THE WYOMING
Archaeologist

VOLUME 62; NUMBER 1; 2018

ISSN: 0043-9665

[THIS ISSUE PUBLISHED March, 2020]

THE WYOMING Archaeologist

THE WYOMING ARCHAEOLOGIST is published semi-annually by the Wyoming Archaeological Society, Inc. Address manuscripts and news items for publication to: Dr Danny Walker, Editor, The Wyoming Archaeologist, 1687 Coughlin St, Laramie WY 82072.

On the Cover:

Featue from the Canid Housepit site, (48CR8818). See article by Buenger, this issue.

Information for Contributors

The Wyoming Archaeologist accepts papers from professional archaeologists, students, and avocational archaeologists. Subjects published in The Wyoming Archaeologist include, but are not limited to, archaeological reports on sites in Wyoming and adjacent areas, descriptive project summaries, preliminary results of significant studies, archaeological method and theory, ethnographic studies, regional history, and book reviews. Submissions by professional archaeologists will be sent for peer review before acceptance.

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

The society membership period is from January 1 through December 31. All subscriptions expire with the Fall issue and renewals are due January 1 of each year. Continuing members whose dues are not paid by March 31 of the new year will receive back issues only upon payment of $5.00 per issue. If you have a change of address, please notify the Executive Secretary/Treasurer. Your *WYOMING ARCHAEOLOGIST* will not be forwarded unless payment is received for return and forwarding postage. Back issues in print can be purchased for $5.00 each, plus postage. Back issues out of print are available at $0.25 per page plus postage.

Checks for chapter subscriptions and renewals should be sent to the chapter secretary involved. All other checks, subscriptions, and renewals should be addressed to the Executive Secretary/Treasurer. Correspondence and orders for back issues should be addressed to the Executive Secretary/Treasurer.

Society yearly subscription rates are as follows:
Individual Associate Member - $20.00
Institutional Member - $30.00
Canada and Other Foreign - $34.00

Other memberships may be available. Contact the Executive Secretary/Treasurer for information. Local chapter dues are in addition to state society dues. The Wyoming Archaeological Society is a Nonprofit Organization.

The Wyoming Archaeological Society, Inc. and its local chapters do not discriminate on the basis of age, gender, sexual orientation, gender identity, gender expression, ethnicity, disability, national origin, political affiliation, or religious belief.

THE WYOMING ARCHAEOLOGIST
VOLUME 62(1), SPRING 2018

Table of Contents

THIS ISSUE PUBLISHED MARCH 2020

IN MEMORIUM

JOHN PATRICK ALBANESE
1925-2019

MARION, Ark.—John Patrick Albanese, age 93, a long-time Casper resident, died on February 21, 2019 in Marion, Arkansas where he had moved to be near his daughter and son-in-law.

John was born in Newark, New Jersey on July 11, 1925 to John Salvatore and Helen (Black) Albanese. John left Newark in 1943 when he joined the U. S. Army to serve in WWII. He served in Europe and was awarded a purple heart and a bronze star for bravery. After the war, John attended the University of Wyoming where he earned his Bachelor and Master's degrees in Geology and met and married Evelyn Gerda Jacobsen.

They moved to Casper, Wyoming in 1962 and it was there that they settled with their two children. They were married for 68 years and traveled all over the world as John served on boards and committees and worked in his fields of petroleum geology and geo-archaeology. He continued his work well into his 80's, sharing his expertise and passion for archaeology and geology, acting as a mentor to many.

John loved his adopted state of Wyoming, and anyone who got to take a "short drive" or tour with him learned all about teepee rings, Wyoming history, mineral stratification, and a number of other things from someone who truly knew and understood the subject matter.

He was a fine cook, and much of the fresh produce he used came from the large vegetable garden he planted and tended annually. John had many other interests including reading, creating mosaic art, making wine, watching wildlife, and spending time with friends and family.

John was preceded in death by his wife, Evelyn, in 2014, and his son, Richard John Albanese, in 2018.

He is survived by his daughter, Arlene Albanese Roberts (John), of West Memphis, AR; two granddaughters, Kara Reed (Aaron) of Leavenworth, KS and Lisa Albanese of Billings, MT; three great-grandchildren, Bryn and Grant Reed, and Arazia Ruffino; and his sister, Helen Albanese Pallante of New Jersey.

Memorial donations may be made to the Friends of the Wyoming Veterans Memorial Museum, 3740 Jourgensen Avenue; Casper, WY 82604.

https://trib.com/lifestyles/announcements/obituaries/john-patrick-albanese/article_46c141a4-185d-5e8d-81fa-46137d94dbea.html

A Few Words in Memory of: John P. (for Patrick) Albanese, July 11, 1925 - February 21, 2019; presented by Kerry Lippincott.

John and I surveyed quite a few oil and gas well pads and pipeline corridors together, but not nearly as many as he surveyed by himself or with any of his other surveying partners. John and I shared a lot of "windshield time" on the highways, byways, and two tracks of Wyoming, but not nearly as many as he drove by himself. And I have had my arms nearly pulled out of their sockets while serving as John's rod man in the wind, but at the same time he was wrestling with plane table and alidade that must have been bouncing up and down like a Mexican Jumping Bean.

John was a Native of Newark, New Jersey who quickly adopted Wyoming as his home base. Both he and his father volunteered for the military after 1941; his father was a Sea Bee in the Pa-cific Theater and John was in the Infantry in Europe. John was wounded by artillery shrapnel, lost the sight in his right eye, convalesced in Abergavenny, Wales, and returned to the Front Line. He once mentioned that he and his unit had gone for over 50 days without any kind of relief as they advanced across eastern France and western Germany. John was a member of The Greatest Gen-eration.

John received a Bachelor's and Master's

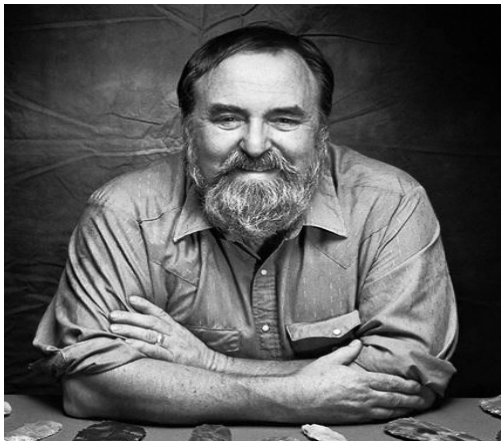
Degree in Geology from the University of Wyoming under the G.I. Bill. His Master's Thesis was on the geology of his wife's family ranch along Horse Shoe Creek in the Laramie Range. He was, at heart, by education, training, and experience a petro-leum geologist, or as he was known to have called it, "the grease business". John morphed into a geoarchaeologist after George Frison asked him to provide a geomorphological interpretation of the Ruby site in the Powder River Basin. John introduced George to the benefits, additions, and insights that deep stratigraphy could bring to an understanding of buried sites. After Ruby, John provided George with similar services at the Casper site, Colby Mammoth site, Agate Basin, Han-son Folsom, Horner, Carter-Kerr/McGee, and Mill Iron sites. He did the same for Miles Gilbert at Natural Trap Cave; for Dennis Stanford at the Dutton/Selby and Jones/Miller sites in Colorado; for Les Davis at the MacHaffie and Indian Creek sites in Montana; for Adrien Hannus at the Ray Long and Buster Hill sites and for Michael Fosha at the Licking Bison and Summit Springs sites in South Dakota; and for many, many other individuals at other sites in other places.

John wrote about paleotopography and authored comprehensive geoarchaeological overviews for the Northwestern Plains that were published in volumes from the Geological Society of Amer-ica and the University of Oklahoma Press. And, in turn, John was "roasted" as a Special Recogni-tion at the banquet of the fifth Island in the Plains Symposium in Custer, South Dakota and was the subject of a dedicated symposium entitled "Quaternary Geoarchaeology: Honoring the Work of John Albanese" at the Geological society of America's Rocky Mountain Section's 2015 meeting here in Casper.

Finally, John was a member of the Wyoming Archaeological Society since at least 1964, served as the Casper Chapter president in 1967 and 1968, the State president in 1969 and 1970, and received an Honorary Lifetime membership for his services several years ago. John was pre-sented with the W.A.S Golden Trowel Award "for outstanding achievements" in 1973. John was present at the founding of the Wyoming Archaeological Foundation and served as its president.

And so, In Memory, Thank You, John Albanese.

IN MEMORIUM
DENNIS J. STANFORD
1943-2019



The following message was sent on April 24, 2019 by Sant Director, Dr. Kirk Johnson, Smithsonian Institution, NMNH concerning the passing of Dennis Stanford.

"It is with great sadness that I write to tell you that our friend and colleague, Dennis Stanford, Curator of North American Archaeology and Director of the Paleoindian Program, passed away this morning at Georgetown University Hospital after a long illness. Dennis was a beloved member of our community and could always be counted upon for a kind word and a smile. He was also a gifted and passionate archaeologist.

After receiving his PhD from the University of New Mexico, Dennis joined the Department of Anthropology in 1972, launching a 47-year career at the museum. He became one of the best known archaeologists in North America, with a gift for communicating research to both scholarly and public audiences. At a time when Paleoindian archaeology was still in its formative stages, Dennis helped advance the field through his studies of lithic materials, especially the distinctive stone tools known as Clovis points. His early-career fieldwork at the Jones-Miller Bison Kill Site in Colorado was an exceptionally careful excavation and study of a rich bison butchery site that dated to the Folsom period, roughly 10,000 years ago, and helped set the stage for the rest of his career. The last few decades of his research focused on the origins of the first inhabitants of North America, along with human adaptations to the changing environment as the last Ice Age was ending. He conducted fieldwork in Siberia, northern China, the western Arctic, the Rocky Mountains and, most recently, in the Chesapeake Bay region. Early on, his experimental research in using traditional stone tools to butcher an elephant that recently died was covered by National Geographic.

During his career Dennis authored 136 publications, including several books. Across Atlantic Ice, which described his theory for an Atlantic route taken by the earliest Americans, was his most recent book. It was translated into multiple languages and was made into an audiobook.

Dennis was generous in his service to the museum and academic community, serving as chair of the Anthropology department from 1993 to 2000, serving as head of the archaeology division multiple times, hosting 32 fellows and serving on many dissertation committees. However, his substantial research and service accomplishments are almost outstripped by his extraordinary contributions to the archaeology collections. Dennis was the excavator/donor of 20 acquisitions totaling 475,000 objects and was the curator of record when an additional 32 acquisitions joined the collections, representing an additional 673,000 items. He will remain one of the foremost contributors to the North American archaeological collections for decades, if not centuries, to come.

I know all of you join me in sending our deepest sympathies to Dennis' wife Pegi and his family, friends, and colleagues.

Sincerely, Kirk Johnson, Sant Director

(photo and text curtesy of Smithsonian Institution)

IN MEMORIUM

Diane Porter
1928-2019

Diane Lou (Wahl) Porter, 60-year Riverton resident, died suddenly last week, at the age of 90.

Diane was born July 20, 1928 in Independence, KS, to Clyde (Pete) Wahl, and Mary Edythe (Sheldon) Wahl. She graduated from Kansas State University in 1951 and married Wm F. (Bill) Porter. They lived in Junction City, KS, where she taught elementary school, and later in Ellinwood, KS where sons Dean and Kim were born. They were transferred to Alberta, Canada for several years, and then moved to Midwest, Wyoming, where son Jeff completed the family.

Moving to Riverton in 1959, Diane became a stay at home mom, but later worked as a teacher's aide, and then taught nutrition through the University of Wyoming, in a mobile classroom on the Wind River Reservation.

She enjoyed traveling in the US and abroad, also including local explorations with the Wyoming Archaeological Society. In the meantime, she liked playing golf and bridge, gardening, and spending time with her family.

She is survived by her husband Bill, of Riverton, sons

Dean of Arvada, CO, Kim of Hot Springs, AR, and Jeff of Grand Junction, CO. Also, granddaughters Kaylee of Ft Collins, CO, and Michelle of Laramie, WY, sister in law Beverly Wahl of Edmond, OK, and several nieces and nephews. She was preceded in death by her parents, brother Ben, and sister Eve. The friends she had in Riverton who have now passed on are too numerous to name.

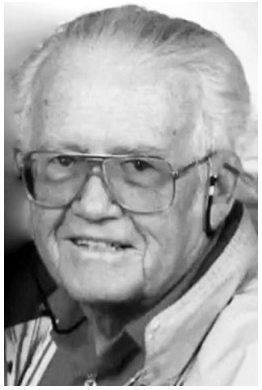
A brief gathering in her memory will be held at the Davis Funeral Home on Friday, May 24, 2019 at 2:00 p.m. with Pastor Aaron McKee officiating.

http://www.thedavisfuneralhome.com/home/obit/2947

IN MEMORIUM

William Porter

1924-2020



William F. Porter, a sixty year resident of Riverton, Wyoming, died January 14 after a year-long struggle with dementia. He was 95 years old.

He was born in Enid, OK on October 4, 1924 to Francis N. and Elizabeth (Cunningham) Porter. After high school in Pratt, KS, he entered the US Marine Corps. He took part in the battle of Iwo Jima, and then the occupation of Japan.

Returning home, he attended Kansas State University, receiving a business degree in 1951. He married Diane Wahl and began his long career with Stanolind Oil and Gas, later Amoco.

After the birth of sons, Dean and Kim, the family was transferred to Alberta, Canada for four years. They then moved to Wyoming, where son Jeff was born, and settled permanently in Riverton in 1959.

Bill served on the Riverton City Council from 1967 to 1972 and again from 1987 to 1992. He was a mainstay of the Lions Club, serving as secretary for many years, and participating in all of their community activities. He was inducted as a member of the Wyoming Lions Hall of Fame, among other honors.

He enjoyed golf, working on home and automotive restoration projects, and searching for fossils and arrowheads which he polished and mounted for display. After retirement, he and Diane traveled with friends to many places in the US and abroad. He competed in the Wyoming Senior Olympics, winning medals in table tennis and golf. He was active in the local chapters of the Wyoming Archaeological and Historical Societies and enjoyed many field trips with them.

He was preceded in death by his wife, Diane, and also his brothers, James, Robert, and Joseph. He is survived by son, Dean, Kim, and Jeff, and granddaughters, Kaylee and Michelle.

http://www.thedavisfuneralhome.com/home/obit/3125

IN MEMORIUM
JUDITH INBERG
1938-2018

A Celebration of Life for Judith "Judy" Elaine (Rush) Inberg, 80, will be held from 2:00 until 4:00 p.m., Thursday, December 27, 2018 at the Holiday Inn in Riverton, WY. Memorial contributions to the Help for Health Hospice in care of Davis Funeral Home, 2203 West Main, Riverton, WY 82501.

Mrs. Inberg passed away on November 16, 2018 at Help for Health Hospice Home in Riverton, WY.

She was born on September 6, 1938 in Charlotte, N.C. daughter of Harold J. and Lillian (Rees) Rush. Judy attended an elementary school in Rosebud, S.D. high school at Fort Washakie, Wy, graduating in 1960 before attending the University of Wyoming, graduating with a degree in Elementary Education and Special Education.

On August 13, 1960, Judy married Richard "Dick" Inberg in Ethete, WY.

Judy worked at Ashgrove Elementary School in Riverton from 1960 until 1962. She then went on to substitute teach for the Riverton School district from 1963 until 1986. In 1986, she became the special education teacher for the Fort Washakie School District until 2001. While she worked as a substitute teacher, she also ran her own business, Wagon Wheel Catering.

Judy was a member of the Back Country Horseman, Wyoming Education Assoc., P.E.O. Chapter H, as well as the Archaeology Club. She also taught Sunday school at the Episcopal Church.

Mrs. Inberg enjoyed riding in the backcountry with her mule, Salie, skiing at Jackson Hole, walking, camping and writing poetry. She also liked to spend her time traveling, dancing as well as photography.

Survivors include her husband, Richard "Dick" D. Inberg of Riverton, WY; daughters, Mary Ellen Nelson and Lee Ann Inberg-Schuff; 4 grandchildren. Mrs. Inberg was preceded in death by her sons, Eric R. Inberg and Kirk Inberg; parents, Harold and Lillian Rush; brother, Thomas Rush and sister, Cherry Rush.

http://www.thedavisfuneralhome.com/home/obit/2864

IN MEMORIUM
J. D. "Sam" Drucker
1952-2019

Born on November 17, 1952, in Kansas City, James Douglas "Sam" Drucker was adopted by Donald Kenneth and Jeanne Bellis Drucker and began his life in Missouri. James had multiple interests; fishing and hunting arrowheads with granddad Bart Bellis on his Wheatland, WY farm, cooking and, specially, spending time with his sisters Anne Claire, Mary, and Katie. After Sam and his family moved to Kearny, NE, he performed as the lead singer in a band, "Bittersweet Conspiracy" and also received the nickname "Sam Drucker" after the lovable grocer in the sitcom "Green Acres". In 1971, his family returned to Wheatland and Sam enrolled at the University of Wy-oming. Working as a surveyor for Banner and Associates, Sam found he had a knack for spotting artifacts which led to discussions of these finds with UW archeologists. In 1992, Sam re-entered college and earned a Bachelor of Arts and Masters of Arts in Anthropology, specializing in Archeology.

In 1992, Sam became a cartographer in the Cheyenne Bureau of Land Management (BLM) office. He left BLM for a Sheridan cultural resource management firm; then returned in 2004, transferring to the BLM Pinedale office. Though Sam's professional accomplishments are too numerous to list, he was most proud of his work on the Wardell Buffalo Trap south of Pinedale, Holden Hill Emigrant Inscription Site, Jerry Hunt Pictograph Site, Sommers Medicine Wheel, and the Lander Trail New Fork River Crossing Historical Park. As a result of his respectful relationships with the Eastern Shoshone, Shoshone-Bannock, Northern Arapaho, and Ute Tribal Preser-vation Officers and Tribal Elders, he was asked to document the Ruby Butte Landscape site, an Indian burial ground. He was recognized by multiple historical organizations, including receiving a Distinguished Service Award from OCTA (Oregon-California-Trail-Association). Sam's professionalism and passion resulted in his designation by the BLM as a "National Heritage Hero" in 2019.

Sam freely shared his professional expertise and joined the Board of Trustees for the Sublette County His-torical Society and Museum of the Mountain Man. He served eight years, including President for his last two years. Sam also founded the Upper Green River Basin Chapter of the Wyoming Archaeological Society (WAS). He rel-ished involving others in archeology and history and participated in activities with the Sublette County Historic Preservation Board, Wyoming History Foundation, and Green River Valley Museum. A member of the Upper Green River Chapter of Trout Unlimited, Sam worked to protect coldwater fish habitats and enjoyed tying flies and sharing his expertise with younger anglers.

In 1982, Sam married Ellen Kay White and her 2 year old daughter Evonne became the light of his life. On November 17, 1984, daughter Chelsea Claire joined the family. Ellen and Sam divorced in 1999, but remained committed to raising their daughters with warmth and kindness. Having the same birthday was just one of many special bonds between Chelsea and Sam. They were lifelong best friends and Chelsea was his caretaker to the end. Sam's love of children extended to his nieces Katelynn and Katherine who always enjoyed his frequent visits.

Sam passed away peacefully on November 6, 2019 at St. John's Hospital in Jackson Hole, WY surround-ed by his family and friends. One of the last things that Sam said was to "Look for him in the Smiles." He is sur-vived by daughters Chelsea Drucker, Denver, CO, and Evonne Shirzadegan with granddaughter Akacia Horsley of Flagstaff, Arizona, sister Katie and her hus-

band, Howard Johnson and two nieces Katherine Johnson and Katelynn Blasi and husband, Austin Blasi of Colorado. (Courtesy of The Pinedale Roundoup).

