor of Feature 6 was incomplete. Calculations based on its floor area will thus be incomplete. However there are certain methods which may partially overcome this incompleteness. First the basic calculation: it appears to be roughly subrectangular, with a long axis oriented NW-SE and a short axis NE-SW. The length of the longer axis is about 3.2 m and of the shorter about 2.7 m. Length times width gives a rough calculation of a 8.64 sq m floor area.

Since the house floor is certainly incomplete, one might be permitted to estimate the size of the full house floor. To do so some assumptions need to be made. The first major assumption is the house floor is bilaterally symmetrical and the second assumption is the floor is bilaterally symmetrical around the shallow, basin-shaped hearth. These two assumptions provide a house floor (Figure 6, left) with a hypothetical length of 5.0 m, a width of 2.6 m and a floor area of approximately 13.02 square meters. One problem with this reconstruction is, because of the arbitrary nature of the bilateral symmetry assumption, the house wall passes directly through the perimeter of Feature 3. This would probably be an unlikely event in the case of the actual house floor.

Thus, the final estimation of a house floor whose edges have been arbitrarily smoothed can also be postulated (Figure 6, right). This house floor has a reconstructed length of 5.0 m, width of 3.4 m, and a floor area of 13.34 square meters. Because of the roughly oval outline of this reconstruction, the formula for the floor area calculation is changed to  $1/2L \times 1/2W \times 3.14$ . These arbitrary estimations are not entirely unreasonable but the nature of their underlying assumptions must be reemphasized.

One study of Wyoming Basin house pits indicates those structures' shapes range from roughly circular to slightly ovate and from ovate to rectangular (Harrell et al. 1998). Compared to Wyoming Basin house pits discussed by Harrell et al (1998), the house floor at 48CO1712 is larger. Their calculations, based on eight housepits at five sites, ranged from 4.88 to 12.41 square meters with an average of 8.70.

Calculation for a sample of tipi ring floor areas gives a much larger average size. From a sample of 63 mapped and 15 excavated stone circles at 48PL21 along the North Platte River in the Glendo Reservoir area, Mulloy calculated a range of diameters from 3.44 to 8.05 m with an average of 5.48 m (Mulloy 1965:29-30). Assuming a roughly circular shape, these habitation floors would have an area of 10.81 to 25.28 square meters with an average of 17.19.

Thus the house floor at 48CO1712 was probably larger than many reported Wyoming Basin house pits but smaller than most tipi rings reported from a nearby area of Glendo Reservoir.

### CONCLUSIONS

The partially preserved house floor at 48CO1712 was discovered during the course of mitigation excavation at two of the four charcoal-stained features reported by BLM archaeologists in a gas processing plant access road. It consisted of a subrectangular charcoal stain with a central, shallow basin-shaped hearth, three deep, interior charcoal-stained pits, and six possible interior postmolds. The intact portion of the house floor measured 3.2 m NW-SE and 2.7 m NE-SW. A bilaterally symmetrical reconstruction of the full house floor gave a 5.0 m length and a 3.4 m width, or a floor area of 13.34 square meters. This is larger than contemporary house pits in the Wyoming Basin.

Adjacent to one of the pit features was a probable anvil stone. A pollen wash of the upper surface produced predictable pollen from the local plant community -- pine, sagebrush, greasewood, sunflowers, and grasses. A protein residue of the surface yielded positive results to bear antiserum, suggesting some part of a bear -- tissue, fats, or fluids -- was processed on the anvil. The combination of plant and animal remains could most easily be explained by suggesting the anvil was used to make pemmican or similar substance. There were no chipped stone tools from the house excavations and even debitage was sparse. Faunal materials were identified as lower leg and rib elements of deer or pronghorn.

Two radiocarbon dates, 4190±70 B.P. and 4590±70 B.P., were obtained from features in the house floor. Calibration of these radiocarbon ages with real calendar time gives a date of occupation around 3020 B.C. This would place the house's occupation early in the Middle Plains Archaic.

### ACKNOWLEDGMENTS

Excavations at the buried Middle Plains Archaic house floor at 48CO1712 were greatly facilitated by the volunteer help from Carl and Ethel Lembke, for whom the house pit is named. Besides the excellent volunteerism shown by the Lembkes, several other volunteers assisted during

the 1994 excavations for various periods lasting from several hours to several days. They included Jim Curkendall and Betty Rickman (Wyoming Archaeological Society), Brad Humphrey and Jill Kingham (US Forest Service), Marcel Kornfeld and Mary Lou Larson (University of Wyoming), Chris Lippincott, Chris Mazzo, and John Pallante. The site was visited by BLM archaeologists Chris Arthur and George Ruebleman as the excavations were nearing completion. Funding for the project was provided by Kerr-McGee Corporation.

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# GRANITE CREEK ROCKSHELTER (48BH330), BIGHORN NATIONAL FOREST

by  
Gigi York

## ABSTRACT

The Granite Creek Rockshelter (48BH330) has yielded solid stratigraphic evidence, C-14 dates and projectile point sequences. These sequences have been a cornerstone in laying the foundation of temporal evidence for continuous human habitation before, during, and after the Altithermal period in the Bighorn Mountains. Granite Creek Rockshelter provided a sequence of cultural diagnostics from Paleoindian through the Late Prehistoric periods. No previous report has been written for the 1973 excavation of this exceptional site. This present report corrects that vacancy and provides basic details of the site, excavation, and the artifacts.

## INTRODUCTION

The Granite Creek Rockshelter site (48BH330) (Figure 1) was located in the Bighorn Mountains, inside Bighorn National Forest in north-central Wyoming in Shell Creek Canyon next to the Bighorn Basin, east of Shell. The site's elevation is 7080 feet. During erosional events more than 10,000 years ago, several segments of stratified limestone dislodged from their parent formation and gravitated down the steeply inclined slope to this location. The southeast-facing rockshelter was located beneath a massive spall in an open area of scrubs and grasses. Fortunately, this rock came to rest in a position that provided a small refuge for human occupation, less than a quarter mile uphill from Shell Creek, a perennial stream.

Granite Creek Rockshelter was discovered in September 1973 during earthmoving to reroute a segment of U.S. Highway 14. A Forest Service

employee noticed lithic artifacts, stopped the construction, and notified the Wyoming State Archaeologist, Dr. George C. Frison. Salvage excavations took place between September 20 and 24, 1973. The rockshelter and additional archaeological materials were found among several huge limestone blocks. Unfortunately collectors had already plundered part of the site, which "preventing us from recovering a fully adequate sample for this key site" (Frison and Wilson 1975:32). Salvage excavations were undertaken in undisturbed areas (Frison and Wilson 1975:32). Limited space within the shelter (Figure 2) would accommodate only sufficient room for one excavator (Danny Walker, personal communication, 1990). Additionally, a lack of funding and time restricted the thoroughness of the investigations. The rockshelter was destroyed by the highway construction after the hurried salvage excavation. These events took place before federal legislation required preservation or allowed for adequate funding and time for the salvage excavation.

The Granite Creek Rockshelter excavation provided part of the critical bridge of temporal data that span the former void of evidence of human habitation in the intermontane region of the Bighorn Mountains, the millenniums between the Paleoindian and Middle Plains Archaic (McKean) manifestations. The investigation yielded a stratified sequence that covers more than eight or nine thousand years of human use, one of "the longest cultural sequence known for the area" (Martorano et al. 1985:12). There were two Paleoindian levels, an Altithermal-age level, an early post-Altithermal level, one or more Late



Figure 1: Granite Rockshelter, under large rock in middle of construction area.

Plains Archaic levels, and a Late Prehistoric level (Frison and Wilson 1975:32).

Particularly significant were the carbon-14 dates that confirmed the projectile point typology (Table 1). Besides the radiocarbon data, projectile points (Table 2) were found in situ that provided firm evidence of human use of the shelter during the Altithermal period from approximately 8000 B.P. to 5000 B.P. The

Laddie Creek site (Larson 1990), the Dead Indian site (Frison and Walker 1984), and Mummy Cave (Husted and Edgar n. d.), similarly located in the Bighorn Basin area, have also provided supporting evidence of human residency during Altithermal times in the Bighorn Basin enclave of the Northwest Plains.

The lowest or earliest stratigraphic levels of the Granite Creek Rockshelter site contained two

Table 1: Radiocarbon dates from Granite Creek Rockshelter.