TRIBUTE TO J. D. (SAM) DRUCKER
By Dave Vlcek

Sam Drucker came to BLM Pinedale in 2004 in the midst of a huge energy development effort. While the ener-gy workload was substantial, Sam found time to engage in critical Section 110 efforts. A massive flash flood and erosional episode occurred in 2005 and heavily impacted the Wardell Buffalo Trap, a major National Register-Listed site on BLM land near Pinedale. Large quantities of bison bone and artifacts were exposed and deteriorat-ing. While BLM pondered what to do, Sam got permission from BLM Pinedale to engage in emergency protection excavations. This he coupled with a research orientation that filled in several archaeological gaps left by the early 1970's University of Wyoming excavations. He took on volunteers, a very successful public education effort and, subsequent to the emergency salvage effort, secured $120,000 to fund analysis, curation and related expenses.

At BLM and especially after (senior archaeologist) Dave Vlcek's retirement, Sam became a respected leader in proactive, positive Native American and Tribal consultations. He was very well regarded by the Shoshoni, Ute and Arapaho elders who name selected him for BLM government to government consultations. In typical Drucker pro-fessionalism and enthusiasm early in the 2000's, he developed an innovative Paleontology program, active, pro-ductive and functional. It set a statewide standard for success.

After hours, Sam became involved in local museum volunteer work, becoming President of the local Archaeo-logical Society chapter (a post he still holds) and was appointed President of the Museum of the Mountain Man for one term. In these roles he organized speakers, volunteer projects, a volunteer workforce and a positive image of BLM and the cultural program at the local level. He sat on the Sublette County Historic Preservation Commission.

Sam also possessed historical interests. He was pivotal in the initiation, development and opening of the Lander Trail New Fork River Crossing Sublette Historic County Park. Funded by innovative Section 106 work, not federal dollars, it was a success story. Indeed, the actual Lander Trail segment that ultimately led to recognition of the his-torical significance of the area was due to his extensive knowledge of F. W. Lander's survey field notes form the 1850's. In this effort, Sam employed expertise he developed as a land surveyor before and while at BLM Chey-enne. His historical expertise extended into his volunteer work evaluating the 1959 Bierstad campsite in South Pass. More significantly, he sponsored and carried out the total recordation of the Holden Hill Oregon Trail Inscription Site, arguably the largest, best preserved Emigrant Trail registry in the nation. His team of volunteers included BLM Denver Office 3-D wizards who employed state-of-the-art 3-D photogrammetry. And all on Pinedale BLM!

His professional writing skills were polished by his master's Thesis, a settlement pattern analysis of energy-related inventories in the Granger gas field. More recently, he completed a comprehensive study of BLM's land and projects at Boulder Lake, including a highly successful volunteer effort at prehistoric site evaluation. As part of a public recommendation from the Pinedale Anticline Working Group (PAWG), he co-authored a poster presentation at the national Society for American Archaeology meetings highlighting the cultural resources of Pinedale BLM and encouraging professional investigation and research. He also developed a poster highlighting the Lander Trail in Wyoming as partial mitigation of energy developments in the Lander Trail, part of the National Historic Trail net-work.

At BLM, he managed a huge workload, but also found time (usually his own donated time) to enhance docu-mentation of BLM's "Piney Creek Indian Skull" and the "Mobil Gravesite" and developed, at the Ute Indian Tribal Elder's request, a Landscape Analysis of the "Ruby Butte Landscape" (a complex important to several Indian Tribes on BLM land), to aid in BLM's NAGPRA efforts. He fully supported the recordation of 48LN4881, the Jerry Hunt Pictograph Site (on Pinedale BLM) the largest pictograph site in all of southern Wyoming, the location of which was lost for some 20 years. He continued to plug away at the legacy reports sometimes called BLM's "back-log"

Then, in 2018, when National Park Service funding fell through, Sam succeeded in eliciting BLM Cheyenne staff to fund and execute an innovative "Drone Mapping Project" of two highly significant Rock Alignment complexes, the Sommers Medicine Wheel, and Aspen Ridge. Encouraging use of state-of-the-art technology, these complex (and significant from Native American perspectives) archaeological sites were recoded and important data relating to BLM land ownership, site condition and tribal interests resulted.

Sam continued to foster excellent working relationships and partnerships with the University of Wyoming, De-partment of Anthropology, Sublette County, the local Ranching community, the Museum of the Mountain Man, the Oregon California Trails Association and several local and statewide professional groups. He epitomized what a dedicated, hardworking and skilled BLM Cultural Resource Specialist is all about.

ANNOUNCEMENTS

Wyoming Archaeological Society, Inc.
2019 Annual Meeting Minutes
8:21 a.m. – Ramkota Hotel – Wyoming Theater – Casper, WY
Saturday, May 4, 2019

Presiding: Mavis Greer, President

Call to Order: 8:21 a.m.

Report of Credentials Committee/Roll Call of Delegates: Executive Secretary/Treasurer Carolyn Buff certified the voting delegates: Absaroka – Chris Finley and Sylvia Huber; Ancient Trails – Cher Burgess and Alice Tratebas; Casper – LeiLani DeClue and Dave McNulty; Cheyenne – Jason Bogstie and Richard Curritt; Fremont County – Bill Elder and Ed McAuslan; June Frison – Carmen Clayton and Marcia Peterson; Pumpkin Buttes – Robin Carlson and Mike Stone; Sheridan/Buffalo – Nick Palmer and Christine Varah; Sweetwater County – absent; and Upper Green River Basin - Sam Drucker and Dave Vlcek.

Roll Call showed nine chapters represented: Absaroka, Casper, Ancient Trails, Cheyenne, Fremont, June Frison, Pumpkin Buttes, Sheridan/Johnson County, and Upper Green River Basin.

Approval of Minutes of April 27, 2018: Motion by Christine Varah, second by Robin Carlson, to approve the minutes as published in Volume 60(1) Spring 2016 issue of *The Wyoming Archaeologist.* Carried.

Treasurer's Report: Executive Secretary/Treasurer Carolyn Buff gave the treasurer's report showing a total net worth of $70,578.37, a decrease of $4,743.61. The treasurer explained that much of the decrease was due to several chapters having not submitted their dues before the end of the fiscal year and that all expenses have gone up. Even if all chapters had paid by the end of the fiscal year, there would still be a decrease in net worth.

Motion by Robin Carlson, second by Bill Elder to file the treasurer's report for audit. Carried.

Auditor's Report: Craig Bromley, Kerry Lippincott and Alice Tratebas certified that the treasurer's report was in order.

Editor's Report: Danny Walker – Announced that addresses should be updated if members wanted to receive the journal. Three issues have been published and another issue is ready to go and then we will be caught up to spring of 2018. Manuscripts are needed to continue to print.

Librarian's Report: Maddie Mackie – The library continues to receive materials into the inventory, and the materials are available for check-out. We receive newsletters and journals from other societies. The library is housed at the University of Wyoming in the Anthropology Building and she has a list that is up-to-date.

Committee Reports: Scholarship: Carolyn Buff announced that the Scholarship Committee would meet at lunch in the restaurant to evaluate the scholarship applications.

SAA/COAS: Marcel Kornfeld reported that the Council of Affiliated Societies is now called the Council of Allied Societies, made up of local and regional societies and that SAA provides a table to display brochures, publications, etc. They also have a new logo. There is a one-time registration fee of $25 for avocationals to attend meetings. They are also working on other recognition in addition to the Crabtree Award. At issue is the nomination process. COAS would like a link to chapters and is encouraging work with local societies when meetings are scheduled in that location. Other ideas floating are Facebook, etc.

Chapter Reports: The chapter reports will be published in *The Wyoming Archaeologist*.

State Archaeologist's Report: Marcia Peterson – Greg Pierce has resigned as the Wyoming State Archaeologist and the job announcement has been released.

There will be fewer volunteer opportunities this summer.

The office will be doing surveys in the northeastern part of the state; June 3-7 they will be surveying a private parcel next to the Black Hills where they will be teaching survey processes (GPS, photographs, etc.); June 9-14 will cover excavation training at the Courchaine Site and spaces are almost full. There are still spaces available for the survey training.

The archaeology fair will be held September 7, 2019 at the Old Territorial Prison, from 10:00 a.m. to 3:00 p.m.

Mariska Marksey will be returning to the Pine Grove State Coach Station on the Overland Trail to do work with students aged pre-college from July 14-20, 2019.

Old Business:

WAS Payment for Student Registration Fees and Banquet Tickets: Mavis Greer reported that 11 students had registration fees waived and ten had banquet fees waived, for a total of $575.00.

Website: John Laughlin reported that updates are done when needed; we only have to notify him. Bonnie Smith volunteered to help manage the site. John and Dan were commended for their work on the site.

Wyoming Archaeology Awareness Month: Judy Wolf reported that Wyoming had placed second at the SAA with the poster. She requested $250.00 for Archaeology Awareness Month in September and thanked the Society for the continued support. She announced that chapters could pick up posters and that t-shirts, caps and aprons were available for purchase.

Motion by Sylvia Huber, second by Marcia Peterson

to donate $250.00 to Wyoming Archaeology Awareness Month. Carried.

Archaeology Fair Funding Request – Marcia Peterson noted that some of the performers are returning and made a request for $500.00. Motion by Mike Stone, second by Robin Carlson to donate $500.00. Carried

Wyoming History Day: Danny Walker announced that both the WAS and WAPA awards of $100.00 each went to a student from Cody Middle School, Hayley Pearson-Horner, the great granddaughter of Pearl Horner of the Horner Site. She also won the Colonial Dames of Wyoming Award for the best project on family history. She will advance to the National Competition later in the year. She and her dad will attend the banquet and the Sunday field trip.

Frison Institute: Jason Toohey reported that the Institute had a great year as they continued to work on public education. He also announced that Dr. John Verano will speak on September 26.

The endowment continues to grow, currently at $820,000, which allowed funding for 18 competitive grants.

Friends of the George C. Frison Institute: Jason Toohey – Thanked the Friends for their continued efforts in fundraising and review grant applications. He also announced a new board member, Judy Wolf.

Wyoming Archaeological Foundation: Brigid Grund, president, reported that the Foundation has a new logo: a shield-bearing warrior from Red Canyon. A grant was written for continued research at Hell Gap and that the 2019 field season has been funded by the Wyoming Cultural Trust Fund.

Names, addresses, etc.: Carolyn Buff requested that names, addresses, phone numbers and emails be updated as soon as possible and to please provide zip +4s. Any piece of junk mail can provide that information. Just look at the address.

New Business

In Memory of John Albanese – Kerry Lippincott presented a short summary of John's life which will be printed in *The Wyoming Archaeologist.*

In Memory of Dennis Stanford – Dave Vlcek spoke briefly about Dennis's contributions to Wyoming archaeology.

In Memory of BJ Earle – Mavis Greer gave a short memorial of BJ's contributions to Wyoming archaeology.

Dues Increase – Mavis Greer and Carolyn Buff spoke to the falling income and reasons for an increase, noting that the last increase was in 1999 and that surrounding states' societies and other organizations had raised their dues within the last few years; that in 2003 WAS had to begin paying for the printing of *The Wyoming Archaeologist* when the OWSA had to undergo budget cuts, paper and ink costs continue to rise; postage has gone up twice in the last year; membership fluctuates; and most other operating expenses have risen.

Motion by Bill Elder, second by Mike Stone to approve a state dues increase to $20.00 for a single membership and $25.00 for family memberships. One opposed. Carried.

PayPal Option – Carolyn Buff raised the issue of allowing dues to be paid via PayPal. Motion by Christine Varah, second by Robin Carlson to allow PayPal payments. Carried.

Digital Copy of *The Wyoming Archaeologist* – John Laughlin explained how we can offer the journal in digital format or continue to print hard copies, with members having the option of receiving either.

Second Signatory on the Financial Accounts – Carolyn Buff reported that with the resignation of Greg Pierce, a replacement second signatory was needed on all of our accounts. Motion by Bill Elder, second by Robin Carlson to appoint Danny Walker as the second signatory. The motion was amended to read "to appoint the editor" as the second signatory. Carried. Danny Walker will assume that position.

State Historic Preservation Office – Richard Curritt and Shane McCreary – Richard reported that Senate File 101 passed and that SHPO is working with county coroners to work out the protocols for following the bill. Heather Rockwell will begin as a deputy SHPO on July 1; Sam Levan will begin as the GIS specialist; and Shane McCreary was introduced. The new database will be launched on Monday, May 6 while the old links will be available for a while longer.

Survey Section: No Report.

Brochures, Letterhead, Envelopes, Membership Cards: are available by contacting Carolyn Buff.

Correspondence: None to report.

Election of Officers: Rachael Shimik, chair, June Frison Chapter; Christine Varah, Sheridan Chapter; and Marcel Kornfeld, June Frison Chapter.

Nominated and agreeing to serve were Mavis Greer, president; John Laughlin, 1st vice president; and Rachael Shimik, 2nd vice president. Declared elected by acclimation.

Nominated for member-at-large to the Foundation (term ends 2021) were Bill Elder, Bonnie Smith, and Dave Vlcek. Motion by Christine Varah, second by Sylvia Huber to cease nominations. Carried.

A secret ballot vote was cast and Bill Elder was elected, with the term ending in 2021.

Nominating Committee procedures will be posted to the web site and will be passed on to the next committee.

2020 Nominating Committee: Rachael Shimik, 2nd vice president, June Frison Chapter, chair; Danny Walker, honorary member; and Marcel Kornfeld, June Frison Chapter.

Selection of Site for 2020 Annual Meeting: Sheridan is scheduled to host the 2020 meeting and Christine Varah extended the invitation.

Carolyn Buff announced that Sheridan would host in 2020, Pumpkin Buttes is scheduled for 2021, Ancient Trails for 2022, Laramie for 2023, Upper Green River for 2024, and Riverton for 2025.

Selection of Site for 2019 Summer Meeting: Invitation by Todd Surovell to visit the La Prele Mammoth site from June 28-30, 2019. Camping facilities are available on site. The site will be open for two, ten-day sessions, June 23-July 3 and July 8-17. The announcement will be posted on the website.

Marcel Kornfeld announced that the Hell Gap Open House would be held July 12-14.

Announcements: Mavis Greer announced that the Ramkota shuttle would transport attendees to and from the Yellowstone Garage for the banquet.

Mavis Greer announced that the Executive Committee had met earlier and appointed Carolyn Buff to the search committee for the Wyoming state archaeologist's position, representing the Wyoming Archaeological Society.

Carpooling options for the Sunday field trip were discussed with members asked to meet in the lobby of the Ramkota at 9:00 a.m. to carpool as many people as possible to the site.

The American Rock Art Association will hold its annual meeting in Flagstaff, AZ June 13-17, 2019. Information can be gotten from www.arara.org.

Please update your chapter officers with the executive secretary/treasurer and send any pertinent chapter information to John Laughlin or Dan Bach for inclusion on the website.

The Wyoming Archaeological Foundation will meet at this afternoon at 4:30 p.m. in the theater.

Carolyn Buff announced that the WAS window clings and magnetic decals were available for sale here and from the website.

International Archaeology Day is in October. The web site is www.archaeologyday.org for anyone interested in posting their activities.

Other Business to Come Before the Body – A thank-you was given to Kerry Lippincott for the John Albanese memorial.

Danny Walker asked that chapter reports be sent to Carolyn to be published in the journal.

Bill Eckerle announced that the Rocky Mountain Archaeological Conference would be held in Logan, UT October 3-5, 2019.

Adjourn: There being no further business, the meeting adjourned at 10:15 a.m.

/s/ Carolyn M Buff
Executive Secretary/Treasurer

Golden Trowel Award: 2019 recipient Larry Amundson, Fremont County Chapter

Keynote Speaker: Rob Bozell, Nebraska State Archaeologist

AUDITING COMMITTEE REPORT; March 31, 2019

In accordance with the bylaws, the Auditing Committee has reviewed the Treasurer's books and records for the Wyoming Archaeological Society, Inc. for fiscal 2018

AUDITING COMMITTEE SUMMARY; March 31, 2019

The Wyoming Archaeological Society, Inc. owns one checking account, one savings account, two money market accounts, and two certificate of deposit accounts at the Reliant Federal Credit Union, 4015 Plaza Dr, Casper, WY 82604.

Balance on hand March 31, 2018 - $75,321.98
Receipts
Interest and Dividends - $722.01
Income - $11,039.79

Disbursements – $9,784.26

Balance on hand March 31, 2019 – $70,578.37 (a net decrease of -$4,743.61)

Includes one outstanding check(s) of $2,516.20 and two outstanding deposit(s) of $851.5 and $217.50.

Audited and found correct.

/s/ Paul Sanders Date May 3, 2019
/s/ Richard Currit Date May 3, 2019
/s/ Matt Landt Date May 3, 2019

Wyoming Archaeological Society, Inc.
Scholarship Committee Minutes
Saturday, May 4, 2019 – Ramkota Inn – Casper
12:00 p.m.

Presiding: Carolyn Buff, Chair

Present: Carolyn Buff, Mavis Greer, Sylvia Huber, John Laughlin, Mary Lou Larson, Maddie Mackie, Marcia Peterson, Paul Sanders, Danny Walker

Absent: John Laughlin, Rachel Shimek, Todd Surovell, and Brian Waitkus

Carolyn Buff reminded all committee members that if they had printed the scholarship applications that they must then destroy them so that we are in compliance with the FERPA Act. We assure students that the applications

will be destroyed after the granting of the money because of the personal information contained in the applications.

We only had applications for the Reiss Memorial Field School Scholarships.

Carolyn reported that a private company had donated another $500 to be awarded to a specific student, thereby making the total available $2,000.

Motion by Maddie Mackie, second by Paul Sanders to award the scholarships to Mackenzie Deslata, Kathie Eldridge, and Devin Henson. Carried

Motion by Danny Walker, second by Paul Sanders to award the each of the applicants $666 for summer field work. Carried.

Adjourn: 12:40 p.m.

/s/ Carolyn M Buff
Scholarship Chair

Wyoming Archaeological Society, Inc.
Chapter Reports for the 2018-19 Year

Absaroka: Chapter members volunteered at the Annual Wyoming Archaeology Fair in Laramie with various public outreach and education activities.

Bonnie Smith, chapter president, hosted a booth for Project Archaeology and the Draper Natural History Museum.

The chapter hosted more than 220 3rd and 4th grade students for International Archaeology Day Museum Adventure at the Draper Natural History Museum with underlying themes of archaeology stewardship.

Work With Other Organizations – The chapter worked with the Office of the Wyoming State Archaeologist and the University of Wyoming Archaeological Repository to assist with the avocational archaeology "Ice Cave Survey" in the Bighorn mountains.

Programs Presented: Dr. Ric Weatherman, "Late Archaic Hunter-Gatherers in the Black Hills: Investigations at 39LA504 Crystal Cave;" Movie Night, "The End of the Spear;" Chris Finley, "Archaeology, Survey, and a Railroad;" Dr. Danny Walker, "The Continuing Search for the Lost Indian Wars Mass Grave in Central Wyoming;" Dr. Larry Todd, "Archaeology Around the Ice: Ice-Patch Organics in Landscape Context;" and Kierson Crume, "The Folsom-Aged Hanson Site (48BH329)."

Ancient Trails: The chapter has been largely inactive this past year and has not held regular meetings. We had a discussion with the Weston County chapter of the Wyoming Historical Society about planning joint meetings focused on archaeological programs.

Field Work – The chapter still intends to finish GPS mapping preserved segments of the Cheyenne-Deadwood Trail along Stockade Beaver Creek in the Black Hills.

Casper: Programs Presented – Dr. Polly Schaafsma, Independent Rock Art Researcher, Research Associate Museum of New Mexico, Santa Fe), "Petroglyphs, Symbols, and Change in Power and Display in the Rio Grande Valley of New Mexico;" Dr. Kerry Lippincott, "Disseminating Archaeological Information by Means of Conferences, Meetings, and Get-Togethers (North and South Dakota);" Jason Vlcan, "A Trail of Graves;" Craig Bromley, "Chaco Canyon;" Patrick Walker, "The Ferris Mountain Airplane Wreck, A Story of Tragedy and Perseverance;" Dr. Robert Kelly, "12,000 Years of Prehistory in the Bighorn Mountains: A Preliminary Report on the Archaeological Excavation of Alm Rockshelter;" Dr. Mavis Greer, "Egypt, Pyramids of the Nile and Rock Art of the Western Desert;" and Kaci Weinschrott, "A Tour of Grecian Archaeology."

Cheyenne: Programs Presented – Ken Wright, P.E., "Mesa Verde Watersheds and Reservoirs;" Dr. Robert Kelly, "What Radiocarbon Dates Can Tell Us About Prehistoric Human Populations;" Dr. Marcel Kornfeld, "What Were Paleoindians Really Like?" Russel Richards, "Historic Cans and how to Identify Their Age;" Dr. Jason LaBelle, "The First Ascent: Ten Thousand Years of Native American Occupation in the Colorado Mountains;" Kelton A Meyer, "A Method to the Madness: Temporal and Spatial Consideration for a Complex Alpine Game Drive Site, Rollins Pass Colorado;" Dr. Kenneth L Kvamme, "Geophysical Prospecting for Archaeology in the Great Plains."

Fremont County Chapter: Public Education – Distributed Wyoming Archaeology Awareness month posters to schools and museums in Fremont County and all schools on the Wind River Reservation. Public Service Announcements to Wyoming Public Radio, county10.com, dailyranger.com, *Riverton Ranger,* Wind River Radio Network, *Lander Journal,* WAPA Facebook, and County10 Facebook.

Work With Other Organizations – History of Taxidermy at Dubois museum and Big Horn Sheep Center, OWSA Beaver Creek investigations, Vore Buffalo Jump, Fremont County Museum System, Heart Mountain Interpretive Center, Southern Utah Rock Art Sites Study, Washakie Museum & Cultural Center's Paleontology and Archaeological Presentations, surveyed the Devils Graveyard area in the Absaroka Range for Prehistoric High Altitude Campsites, and research on Arisn Maru, Japanese Freighter, sunk October 24, 1944 in South China Sea, with nine POWS from Fremont County – monument to be placed in Riverton Veteran Park on October 24, 2019, the 75th anniversary.

Publications/Reports – Printed annual shirt pocket membership booklets which lists our speakers, FCAS history, WAS history, goals of the WAS, online sources of Wyoming archaeology reports, and members contact

information.

Programs Presented – Larry Amundson, "Rock Art of the Southwest;" Mike Bies, "Island Rock Art: Hawaii and Alaska;' Carlie Ideker, "Luminescence;" Dr. Greg Pierce and Marcia Peterson, "OWSA Avocational Overview: Dr. Larry Todd, "Washakie Wilderness Archaeology;" and Craig Bromley, "Chaco Canyon."

Vandalism Report – Monitor of Woodard Site – no current evidence of looting or vandalism

June Frison Chapter: Public Education – Co-sponsored open house tour of UWAR with the OWSA and continue outreach with social media, with 400-700 engagements with the JFC Facebook page per month.

Programs Presented – Dr. Charles Reher; "The Laramie Archaeological Landscape;" Dr. Robert Kelly, "Radiocarbon Dates, Human Population and the Prehistoric Use of Ice Patches;" Dr. Maddie Mackie, "Mammoth Hunting in Southeast Wyoming;" Bonnie Lawrence-Smith, "Cry to Heaven: Golden Eagles and Thunderbirds in the Bighorn Basin;" Alex Garcia-Putman, Missing Bone and Animal Scavenging: A Cautionary Tale from Forensic Taphonomy;" Michael Page, "The Blevins Site and Western Plains Woodland;" Becca Mashak, "Memoirs of a Contract Archaeologist;" and Dr. Charles Reher, "Out on the Chaco: A Revisit to Settlement and Subsistence Along the Lower Chaco River."

Pumpkin Buttes Chapter – No report submitted

Sheridan-Johnson County: Programs Presented – Hillary Jones, "Paleoindian Sites on the Shore of Lima Reservoir in Montana's Centennial Valley;" Ken Heuermann, "Reminisces of an Old Amateur Collector and Weekend Shovel/Screen Man;" Spencer Morris, "Battle of the Rosebud/Battle Where the Sister Saved her Brother;" OWSA, "New Wyoming Avocational Archaeological Certification;" John S Harris, "Why is Site Surface Vegetation Under-Studied in Archaeology?" Rosebud Battlefield Tour; Dr. Danny Walker, "The Continuing Search for a Lost Indian Wars Mass Grave in Central Wyoming;" Bonnie Lawrence-Smith, "Bighorn Basin Rock Art Panels;" Dave McKee, "Life of the Tie Hack: Historic Logging Camps in the Mountains of Southern Wyoming;" and Don Disk, "Minoan and Greek Mediterranean World."

Field Trips – Wold Ranch Buffalo Jump and Rock Art and Medicine Wheel

Sweetwater – No report submitted.

Upper Green River Basin Chapter -.Work With Other Organizations – Partnered with Sublette County Historical Society to hold meetings and presentations at the Museum of the Mountain Man.

Programs Presented – Marcia Peterson, "The OWSA 2017-2018 WAS Tour: Introducing the Avocational Archaeology Training Program and the New UWAR Database and Website;" Dave Vlcek, "High Elevation Archaeological Research in the Wind River Range;" Michael Page, "Pottery Traditions Found in Western Wyoming;" Sam Drucker, "Archaeology: Then and Now;" Brigid Grund, "Paleoindian Heartland: An Archaeological Synthesis of Wyoming's First People;" and Dr. Robert Kelly, "Fun With Radiocarbon Dates."

TREASURER'S REPORT FOR FISCAL YEAR ENDING MARCH 31, 2019
RELIANT FEDERAL CREDIT UNION

CHECKING ACCCOUNT	**INCOME**	**EXPENSES**	**BALANCE**
Beginning Balance	$5,208.99		
Deposits	$6,551.50		
Interest Earned	$1.31		
TOTAL INCOME - Checking			**$11,761.80**
EXPENSES			
Wyoming History Day		$100.00	
Bloedorm Lumber - Trowel		$14.99	
Danny Walker - Red Buttes Grant		$530.00	
Reliant Federal Credit Union - Visa Card -			
USPS - Postage		$144.00	
Wyoming Archaeological Foundation - Annual Dues		$317.50	
Sylvia Huber - Trowel and Engraving -			
Billings Meeting		$19.97	
Reliant Federal Credit Union - Visa - Modern Printing, Merback Awards -			
Mailing, Engraving		$51.10	
Scott Dersam - Frison Scholarship		$1,000.00	
Ashley Neff - Mulloy Scholarship		$1,000.00	
Molly Herron - Undergraduate Scholarship		$1,000.00	

Danny Walker - Plains Travel - Red Buttes Grant		$1,141.00	
Wyoming Archaeology Month and Fair		$750.00	
USPS - Postage		$150.00	
SAA - 2018 and 2019 Dues		$70.00	
USPS - Bulk Permit		$235.00	
Reliant Federal Credit Union - Visa Card - Modern Printing - Mailing		$27.00	
University of Wyoming Copy Center - Printing of Journal		$2,516.20	
To Reiss Certificate of Deposit per Chris Reiss		$500.00	
Reverse Transfer		$217.50	
TOTAL EXPENSES		**$9,784.26**	
ENDING BALANCE - Checking Account			**$1,977.54**
SAVINGS ACCOUNT			
BEGINNING BALANCE	$125.49		
Interest Earned	$0.12		
ENDING BALANCE			**$125.61**
MONEY MARKET ACCOUNT - 0040			
BEGINNING BALANCE	$7,813.89		
Interest Earned	$18.67		
ENDING BALANCE			**$7,832.56**
MONEY MARKET ACCOUNT - 0041 (BLM)			
BEGINNING BALANCE	$9,312.82		
Interest Earned	$22.24		
ENDING BALANCE			**$9,335.06**
Total available after March 31, 2017 = $6535.07 for Big Horn Basin projects, digitization, and report-writing			
CERTIFICATE OF DEPOSIT - 00100			
BEGINNING BALANCE	$46,355.13		
Interest Earned	$395.58		
ENDING BALANCE			**$46,750.71**
CERTIFICATE OF DEPOSIT - 0101 - Reiss Account			
BEGINNING BALANCE	$13,557.06		
From Checking per Chris Reiss	$500.00		
Interest Earned	$284.09		
ENDING BALANCE			**$14,341.15**
TOTAL NET WORTH AS OF MARCH 31, 2019			**$70,578.37**
Total Income	**$80,362.63**		
Total Expenses		**9,784.26**	
Net Increase (Decrease)			**$(4,743.61)**

Carolyn M Buff
Executive Secretary/Treasurer

WYOMING ARCHAEOLOGICAL SOCIETY AND WYOMING ARCHAEOLOGICAL FOUNDATION SCHOLARSHIPS AND GRANTS

GEORGE C. FRISON MASTER'S SCHOLARSHIP

The George C. Frison scholarship is awarded each year by the Wyoming Archaeological Society and the recipient is announced at the annual spring meeting of the society. Proposals should focus on projects relevant to Archaeology/Anthropology. An emphasis on research in Wyoming is encouraged.

The scholarship is awarded to a University of Wyoming graduate student in the MA program in Anthropology, with a preferred, but not required, emphasis toward Archaeology as a subdiscipline. The award is made only to students who expect to make Anthropology a vocation and expect to contribute constructively to its subfields. The amount normally varies around $400-500 depending on availability of funds. Each applicant must have maintained at least a 3.25 grade point average in all Anthropology courses and a 3.00 overall grade point average to be eligible.

WAS encourages the scholarship recipient to use this support to help him/her complete an independent research project (e.g., a thesis) pertinent to Anthropology, and disseminate the research results. Recipients are encouraged, though not required, to present a research paper at a spring meeting of the WAS following the year of the scholarship award, or submit a written version of their research to the editor of The Wyoming Archaeologist to be considered for publication.

WHO MAY APPLY?

1. A graduate student in Anthropology at the University of Wyoming with a preferred, but not required, emphasis toward Archaeology as a subdiscipline.
2. The student is expected to make Anthropology a vocation and to contribute constructively to its subfields.
3. Student must have maintained a minimum 3.25 GPA in Anthropology courses and an overall 3.00 GPA.

WHAT NEEDS TO BE INCLUDED IN AN APPLICATION?

1. Cover page
   a. Completely filled out cover page for the scholarship, including name, date, and full address.
   b. Applicant must show that he/she maintains a minimum 3.25 GPA in all Anthropology courses, and a 3.00 overall GPA.
   c. Applicant must sign the release statement on the cover page.
   d. Briefly state your current level of progress toward your degree.
   e. Include a short paragraph stating your future archaeological intent (i.e., career goals).
   f. Provide a title and abstract of your proposed project.
2. A maximum two-page, typed, double-spaced explanation of the proposed project.
3. A short vita (maximum of two pages, typed, double-spaced).
4. Two letters of recommendation. At least one of the two letters must come from a professional Anthropologist/Archaeologist in Wyoming. The second letter may come from a professional in a related field outside of Anthropology.

WHERE TO SUBMIT THE COMPLETED APPLICATION?

1. Submit two copies of the completed application packet, including the cover page, explanation of proposed project, and vita to the Mulloy/Frison Scholarship Committee, in the Department of Anthropology office, Anthropology Bldg. Room 123, University of Wyoming, Laramie, WY, 82071. The Department Office Associate will keep a file to hold all applications until they are delivered to the committee for review. These materials must be in to the Department Office Associate by the deadline posted for the year of the award (usually sometime in April), or applications will not be considered.

WHAT HAPPENS IF I AM AWARDED A SCHOLARSHIP?

1. The Executive Secretary/Treasurer of the Wyoming Archaeological Society will mail you a letter notifying you of your award, and the check will be included. If you attend the spring meeting the year you apply, the award is usually made and you are recognized as a scholarship recipient at that time.
2. The recipient can use this support for an independent research project (i.e., thesis), to help with travel expenses related to research, or other pertinent activities.
3. Recipients are encouraged, though not required, to give a presentation about their project at a spring meeting of the Wyoming Archaeological Society following the year of the scholarship award, or submit a written version of their research to the editor of *The Wyoming Archaeologist* for publication.

WILLIAM T. MULLOY UNDERGRADUATE SCHOLARSHIP

The William T. Mulloy Scholarship is awarded each year by the Wyoming Archaeological Society and the recipient is announced at the annual spring meeting. Proposals should focus on projects or activities relevant to Archaeology/Anthropology. An emphasis on research in Wyoming is encouraged.

The scholarship is awarded to a University of Wyoming student in Anthropology, with a preferred, but not required, emphasis toward Archaeology as a subdiscipline. The award is made only to students who expect to make Anthropology a vocation and expect to contribute constructively to its subfields. The amount normally varied around $400-500 depending on availability of funds. Each applicant must have maintained at least a 3.00 grade point average in all Anthropology coursed and a 2.75 overall grade point average to be eligible.

WAS encourages the scholarship recipient to use this support to conduct independent study, to help with travel expenses related to research, or other pertinent activities. Recipients are encourage, though not required, to deliver a presentation about their activity at a spring meeting of the Wyoming Archaeological Society following the year of the scholarship award, or submit a written version of their research to the editor of The Wyoming Archaeologist to be considered for publication.

Application forms and guidelines are available at the top of this page, from the Departmental Office Associate, and from the State Archaeologist, Room 218, Anthropology Building.

WHO MAY APPLY?

1. An undergraduate student in Anthropology at the University of Wyoming with preferred, but not required, emphasis toward Archaeology as a subdiscipline.
2. The student is expected to make Anthropology a vocation and to contribute constructively to its subfields.
3. Student must have maintained a minimum 3.00 GPA in Anthropology courses and an overall 2.75 GPA.

WHAT NEEDS TO BE INCLUDED IN THE APPLICATION?

1. Cover Page:
   a. Completely filled out cover page for the scholarship, including name, date, and full address.
   b. Applicant must show that he/she maintains a minimum 3.00 GPA in all Anthropology courses, and a 2.75 overall GPA. The Departmental Office Assistant must sign in the space provided to verify the student's GPA.
   c. Applicant must sign the release statement on the cover page.
   d. Briefly state your current level of progress toward your degree.
   e. Include a short paragraph stating your future archaeological intent-career goals.
   f. Provide a title and abstract of your proposed activity.
2. A maximum two-page, typed, double-spaced explanation of the proposed activity.
3. A short vita (maximum of one page, typed, double-spaced).
4. Two letters of recommendation.
   a. At least one of the two letters must come from a professional Anthropologist/Archaeologist in Wyoming. The second letter may come from a professional in a related field outside Anthropology.

WHERE TO SUBMIT THE COMPLETED APPLICATION?

1. Submit two copies of the completed application packet, including the cover page, explanation of proposed activity, and vita to the Mulloy/Frison Scholarship Committee, in the Department of Anthropology, Anthropology Bldg. Room 106, University of Wyoming, Laramie. The Departmental Office Associate will keep a file to hold all applications until they are delivered to the committee for review. These materials must be in to the Departmental Office Associate by the deadline posted for the year of the award (usually sometime in April), or applications will not be considered.
2. The applicant is expected to work with authors of recommendation letters to ensure their receipt by the Departmental Office Associate by the posted deadline.

WHAT HAPPENS IF I AM AWARDED A S CHOLARSHIP?

1. The Executive Secretary/Treasurer of the Wyoming Archaeological Society will mail you a letter notifying you of your award, and the check will be included. If you attend the spring meeting the year you apply, the award is usually made and you are recognized as a scholarship recipient at that time.
2. The scholarship recipient can use this support to conduct independent study, to help with travel expenses related to research, or other pertinent activities.
3. Recipients are encouraged, though not required, to deliver a presentation about their activity at a spring meeting of the Wyoming Archaeological Society following the year of the scholarship award, or submit a written version of their research to the editor

of the *The Wyoming Archaeologist* to be considered for publication.

DAVID REISS MEMORIAL FIELD SCHOOL SCHOLARSHIP

The David Reiss Memorial Field School Scholarship is awarded each year by the Wyoming Archaeological Society, Inc. and the recipient is announced at the annual spring meeting.

The scholarships are awarded to students at accredited universities and community colleges who will be attending an archaeological field school. The amount of the award ranges from $500 to $1,500. Each applicant must have maintained at least a 3.00 overall GPA. Preference will be given to students majoring in anthropology at the University of Wyoming or one of Wyoming's community colleges, although students from other institutions who will be attending a Wyoming field school are also encouraged to apply.

A transcript must be attached to the application. Following the award, the transcripts will be destroyed.

WAS encourages the scholarship recipient to use this support to offset the field school expenses including tuition, fees and/or transportation.

Application forms and deadlines are available at the University of Wyoming, Department of Anthropology, or on the web page at www.wyomingarchaeology.org.

Return your completed application materials to the Wyoming Archaeological Society Scholarship Committee, c/o Wyoming State Archaeologist, 1000 E University Ave, Dept 3431, Laramie WY 82071, no later than April 1, of the year of application. Be sure one (1) letter of recommendation and a transcript are also submitted with the application.

JENSEN/ROBSON DOCTORAL TRAVEL AWARD

Sponsored by
Wyoming Archaeological Society,
Wyoming Archaeological
Foundation, and the
Wyoming Association of Professional Archaeologists

Applications are now being accepted for the offering of a stipend to help offset travel costs incurred by PhD students who attend professional meetings to present their own research paper/poster.

WHO MAY APPLY?

Any Doctoral student in the Department of Anthropology, University of Wyoming may apply if they gave a scholarly paper/poster in either the fall or spring semester following the annual meeting of the Wyoming Archaeological Society.

WHAT NEEDS TO BE INCLUDED IN THE APPLICATION?

A completed cover page available from the Departmental Office Associate or State Archaeologist, and must be signed by the applicant. Also:

1. A letter of support from your major Professor, or the faculty member most familiar with your research.
2. A typed copy of your presented paper, complete with citations.
3. A copy of travel, lodging, and meal receipts related to the presentation, reimbursable up to the amount of the award. If you have not yet attended the meeting, but have travel or lodging reservation/receipts, then submit them.

WHERE TO SUBMIT A COMPLETED APPLICATION?

Submit one copy of the completed application packet to the Jensen/Robson Travel Award Committee, in the Department of Anthropology Office, Anthropology Building, Room 106, University of Wyoming, Laramie. The Departmental Office Associate will keep a file to hold all applications until they are delivered to the committee for review. These materials must be delivered two weeks before the annual WAS meeting or the application will not be considered.

WHAT HAPPENS IF I AM AWARDED S UPPORT?

Anticipated support varies but normally runs around $750.00 (1/3 being contributed by each sponsor named above) The Executive Treasurer of the Wyoming Archaeological Foundation will mail the recipient(s) a letter notifying recipient(s) of the award amount and the check will be included. You will be invited to present your paper/poster at the next Wyoming Archaeological Society spring meeting and encouraged to submit an abstract of the research to The Wyoming Archaeologist. If and when the scholarly paper is published, the award recipient(s) is asked to acknowledge WAS, WAF, and WAPA as contributors to the effort.