LAB NUMBER	DATE	MATERIAL	PROVENIENCE	ASSOCIATION
RL390	5390+120 B.P.	charcoal	21 inches deep	side notched projectile points
RL389	4900+130 B.P.	Charcoal	9 inches deep	McKean and sidenotched projectile points
RL387	1230+90 B.P.	charcoal	E1, S10, 3 inches deep	cornernotched projectile points





Figure 2: Granite Creek Rockshelter before excavation.

Paleoindian levels, the lower one yielding Agate Basin-like projectile points and the other yielding Pryor Stemmed (Husted 1969) projectile points. Additional material, including bones, tools, and debitage, was recovered from the Early, Middle, and Late Plains Archaic and the Late Prehistoric levels.

**ENVIRONMENTAL DATA**

The Bighorn Mountains are oriented in a

Table 2: Projectile point summary counts, Granite Creek Rockshelter.

PORTION	NUMBER
complete	11
2/3 complete	1
midsection	4
base	27
tip	10
<b>TOTAL</b>	<b>53</b>

north-south direction, east of the main Rocky Mountain cordillera, and between the Powder River and Bighorn Basins. The range extends more than 120 miles long and 30 miles wide. The Bighorn Mountains were formed approximately 60 million years ago during the Laramide orogeny. The range consists of Paleozoic and Mesozoic sedimentary and metamorphic strata, with a Precambrian core. It is from these sedimentary formations, particularly the Morrison, Phosphoria and Madison formations, that high quality cherts and quartzites were gathered and mined by Paleoindian and later hunters. These materials were then used in fashioning projectile points and various tools.

The slightly arcing anticlinal uplift rises from the 4000+ foot basins to a maximum elevation of 13,167 feet at Cloud Peak. Geologically the mountains are divided into three regions. The Paleozoic sedimentary strata characterizes the

surface of the northern and southern sections while the Bighorns granitic core is exposed in the center segment. Most of the Mesozoic sediments have been removed by erosion. The central granitic area was heavily glaciated during the Pleistocene (Gunnerson 1987). The glacial runoff from the high peaks in the Bighorn Mountains fed Shell Creek and several other streams enabling them to carve deep canyons through the sediments on their steep westward course to the Bighorn Basin.

The southwestern edge of the Bighorn Mountains converges with the Owl Creek Range, oriented in an east-west direction. The Pryor Mountains lie north of the Wyoming-Montana border at a northwesterly - southeasterly angle to the Bighorn Mountains. The Absaroka Mountains complete the western portion of the montane ring that encircles the Bighorn Basin. The Bighorn Mountains underwent extensive valley glaciation during the Pleistocene epoch that created the present rugged terrain. Glacial materials scoured from the surrounding mountains were deposited along the rivers and created a variety of terrains, soils, and eco-niches. Varying bedrock and deposited materials dictated the newly formed surface soils (Despain 1973), and in turn the vegetation reflects those differences.

The geological formations in the immediate area around the Granite Creek Rockshelter include Plutonic rocks, Upper Cambrian, Devonian kimberlite, and intrusive diatremes, Mesozoic and Paleozoic sedimentary rocks (Madison and Darby Formations), Oligocene, Quaternary rocks and unconsolidated deposits, Holocene and Pleistocene landslide deposits (Love and Christiansen 1985).

The Bighorn Mountains contain three biotic zones created by variations in elevation. These vegetational communities vary noticeably because of elevation changes. Soil development, temperature zones, and annual precipitation also change with elevation, with soil development and temperature tapering off in the higher zones. A lack of sufficient flora in the higher zones influences the carrying capacity of larger mammals in that area. The Canadian zone is the

lowest and broadest zone, lying between 7,000 and 8,710 feet in elevation. The Hudsonian zone starts around 8,710 feet and reaches to 10,000 feet. The Alpine-Arctic zone begins around 10,000 feet and ends in the fragile treeless tundra and craggy granite peaks. The floral variations between the Canadian and Hudsonian zones are slight. The continuous coniferous forest, grasslands, and scrubs are used by the same animals that inhabit those higher zones (Gunnerson 1987).

Tree species include Engelmann spruce, white spruce, Douglas Fir, dwarf juniper, and ponderosa pine, quaking aspen, cottonwood, and boxelder (Grant 1981). The shrubland community is dominated primarily by big sagebrush. Gooseberry, red raspberry, bristly red currant, blueberry, and red elderberry also occur (Weber 1967). The most prominent varieties of bunch and short grasses and sedges include red fescue, alpine timothy, mountain meadow-grass, Nelson's needle-grass, purple-top needle-grass, wheatgrass, sedge, and threadleaf sedge (Williams 1898).

The Bighorn Mountains and Bighorn Basin are host to many of the same flora and fauna taxa that existed during and since the end of the Pleistocene (Walker 1986, 1987). However, there are several animals that have either become extinct, for example the mammoth, or are absent, like the bison, that were an integral part of the early hunter-gatherer economic system. Presently, the most common herbivores are deer, wapiti, moose, badger, and possibly a few bighorn sheep. The carnivores include the coyote, bobcat, and mountain lion. Black bear still exist; in limited numbers but there are no longer any grizzly bears or wolves present (Craig 1982).

The smaller mammals include beaver, mountain cottontail, red squirrel, marmot, muskrat, raccoon, and wood rat. Among the birds are raven, crow, night hawk, golden eagle, various hawks, falcons, and great horned owl. Several species of fish are found in the streams.

#### FIELD INVESTIGATION

The archaeological investigations began September 20, 1973. A general reconnaissance of the area was initiated to establish the boundaries of

the site. The rockshelter lay 385 feet uphill from Highway 14 and measured 85 feet long. It consisted of three triangular sheltered overhang areas, and was 18 feet deep at its deepest point beneath the western overhang. There was considerable rock fall scattered around the periphery of the shelter and between the two largest overhangs. Areas of the site had been disturbed during construction activities and by vandals (pot hunters). Photographs of the site were taken throughout the investigation. A site map was drawn. Samples were taken from various levels of the test excavation for radiocarbon dating purposes.

Three test pits were dug. Two trenches were dug in the main area beneath the west overhang (Figure 3). The main excavation was in the

central area of the shelter, perpendicular to the rear wall and extending to the front overhang and drip line (Figure 4). It measured approximately fifteen feet by five feet while the second excavation measured approximately eight feet by five feet. Both areas included small segments of the vandalized area that had been disturbed to a depth of 15 inches. The rock floor was 18 inches below the surface in undisturbed areas along the back wall. A large fire area measuring 2'8" x 2'0" was found at the rear of the shelter on the 18 inch level (on the rock floor). In the middle area of the shelter, the rock floor was 21 inches deep (Figure 1). A second smaller fire hearth was found in the center-front of the shelter. The material from the test pits was screened through 1/4 inch and 1/8 inch screens.



Figure 3: Excavation units within Granite Creek Rockshelter.

Table 3: Projectile point data from Granite Creek Rockshelter.

UWARTIFACT NUMBER	CONDITION	MATERIAL	LENGTH	WIDTH	THICKNESS	NOTCHING	PERIOD
30876	C	Ob	4.51	1.59	0.60	Lance	Paleo
30880	F	Ct	1.50	1.31	0.66	Stem/Lance	Paleo
30883	C	Ct	2.41	1.21	0.29	C-N-L	Pre
30884	C	Ct	2.24	1.40	0.39	S-N	EPA
30885	F	Ct	2.76	1.66	0.44	S-N	EPA
30888	C	Ct	2.79	1.68	0.28	C-N	L Pre
30889	F	Ct	1.39	1.28	0.50	Stem	Paleo
30890	NC	Ct	3.50	2.43	0.41	C-N	LPA
30893	F	Ct	0.68	1.49	0.33	C-N	Paleo
30894	C	Ct	3.86	1.67	0.50	C-N	MPA
30895	F	Ct	2.90	1.39	0.21	C-N	L Pre
30897	F	Ct	1.29	1.69	0.24	C-N	L Pre
30898	F	Ct	1.51	1.34	0.59	Stem?	Paleo
30900	F	Ct	2.19	1.59	0.39	C-N	MPA
30902	F	Ct	1.20	1.15	0.40	Stem	Paleo
30903	F	Ct	1.82	—	0.22	S-N	L Pre
30904	C	Ct	3.70	1.51	0.53	C+B	MPA
30905	F	Ct	0.43	1.00	0.27	S-N	LPA?
30907	F	Ct	2.10	—	0.43	S-N	EPA
30909	F	Ct	1.80	1.50	0.29	?	L Pre
30913	C	Ct	2.95	2.12	0.42	S-N	LPA
30914	F	Cy	1.60	—	0.50	S-N	LPA
30915	F	Ct	2.87	—	—	S-N	EPA
30916	F	Ct(2)	2.59	1.89	0.49	S-N	EPA
30919	F	Ct	2.10	—	0.40	C-N	MPA
30920	C	Ct	2.61	1.79	0.52	S-N	EPA
30924	F	Ct	1.56	1.28	0.34	S-N	L Pre
30928	F	Ct	1.50	0.90	0.27	C-N	L Pre
30943	F	Ct	4.11	1.75	0.47	Lance	MPA?
30951	F	Ct	1.40	0.91	0.34	S-N	L Pre
30985	F	Ct	1.95	—	0.42	C-N	MPA
30987	F	Ct	1.73	1.50	0.38	S-N	MPA
31025	F	Ct	1.51	1.60	0.40	Lance/Stem	Paleo
34449	F	Ct	0.71	1.96	0.39	S-N	LPA