WYOMING ARCHAEOLOGICAL FOUNDATION JENSEN/ROBSON RESEARCH GRANT

The Wyoming Archaeological Foundation-Jensen/Robson Research Grant will be in the amount of $1000 given annually at the WAS state meeting held in the spring of each year (a year is defined as the period of time from one annual state meeting to the next). The amount to be granted per application is at the discretion of the board and may be more or less than the actual requested figure, but not more than the maximum limit of $1000. The award must be used within the year granted.

The following guidelines are given to assist chap-

ters and members in designing archaeological projects that are eligible for funding through the Wyoming Archaeological Foundation.

DEFINITIONS:

1. "WAF or Board" means the Wyoming Archaeological Foundation.
2. "WAS" means Wyoming Archaeological Society.
3. "Chapter" means any WAS chapter.
4. "Member" means any WAS paid member.

PURPOSES OF THE WYOMING ARCHAEOLOGICAL FOUNDATION

The purposes of WAF shall be: to foster and encourage the preservation of all manner of things having archaeological or historical value or interest within the State of Wyoming; to discover, restore, preserve, maintain, own, repair, construct, equip or otherwise place in condition, sites, properties both real and personal, areas, buildings, fixtures and other improvements and personal property having archaeological or historical interest or values.

ELIGIBILITY

Any paid member of at least three years membership, or chapter, of the Wyoming Archaeological Society is eligible to apply for the annual grant.

SPECIAL CONSIDERATION

Decisions about emergency funds can be made at any other time during the year, and will be reviewed at the discretion of the board with a quorum of board members and officers.

APPLICATION

Once completed, signed, and dated WAF application form must be submitted that includes the following information ion a formal Proposal, not to exceed two pages, of the project to include:

(a) A concise narrative overview of the project which must be related to archaeology;
(b) Reasons, goals and objectives of the project;
(c) Proposed timeline with dates for beginning and ending the project;
(d) Detailed budget and budget justification showing expected cost;
(e) Project Director;
(f) An explanation of how the project will enhance or benefit archaeology and WAF;
(g) An explanation of cooperative efforts with other organizations, which could benefit from the project.

All above information will be considered as part of the official application and will be submitted to the WAF Board of Directors. WAF will retain this information for the official files.

The application is to be postmarked or delivered to WAF on or before March 15th of the year applying for grant. Applications can be emailed to Marcia Peterson at marcia.peterson@wyo.gov with all the above information.

If mailed by the postal service, a completed application form with the above information be submitted to: Wyoming Archaeological Foundation, P.O. Box 2168, Laramie, Wyoming 82073, Attn: Marcia Peterson

SPECIFIC GUIDELINES

Costs specifically excluded from funding are:

(a) No indirect costs;
(b) Purchase of equipment;
(c) Communication systems;
(d) Administration-salary, overrun, overhead, entertainment, supplies;
(e) Any non-budgeted expense that is not presented in the budget and approved contract.

No contingency can be allowed.

EVALUATION OF APPLICATIONS

The board will receive, review, and make recommendations on the application(s) and will make the award(s) from among the applicant(s) by a majority vote. If the decision to grant or deny funding is not unanimous the President and Board will "consult and discuss" until consensus is reached. Some of the questions will be asked pertaining to each application and the answer will be evaluated:

(a) Is the project compatible with WAF's existing or proposed programs and stated purposes?
(b) Is there a recognizable benefit to WAS beyond the organizations direct involvement?
(c) Is the project designed to draw interest to the archaeology community and the society?
(d) Does the project stand a good chance of satisfying its stated objectives? Is it effective and feasible?
(e) Is the project new or is it one that has been undertaken before?
(f) Is the application through and complete? Has the applicant overlooked some costs that appear imminent or necessary for the successful completion of the proposed project? Is the extent and operation of the project clearly outlined?
(g) Does the applicant have the financial ability to provide the funds necessary to carry the project to its successful completion?
(h) Does the applicant have the wherewithal to provide accounting and reporting?
(i) Has this project been submitted to WAF before?

DISBURSEMENT OF FUNDS

Decisions on the funding of proposals will be made at the WAF board meeting held every spring in conjunction with the annual meeting of the Wyoming Archaeological Society.

If at any time, WAF runs low of funds, the annual project award will be temporarily suspended at the advice of the current Treasurer / Executive Treasurer, until the treasury is again able to sustain the maximum $1,000.00 annual outflow.

If a member of the board applies for funding, they must withdraw from voting on all applications and one of the non-voting board members will be selected by the president to cast the other vote.

The applicant will be informed of the board's final decision to grant or deny the request by email or regular mail.

If the award is granted, a check for the funds will be sent to the applicant with information required for a "Project Completion and Expenditure Report" to be sent back to WAF after the stated project completion date.

Any project extension beyond the one-year allotment must be requested in writing and sent to the WAF President. The president will review with the Board of Directors and officers for approval.

The grantee is responsible for acknowledging WAF – Jensen / Robson Research Grant in any publication stemming from the project. The grantee is also asked to submit a short article, about two or three paragraphs, about the project to the Wyoming Archaeologist after the stated project completion date.

ARCHAEOLOGICAL EXCAVATION AT THE CANID HOUSEPIT SITE (48CR8818)

by
BRENT A. BUENGER

ABSTRACT

The excavated cultural deposit at the Canid Housepit site (48CR8818) consisted of a single housepit feature, three subfloor thermal basins internal to the housepit substructure, 66 lithic reduction specimens, three flake tools, and 870 faunal specimens. The housepit was dated to the Opal phase of the Early Archaic period (Wyoming Basin Chronology) through four conventional radiocarbon age estimates ranging between 5940 ± 30 and 5240 ± 30 years B.P. The housepit, features, and cultural materials are viewed as representing the site use by a small group of hunter-gatherers as part of an adaptive strategy conditioned by regionally marginal Mid-Holocene environmental conditions. The proximity of the Canid Housepit site to Dry Cow Creek and Muddy Creek was likely a contributing factor which conditioned the occupation, and potential reoccupation of the site by Archaic period hunter-gatherers.

INTRODUCTION

The Canid Housepit site (48CR8818) is located in south-central Wyoming within Carbon County, 25 mi (40 km) north of Baggs, WY (Figure 1). The site is located within the eastern portion of the Washakie Basin, near the convergence of the southeastern portion of the Great Divide Basin and the southwestern edge of the Atlantic Rim. Hydrologic features near the site consist of a complex system of creeks and drainages including Muddy Creek, Dry Cow Creek, and Cow Creek. The immediate site area is situated on the leeward side of a low ridge overlooking Dry Cow Creek to the south and east. Eolian sand in the form of a sand shadow intermixed with slopewash has formed on the leeward side of the slope where the Canid Housepit site cultural deposits were recorded at 30-40 cm below the present ground surface. Surface soil at the site consists of pale brown (10YR6/3) sandy loam classified as the Pepal-Teagulf complex is derived from sedimentary rock colluvium (USDA 2014). Bedrock geology at the site consists of Upper Cretaceous Foxhills Sandstone and the upper part of the Lewis Shale, and the Dad Sandstone member of the Lewis Shale (Scott et al. 2011). Local surficial geology consists of residuum mixed with scattered bedrock outcrops and eolian deposits (Case and Hallbery 2006). The site is situated within a rolling sagebrush steppe ecoregion (Chapman et al. 2004).

The excavated cultural deposit at the Canid Housepit site consisted of a single housepit feature containing three subfloor thermal basins, and cultural materials. The deposit is dated to the Opal phase of the Early Archaic period (Wyoming Basin Chronology) through four conventional radiocarbon age estimates ranging between 5940 ± 30 and 5240 ± 30 years B.P. (Table 1). The housepit, features, and cultural materials are viewed as representing use of the site by a small group of hunter-gatherers as part of an adaptation conditioned by the generally xeric Mid-Holocene environment of the Wyoming Basin. Hunter-

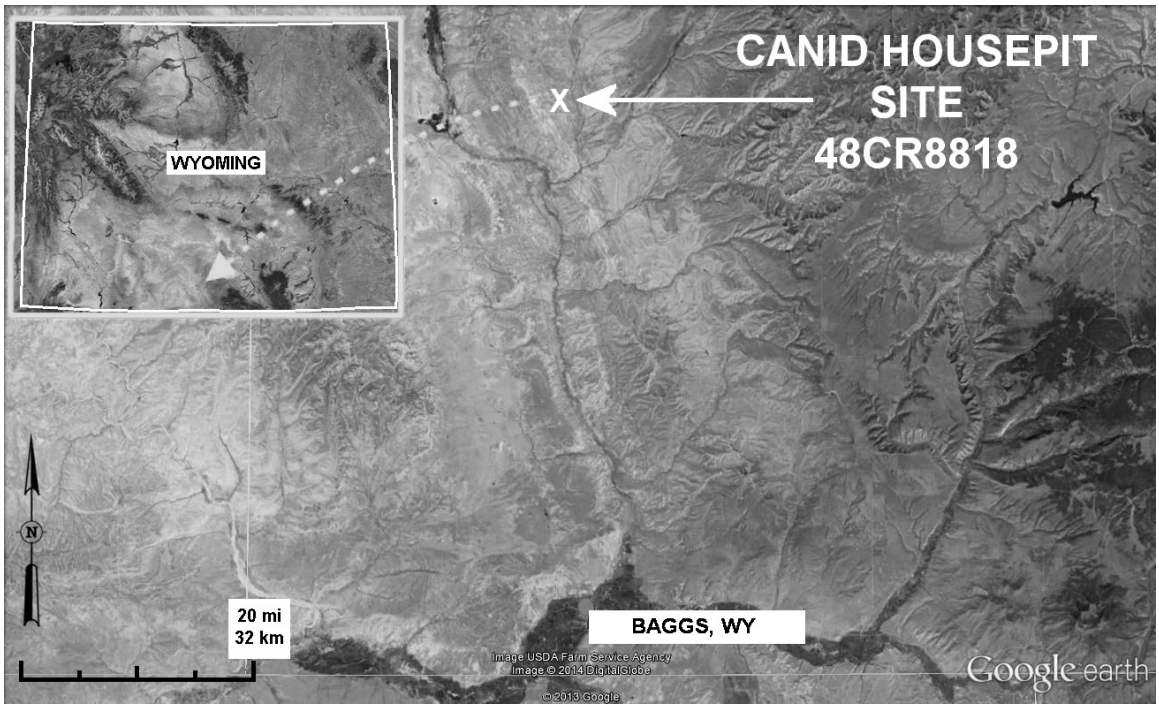


Figure 1: Aerial image of Canid Housepit site (48CR8818) locality in Wyoming (adapted from Google Earth).

gatherer adaptive strategies which evolved through time and were expressed during the Archaic period within the region likely included high residential mobility, broad-spectrum resource procurement, and re-use of productive/attractive site localities and existing site facilities such as housepits and slab-lined thermal pits. The proximity of the site to Dry Cow Creek and Muddy Creek was likely a contributing factor conditioning the occupation, and potential reoccupation, of the housepit and use of the site by Mid-Holocene hunter-gatherers.

RESULTS

In total, 39.25 m² of intact sediment was excavated within a contiguous 7 m L x 6 m W block at the Canid Housepit site. The component was a single housepit feature containing three internal subfloor thermal basins, which yielded conventional radiocarbon age estimates of 5270 ± 30, 5600 ± 40, and 5980 ± 30 years B.P. The deposit represents at least one Mid-Holocene hunter-gatherer occupation of the housepit structure, and based on the statistically different radiocarbon dates obtained from the housepit, multiple occupations may be represented.

Table 1: Radiocarbon ages from Canid Housepit site (48CR8818).

SAMPLE FEATURE (F) #	SAMPLE DESCRIPTION LAB #	MEASURED RADIOCARBON AGE	$\partial^{13}C$	CONVENTIONAL RADIOCARBON AGE	2 SIGMA CALIBRATION RESULTS	LAB NUMBER
48CR8818–1 (11-WAS-011)	(organic sediment): acid washes	5240±30	-23.2‰	5270±30	6180 to 6140 6120 to 5980 5980 to 5940	Beta-336228
48CR8818–2 (11-WAS-011)	(charred material): acid/alkali/acid	5940±30	-22.3‰	5980±30	6890 to 6740	Beta-336229
48CR8818–3 (11-WAS-011)	(organic sediment): acid washes	5580±40	-23.5‰	5600±40	6450 to 6300	Beta-336230

Note: All dates are AMS.

Cultural materials recorded during the excavation of the housepit substructure and a portion of the surface exterior to the housepit include 66 lithic reduction specimens, three flake tools, and 870 faunal specimens.

GEOARCHAEOLOGY

Four stratigraphic units were recorded during the excavation of the housepit at the Canid Housepit site (Figure 2). Stratum I consisted of yellowish-brown (10YR5/4) massive, well sorted, medium-grained sand derived from eolian deposition, which trends to sandstone residuum with increased depth. The Feature 1 housepit substructure was excavated into Stratum I during the preparation and occupation(s) of the structure. Stratum Ia consisted of medium grained eolian sand and slopewash containing few (< 5%) pebbles measuring < 1cm. It was predominantly intrusive and anthropogenic, representing an admixture of dark gray (10YR4/1) to dark grayish brown (10YR4/2) charcoal and organically-stained housepit fill sediment. It was derived from an admixture of post-occupation eolian sand and slopewash deposition intermixed with dispersed organics from the cultural occupation(s) of the housepit structure. Eckerle et al. (2011) suggest an occupational trample zone in sandy substrate, such as observed for the Feature 1 housepit substructure, would have been about 3-8 cm thick. The housepit fill sediment was observed to be relatively uniform and no distinctive stratigraphic separations within Stratum Ia indicative of a distinct living floor were visible. No stratigraphic evidence of discrete, temporally punctuated cultural occupations of the housepit structure was observed within the fill sediment or lower portion of the housepit substructure. Stratum Ib represents a brown (10YR5/3) subsoil comprised of a sandy clay Bt horizon which formed within the upper portion of Stratum I and overlies the Stratum Ia housepit fill sediment. It formed as the result of clay illuviation and surface stabilization likely from increased effective precipitation and vegetation growth occurring at some point after the site was abandoned, probably during the Early Late Holocene (4500-1800 B.P.). It appeared to be similar to regional Neoglacial soil formation associated with moister Late Holocene environmental conditions within region beginning after 4500 B.P. The Neoglacial soil occurs throughout the Wyoming Basin, and generally dates between 3000-1500 B.P. (Albanese and Frison 1995; Eckerle 1997). Stratum Ic represented an AB soil horizon transitional between the underlying Bt horizon (Stratum Ib) and the surface A horizon.

FEATURES

Four archaeological features were recorded during the excavation at the Canid Housepit site. These include a single housepit feature (Feature 1) and three internal subfloor thermal basins recorded within the housepit

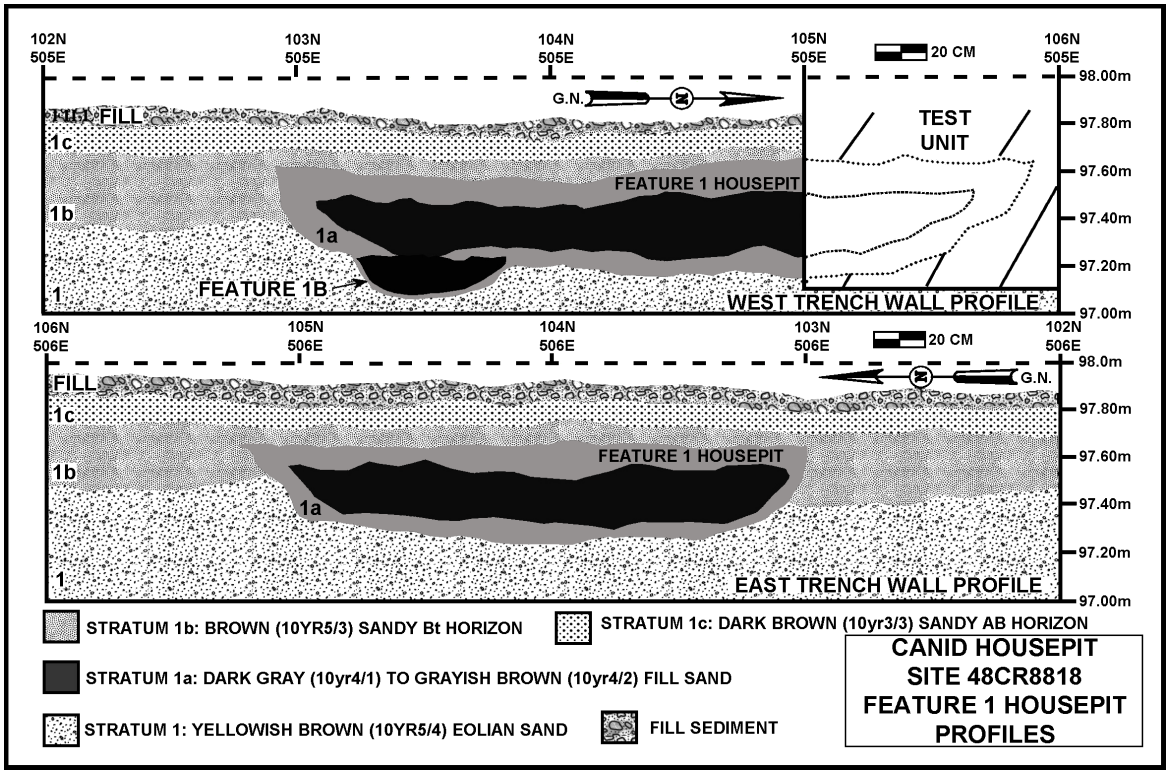


Figure 2: Stratigraphic profile of Feature 1 housepit at Canid Housepit site (48CR8818) as viewed from east and west walls of pipeline trench

substructure (Feature 1A-1C). The morphological characteristics, sampling results, and provenience information for the features are summarized (Table 2).

The morphology of the housepit substructure was irregularly hemispherical in planview, basin-shaped in profile, and contained thermal basins excavated below the occupational floor of the housepit (Figures 3 and 4). The housepit was effectively bisected as a result of construction of the pipeline trench which impacted a 70 cm wide section of the central portion of the housepit substructure. Pipeline trench construction also truncated the eastern portion of Feature 1B, a subfloor thermal basin located within the housepit. Overall, around 20-25% of the housepit is estimated to have been impacted by the mechanical excavation of the pipeline trench. No evidence of posthole molds or a superstructure was observed during excavation of the housepit. Cultural materials recovered from the Feature 1 housepit during excavation included 30 lithic reduction flakes and 648 faunal specimens. Only 12 of the 30 debitage specimens were recovered from the housepit floor or lower extent of housepit fill sediment. The remaining specimens recovered from the mid to upper housepit fill sediment were probably deposited post-occupation via slopewash. The limited quantity of lithic debitage precludes any substantive analysis of stone working activities. It is probable lithic debris resulting from any lithic reduction occurring within the housepit was discarded exterior to the structure.

The 648 faunal specimens recovered from all levels of the housepit substructure included: 30 dog/coyote (*Canis sp.*); one badger (*Taxidea taxaus*); one cottontail rabbit (*Sylvilagus sp.*); 87 jackrabbit (*Lepus sp.*); one leporid; one squirrel-sized: 487 rabbit-sized; 20 vole to rabbit-sized; 14 coyote-sized; one deer-sized; one coyote to bison-sized; and four unidentified mammal specimens. Most (92%) of the faunal remains recovered from the housepit consisted of rabbit or rabbit-sized remains, with around 5% representing by coyote or coyote-sized remains. This suggests at least one cottontail rabbit, one dog/coyote, and three jackrabbits were processed during the occupation(s) of the housepit structure. The badger and vole specimens were most likely intrusive to the deposit.