Materials: OB = obsidian; CT = chert; CY = chalcedony; Ct = quartzite

Notched: B = basal; SN = side; CN = corner; Lance (L) = lanceolate; stem = stemmed

Periods: L Pre = Late Prehistoric; LPA = Late Plains Archaic; MPA = Middle Plains Archaic; EPA = Early Plains Archaic; Paleo = Paleoindian  
C = Complete; F = Fragment; NC = Nearly Complete

Note: All measurements in centimeters (cm). Blank spaces (dashes) represent absent or missing data.

### CULTURAL DATA

The Bighorn Basin and Bighorn Mountain geographic areas are within the Northwest Plains cultural area. Rough estimates of the various cultural periods are as follows: Paleoindian (12-8000 yrs B.P.), Early Plains Archaic (8000--5000 yrs B.P.), Middle Plains Archaic (5000-3000 yrs B.P.), Late Plains Archaic (3000-1500 yrs B.P.), and Late Prehistoric Periods (1500-150 yrs B.P.) (Frison 1991).

Projectile points styles serve as useful index fossils in defining various cultural complexes and radiocarbon dating has provided supporting

evidence to the projectile point typology. Other artifacts such as scrapers and knives are not distinctive enough to suggest a cultural time period for they remained nearly unchanged over a broad area and over thousands of years.

The Paleoindian economic procurement pattern on the plains was involved the hunting of large game animals. The projectile points were large, well-made lanceolate shapes that displayed a well-developed lithic technology. The early fluted points, Clovis and Folsom, are followed by a variety of large unfluted points, Agate Basin, Hell Gap, Alberta and Cody Complex plus a variety of

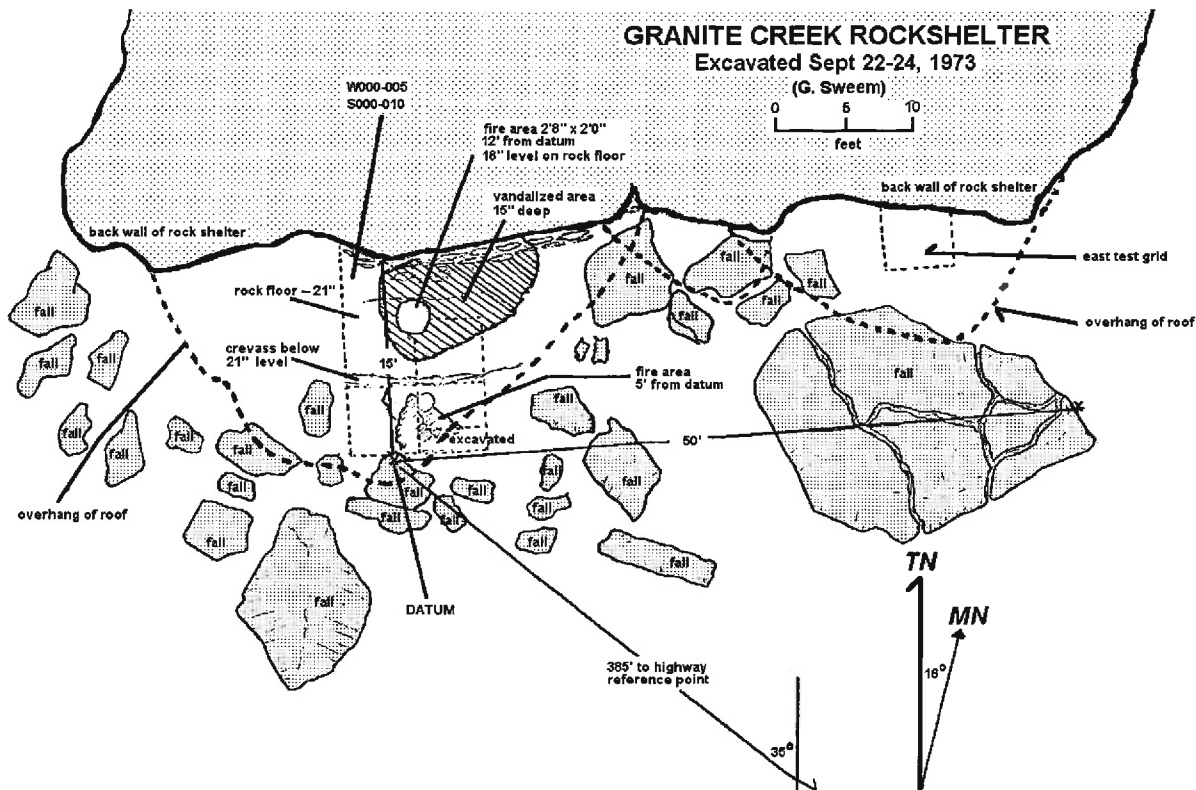


Figure 4: Map of Granite Creek Rockshelter (by Glen Sweem).

restricted local versions at the close of the Paleoindian Period. Among these are James Allen, Angostura, Pryor Stemmed, and possibly Lusk projectile points.

The Altithermal period, which coincides with the cultural Early Plains Archaic period, was marked by an abrupt change in projectile point styles. The Paleoindian lanceolate and stemmed forms of projectile points changed to the early corner- and side-notched projectile point forms (Frison and Wilson 1975). Early Plains Archaic cultural material is found in the Bighorn Mountains at the following sites: Leigh Cave (Frison and Huseus 1968), Paint Rock V (Frison 1976), Medicine Lodge Creek (Frison 1976), Rice Cave (Frison 1978), Laddie Creek (Frison 1978; Larson 1990), Southsider Cave (Frison 1978), Carter Cave (Frison 1978), Mummy Cave (Husted and Edgar n. d.), Bottleneck Cave (Husted 1969), and the Granite Creek Rockshelter (Frison and Wilson 1975).

The Bighorn Basin supported "a carefully scheduled hunting-and-gathering economy, centered in and around the mountains and some interior areas of greater topographic relief" (Frison 1976:172-173). Probably the human populations broadened their economic base to compensate for the fluctuating climatic patterns by using mountain resources. Before the Altithermal period (pre-8000 B.P.), the Plains Indian subsistence economy was centered around bison procurement. However, there was probably always a need for subsistence diversification within the Bighorn Basin and the surrounding mountains (Reeves 1973). Folsom projectile points have been found at various altitudes and locations throughout the Bighorn Mountains (Frison 1978:115) suggesting Paleoindian use, at least on a seasonal basis, of the Bighorn Mountains intermontane basin and mountain areas.

The Bighorn intermontane area was typified by an economic subsistence pattern of

hunting-and-gathering. The climate dictated a subsistence pattern different from that of the bison hunters of the plains. The Absaroka Mountains to the west formed a rain shadow over the Bighorn Basin, which limited annual rainfall there in places to as little as seven inches. This dearth of moisture accounts for a restriction on the production of grasses needed to support a large population of bison and therefore, a necessity to rely on a broader economic base that included plants and a variety of smaller animals and even insects. Temperatures probably fluctuated over the same broad range they do today, plunging below -50 degrees F in the winter and soaring above 100 degrees on a summer afternoon. The growing season was too short to accommodate horticultural efforts even if there had been adequate water available.

During the arid Altithermal period in the Bighorn Basin, and today, moisture increased in the adjacent mountains with increasing altitude. But even in the Basin, humans probably could have adjusted and adapted to the drier climate.

Research conducted over the last thirty years has begun to erode the previous theory that the area was totally abandoned during the Altithermal. The Hawken bison kill site (Frison et al. 1976) in the Black Hills of eastern Wyoming provides an example of human residency on the eastern border of the plains. Continued excavations at the Helen Lookingbill site have provided evidence of residency in the southern Absaroka Mountain during the Altithermal (Frison 1978:348). The Paint Rock V and the other previously mentioned Bighorn Basin sites have survived the destruction of erosional forces. Stream cutting played a particularly significant role in soil degradation and site destruction during the Altithermal period. Fortunately the Granite Creek Rockshelter, and Mummy Cave (the primary Altithermal site), and other rockshelters escaped erosional destruction and preserved the rare stratigraphic data that refutes the hiatus theory in the Bighorn Mountains and Basin.

**LATE PALEOINDIAN POINT TYPOLOGY**

The earliest archaeological evidence at the Granite Creek Rockshelter is represented by the

obsidian Agate Basin-like lanceolate projectile point. Stratigraphically, the next level contained the Pryor Stemmed type (Husted 1969). Both faces of the Pryor Stemmed point have a series of uniform shallow and broad flaking pattern along one edge that abruptly meets a shallow, steep beveled edge. Husted describes the resulting effect as a spiral twist.

**48BH330-30876** (Table 3; Figures 5, 6)

This is a complete laurel leaf lanceolate, obsidian, Paleoindian projectile point, probably a variant of an Agate Basin type point. The flaking pattern is generally parallel oblique. The irregularity of the flaking pattern may or may not be attributable to the reworking of the point. The cross-section is less than perfectly lenticular. The blade is battered, nicked, and broken along the one distal edge. The blade edge is very convex and has been beveled. There is basal grinding.

**48BH330-30880** (Table 3; Figures 5, 6)

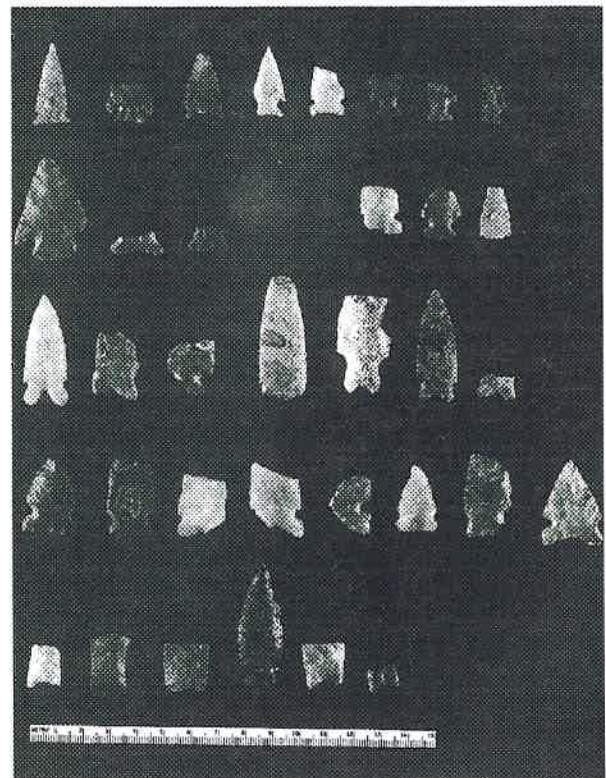


Figure 5: Projectile points from Granite Creek Rockshelter.

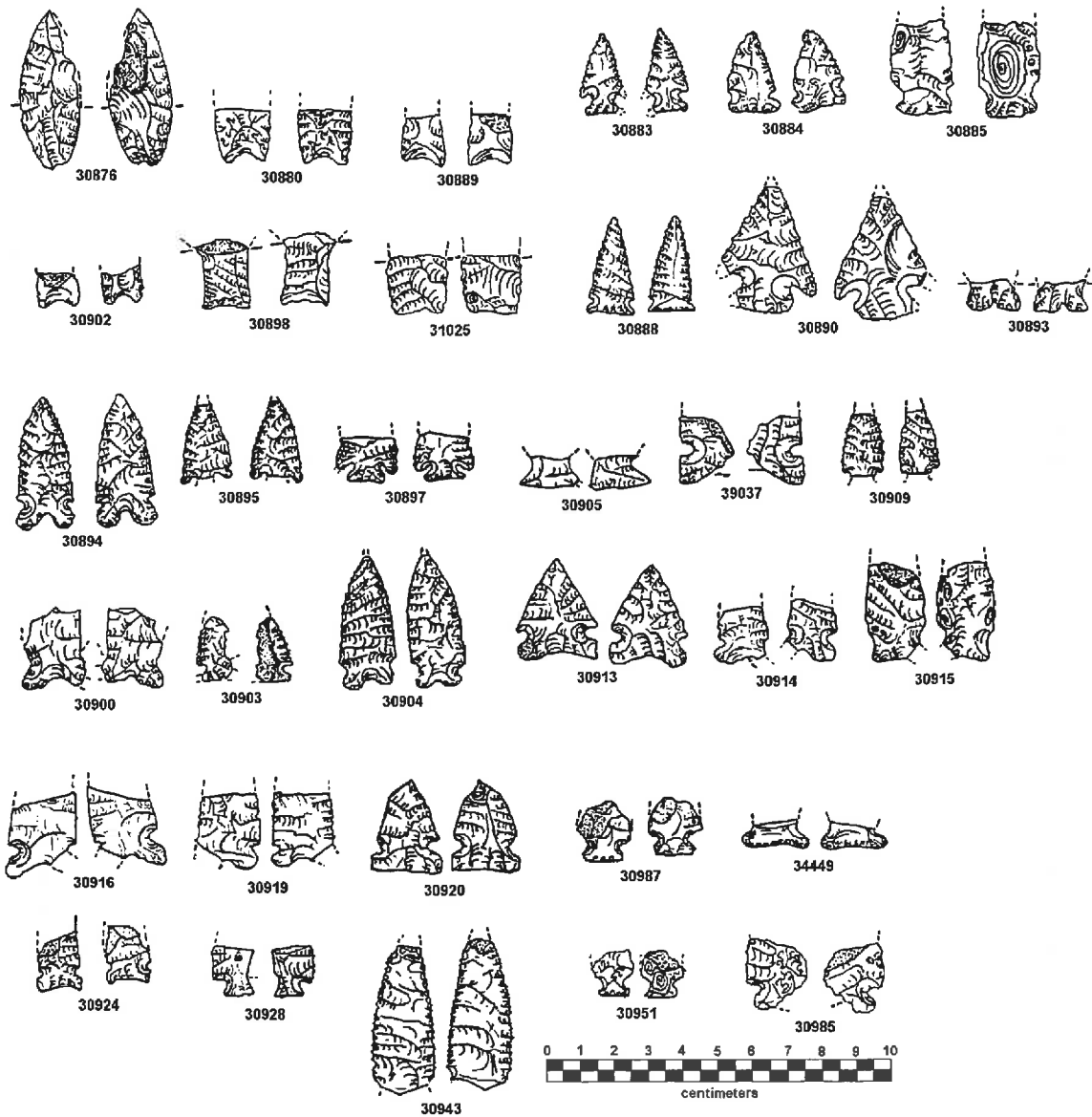


Figure 6: Projectile points from Granite Creek Rockshelter.

This is probably a Paleoindian projectile point basal fragment that is grey-brown chert and heat crazed. It is possibly the tapered end of a lanceolate blade or stemmed point that has a deeply indented base thinned for hafting. 48BH330-30889 (Table 3; Figures 5, 6)

This is a whitish grey with large translucent particles and white matrix Morrison chert point base that is probably Paleoindian in age. It is a small fragment, but may be part of a Pryor-stemmed projectile point. The base is deeply indented and exhibits grinding. The stem broadens

out at the base. It has an obscured irregular flaking pattern and a lenticular cross-section.

**48BH330-30893** (Table 3; Figures 5, 6)

This point is corner-notched with an indented base notched to a depth of 0.021 cm. This projectile point base fragment of light brown Phosphoria chert modeled with blue spots is probably Paleoindian in age. The cross-section is lenticular shaped, with a thinned base. Most of the neck and blade are missing but there are indications the flaking was finely executed.