Feature 1A consisted of an internal subfloor thermal basin located within the northeastern portion of the Feature 1 housepit substructure (Table 2). The morphology of the thermal basin was hemispherical in planview and basin-shaped in profile with sloping sides and an undulating, concave bottom. Feature fill sediment collected from Feature 1A yielded a conventional radiocarbon age estimate of 5270 ± 30 years B.P., and calibrated radiocarbon age estimates of 6180-6140, 6120-5980, and 5980-5940 cal. B.P. This age estimate was derived from organic sediment as opposed to charred material. The conventional

Table 2: Feature Attribute Summary Table for Excavated Features, Canid Housepit Site (48CR8818)

FEAT.	TYPE	MAX L (CM)	MAX W (CM)	MAX D (CM)	VOL.* (LITERS)	SURFACE AREA** (CM^2)	CULTURAL MATERIAL (#)	FCR (#) (G)	FILL MATRIX	FTIR (ORGANIC RESIDUE)	DATE (YRS.B.P.) UNCALIB.
1	Housepit						Flakes (30)	0	Eolian Sand	N/A	5850±40
		385	275	50	2784.25	83111.88	Bone (648)		Slopewash		
1A	Subfloor						Flakes (1)	11	Eolian Sand	No Specific	5270±30
	Thermal Basin	75	70	23	63.51	4121.25	Bone (36)	(470g)	Slopewash	Matches	
1B	Subfloor						Bone 94)	0	Eolian Sand	No Specific	5980±30
	Thermal Basin	63	27	25	22.37	1335.29			Slopewash	Matches	
	Truncated Est.	*63*	*60*	*25*	*69.03*	*4121.25*					
1C	Subfloor						Flakes(2)	1	Eolian Sand	No Specific	5600±40
	Thermal Basin	70	75	25	69.03	4121.25	Bone (108)	(50g)	Slopewash	Matches	

*Volume (Liters) = ⅔ π (D)(L/2)(W/2)/1000 **Surface Area (cm^2) = π (W/2)(L/2). FTIR = Fourier Transform Infrared Spectroscopy. *Truncated Est.* = Estimated intact dimensions for truncated feature.

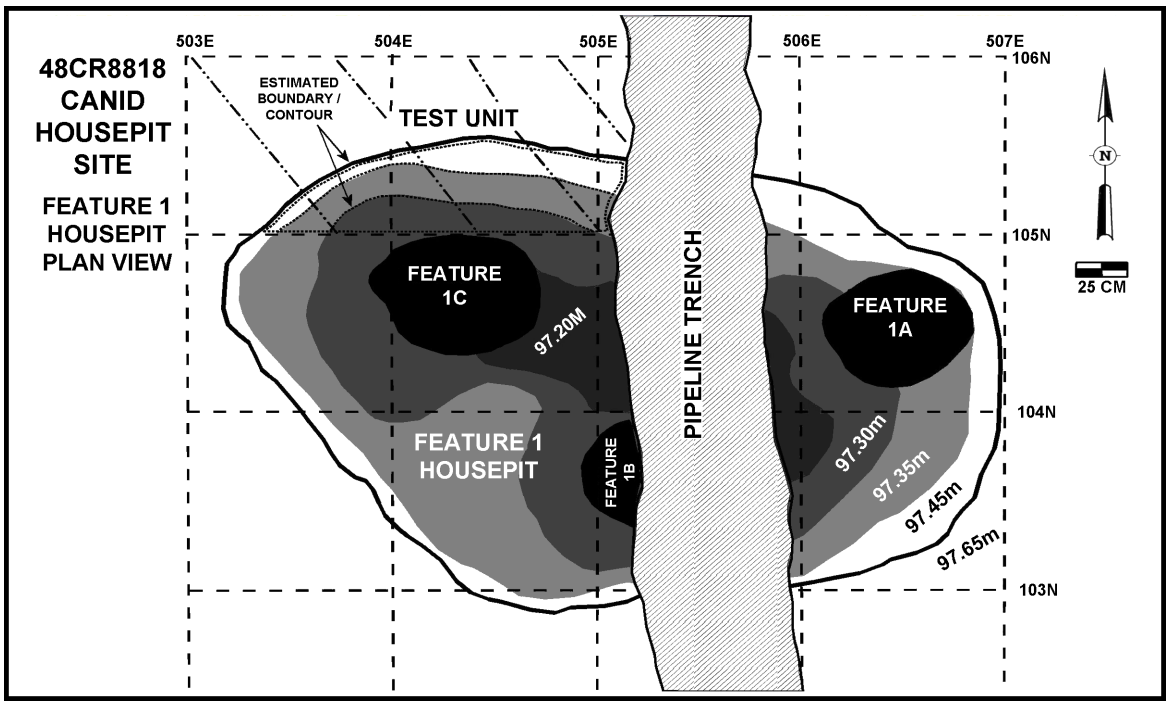


Figure 3: Plan view map of Feature 1 housepit from Canid Housepit site (48CR8818).

Figure 4: Post-excavation photograph of Feature 1 housepit from Canid Housepit site (48CR8818).

age estimate obtained for Feature 1A was the youngest of the four dates established for the housepit by over 700 radiocarbon years. It is possible the date may have been skewed by the introduction of younger fill sediment post-occupation since the feature was located in the upper portion of the housepit substructure near the surface. The other two subfloor thermal basins were recorded 20-25 cm deeper within the housepit substructure.

Thermally altered stone recovered from within Feature 1A during excavation consisted of 11 small (3 < 3 cm; 8 3-6 cm) oxidized sandstone fragments with a combined mass of 470g. Debitage recovered from Feature 1A consisted of a single secondary flake derived from general quartzite. No stone tools were recovered from the feature. The excavation of the feature also yielded 36 faunal specimens, nine of which exhibited evidence of thermal alteration. The burned specimens consisted predominantly of dog/coyote (*Canis sp.*) left hind foot bones. Dog/coyote hind paw bones were also recorded *in situ* near the outer margin of Feature 1A. The only other thermally altered specimen consisted of a single jackrabbit (*Lepus sp*.) ulna. The remaining faunal specimens recovered from Feature 1A were comprised of fragmented Size Class III mammal remains. FTIR analysis of a sample of fill sediment from Feature 1A did not produce any specific matches for animal or plant processing. No macrofloral remains were recovered from Feature 1A during excavation or as the result of floatation analysis.

Feature 1B represents an internal subfloor thermal basin located within the south-central portion of the Feature 1 housepit substructure. About 50% of the eastern portion of the feature was truncated during construction of the pipeline trench. The general morphology of the intact portion of the feature was hemispherical in plan-view, and basin-shaped with a concave bottom in profile (Table 2). Radiocarbon analysis of a sample of fill sediment collected from the Feature 1B yielded a conventional radiocarbon age estimate of 5980 ± 30 years B.P., and calibrated radiocarbon age estimates of 6890-6740 cal. B.P. This age estimate was the oldest recorded for the housepit.

No lithic debitage, stone tools, or thermally altered stone were recovered from within Feature 1B during excavation. Four faunal specimens were recovered from the feature, two of which exhibited evidence of thermal alteration. The burned specimens consisted of a dog/coyote (*Canis sp*.) first phalanx and a cottontail rabbit (*Sylvilagus sp*.) ulna shaft. The remaining two specimens consisted of a jackrabbit (*Lepus sp*.) metacarpal fragment and an indeterminate Size Class III fragment. FTIR analysis of a sample of fill sediment collected from Feature 1B did not produce any specific matches and no macrofloral remains were recovered from the feature fill sediment.

Feature 1C represents of an internal subfloor thermal basin located within northwestern portion of the Feature 1 housepit (Table 2). The morphology of the thermal basin was hemispherical in planview and basin-shaped in profile with steep sloping sides and flat bottom. Feature fill sediment collected from Feature 1C yielded a conventional radiocarbon age estimate of 5600 ± 40 years B.P., and a calibrated radiocarbon age estimate of 6450-6300 cal. B.P.

Cultural materials recovered from Feature 1C during excavation included two lithic reduction flakes, 108 faunal specimens, and a single thermally altered sandstone fragment (3-6 cm; 50g). The debitage consisted of one finishing maintenance flake and one flake fragment derived from fossiliferous chert. The 108 faunal specimens recovered from Feature 1C were comprised of 94% Size Class III mammal and jackrabbit (*Lepus sp*.) bone. Five specimens were identified as dog/coyote (*Canis sp*.), including three complete thoracic vertebrae, a thoracic vertebra centrum, and a thermally altered hamate process. In addition, two thermally altered coyote-sized specimens consisting of a long bone shaft flake and lumbar vertebra fragment were also recovered from Feature 1C. No additional artifacts were recovered from Feature 1C and no macrofloral remains were recovered from the feature during excavation or as the result of floatation analysis. FTIR analysis of a sample of fill sediment from Feature 1C did not produce any specific matches for animal or plant processing.

The functionality of the Feature 1 housepit relates to its use as a short-term residential structure by a small group(s) of Archaic period hunter-gatherers. Activities conducted within the structure included the processing of dog/coyote, jackrabbit, and rabbit-sized animals, potential lithic reduction and probably other activities. The three subfloor thermal basins (Feature 1A-1C) located within the housepit appear to have been used to process faunal resources, and may have also been used as light and heat sources during the housepit occupation(s). Direct evidence of floral resource processing was not recorded for the housepit or subfloor features. However, this does not preclude the possibility it occurred in association with the occupation(s) of the housepit. The structure was likely used as a sheltered residential base from which to conduct a range of hunter-gatherer activities during a portion of the cold/low biomass season (fall to spring), and potentially multiple times over multiple seasons or longer durations of time.

CHIPPED STONE TOOLS

Only three chipped stone tools were recorded as the result of the excavation of the Canid Housepit site. The tool assemblage includes one retouched flake and two utilized flakes. No definitive temporally or stylistically diagnostic stone tools were recorded during the

excavation of the housepit component. However, one projectile point specimen was recovered in association with the housepit at the site during the evaluative testing phase of the project. Tool attributes and proveniences for specimens from the Canid Housepit site stone tool assemblage are summarized (Table 3).

Projectile points

The single projectile point recovered from the Canid Housepit site was recorded from a test unit placed over the lateral margin of the Feature 1 housepit during the evaluative testing phase of the project. The projectile point (BLG141.7) consists of a large, nearly complete corner-notched point derived from fossiliferous chert (Figure 5). The overall morphology is triangular and lenticular in cross section (Table 3). The specimen exhibits a regular parallel flaking pattern and is mostly complete, missing only a portion of the base. Without the presence of an intact base, it is difficult to assign a specific typology to the specimen, but it is morphologically consistent with large Archaic period corner-notched points from the region, some of which have been assigned to the Elko Series.

Flake tools

Specimen 48CR8818-49 represents a complete retouched flake derived from dark brown fossiliferous chert. The flake tool was made from a large tertiary flake without cortex. Unifacial edge retouch is present on one lateral margin and the distal edge (Table 3). It was not recorded in direct association with the Feature 1 housepit substructure. The specimen was likely used as a relatively expedient cutting implement and later discarded.

Specimen 48CR8818-46 is a complete utilized tertiary flake derived from light gray fossiliferous chert (Table 3). No cortex is present and it exhibits usewear along one lateral margin and distal margin. It was not recovered in association with the Feature 1 housepit substructure, but was recorded ca, 50-80 cm west of the housepit. The specimen was likely used as an expedient cutting tool and discarded after use.

Specimen 48CR8818-48 represents a utilized secondary flake with some dorsal cortex also derived from light gray fossiliferous chert (Table 3). It exhibits usewear in the form of nibbling along one lateral edge. The flake tool was recovered near the northern margin, but external to, the Feature 1 housepit substructure. It was likely used as an expedient cutting tool and discarded after use.

DEBITAGE

The excavation of the Canid Housepit site yielded 66 lithic reduction specimens. Only 12 (18.18%) of these specimens were recovered from the occupational zone (floor and lower fill sediment) within the Feature 1 housepit. The remaining specimens (81.81%) were either recovered from the middle to upper fill sediment within the housepit or external to the housepit. This suggests lithic reduction activities were either conducted primarily outside the housepit structure, or much of the lithic debitage was discarded outside. Additional lithic reduction activity areas or midden areas derived from housepit cleaning may exist beyond the spatial extent of the excavation block; however, no evidence of this was recorded during excavation or testing.

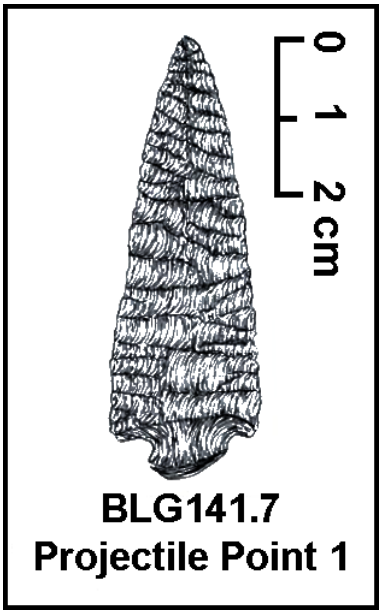


Figure 5: Illustration of projectile point recorded during testing at Canid Housepit site (48CR8818).

Overall, the assemblage is comprised primarily of tertiary flakes and secondary flakes representing 34.85 and 33.33% of the assemblage respectively. Flake fragments without cortex were recorded at an observed frequency of 9.09%. Flake fragments with cortex and shatter each represent an additional 4.55% of the assemblage respectively. Primary flakes represent only 6.06% of the debitage assemblage. Finishing/maintenance flakes were recorded at an observed frequency of only 7.58%. The limited size of the debitage sample precludes any substantive analysis of lithic reduction activities. However, these limited data do suggest early to middle stage lithic reduction was the primary stone working activity conducted within and around the immediate spatial extent of the housepit. Evidence of thermal alteration in the form of potlid fractures, thermal fractures, and oxidized mineralogy was observed for only (13.63%) of the debitage sample. This is most likely from lithic debitage being discarded within or directed toward the interior subfloor thermal basins located within the housepit. The debitage may have been further dispersed from the housepit during thermal basin clean-out intervals.

The composition of lithic raw material types for the Canid Housepit site debitage assemblage consists primarily of fossiliferous general chert, which represents

Table 3: Summary of Chipped Stone Tool Characteristics, Canid Housepit Site (48CR8818)

CATALOG #	PROVENIENCE	ELEV.	TOOL TYPE	LITHIC TYPE	DIMENSIONS L X W X TH (MM)	CONDITION/ PORTION	EDGE RETOUCH/ CROSS SECTION/ MORPHOLOGY/ COMMENT
BLG141.7	Test Unit 1	N/A	Projectile Point	Brown Fossiliferous Chert	58.4 x 19.8 x 4.6	Nearly Complete	Bifacial/All / Lenticular / Triangular / Corner-notched, Very Regular Parallel Flaking, Base / Stem Fractured, Elko-like.
48CR8818-49	107N 506E Housepit Exterior	98.00-97.85 m	Retouched Flake	Dark Brown Fossiliferous Chert	31.5 x 18.3 x 9.2	Complete	Unifacial / Lateral / Distal
48CR8818-46	106N 500E Housepit Exterior	98.00-97.90 m	Utilized Flake	Light Gray Fossiliferous Chert	26.6 x 18.5 x 5.3	Complete	None / Usewear / Lateral / Nibbling
48CR8818-48	105N 506E Housepit Exterior	97.85-97.75 m	Utilized Flake	Light Gray Fossiliferous Chert	39.0 x 20.3 x 7.6	Complete	None / Usewear / Lateral / Nibbling

87.88% of the debitage assemblage. Specimens derived from general quartzite and non-fossiliferous general cherts were recorded at significantly lower observed frequencies of 9.09% and 3.03% respectively. Based on the distribution of raw material types for the Canid Housepit site debitage assemblage, it appears regionally/ locally available fossiliferous chert was the most readily available and used raw material for tool production. Primary and secondary sources of toolstone are also along the southern and western margins of the Great Divide Basin north of the site (Michaelsen 1983; Miller 1991). Major chert producing strata are also known from the Washakie Basin west of the site within the LaClede bed of the Laney Member of the Green River Formation (Love 1997). These include primary Green River Formation fossiliferous chert varieties and dark brown non-fossiliferous chert located along the Delaney Rim escarpment, bioclastic cherts (oolitic, algalitic, ostradcods), and secondary lag cobbles exposed on desert pavement in the surrounding area.

FAUNAL ANALYSIS

The analysis of faunal remains recovered during the excavation at the Canid Housepit site was conducted by Megan Partlow and summarized here. The faunal assemblage is comprised of 870 specimens. Most of the specimens (91%) were recovered from the housepit and subfloor thermal basins. In general, the assemblage showed limited evidence of weathering indicating most of specimens were buried relatively rapidly by aggrading eolian sand and slopewash sediment post-occupation. The assemblage was highly fragmented with 90% of specimens measuring < 2cm in length. The high degree of bone fragmentation is consistent with housepit site faunal assemblages from the Wyoming Basin (Smith 2003). Evidence of thermal alteration was observed for 26% of specimens. None of the specimens exhibited evidence of cultural modification in the form of green bone fractures, cut marks, or hammerstone impacts.

Because of the highly fragmented nature of the assemblage, most (80%) of the specimens were identified only to a mammal size class or as unidentified mammal. The faunal assemblage from the Canid Housepit site is summarized (Table 4). The badger (*Taxidea taxus*) and vole specimens are likely intrusive to the deposit. Only one specimen was identified as pronghorn (*Antilocapra americana*), and six specimens were identified as mammal Size Class V (pronghorn/deer-sized). The 61 dog/ coyote (*Canis sp.*) remains primarily consist of vertebral column and foot specimens, and likely represent a single animal. Two of these specimens exhibited evidence of thermally. Dog/coyote remains were recovered from all three subfloor thermal features within the housepit

Table 4: Summary of Faunal Remains, Canid Housepit site (48CR8818)

ORDER	TAXON	COMMON NAME	ALL REMAINS		"CULTURAL"[1]	
			NISP	MNI	NISP	MNI
Class Mammalia (mammals)						
Carnivora	*Canis sp.*	Coyote or dog	61	1	61	1
	Taxidea taxis	Badger	1	1	1	1
Artiodactyla	*Antilocapra americana*	Pronghorn	1	1	1	1
Rodentia	*Tamias* sp.	Chipmunk	2	1	2	1
	Subfamily Arvicolinae	Voles	3	1	--	--
Lagomorpha	Family Leporidae	Rabbits and Hares	1	--	1	--
	Sylvilagus sp.	Cottontail	2	1	2	1
	Lepus sp.	Jackrabbit	107	3	107	3
Unknown	Size Class II	Squirrel-sized	1	--	1	--
	Size Class III	Rabbit-sized	643	--	643	--
	Size Class I-III	Vole to rabbit-sized	20	--	20	--
	Size Class IV	Coyote-sized	17	--	17	--
	Size-Class V	Deer-sized	6	--	6	--
	Size-Class IV-VI	Coyote to bison-sized	1	--	1	--
	Unidentified	Unidentified mammal	4	--	4	--
Total Identified to Class			870	9	870	8
Unidentified			--	--	--	--
Total			**870**	**9**	**870**	**8**

[1] Excludes vole remains.

substructure. Remains identified as jackrabbit (*Lepus* sp.) consist of 107 specimens representative of at least three individuals. An additional 643 specimens were identified as mammal Size Class III (rabbit-sized), and also likely predominantly represent jackrabbit. Only two specimens were identified as cottontail rabbit (*Sylvilagus* sp.). It appears during the housepit occupation(s) at least three jackrabbits, one cottontail, one dog/coyote, and one pronghorn where procured and portions processed on site.