**48BH330-30898** (Table 3; Figures 5, 6)

This is a Phosphoria chert projectile point base, probably from a Pryor-stemmed point. It has beveled flaking along the stem's edge. The blade may have been broken during use (versus during manufacture) because all that remains is the area of the base that would have been in the haft. The base is slightly concave and displays basal grinding.

**48BH330-30902** (Table 3; Figures 5, 6)

This is a small concave and thinned basal fragment of brick-red phosphoria chert. It is probably a projectile point from the Paleoindian (or McKean lanceolate?) tradition with a tapered or stemmed base. The base probably snapped at the hafting point upon impact.

**48BH330-34449** (Table 3; Figures 5, 6)

This is a biface fragment, perhaps a Paleoindian projectile point fragment, which appears to have been broken during use. It has been exposed to heat which darkened the Phosphoria chert. The cross section is lenticular at the break, and the base is badly nicked.

#### EARLY THROUGH LATE PLAINS ARCHAIC PROJECTILE POINT TYPOLOGY

There are two typical projectile point types from the Bighorn area during the Altithermal (sites dating from 8,000 yrs B.P. - 5,000 yrs B.P.). The Bitterroot point type is a large, side-notched, square-based point. There are also large triangular shaped points having two basal notches that were found at Medicine Lodge Creek. The fine lithic technology of the Paleoindian period

degenerated into irregular flaking patterns and cruder finishing techniques.

Husted describes a "Pahaska Side Notched" projectile point in the Mummy Cave report as a "side notched point with weakly convex lateral edges and a slightly concave base. The notches are deep and wide and oriented parallel to the basal edge. The lateral edges are retouched, and the base is bifacially thinned. The basal edge is lightly ground" (Husted n. d.:102).

Middle Plains Archaic Period projectile points (5,000 yrs B.P.- 3,000 yrs B.P.) are typified by the McKean projectile points. The earliest points were large lanceolate or stemmed projectile points with a notched or a concave base. There were several McKean points recovered from Granite Creek Rockshelter. They are side- or corner-notched and have or stemmed or tapered indented-bases.

In the Late Plains Archaic Period (3,000 yrs B.P. to 1,500 yrs B.P.), projectile points were more often corner-notched than side-notched. They frequently had shallow concave bases. This was probably to increase the durability of the base and to simplify hafting.

**48BH330-30884** (Table 3; Figures 5, 6)

This is an Early Plains Archaic projectile point of light yellow translucent chert of unknown origin. It is a complete point showing heavy reworking near the tip that had probably been broken off the blade before reworking. The base is straight, ground, and side-notched. The blade is badly nicked and jagged with obviously reworked blade edges. The tip is asymmetrical. The cross-section is lenticular shaped.

**48BH330-30885** (Table 3; Figures 5, 6)

This is probably an Early Plains Archaic projectile point of red Phosphoria chert, badly damaged and blackened by heat. It is also heat spalled and was probably broken during use. Only the base and lower half of the blade remain. It is side-notched. The flaking pattern is obscured by heat spalling. The blade is nicked and uneven.

**48BH330-30907** (Table 3; Figures 5, 6)

This is a base from a broken projectile point fragment made from an unknown tan and pink chert. It may be part of an Early Plains Archaic



point. Half of the basal end remains plus some of the blade. The artifact may have been a large point when complete. The point is side-notched. The flaking pattern is fine, but only a small area remains.

**48BH330-30913** (Table 3; Figures 5, 6)

This is a complete projectile point, probably Early Plains Archaic, that has been highly modified. It is made of an unidentified chert. The base is concave. It is corner-notched with basal thinning. The flaking pattern is "crude" and the blade edge is slightly serrated and retouched.

**48BH330-30916** (Table 3; Figures 5, 6)

This is probably an Early Plains Archaic, twist-broken projectile point base of very light grey to translucent orthoquartzite. It is side-notched and the blade has finely pressure flaked edges. The base is deeply concave. The flaking pattern is generally parallel, but is irregular.

**48BH330-30920** (Table 3; Figures 5, 6)

This is a dark brown (perhaps heated?) Phosphoria chert Early Plains Archaic projectile point that has been reworked, but retains a lenticular cross-section. The base is straight and the blade edges exhibit steep pressure flaking. There is an unusual irregular flaking pattern. Large shallow flakes and narrow steep flakes are removed from the dorsal side while the reverse side of the blade has fine, small surface flaking on one half and a deep large flaking pattern on the other half.

**48BH330-30985** (Table 3; Figures 5, 6)

This is perhaps an Early Plains Archaic projectile point fragment of an unknown grey and brown tinted chert. The blade split laterally and only one worked side of it remains. It is probably almost corner-notched with signs of basal thinning. There is very little of the flaking pattern remaining.

**48BH330-30894** (Table 3; Figures 5, 6)

This is a complete translucent and white chert projectile point, typical of McKean Complex points. It is corner-notched, with the blade slightly convex and serrated. Interestingly, there is steep beveled flaking along the blade edges. The flaking pattern is "crude" and there is a

section of the flaked surface missing from the proximal end of the blade. The blade edges are nicked and rough.

**48BH330-30900** (Table 3; Figures 5, 6)

This is a badly broken projectile point of medium grey Morrison chert. This point displays a severe impact break (bend break). One basal spur and most of the blade are missing. There is an interesting burin-like break along one edge of the blade. The base is concave and corner-notched. There is evidence of pressure flaking along a small segment of the blade.

**48BH330-30904** (Table 3; Figures 5, 6)

This is a complete McKean Complex projectile point of black and grey banded Morrison chert. The point is corner and basally notched with crescent thinning. The blade edges are pressure flaked and display some nicking near the tip.

**48BH330-30915** (Table 3; Figures 5, 6)

This is a badly broken side-notched projectile point, probably McKean complex, of light brick red Phosphoria chert. There is evidence of extensive heat damage and signs of the original use break. The base is slightly concave while the blade edge is straight and badly nicked. There is a general pattern of parallel oblique flaking, but it is not completely consistent.

**48BH330-30919** (Table 3; Figures 5, 6)

This is a whitish translucent base and blade projectile point fragment, perhaps McKean complex. There is an irregular flaking pattern. It is corner-notched with a straight fine serrated edge. The blade is uneven and nicked. The blade was probably broken during use.

**48BH330-30943** (Table 3; Figures 5, 6)

This is a lanceolate shaped projectile point, or possibly a knife blade, of light grey Morrison chert. There is an orange ring inclusion, filled with a darker grey material. The tip and base are broken, perhaps from use. The flaking pattern is generally lateral to parallel oblique. There is nicking along the blade edge that has pressure flaking. The edge is serrated.

**48BH330-30890** (Table 3; Figures 5, 6)

This is a brick red, Phosphoria chert, projectile point, probably Late Plains Archaic, with a slightly

broken spur, tang, and tip. There are wide flaking scars. The base is slightly convex with indications of basal grinding. It is corner-notched, with some fine pressure flaking. The blade edges are nicked, irregular and with a serpentine edge outline.

**48BH330-30905** (Table 3; Figures 5, 6)

This artifact is a blackish red, apparently burned, Phosphoria chert projectile point base, perhaps Late Plains Archaic in age. The flaking pattern is distinctive and very angular. The basal edge is straight.

**48BH330-30914** (Table 3; Figures 5, 6)

This is the base and lower blade fragment of a light grey chalcedony side-notched projectile point. It is finely flaked.

**48BH330-34449** (Table 3; Figures 5, 6)

This is a basal fragment of a maroon-brown Phosphoria chert, perhaps a Late Plains Archaic, projectile point fragment. It appears to be side-notched. The base is slightly concave and displays fine pressure flaking.

#### LATE PREHISTORIC PROJECTILE POINT TYPOLOGY

The arrival of the bow and arrow marked the beginning of the Late Prehistoric period (sites dating from 1500 yrs B.P. to 150 yrs B.P.) on the Northwestern Plains. Projectile points hafted to arrow shafts were smaller than those used with the throwing spear or dart and atlatl. Late Prehistoric projectile points were both side-notched and corner-notched. Pressure flaking was used to smooth the edges so they would not sever the sinew binding. Flakes were removed to lessen the hafting bulk to produce a slimmer and smoother hafting area that facilitated deeper penetration of the arrow. Bows provided higher velocity than the thrusting power of the spears or atlatls, and rendered arrows at least as lethal and effective as their precursors (George C. Frison, personal communication, 1989).

**48BH330-30883** (Table 3; Figures 5, 6)

This is a small, delicately flaked corner-notched projectile point of white chert. The base is slightly concave. The blade is serrated and

slightly convex. The point is flat on the ventral side and convex on the dorsal side. There is fine pressure flaking along the blade edges.

**48BH330-30888** (Table 3; Figures 5, 6)

This is a complete Late Prehistoric projectile point of yellowish brown translucent orthoquartzite with black and red speck inclusions. The point is corner-notched. The flaking pattern is obscured and the surface very smooth. The point may have been reworked for it is slightly asymmetrical.

**48BH330-30895** (Table 3; Figures 5, 6)

This is a Late Prehistoric projectile point blade of dark red and black Phosphoria chert that has been heat damaged. The broken tip and base are snapped off, evidence of use breakage. It was probably corner-notched and exhibits a fine flaking pattern. The blade edge serration is shallow and lightly nicked.

**48BH330-30897** (Table 3; Figures 5, 6)

This is the base and lower half of a corner-notched, Late Prehistoric projectile point of light red, translucent Phosphoria chert. It was probably broken during use. The base is straight across with a ragged edge thinned by flaking. The flaking pattern is well executed with some fine steep pressure flaking along one blade edge. Large irregular flakes are removed from the rest of the surface.

**48BH330-30903** (Table 3; Figures 5, 6)

This is a Late Prehistoric arrow projectile point of dark red, burned Phosphoria chert. The point broke vertically down its length, perhaps because of the intense heat. Heat spalling covers most of the surface of one side. The point is side-notched. The blade edge is serrated and the tip is missing. The basal edge is flat and pressure flaked.

**48BH330-30909** (Table 3; Figures 5, 6)

This is fine grained Morrison chert projectile point blade fragment is probably Late Prehistoric in age. The tip and base are missing and both ends display a typical use breakage impact pattern. The blade has badly nicked edges. The flaking scars are shallow and subtle. There is evidence of fine pressure flaking along the blade edges.

**48BH330-30924** (Table 3; Figures 5, 6)

This is a base and lower blade of a Late

Table 4: Summary counts of tools from Granite Creek Rockshelter.

TOOL TYPE	COUNT
scraper	11
biface	32
uniface	2
knife	2
Graver	2
drill	1
flake tool	303
ground stone	10
rubbing stone	1
core	8
<b>TOTAL</b>	<b>372</b>

Prehistoric projectile point fragment of an unidentified chert. It is a light whitish-grey and slightly translucent. The distal point of the blade was probably broken during use. It is side-notched, with an unusual little spur pointing downward from the base. The other basal corner has a hint of a spur. It shows no evidence of retouching, has an irregular flaking pattern, and a lenticular cross-section.

**48BH330-30928** (Table 3; Figures 5, 6)

This is an extremely dark red Phosphoria chert projectile point base and partial blade fragment, perhaps Late Prehistoric. The base is straight with pressure flaking. The remaining blade edge shows serration and is slightly convex. There is little evidence of fine irregular flaking. The use wear break suggests a heavy shock impact.

**48BH330-30951** (Table 3; Figures 5, 6)

This is the lower half of a fire blackened, red Phosphoria chert projectile point fragment, probably Late Prehistoric. It shows extreme heat spalling. There are thinning flake scars along the straight basal edge and irregular flaking.

**48BH330-30987** (Table 3; Figures 5, 6)

This is probably the proximal half of a light, bright red Phosphoria chert projectile point. It may be Late

Prehistoric. The base is straight and is side-notched. The blade edge is coarse.

**OTHER ARTIFACTS**

A variety of other lithic tool types were recovered from Granite Creek Rockshelter (Table 4, Figures 7, 8). Additional tools may be present within the debitage sample from the site (see below). Many tools display evidence of being burned and trampled. Future studies of the Granite Creek Rockshelter lithic material should include reexamination of all these artifacts, especially the flake tools, to determine if they have been utilized or if the edge damage occurred post-depositionally. The debitage should also be further examined.

**TOOLS**

48BH330-30911 is probably a McKean Complex knife blade broken during use. This is a particularly well made tool. The flaking and manufacture of this item are of unusually fine quality and the lithic material resembles chaledony. Its general lanceolate shape and deeply indented base strongly resembles a Clovis projectile point base. However, this artifact is not

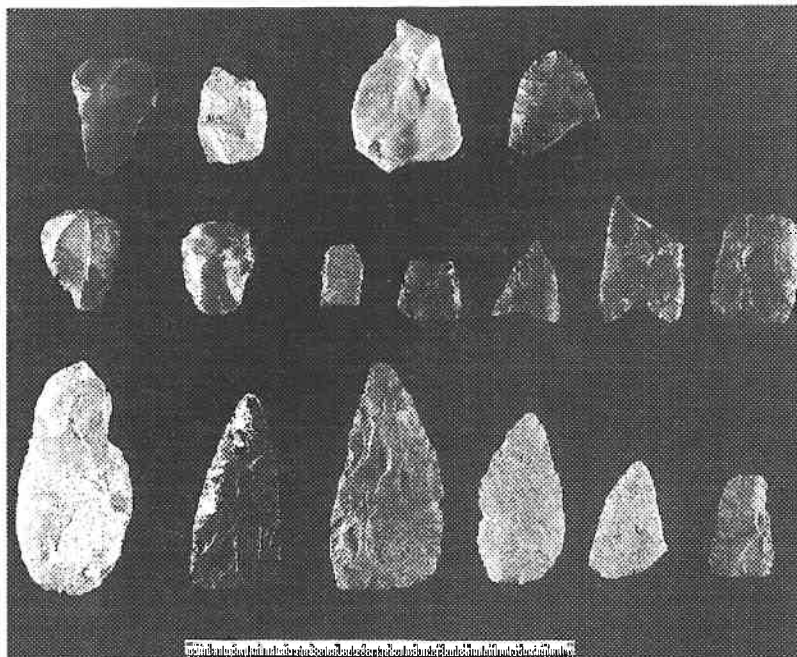


Figure 7: Stone tools recovered from Granite Creek Rockshelter.