Overall, the faunal assemblage from the Canid Housepit faunal assemblage is primarily (86%) comprised of jackrabbits and mammal Size Class III (rabbit-sized) remains. This is consistent with faunal assemblages from Mid-Holocene housepit sites in the Wyoming Basin (Harrell et al. 1997; Lubinski 2000; Smith 2003). However, the Canid Housepit faunal assemblage is anomalous with regard to the presence of dog/coyote (*Canis* sp.) remains. None of 126 radiocarbon-dated faunal assemblages from Lubinski's Greater Green River Basin faunal database include *Canis* sp. remains dating to the Opal phase of the Early Archaic (Lubinski 2000; Partlow and Lubinski 2012). The oldest radiocarbon-dated assemblage from the database with *Canis* sp. remains was from Hogsback Site (48UT2516) dating to 4500±90 B.P. where a single *Canis* sp. scapula was reported from Structure 1 (Reed 2005). The Canid Housepit site is unique to the region because it is the oldest known site and housepit site to have yielded a significant quantity (61) of *Canis* sp. remains. Some of these remains exhibited evidence of thermal alteration, further establishing a cultural association for the canid specimens.

SPATIAL ORGANIZATION

Information regarding the spatial distribution of cultural materials recovered from within the housepit and adjacent surrounding area at the Canid Housepit site illustrates the potential for understanding the spatial organization and type of activities conducted within or near the structure during the hunter-gatherer occupation(s). Unfortunately, stone tools and lithic debitage were not recovered in sufficient quantities for meaningful spatial distribution analysis. The only artifact class recovered in sufficient quantity for analysis was faunal remains.

Most (86%) of the 793 faunal remains recovered from the Feature 1 housepit and subfloor thermal basins consisted of jackrabbits and Size Class III (rabbit-sized) mammal remains. The density distribution of jackrabbit and rabbit-sized faunal remains recovered from the site is

illustrated (Figure 6). This shows a concentration of these remains between the Feature 1B and 1C subfloor thermal basins, and less dense concentrations of rabbit remains emanating outward toward the margins of the housepit substructure. These data suggest rabbits were processed in an area between the two thermal basins and each of the thermal basins was used to process these faunal resources. In addition, processed and post-consumption rabbit remains may have been swept to the outer margins of the housepit, as well as the exterior to the housepit.

The faunal data also indicate a single dog/coyote was processed during the occupation of the Feature 1 housepit structure. The density distribution of dog/coyote and coyote-sized faunal remains recovered from the housepit and site is presented (Figure 7). The density map shows limited concentrations of these remains in spatial association with Features 1B and 1C, and to a lesser extent Feature 1A. The greatest concentration of canid remains is associated with Feature 1A. Dog/coyote remains were recovered from each of the subfloor thermal basins during excavation of the housepit. The spatial data further suggest a dog/coyote was processed within the housepit, most likely in the area between Feature 1B and 1C, and each of the three subfloor thermal basins was used to process the animal. The dog/coyote and rabbits were likely transported back to the housepit as complete carcasses and processed intensively for extracting nutritional value, and perhaps for their pelts.

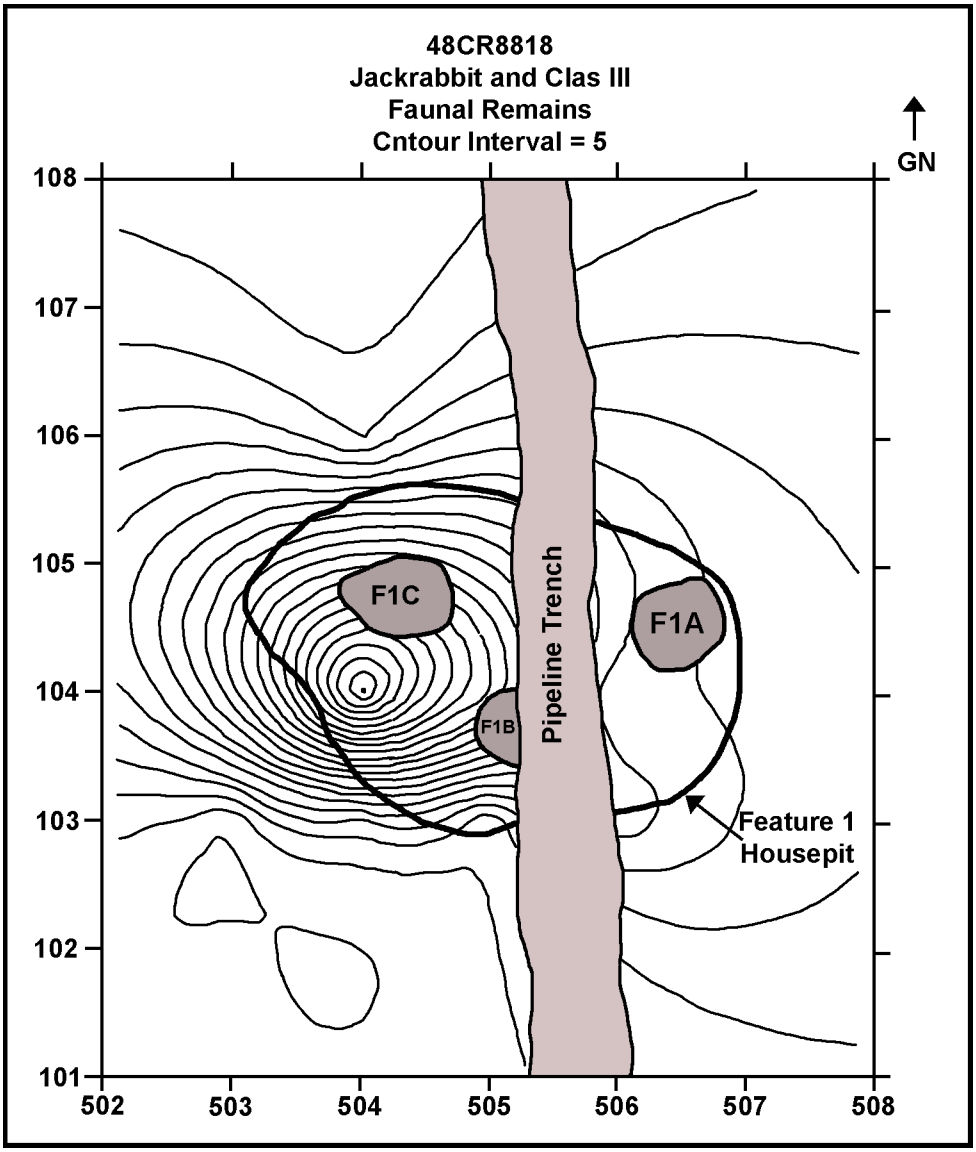


Figure 6: Contoured density map for jackrabbit and rabbit-sized faunal remains recovered from Canid Housepit site (48CR8818).

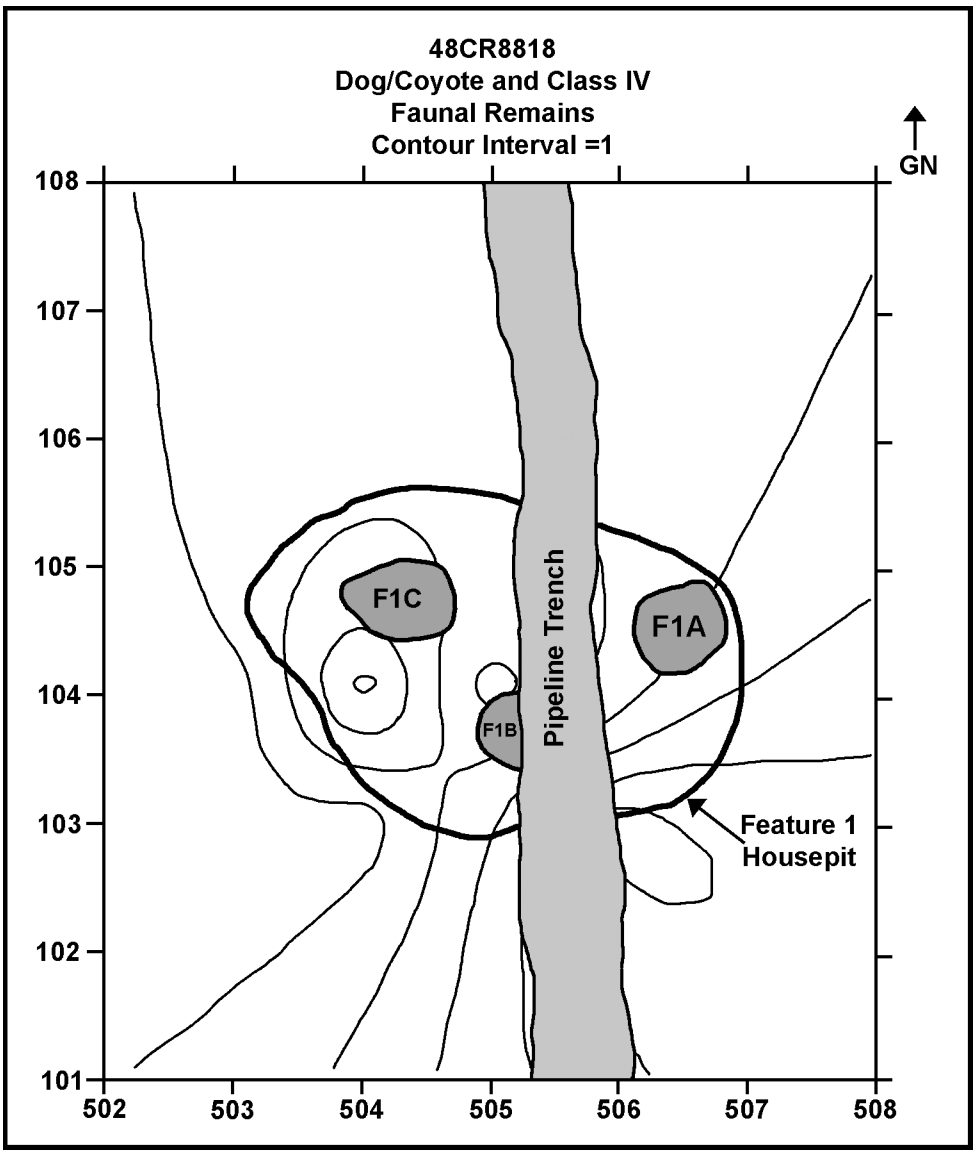


Figure 7: Contoured density map for dog/coyote and dog-sized faunal remains recovered from Canid Housepit site (48CR8818).

ARCHAIC PERIOD HOUSEPIT USE IN WYOMING

The use of housepits by Archaic period hunter-gatherers in Wyoming has remained a topic discussion among archaeologists as an increasing number of housepit sites have been excavated in the region (Harrell et al. 1997; Landt and Reed 2014; Larson 1997; Miller and McGuire 1997; Rose 2008; Shields 1998; Smith 2003; Smith and McNees 2011; Waitkus and Eckles 1997; Walker et al. 1997). Based on this ongoing research, Buenger and Goodrick (2019) provided a recently compiled sample of 101 excavated housepits from 53 individual archaeological sites in Wyoming. Basic summary information including housepit metrics, number of internal features, radiocarbon dates, and landscape setting for the excavated Archaic period housepits included in the sample are presented (Table 5). The housepit sample was represented by 206 conventional radiocarbon age estimates derived from 99 individual housepits ranging between 7290 and 3075 B.P. (dates were averaged for housepits represented by multiple radiocarbon age estimates). The mean date for housepits across the sample was 5256 B.P. The radiocarbon data showed most housepits from the sample were dated between 5700-4900 B.P. (52.52%). Few housepits were shown to be dated before 3700 B.P. (7.07%) or after 6100 B.P. (6.06%). The radiocarbon data showed 63 (66.67%) of the sampled housepits from Wyoming dated to the Late Middle Holocene (6000-4500 B.P.). Twenty (20.20%)

Table 5: Summary Information for Archaic Period Housepits from Wyoming (adapted from Buenger and Goodrick 2015)

MAP NO.*	SITE	HP NO. †	DIMENSIONS L X W X D (CM)			VOL.** (LITERS)	SURFACE AREA*** (CM^3)	^{14}C DATES RANGE (#) (YRS. B.P.) [RANGE AVERAGE]	INT. FEAT. NO. ‡	TOPOGRAPHIC LOCATION / WATER SOURCE	REFERENCES
1	Shoreline (48CR122)	1976	270	210	26	775.4	44509.5	5200 ±150 (1)	2	Terrace/Basin North Platte River	Walker et al. (1997)
		1986	450	350	20	1656.7	123637.5	N/A	1		
2	High Point (48CR1790)	1	280	240	20	706.9	527.52.0	5300 ±60 (1)	3	Basin/Uplift Standard Draw	Murray 2001
		2	380	320	36	2302.4	95456.0	6320 ±60 (1)	4		
3	Medicine House (48CR2353)	2	600	600	125	23667.8	282600.0	5160 ±120-5360 ±80 (2) [5260 ±100]	6	Basin Interior Carbon Creek	McGuire et al. (1984) Miller and McGuire (1997)
4	Sinclair (48CR4522)	16	560	560	60	9896.3	246176.0	5540 ±80-5770 ±80 (2) [5655±80]	7	Basin/Uplift Sugar Creek	Reust (1989) Smith and Reust (1992)
5	48CR4686	1	250	120	33	520.7	23550.0	4930 ±90 (1)	4	Basin/Uplift Lost Soldier Creek	Reust et al. (1993)
6	Prism (48CR5699)	3	355	405	62	4688.3	112863.4	6200 ±50-6250 ±50 (3) [6233±50]	2	Basin Interior Muddy Creek	Frankus (2012)
7	Split Hearth (48CR6979)	1	584	408	63	7895.1	187043.5	5520 ±30-5670 ±40 (3) [5613±40]	8	Basin Interior Echo Springs	Murray (2008)
		2	460	401	33	3201.6	144801.1	5340 ±30-5470 ±40 (4) [5412±40]	6		
8	Hedgehog (48CR7035)	5	312	300	12	590.75	73476.0	7020 ±40 (1)	4	Basin Interior Echo Springs	Murray (2008)
9	Canid (48CR8818)	1	375	275	55	2983.1	80953.1	5800 ±40 (1)	3	Basin Interior Dry Cow Creek	Buenger (2014)
10†	Flying A Ranch (48FR1431)	20	180	184	41	714.2	25999.2	4070 ±50-4350 ±80 (3) [4173 ±60]	3	Basin Interior Middle Casper Creek	Martin et al. (1999)
		22	337	253	24	1076.2	66929.9	4110 ±50-4250 ±60 (6) [4155 ±57]	7		
11†	Split Rock Ranch (48FR1484)	1	550	400	70	8099.6	172700.0	4430 ±60-6180 ±170 (5) [4850 ±50]	4	Terrace/Uplift Sweetwater River	Eakin (1987) Eakin et al. (1997)
		2	280	280	40	1649.3	61544.0	5630 ±180 (1)	3		
		3	-	-	-	N/A	N/A	5730 ±190 (1)	2		
		4	345	380	48	3309.7	102913.5	3400 ±90-5870 ±170 (7) [4970±90]	6		
		6	-	-	-	N/A	N/A	5080 ±160-5760 ±160 (2) [5420 ±160]	2		

12†	Crooks (48FR1602)	A	390	370	48	3642.9	113275.5	4850 ±70 (1)	4	Basin/Foothills Crooks Creek	McKern (1987b)
		B	343	320	20	1154.5	86161.6	4300 ±70 (1)	6		
		D	400	370	48	3736.3	116180.0	4360 ±90 (1)	3		
13	48FR2330	16	460	440	125	13306.5	158884.0	5390 ±100-5950 ±100 (2) [5670±100]	7	Basin Interior Sweetwater River	Reiss (1990)
14†	Headlining (48FR4464)	A	320	250	16	673.2	62800.0	5520 ±40 (1)	3	Terrace Sweetwater River	Fleming (2005a)
		B	250	200	23	604.8	39250.0	5250 ±40 (1)	1		
		C	330	330	43	2462.9	85486.5	5390 ±40 (1)	3		
		D	280	280	30	1237.0	61544.0	5330 ±40 (1)	1		
15†	Two-Fisted Manos (48FR4516)	A	270	220	30	937.2	46629.0	5240 ±40 (1)	1	Terrace Sweetwater River	Fleming (2005b)
		B	277	250	31	1129.1	54361.3	5190 ±40 (1)	3		
16	Jeffrey City (48FR4398)	2	362	323	60	3689.8	91786.9	5220 ±40-5320 ±40 (2) [5270 ±40]	3	Basin Interior Crooks Creek	McClelland and Smith (2001)
17	Black & Red (48FR4457)	2	280	250	15	552.3	54950.0	4660 ±50 (1)	2	Basin Interior Muskrat Creek	Karpinski (2005b)
18	Moneta Divide (48FR4459)	7	210	210	26	603.1	34618.5	4990 ±40-5000 ±50 (2) [4995 ±45]	14	Basin Interior Muskrat Creek	McNees (2005a)
		11	500	410	135	14555.7	160925.0	5310 ±40-5390 ±40 (3) [5347 ±40]	2		
19	Sheep Mountain (48FR5125)	1	350	350	35	2255.0	96162.5	4650 ±50-5040 ±50 (3) [4883 ±50]	3	Foothills/Basin Crooks Creek/ Tributaries	Buenger (2011c)
		15	310	305	35	1740.5	74221.8	5850 ±40-6100 ±40 (2) [5975 ±40]	3		
20†	Crooks Gap (48FR6260)	36	310	240	30	1173.9	58404.0	5170 ±30-5260 ±40 (2) [5215±35]	9	Terrace/ Foothills Crooks Creek	Peterson and Smith (2012)
		39	320	184	20	619.36	46220.8	5420 ±40 (1)	4		
		59	368	300	30	1741.95	86664.0	5200 ±30-5330 ±40 (4) [5265±40]	15		
21†	White Stallion (48FR6261)	1	450	200	23	1088.72	70650.0	5600 ±30 (1)	7	Terrace/ Foothills Crooks Creek	Rood et al. (2012)
		6	220	255	10	295.06	44038.5	5290 ±30-5290 ±30 (2) [5290±30]	2		
		9	300	300	25	1380.62	82425.0	5620 ±30 (1)	5		
22	Grass Creek (48HO120)	31	375	300	29	1183.3	883312.5	4380 ±80 (1)	0	Terrace Grass Creek	Reiss (1991)
23	Moxa (48LN616)	1	346	284	42	2170.6	96162.5	4390 ±60(1)	2	Basin/Uplift Blacks Fork River	Kautzman (2005)

24†	ED1 Twin (48NA226)	1	260	242	62	2051.8	49392.2	5020 ±60-5230 ±40 (2) [5125 ±50]	3	Basin/Uplift Poison Spider Creek	Buenger (2011d)
		2	300	295	40	1861.9	69472.5	5190 ±40-5320 ±40 (2) [5255 ±40]	4		
25	Horton (48NA884)	2	306	382	46	2087.7	67739.2	5480 ±50-5570 ±50 (2) [5525 ±50]	3	Terrace Sweetwater River	Buenger (2011e)
26	48NA963	3	284	228	90	3065.1	50830.3	2680 ±95-3470 ±115 (2) [3075 ±105]	4	Basin/Terrace Bates Creek	Waitkus et al. (1988)
		4	210	200	38	839.4	32970.0	5570 ±115-5850 ±105 (2) [5715 ±110]	3		
		34	300	245	35	1353.0	57697.5	5685 ±100 (1)	5		
27†	48NA964	11	315	315	50	2609.4	77891.6	5200 ±100-5570 ±100 (2) [5385 ±100]	3	Basin/Terrace Bates Creek	Waitkus et al. (1988)
		53	344	290	18	944.4	78311.6	5465 ±95-5688 ±100 (2) [5577 ±98]	5		
		165	207	207	45	1014.1	33636.5	5510 ±105-5555 ±105 (2) [5533 ±105]	2		
28	Two Toads (48NA1079)	1	365	330	51	3230.9	94553.3	5170 ±60-5260 ±130 (2) [5215 ±95]	2	Basin Interior Casper Creek	Darlington et al. 1995
29	Natrona (48NA2526)	4	313	235	57	2205.1	57740.7	3820 ±50-4080 ±70 (6) [3912±53]	3	Basin/Uplift Casper Creek	McClelland and Martin (1999a)
30	Sixmile Draw (48NA2529)	3	324	290	44	2174.4	73758.6	5200 ±60-5430 ±170 (5) [5400±80]	8	Basin Interior Casper Creek	McClelland et al. (1999)
31	Powder River (48NA2779)	3	312	223	28	1024.6	54617.16	5260 ±60 (1)	3	Basin Interior South Fork Powder River	Lubinski (1999)
		4	225	275	29	943.8	48571.88	5490 ±60 (1)	1		
32	Sweetwater Terrace (48NA3800)	1	310	350	40	2282.6	85172.5	5470 ±50-5540 ±50 (2) [5505 ±50]	2	Valley/Terrace Sweetwater River	Buenger (2011f)
33	Confluence (48NA4588)	1	275	275	70	2784.3	59365.6	5340 ±40-5390 ±40 (2) [5365 ±40]	2	Basin/Terrace Fish Creek Horse Creek	Buenger (2013)
34	Beef Gap (48NA3801)	1	375	325	40	2564.0	95671.8	5240 ±40-5370 ±40 (2) [5305 ±40]	2	Valley/Gap Sweetwater River	Buenger (2011g)
35	Dry Creek (48NA3805)	1	375	375	25	1849.0	110390.6	3910 ±60 (1)	1	Basin/Terrace Dry Creek/ Cottonwood Creek	Buenger (2011h)
36†	Birch Creek (48SU595)	B	350	343	34	2146.8	94239.3	4350 ±80 (1)	2	Foothills/Basin Birch Creek	Thompson et al. (1996)
		C	340	290	33	1711.3	77401.0	4390 ±70 (1)	2		

37†	McKeva Ryka (48SU2094)	A	347	265	25	1209.1	72184.7	6290 ±80-6880 ±80 (4) [6645 ±80]	5	Basin/Terrace Sand Draw	McKern and Current (2002)
		B	357	300	32	1802.5	84073.5	6210 ±80-6680 ±80 (2) [6445 ±80]	6		
38†	Jonah's House (48SU2324)	A	379	347	29	2005.9	103237.7	6660 ±70-7070 ±80 (3) [6920 ±70]	5	Basin/Terrace Sand Draw	McKern and Current (2003)
		B	337	295	20	1045.6	78040.8	6590 ±80-6920 ±80 (5) [6714 ±80]	4		
39†	J.D. Love (48SU4479)	A	365	282	23	1245.1	80800.1	6460 ±60-7110 ±60 (5) [6796 ±60]	10	Basin/Terrace Sand Draw	McKern and Current (2004)
		B	301	296	20	937.2	69940.4	5330 ±60-7020 ±60 (5) [6344 ±60]	10		
		C	364	357	24	1640.3	102009.2	5320 ±60-6920 ±60 (5) [6064 ±60]	10		
		D	195	181	25	464.1	27706.5	7290 ±50 (1)	2		
		F	319	234	28	1099.3	58597.1	4590 ±60-7050 ±60 (5) [6370 ±65]	8		
		G	234	174	22	471.1	31962.1	5450 ±70-7300 ±60 (2) [6200 ±65]	5		
40†	New Fork (48SU5084)	1	420	280	45	2783.3	92316.0	5560 ±50-5820 ±50 (3) [5693 ±50]	3	Basin/Foothills New Fork River	Pastor et al. (2010)
		2	380	350	40	2798.1	104405.0	4270 ±40 (1)	3		
		3	340	280	45	2253.2	74732.0	5570 ±40 (1)	3		
41	Sevenmile Gulch (48SW1673)	3	286	270	12	487.4	60617.7	4850 ±50 (1)	3	Basin/Terrace Blacks Fork River	Murray (2006)
42	Maxon Ranch (48SW2590)	40	335	350	54	3330.1	92041.3	6000 ±130 (1)	5	Foothills Sage Creek	Harrell and McKern (1986)
		43	370	350	56	3814.2	101657.5	4860 ±110 (1)	5		
43	Sweetwa-ter Creek (48SW5175)	7	300	250	30	1183.4	58875.0	5130 ±90 (1)	2	Uplift/Basin Sweetwater Creek	Newberry and Harrison (1986)
44†	Bald Knob (48SW5982)	17	280	100	25	368.2	21980.0	4530 ±70 (1)	3	Uplift/Basin Able Creek Lost Soldier Creek	Reust et al. (1993) Hoefer (1988)
		20	230	175	44	931.5	31596.3	4530 ±110 (1)	3		
		35	330	250	54	2343.1	64762.5	4400 ±80 (1)	4		
		A	310	137	24	536.1	33339.0	4940 ±40 (1)	3		
		5	170	100	36	321.9	13345.0	5100 ±80 (1)	4		
		15	300	300	15	710.0	70650.0	4710 ±70 (1)	5		
45	Farson (48SW6777)	8	380	280	35	1958.6	83524.0	5360 ±100 (1)	4	Terrace/Basin Sandy River Sandy Creek	Harrison and Creasman (1989)

46	Lower Powder Spring (48SW7933)	6	300	300	20	946.7	70650.0	4500 ±70 (1)	4	Basin/Foothills Lower Powder Spring/Powder Wash	Darlington and Murcray (1998)
47	Chain of Lakes Rim (48SW13158	5	410	330	45	3202.3	106210.5	5220 ±70 (1)	6	Basin/Uplift Drainages/ Catchments/ Marsh	Fleming (2005c)
		9	410	360	54	4192.0	115866.0	5530 ±70-5720 ±40 (4) [5640 ±60]	6		
		10	300	300	35	1656.7	70650.0	4360 ±70 (1)	0		
		13	350	350	80	5154.3	96162.5	None	1		
48†	Arapahoe Creek (48SW13152)	1/2	386	270	63	3453.3	81812.7	4870 ±50-5530 ±170 (3) [5203 ±87]	2	Basin/Foothills Arapahoe Creek/ Tributaries	Lowe (2005)
		C	342	232	24	1001.5	62285.0	5560 ±40-5570 ±40 (2) [5565 ±40]	4		
49†	Elk Head (48WA1181)	15	300	236	26	968.2	55578.0	3510 ±130-3930 ±70 (3) [3707 ±87]	4	Uplift/Terrace Big Horn River/ Slick Creek	McClelland and Martin (1999b)
		16	250	268	30	1057.2	52595.0	3890 ±70-4140 ±70 (2) [4015 ±70]	2		
		19	230	162	14	274.4	29249.1	3870 ±70 (1)	1		
50	Nowater (48WA1463)	19	268	204	58	1667.8	42917.5	3870 ±80-3990 ±140 (2) [3930 ±110]	4	Basin/Uplift Nowater/ Kirby Creeks	Martin and Harding (1999)
51	Telephone Draw (48UT133)	6	385	340	39	2685.0	102756.5	5630 ±40-5700 ±40 (2) [5665 ±40]	3	Basin Interior Telephone Draw	Flemming and Karpinski (2010)
52	Broken Home (48UT186)	16	350	330	45	2733.6	90667.5	5240 ±110 (1)	2	Uplift Clear Creek	Rood and Pope (1993)
53	Hogsback (48UT2516)	1	395	435	25	2259.3	134882.6	4280 ±40-4500 ±40 (2) [4390 ±40]	2	Terrace/Uplift Little Muddy/ Albert Creeks	Eckman (2005)

*Map No. = Corresponding housepit site location number on Figure 1 Map. HP No. = Recorded number for excavated housepit feature.
Int. Feat. No. = Number of internal features recorded within excavated housepit.
**Volume (Liters) = 0.67 π (D)(L/2)(W/2)/1000.
***Surface Area (cm^3) = π (W/2)(L/2).
†Multi-housepit site containing at least two housepits that share a minimum of one statistically similar radiocarbon date (CALIB 6.0.1).

housepits in the sample were dated to the Early Late Holocene (4500-1800 B.P.) of the Late Archaic. Only thirteen (13.13%) of the sampled housepits were dated to the Early Middle Holocene (7500-6000 B.P.).

In Wyoming, increased eolian activity within the major dune fields has been shown to have occurred from the Early Middle Holocene through the Late Middle Holocene (7500-4500 B.P.) (Ahlbrandt 1974; Ahlbrandt et al. 1983; Gaylord 1982, 1990; Eckerle 1989; Forman et al. 2001; Halfen et al. 2010; Mayer and Mahan 2004; Stokes and Gaylord 1993). The alluvial record in portions of Wyoming during the Early Middle Holocene has also shown evidence of reduced stream flow indicative of arid conditions (Eckerle 1990, 1994). Eckerle (1997) has suggested a decrease in effective precipitation during this period resulted in reductions of grassland biomass and a shift toward increased desert shrubland vegetation. Through the analysis of archeofaunal assemblages, Byers et al. (2005) have suggested reductions in forage productivity adversely impacted large game populations in the Wyoming Basin between 8500-6000 B.P.

During the Early Late Holocene (4500-1800 B.P.), eolian activity has been shown to have been on the decline resulting in a period of sand stabilization within most of the major dune localities within the region (Ahlbrandt et al. 1983; Forman et al. 2001; Halfen et al. 2010; Mayer and Mahan 2004; Stokes and Gaylord 1993). The stabilization of dune surfaces and landforms was accompanied by an ensuing pattern of regionally distinct Late Holocene soil formation in many areas within Wyoming Basin and Wind River Basin (Albanese 1989, 1995; Albanese and Frison 1995; Eckerle 1989, 1997). Where present In areas of the Wyoming Basin, this often consists of a weathered Bw horizon or an illuvial Bt horizon dating between 3000-1500 years B.P. (Albanese and Frison 1995; Eckerle 1997). The soil likely formed as the result of increased effective precipitation, vegetative growth, and subsurface moisture retention in association with mesic environmental conditions. This soil has been observed overlying multiple Early Archaic housepit deposits within the Wyoming Basin (Buenger and Goodrick (2019). In addition, a Bt soil horizon was observed to overlie the housepit deposit at the Canid Housepit site. Byers et al. (2005) have shown a significant increase in artiodactyl populations within the Wyoming Basin occurring around 3200 B.P. These proxy paleoenvironmental data show a trend toward increased precipitation and biomass within the Wyoming Basin and surrounding areas beginning sometime after 4500 B.P. and continuing to 1800 B.P.

The paleoenvironmental evidence suggests the initial expression of housepits and the peak use of housepits by Archaic period hunter-gatherers in Wyoming corresponds to a period of aridity and eolian activity beginning in the Early Middle Holocene and continued into the Late Middle Holocene. The paleoenvironmental, radiocarbon, and archaeological data suggest housepit use was particularly relevant to Archaic period hunter-gatherers in the Wyoming Basin and surrounding regions during this time. The peak in the frequency of dated housepits during this period may have been part of an adaptive strategy expressed by Archaic hunter-gatherers influenced by xeric environmental conditions which likely climaxed during the Late Middle Holocene. Few excavated Wyoming housepits have produced dates older than 6500 B.P., and those which do likely represent the initial expression of a hunter-gatherer strategy in which structured/repeated use of housepit residential bases became important. Conversely, the limited number of housepits dating younger than 4000 B.P. likely represents the decline of the adaptive strategy, which may be partially attributable to increased effective precipitation and increased biomass/foraging potential, resulting in decreased use of housepit structures as residential bases.

Buenger and Goodrick (2019) view the structured use and reuse of housepit localities near perennial water sources as a strategy expressed by hunter-gatherers to mitigate risk from a potential reduction in ecological diversity and carrying capacity when environmental conditions were believed to have been arid. Buenger and Goodrick (2019) used a subset of housepit sites located within the Sweetwater River drainage system in central Wyoming as an example of this strategy. Site localities located near perennial water sources would have supported more year-round ecological diversity compared to more marginal portions of basin interiors. The strategy may have developed through seasonally-conditioned land use in which predictable local resources such as reliable access to water, fuel, and the seasonally available floral and faunal resources were procured through a combination of logistical forays and foraging from the residential focal point of the housepit. Combined, the dataset of housepit sites shows a propensity for hunter-gatherer selection of housepit localities situated near major creeks and drainages systems. These areas likely afforded sheltered topography and access to important resources such as water, fuel, floral resources, and faunal resources, particularly during cold/low biomass portions of the season. These locations would have been ranked higher by hunter-gatherer groups as compared to open camp localities used for various purposes during other times of the seasonal round. Housepit structures were likely used as short-term structures; however, the presence of existing facilities may have contributed to the potential for temporally punctuated reoccupation of the site localities and housepit substructures. The repeated use of a locality by related groups or other post-generational small groups of hunter-gatherers over time is viewed as a component of the housepit use strategy. Housepit locality reoccupation

was likely influenced by presence of existing facilities, hunter-gatherer adaptive behavioral/cultural attributes, and locational attributes.

SUMMARY

The archaeological deposit at the Canid Housepit site consisted of a single housepit feature, three subfloor thermal basins internal to the housepit substructure, and cultural remains associated with the housepit structure. Cultural materials recorded during the excavation of the housepit included 66 lithic reduction specimens, three flake tools, and 870 faunal specimens. A nearly complete Elko-like Archaic period corner-notched point was recovered from within a test unit excavated over the housepit during the evaluative testing phase of the project. The hunter-gatherer occupation (s) of the housepit were dated to the Opal phase of the Early Archaic period through four conventional radiocarbon age estimates ranging between 5240 ± 30 and 5940 ± 30 years B.P. None of the radiocarbon dates obtained for the housepit were shown to be statistically similar. No direct stratigraphic evidence of multiple housepit occupations was observed during the excavation of the housepit substructure.

Faunal remains recovered during the excavation of the housepit suggest rabbits and rabbit-sized mammals were the primary faunal resources procured and processed by hunter-gatherers during the occupation(s) of the housepit. Large mammal remains are not well represented within the assemblage and appear to comprise only a small proportion of the faunal resources procured and processed during the housepit occupation(s). Faunal resources were likely procured on an encounter basis, and portions of larger, higher ranked animals were probably differentially transported back to the housepit locality for further processing and consumption. The faunal assemblage is predominantly comprised of bone fragments, suggesting animals were extensively processed for marrow extraction to maximize nutritional/caloric yield. Overall, the composition of the Canid Housepit artifact assemblage is generally consistent with housepit sites known from the Wyoming Basin and surrounding region (Buenger 2011a; McNees 2005a; Smith 2003). The single exception to this trend is the presence of dog/coyote remains representing a single animal. Canid remains are rare in Early Archaic open-air sites and housepit sites within the region. Of the 126 radiocarbon-dated faunal assemblages from the Greater Green River Basin faunal database, none include *Canis* sp. remains dating to the Opal phase of the Early Archaic (Lubinski 2000; Partlow and Lubinski 2012). This establishes the Canid Housepit site as being unique to the region with regard to the presence of canid remains dating to the Early Archaic.

Overall, the data recorded during the excavation of the Canid Housepit site suggest the housepit is representative of at least one short-term occupation of the structure and site. The occupation was likely more protracted than an occupation of an open-air camp locality because the presence of a structure would have required some time/energy investment in the locality. The housepit was located on the leeward side of a low ridge overlooking Dry Cow Creek. This locality was most likely selected based on its location near the creek at a position on the landscape which offered some shelter from localized weather conditions. The occupation(s) of the housepit likely occurred during a cool/low biomass portion of the seasonal round. Access to fuel, water, a range of exploitable food resources, and potentially stored resourced would have been important during the housepit occupation(s). The archaeological data obtained during the excavation suggest activities associated with the housepit occupation consisted of limited lithic reduction and the procurement and processing of mostly rabbits and a single dog/coyote. No evidence of floral processing or food storage was recorded during the excavation, however, this does not necessarily preclude the possibility these activities occurred. The information obtained as the result of the excavation at the Canid Housepit site is consistent with what has been described for Archaic period housepit sites from Wyoming in general (Buenger 2011a; Buenger and Goodrick 2019; Harrell et al. 1997; Larson 1997; Miller and McGuire 1997; McNees 2005a; Smith 2003; Smith and McNees 2011; Waitkus and Eckles 1997; Walker et al. 1997). Housepit use within the region during the Archaic is viewed as being representative of an adaptive strategy in which hunter-gatherers established residential loci in areas affording access to a range of reliable resources concomitant with xeric environmental conditions in the Wyoming Basin during the Mid-Holocene (Buenger 2011a; Buenger and Goodrick 2019).

ACKNOWLEDGEMENTS

The excavation at the Canid Housepit site was conducted by Western Archaeological Services as part of the Anadarko Exploration and Production Sun Dog Transconnect pipeline project. We would like to thank Anadarko Exploration and Production for funding the excavation and their support throughout the project. The author would like to thank Dan Bush, Dan Green, David Lamb, and Scott Yost for their assistance during the excavation of the site. Gratitude is also expressed to the individuals at Western Archaeological Services who helped process, analyze, and catalog the artifacts from the site.

REFERENCES CITED

Ahlbrandt, Thomas S.
1974 Dune Stratigraphy, Archaeology, and the Chronology of the Killpecker Dune Field.

In *Applied Geology and Archaeology: The Holocene History of Wyoming*, edited by M. Wilson, pp. 51-60. Geological Survey of Wyoming, Report of Investigations 10. Laramie.

Ahlbrandt, Thomas S., James B. Swinehart, and David G. Maroney
1983 Dynamic Holocene Dune Fields of the Great Plains and Rocky Mountain Basins, U.S.A. In *Eolian Sediments and Processes*, edited by M.E. Brooksfield and T.S. Ahlbrandt, pp. 374-406. Elsevier Scientific Publishing B.V., Amsterdam.

Albanese, John P., and George C. Frison
1995 Cultural and Landscape Change during the Middle Holocene, Rocky Mountain Area, Wyoming and Montana. In *Archaeological Geology of the Archaic Period of North America,* edited by E. Arthur Bettis III, pp. 1-19. Geological Society of America Special Paper 297. Boulder.