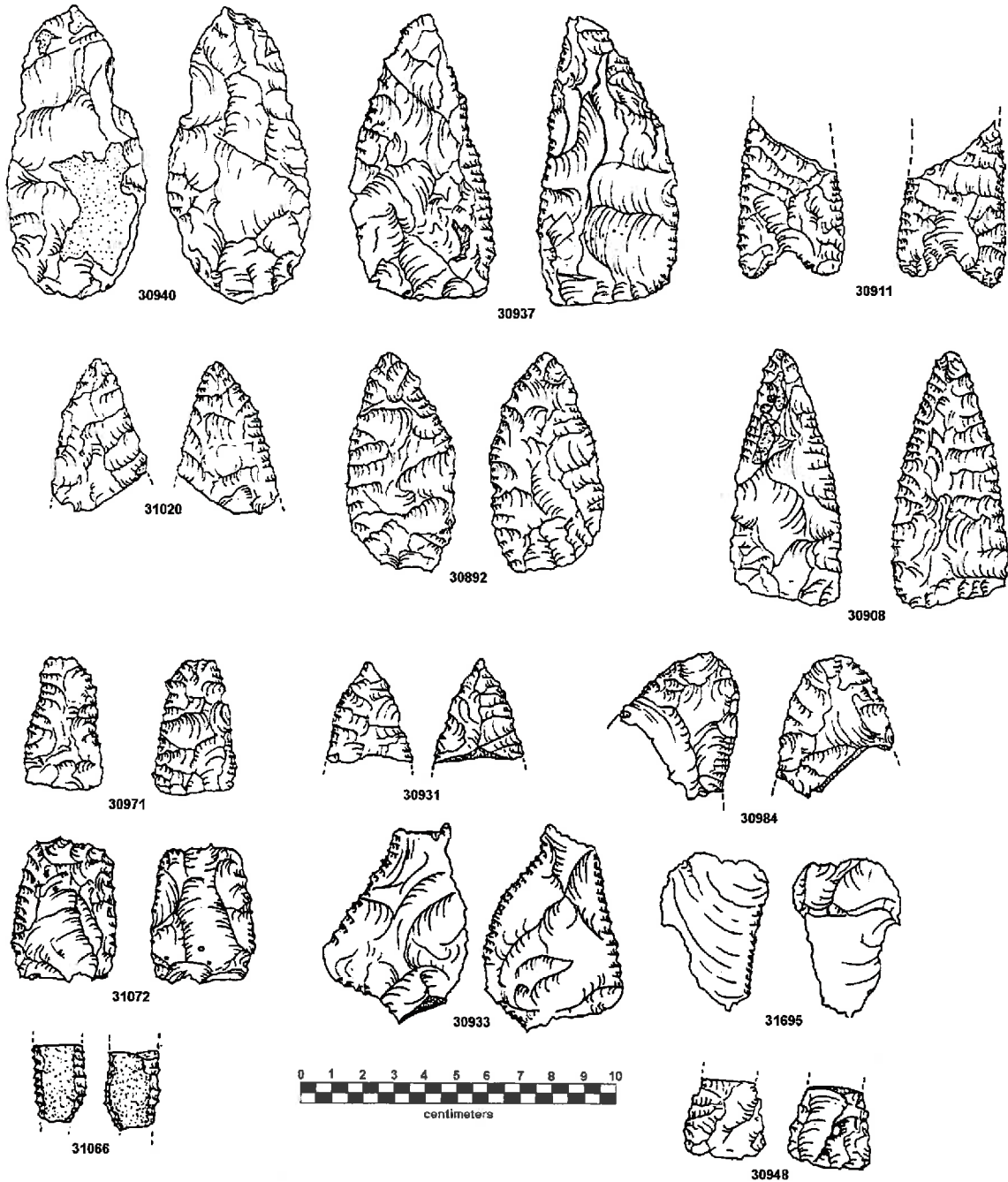


Figure 8: Stone tools recovered from Granite Creek Rockshelter.

fluted, does not have basal grinding, and the flaking pattern is not that normally found on Clovis points. Other similar knives are identified as belonging to the McKean tool assemblages. It

is made of a translucent chert with dark inclusions.  
**MANO**

The mano (48BH330-31694) exhibits heavy pecking and battering marks on both ends. One

end is rounded like a pestle. Only one face is smoothed and striated from use. The opposite side is uneven.

**SHELL**

There was one freshwater gastropod shell (*Lampsilias radiatus*) fragment recovered from the excavations. It measured 7.4 by 7.5 cm in size. No obvious cultural modification could be seen on the edges of the fragment.

**DEBITAGE**

Approximately one cubic foot of debitage was recovered during the excavations at Granite Creek Rockshelter. Only three bags of this debitage were examined during this study.

One bag was labeled "East Trench." It contained 162 debitage flakes. Eleven were quartzite flakes and the rest various cherts, mostly red Phosphoria chert. These averaged 2.0 by 1.0 cm in size. There were also 37 bone fragments and three distinctly different types of gastropod fragments. There were also two larger lithic pieces: a 5.0 by 5.0 cm quartzite crystal flake and a 5.0 by 3.0 cm piece of limestone.

The second bag examined was labeled "East Trench 3-6 inches." It contained 117 chert flakes, most less than 1.0 by 1.0 cm in size. There were 28 quartzite flakes, about the same size. There was one small obsidian flake and six bone fragments.

The last debitage bag examined was labeled "Cleanup Sept 20 - stone" and contained 14 quartzite flakes. One was 7.0 by 6.0 cm; a second was 5.0 by 3.0 cm; a third was 2.0 by 1.0 cm; the

rest averaged 1.0 by 1.0 cm. There were 61 chert flakes. Twenty-two of these were about 2.0 by 2.0 cm in size while the rest were less than 1.0 by 1.0 cm. All but six of these chert flakes were red Phosphoria chert.

**CONCLUSIONS**

Why was this particular shelter used repeatedly over thousands of years? Perhaps because it lay along an access corridor leading to the Bighorn Basin. The number of lithic tools found in the shelter suggests that it was an animal processing area inhabited repeatedly by hunting groups. "Scheduling of economic activities in response to food resource availability was the key to year-to-year prehistoric survival on the Northwestern Plains (Frison 1978:361). Lithic materials were available in the area and there was easy access to water. Undoubtedly game frequented the expansive meadow to graze. The solar orientation would have provided an additional comfort and it is a beautiful location.

Most lithic tools and debitage from the site were local materials. The exception is the obsidian (Table 5), non-volcanic glass, and porcellanite. The presence of obsidian from three different localities suggests either a wide range of yearly round, or participation in some form of trade-exchange network. Other tools and materials suggest perhaps the activities were not limited solely to hunting activities. Fragments of manos, metates, and grinding stones indicate seed processing, butchering and processing activities.

Table 5: Obsidian source data from Granite Creek Rockshelter.

ARTIFACT TYPE	CATALOG NUMBER	SOURCE
Projectile point	48BH33030-876	Fish Creek Second Variety, Wilson, Wyoming or Teton Pass, Wyoming
Flake	48BH33031-692	not submitted
?flake	48BH33031-719	not submitted
Flake	48BH33030-897	Obsidian Cliff, Yellowstone National Park, Wyoming
Flake	48BH33031-167	Mineral Mountain, Utah
Flake	48BH33030-949	Fish Creek Second Variety, Wilson, Wyoming
Flake	48BH33031-015	Obsidian Cliff, Yellowstone National Park, Wyoming
Flake	48BH33031-165	Mineral Mountain, Utah

Most points were in poor condition. Many are broken and damaged, and they appear to have been repeatedly reworked and repaired. These factors, and the breakage patterns, suggest the points were perhaps broken in use, not during manufacture. Frison suggested that "perhaps rehafting of projectile points was the activity represented at the site" (Frison and Grey 1980:39). It is interesting that the Phosphoria chert points were repeatedly reworked rather than replaced when there were local chert sources. Some tools and points were undoubtedly stolen from the site by modern artifact hunters (vandals, pot hunters, etc.). Whole projectile points would have been taken and perhaps broken and damaged points left behind. This factor could account for a skewed representation of damaged artifacts.

Archaeological projects often are crisis oriented with too little money and time. This was the case with Granite Creek Rockshelter. The destruction of the rockshelter was a definite loss of potential research data and the information it might have provided about hunting-and-gathering groups during prehistoric times. Binford (1980:4-20) discusses hunter-gather settlements systems and how ethnographic studies and archaeological materials can be united to reconstruct past cultural ways. Surely the Granite Creek Rockshelter played a continuous role in the procurement rounds of the early peoples of the Bighorn Mountains and Bighorn Basin areas. The archaeological remains represent a small increment of the by-products left by a cultural system that can hopefully be reconstructed to promote a deeper "understanding between the dynamics of a living system in the past and the material by-products that contribute to the formation of the archaeological record" (Binford 1980:5). Binford proposed ambitious and worthwhile goals for archaeological researchers. The aim of archaeological research is to obtain an understanding of the differences in cultural systems "through the study of artifacts" (Binford 1989:3). Those differences influenced and affected patterns that may be traced in the existing archaeological records. This report was an

attempt to gather some of the archaeological puzzle pieces present at the Granite Creek Rockshelter. Hopefully, a future in-depth examination of these artifacts will be initiated to generate more specific information for archaeological pursuit of hunter-gatherer's cultural ways.

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## TWO SOUTH PASS AREA OREGON/MORMON TRAIL CLAY PIPES

by  
James J. Stewart

Fragments of two Point Pleasant Ohio Punctate Pipes dating circa 1860 were found along a section of the Oregon Trail in the South Pass vicinity (48FR-3551). The Oregon/California/Mormon Trails in that South Pass area converged into one general trail which would have been used by Native Americans for millenniums, and by white trappers, traders, emigrants, and gold miners from 1824 through 1900.

Most of the white emigrant traffic along that portion of the Oregon Trail would have been from the 1840s-1870s. The Mormon use of the trail was primarily from the late 1840s through the mid-late 1860s, when the Southern Route across Wyoming, from Cheyenne to Fort Bridger (the Overland Trail) replaced the Platte River route to avoid Indian problems with the Sioux, Cheyenne, and Arapahos from Fort Laramie to South Pass. While the Oregon Trail was still the main emigrant route west, Indian troubles increased in the Wyoming portions. The 11th Ohio Regiment Cavalry Volunteers were stationed along the Sweetwater and Platte Rivers portions of the Oregon Trail beginning on May 30, 1862. The troops were posted at the Platte River Station (Fort Caspar), South Pass, Burnt Ranch, Sweetwater Station, and St. Mary's Station to guard the emigrants and Overland mail routes from Julesburg (Colorado) to Green River (Wyoming). (Dyer 1888:1479). With the opening of the Trans-Continental Railroad in 1869, nearly all Oregon/California/Mormon traffic moved south to use the newly installed Union Pacific Railroad, or the Overland Trail that ran parallel to it. The telegraph line and pony express also moved to the southern route due to Indian troubles. Following 1868, a different type emigrant began using that portion of the Oregon Trail to South Pass where

the pipe fragments were found.

In 1868, the Shoshone-Bannock Indian Reservation was being developed and gold was discovered at Atlantic and South Pass cities. With the new emigrants' activity came a new wave of military activity, with posts created at Camp Stambaugh, South Pass (1870-78), and Camp Augur at Lander (June 1869). With the newer activities, the portion of Oregon Trail where the Point Pleasant Pipe fragments were found, became part of the Rawlins to South Pass Wagon Road. Thus the pipes were found at a locale that saw emigrant traffic from 1824 onward through the end of the 19th Century.

The specific portion of the Oregon Trail is east of South Pass above Sweetwater River, in a section of dry grass/sagebrush hills with intermittent rock outcrops, with occasional spruce trees. The east and west slopes of the hill top where the pipes were found have more clays and soils and are less rocky than the hill top itself. It is very easy to imagine a wagon or handcart meandering its way up the bumpy hill finally to rest at the top on the flatter surface. There the wagon driver or handcart handler could have rested, possibly unloading part of the cargo to take a short lunch, or rearranging the load that was well-joggled coming up the hill. The pipes might have been broken from the joggling, or in the unloading and reloading of a broken wagon or handcart. Currently surface artifacts are scarce, and when found usually partially buried in the clay soils, but on the top the pipe fragments were chinked between stones very much open to the weather.

The initial Bureau of Land Management survey was conducted in July 1994, when the pipe

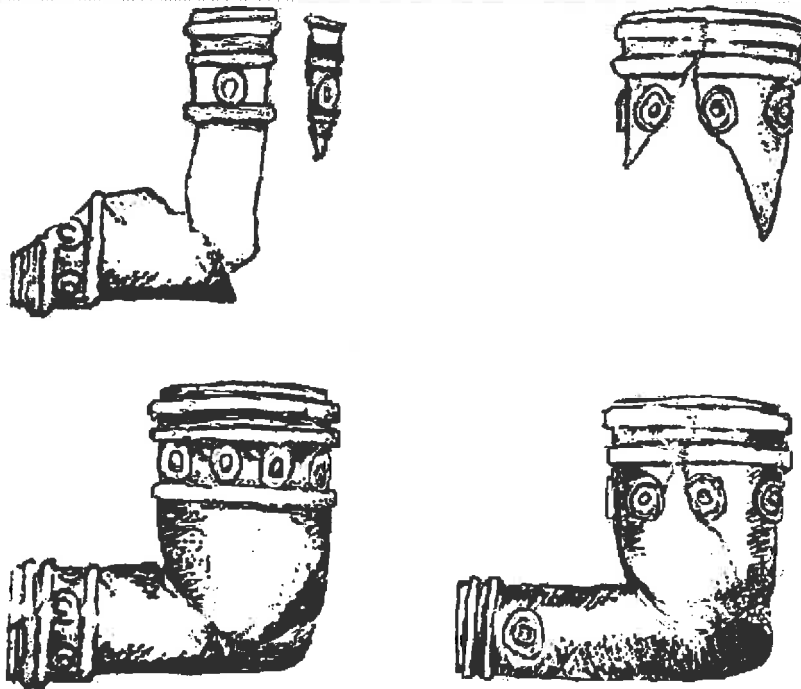


Figure 1: Point Pleasant clay pipes from South Pass, Wyoming. Upper: Point Pleasant Punctate Variant C or I pipe. Lower: Point Pleasant Punctate B Pipe.

fragments were found. Also found were square nails, a sling buckle, a "clinch pin," a double trigger from a flint lock or percussion cap weapon, and a circa .36 caliber casting mold for lead shot. The placement of all of the items at the site fit within dates not preceding 1841, nor later than 1912. (Wuertley 1994).

On the subsequent site survey (1997), a military center fire 44/40 cartridge (with no manufacturer markings, and most likely dating from the late 1860s to the mid 1870s) was found on the east side of the hill near the top not far from glass fragments of light blue telegraph insulator dating from the early 1860s. One objective of that site survey was to look for more pipe fragments, however, none were found.

The pipe fragments represent two Point Pleasant, Ohio, punctate pipes. Both of the punctate pipes have double plain bands above a single band of punctates. One pipe however, listed here as a *triple band punctate pipe*, also has

a plain band below the punctates. The other pipe, listed here as a *double band punctate pipe*, has only the two top bands. Putting the fragments of the *triple band punctate pipe* together did not prove very difficult, as *fragment a* (most of the pipe stem) and *fragment b* (a side with top rim piece) fit together at one break juncture giving an overall image of the pipe. The curvature of the bowl and its estimated size led to my speculating the measurements and shape of the *double band punctate pipe* that had fewer fragments.

My guesstimate of the *triple band punctate* is there were around 12 punctates around the bowl, and 6-7 punctates around the stem. It had a 15-18 mm stem band diameter, was about 40 mm high; by 40-45 mm long; and had about a 20-23 mm bowl

outside diameter. Using Ohio archaeologist James Murphy's pipe typology classifications, this pipe appears to be a Point Pleasant Punctate Variant B Pipe (Murphy 1976:13-15, Figure 2A, 2B, 2C).

The *double band punctate* appears to be a Point Pleasant Punctate Variant C or I Pipe, again using Murphy's pipe typology (Murphy 1976:13-15, Figure 2 D, 2F). It had an estimated 6-8 punctates around the bowl, and probably either one or none around the stem. The pipe appears to have measured around 40 mm high; by 40-42 mm long; with a circa 20-25 mm bowl outside diameter. Since none of the stem was recovered, one can only speculate the bands were similar to the triple band punctate, sans the third one. The clay for the double band pipe appears to be brown with a slate gray matte glazing.

The pipes came from Point Pleasant, Clermont County, Ohio. The pipe factory there initially was built by William P. Lakin, who died in 1843. The factory then changed ownership several times,

shutting down in 1891, and being reopened in 1894-95 by the Akron Smoking Pipe Co. It then appears to have been totally abandoned by 1907 (Murphy 1976:12). The earliest identifiable dated Point Pleasant pipes of any style are Zig-Zags dating from 1851-1861, found at the first Fort Union site in New Mexico (Wilson 1966; Murphy 1976:12, 26-27). Murphy places the punctate pipes as being created at Point Pleasant before 1860, with no known date for when production ceased. (Murphy 1976:27).

Initially the punctate Oregon Trail pipe fragments were identified as Point Pleasant Punctate Pipes by using Michael A. Pfeiffer's 1982 thesis *Clay Tobacco Pipes and the Fur Trade of the Pacific Northwest and Northern Plains*. Pfeiffer's illustration of fragment No. 16, found at the Nebraska townsite of DeSoto dating 1855-1875 (25WN-16) (Pfeiffer 1982:173-76) is similar in design to the Oregon Trail fragments. The DeSoto fragment fits within the same time frames presented in Murphy's factory dates, and fits heavy use of the Oregon Trail east of South Pass where the fragments were found. The DeSoto pipes were found in what was identified as a probable residence cellar. The town of DeSoto was founded in 1854 along the Missouri River, in Nebraska. DeSoto became occupied in 1855 as a steamship traffic town, and was defunct in the late mid 1870s due to the railroads making the steamships obsolete. The town was totally abandoned in 1887 (Pfeiffer 1982:173). Pfeiffer stated similar comparison Point Pleasant Punctate pipe variations had been found at Fort Union North Dakota. (Pfeiffer 1982: 173-76, 184-85, 187-188).

### CONCLUSION

Clay trade pipes were common to mountain men, traders, the military, and emigrants along the Oregon Trail from the earliest western explorations through the turn-of-the century, including Point Pleasant Ohio clay trade pipes. Although we cannot place an exact date for the Oregon Trail pipe fragments, with the use of Murphy's typology and dates for the initial

production of Point Pleasant Punctate Pipes, and Pfeiffer's fragment description and DeSoto research dates, those dates parallel the heavy emigrant use of the South Pass area Oregon/California/Mormon Trail, leading to a reasonable speculation the Wyoming pipe fragments were left on that wind swept hill top sometime between the late 1850s to the early 1870s.

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