Buenger, Brent A.
2011a Discussion and Synthesis. In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 752-837. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2011b The ED1 Twin Housepit Site (48NA226). In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 61-130. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2011c The Horton Site (48NA884). In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 130-246. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2011d The Dry Creek Housepit Site (48NA3805). In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 339-383. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2011e The Sweetwater Terrace Housepit Site (48NA3800). In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 246-295. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2011f The Beef Gap Housepit Site (48NA3801). In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 295-339. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2011g The Sheep Mountain Site (48FR5125). In *Data Recovery Excavations along the Anadarko Howell CO2 Pipeline: 8,000 Years of Hunter-Gatherer Adaptation in Central Wyoming*, edited by B.A. Buenger and S.R. Goodrick, pp. 435-677. Prepared by Western Archaeological Services, for Anadarko Exploration and Production. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

2013 *Data Recovery Excavation at the Confluence Housepit Site (48NA4588).* Prepared by Western Archaeological Services, for Sinclair Pipeline Company. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Buenger, Brent A. and Stacy R. Goodrick
2019 Mid-Holocene Hunter-Gatherers, Housepits, and Landscape Reuse: Sweetwater

River, Wyoming. Plains Anthropologist 64(249):1-22.

Byers, David A., Craig S. Smith, and Jack M. Broughton
2005 Holocene Artiodactyl Population Histories and Large Game Hunting in the Wyoming Basin, USA. *Journal of Archaeological Science* 32:125.142.

Case, James C., and Laura L. Hallbery
2006 *Preliminary Surficial Geology Map of the Baggs 30' x 60' Quadrangle, Carbon and Sweetwater Counties, WY and Moffat and Routt Counties, CO*. Wyoming State Geological Survey, Laramie.

Chapman, Shannen S., Sandra A. Bryce, James M. Omernik, Donald G. Despain, Jeremy ZumBerge, and Mark Conrad
2004 *Ecoregions of Wyoming*. U.S. Geological Survey, Reston, Virginia.

Darlington, David. G., Steven. D. Creasman, Matt D. Kautzman, Ted Hoefer III, and Kevin W. Thompson
1995 *Archaeological Data Recovery along the Exxon Bairoil to Harztog Draw Pipeline in Central Wyoming*. Prepared by Archaeological Services of Western Wyoming College, for Wyoming Bureau of Land Management, Casper Field Office. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Eakin, Daniel H., editor
1987 *Final Report of Salvage Excavations at the Split Rock Ranch Site (48FR1484), Highway Project SCPF-020-2 (19), Fremont County, Wyoming*. Prepared by Office of the Wyoming State Archaeologist Wyoming Recreation Commission, for the Wyoming Highway Department. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Eakin, Daniel H., Julie. E. Frances, and Mary Lou Larson
1997 The Split Rock Ranch Site: Early Archaic Cultural Practices in South-central Wyoming. In *Changing Perspectives of the Archaic on the Northwestern Plains and Rocky Mountains*, edited by M. L. Larson and J. E. Francis, pp.394-435. University of South Dakota Press, Vermillion.

Eckerle, William
1989 Geoarchaeology of Altithermal Sand Dunes: Adaptation to Eolian Environments during the Early Plains Archaic. Unpublished Master's thesis, Department of Anthropology, University of Wyoming, Laramie.
1990 *Geoarchaeology of the Dead Indian Creek Site (48PA551).* Prepared by William Eckerle, Consulting Geoarchaeologist, for the Office of the Wyoming State Archaeologist. Copies available from the Office of the Wyoming State Archaeologist, Laramie.
1994 *Geoarchaeological Assessment of Sites 48SU1386 and 48SU1499, Sublette County, Wyoming.* Prepared by Western GeoArch Research for Archaeological Services of Western Wyoming College. Copies available from Western GeoArch Research, Salt Lake City.
1997 Eolian Geoarchaeology of the Wyoming Basin: Changing Environments and Archaic Subsistence Strategies in the Holocene. In *Changing Perspectives of the Archaic on the Northwestern Plains and Rocky Mountains*, edited by M. L. Larson and J. E. Francis, pp. 139-167. University of South Dakota Press, Vermillion.

Eckerle, William, Judson Finley, and Rebecca R. Hanna
2011 Data Collection Strategies for Assessing Artifact Zone Spatial and Associational Integrity on Sand Occupational Substrates. In *Archaeology in 3D: Deciphering Buried Sites in the Western U.S.*, edited by Mathew Seddon, Heidi Roberts, and Richard V. N. Ahlstrom, pp. 165-180. SAA Press, Washington, D.C.

Fleming, Nathan E.
2005a The Headlining Housepit Site (Site 48FR4464). In *The Archaeology along the Lost Creek Pipeline, Fremont and Sweetwater Counties, Wyoming: Volume III: Sweetwater Arch Sites*, edited by C. S. Smith, pp. 3.1-3.81. Prepared by TRC Mariah Associates Inc., for Lost Creek Gathering Company. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.
2005b The Two-Fisted Manos Housepit Site (Site 48FR4516). In *The Archaeology along the Lost Creek Pipeline, Fremont and Sweetwater Counties, Wyoming: Volume III*: *Sweetwater Arch Sites*, edited by C. S. Smith, pp. 4.1-4.60. Prepared by TRC Mariah Associates Inc., for Lost Creek Gathering Company. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Forman, Steven, L., Robert Oglesby, and Robert S. Webb
2001 Temporal and spatial patterns of Holocene Dune Activity on the Great Plains of North America: Megadroughts and Climate

Links. *Global and Planetary Change* 29(2001):1–29.

Gaylord, David R.
1982 *Geologic History of the Ferris Dune Field, South-Central Wyoming*. Geologic Society of America Special Paper 192, pp.65-82. Geological Society of America, Boulder.
1987 Airflow-Terrain and Hydrologic Controls on Eolian Sedimentation and Holocene Paleoclimatic Fluctuations in Wyoming. *University of Wyoming, Contributions to Geology* 25:157–165.

Halfen Alan F., Glen G. Fredlund, and Shannon A. Mahan
2010 Holocene Stratigraphy and Chronology of the Casper Dune Field, Casper, Wyoming, USA. *The Holocene* 20(5): 773-783.

Harrell, Lynn L., Ted Hoefer III, and Scott T. McKern
1997 Archaic Housepits in the Wyoming Basin. In *Changing Perspectives of the Archaic on the Northwest Plains and Rocky Mountains*, edited by M. L. Larson and J. E. Francis, pp. 334-368. The University of South Dakota Press, Vermillion.

Karpinski, Mark. P.
2005 The Black and Red Housepit Site (Site 48FR4457). In *The Archaeology along the Lost Creek Pipeline, Fremont and Sweetwater Counties, Wyoming: Volume II: Wind River Basin Sites*, edited by C. S. Smith, pp. 2.1-2.53. Prepared by TRC Mariah Associates Inc., for Lost Creek Gathering Company. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Landt, Mathew J. and Charles A. Reed
2014 Prehistoric Architecture: Chapter 25 in *The Piceance Basin Lateral Pipeline Archaeological Data Recovery Project in Moffat and Tio Blanco Counties, Colorado and Sweetwater and Carbon Counties, Wyoming.* Edited by Mathew J. Landt. Prepared for Williams Field Services Company, LLC. Submitted to the Colorado and Wyoming Bureau of Land Management. Copies available from Alpine Archaeological Consultants, Inc. Montrose, Colorado.

Larson, Mary Lou
1997 Housepits and Mobile Hunter-Gatherers: A Consideration of the Evidence. *Plains Anthropologist* 42(161):353-369.

Lubinski, Patrick M.
1999 Archaeological Investigations at the Powder River Site (48NA2779), an Archaic Housepit Site in Central Wyoming. Western Wyoming College Contributions to Archaeology. No. 13. Prepared by Archaeological Services, Western Wyoming Community College, for Wyoming Bureau of Land Management. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.
2000 Of Bison and Lesser Mammals: Prehistoric Hunting Patterns in the Wyoming Basin. In *Intermountain Archaeology*, edited by D. B. Madsen and M. D. Metcalf, pp. 176-188. Anthropological Papers No. 122, University of Utah Press, Salt Lake City.

Martin, William, William M. Harding, Russell D. Richard, Nathan E. Fleming, and Jeff S. Johnson
1999 The Flying A Ranch Site (Site 48FR1431). In *Archaeological Investigations along the Wyoming Segment of the Express Pipeline, Vol. 4,* edited by W. Martin and C. S. Smith, pp. 7.1-7.186. Prepared by TRC Mariah Associates Inc., for the Wyoming Bureau of Land Management. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Mayer, James H., and Shannon A. Mahan
2004 Late Quaternary Stratigraphy and Geochronology of the Western Killpecker Dunes, Wyoming USA. *Quaternary Research* 61:72-84.

McClelland, Bruce R., and William Martin
1999a The Natrona Housepit Site (Site 48NA2526). In *Archaeological Investigations along the Wyoming Segment of the Express Pipeline, Vol. 3*, edited by W. Martin and C. S. Smith, pp. 8.1-8.75. Prepared by TRC Mariah Associates Inc., for the Wyoming Bureau of Land Management. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.
1999b The Elk Head Site (Site 48WA1181). In *Archaeological Investigations along the Wyoming Segment of the Express Pipeline, Vol. 3*, edited by W. Martin and C. S. Smith, pp. 3.1-3.108. Prepared by TRC Mariah Associates Inc., for the Wyoming Bureau of Land Management. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

McClelland, Bruce R., Edward A. Schneider, and William Martin
1999 The Sixmile Draw Site (Site 48NA2529). In *Archaeological Investigations along the Wyoming Segment of the Express Pipeline, Vol. 4*, edited by W. Martin and C. S. Smith,

pp. 7.1-7.186. Prepared by TRC Mariah Associates Inc., for the Wyoming Bureau of Land Management. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

McClelland, Bruce R. and Craig S. Smith
2001 *Data Recovery Investigations at Site 48FR4398: A Housepit Site South of Jeffrey City, Fremont County, Wyoming*. Prepared by TRC Mariah Associates Inc., for Merrick and Company, Aurora, Colorado. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

McNees, Lance M.
2005a Project Overview and Discussion. In *The Archaeology along the Lost Creek Pipeline, Fremont and Sweetwater Counties, Wyoming: Volume I: Project Overview and Discussion*, edited by C. S. Smith, pp. 1.1-7.1. Prepared by TRC Mariah Associates Inc., Laramie, Wyoming, for Lost Creek Gathering Company. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.
2005b The Moneta Divide Housepit Site (Site 48FR4459). In *The Archaeology along the Lost Creek Pipeline, Fremont and Sweetwater Counties, Wyoming: Volume II: Wind River Basin Sites*, edited by C. S. Smith, pp. 3.1-3.137. Prepared by TRC Mariah Associates Inc., Laramie, Wyoming, for Lost Creek Gathering Company. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Miller, Mark E. and David J. McGuire
1997 Early Plains Archaic Adaptations: A View from the Medicine House in the Hanna Basin, South-Central Wyoming. In *Changing Perspectives of the Archaic on the Northwest Plains and Rocky Mountains*. Edited by Mary Lou Larson and Julie E. Francis, pp. 369-393. The University of South Dakota Press, Vermillion.

Partlow, Megan A. and Patrick M. Lubinski
2012 *A Summary of Current Findings on the Archaeofauna of the Wyoming Basin and the La Barge Platform Project Area*. Report submitted to Western Archaeological Services, Rock Springs, Wyoming.

Peterson, Marcia, and Craig S. Smith
2012 *Data Recovery Excavations at the Crooks Gap Site (48FR6260) Fremont County, Wyoming*. Prepared by Carno ENTRIX Salt Lake City, for Devon Energy Corporation. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Reed, Alan D.
2005 *The Kern River 2003 Expansion Project Wyoming: Cultural Resources Mitigation Report*. Alpine Archaeological Consultants, Inc., Montrose, Colorado. Submitted to Federal Energy Regulation Commission, Southwest Region.

Reiss, David (editor)
1990 *Archaeological Excavations at Site 48FR2330. Wyoming Project SCP-PS-020-2 (24). Muddy Gap-Lander. Fremont County, Wyoming*. Prepared by Office of the Wyoming State Archaeologist Wyoming Recreation Commission, for the Wyoming Highway Department. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Rood, Ronald J., Marcia Peterson, Lance McNees, and Craig S. Smith
2012 *Data Recovery Excavations at the White Stallion Housepit Site (48FR6261) Fremont County, Wyoming*. Prepared by Carno ENTRIX Salt Lake City, for Devon Energy Corporation. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Rose, Victoria
2008 The Interior Features of the Wyoming Housepits: Possible Storage Features? Unpublished Master's thesis, Department of Anthropology, University of Wyoming, Laramie.

Scott, Justin F., Wayne M. Sutherland, Joe Johnson, and J. Fred McLaughlin
2011 *Geologic Map of the Baggs 30'x 60' Quadrangle, Carbon and Sweetwater Counties, WY and Moffat and Routt Counties, CO*. Wyoming Geologic Survey, Laramie.

Shields, W. Lane
1998 *Basin Houses in Colorado and Wyoming: Delineation of a Culture Area and Parsing Hunter-Gatherer Modeling.* Unpublished Master's thesis, Department of Anthropology, University of Colorado, Boulder.

Smith, Craig S.
2003 Hunter-Gatherer Mobility, Storage, and Houses in a Marginal Environment: An Example from the Mid-Holocene of Wyo-

ming. *Journal of Anthropological Archaeology* 22:162-189.

Smith, Craig S., and Lance M. McNees
2011 Persistent Land Use Patterns and the Mid-Holocene Housepits of Wyoming. *Journal of Field Archaeology* 36(4):298-311.

Smith, Craig S., and Marcia Peterson
2012 The Crooks Gap Housepit Site and Other nearby Mid-Holocene Housepits. *The Wyoming Archaeologist* 56:27-57.

Stokes, Stephen, and David R. Gaylord
1993 Optical Dating of Holocene Dune Sands in the Ferris Dune Field, Wyoming. *Quaternary Research* 39 (3):274–281.

USDA
2014 United States Department of Agriculture, Natural Resources and Conservation Service, Web Soil Survey. URL http://websoilsurvey.nrcs.usda.gov/app/ Accessed on January 21 2014.

Waitkus, Brian, David Reiss, and David G. Eckles
1988 *Archaeological Investigations along the Medicine Bow-Casper Highway Project, Wyoming Highway Project PREB-024-2(6), Natrona County, Wyoming.* Prepared for the Wyoming Highway Department. Copies available from Cultural Records Office, Wyoming State Historic Preservation Office, Laramie.

Brent A. Buenger
Western Archaeological Services
Rock Springs, WY 82901

THE SPATIAL ORGANIZATION OF REMAINS ASSOCIATED WITH OCCUPATION 3 AT THE CHRYSOPS SITE (48CR9375).

by
HEIDI HUMPHREYS

ABSTRACT

Data recovery excavation at the Chrysops site (48CR9375) was undertaken on behalf of the Anadarko Exploration and Production Sun Dog Pod F and Pod F South Project. Excavations at the site were conducted by Western Archaeological Services during the 2013 summer/fall field season. Sixty-four square meters were excavated across two excavation blocks at the site during the data recovery project. The excavations yielded a single, buried prehistoric cultural component dating to the early Opal phase of the Archaic period in the Wyoming Basin Cultural Chronology (Pastor et al. 2015). The material remains were divided into four site occupations based on radiocarbon dates from eight basin hearth features. Trend surface analysis of the cultural materials recovered from non-feature contexts associated with Occupation 3 suggested the locality included activity areas used for processing selectively transported game animals including pronghorn, elk, bison, sage grouse, and jackrabbit, and maintenance of stone tools used during processing. These time-transgressive behaviors suggest prehistoric inhabitants of the Atlantic Rim area may have employed an organized logistical procurement strategy of subsistence to take advantage of a variety of locally available resources.

INTRODUCTION

Data recovery excavations at the Chrysops site (48CR9375) were undertaken pursuant to cultural resource requirements stipulated for the Anadarko Exploration and Production Sun Dog Pod F and Pod F South project. Warren Resources Inc. subsequently acquired Anadarko holdings in the Atlantic Rim area, including the AR Federal 1691 2-22 pipeline. The Chrysops site is located on public land in south-central Wyoming in the eastern portion of the Washakie Basin where the Great Divide Basin meets the Sierra Madre Mountains. The general area is commonly called the Atlantic Rim, but the term specifically applies to a tall, steep ridge located at the northwest end of the Sierra Madre. Baggs, Wyoming is 21.7 miles south.

The immediate site locality is near the southwestern extent of the low plateau separating Dry Cow Creek and Cow Creek, at an elevation of around 6673.5 ft above sea level (Figure 1). An artesian well drilled in the 1950s is located 436 m west-southwest of the site area. Several natural springs are located within a ten mile radius of the site. A complex system of creeks and drainages including Muddy Creek, Dry Cow Creek, and Cow Creek characterize the local topography by creating large intermittent

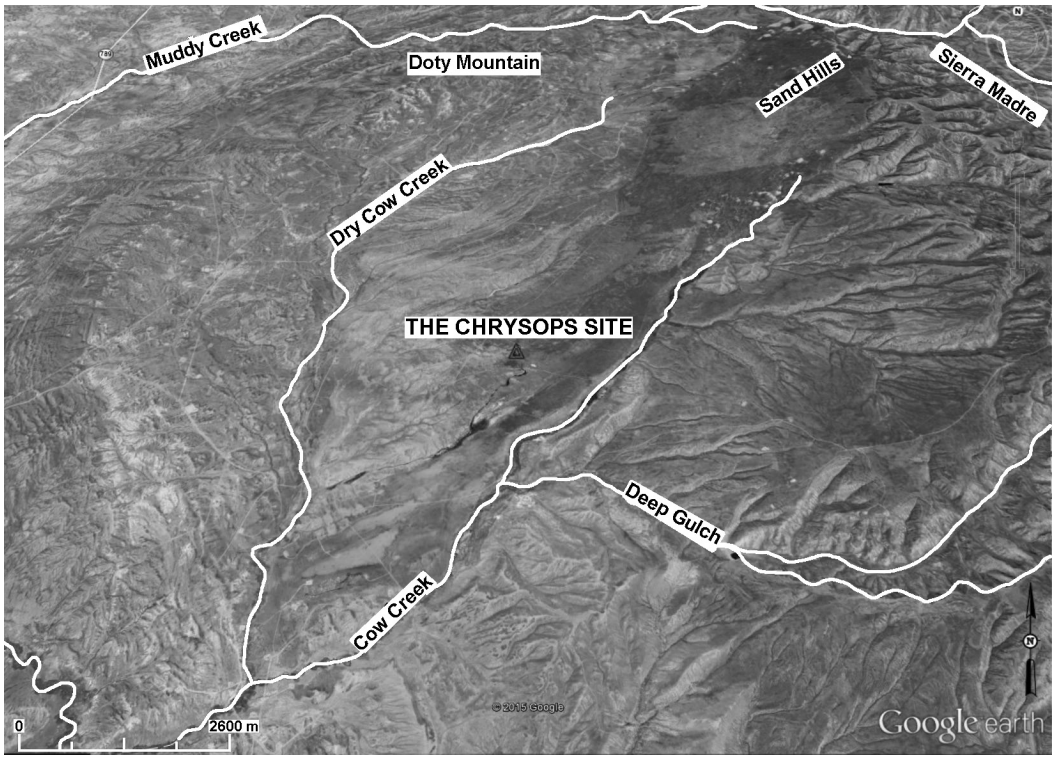


Figure 1: Physical setting of 48CR9375 on low plateau between Cow Creek and Dry Cow Creek (photograph courtesy of Google Earth).

drainages and valleys separated by interfluvial ridges and isolated buttes. The main channel of Cow Creek is located one mile east of the site area. Deep Gulch flows into Cow Creek 1.7 mi south of the site. The main channel of Dry Cow Creek is located 2.4 mi west of the site, and Cow Creek flows into Dry Cow Creek 5.5 mi southwest of the site. Prominent landforms in the region include Wild Horse Butte, Cow Creek Butte, Doty Mountain, and North Flat Top Mountain (see Figure 1).

The underlying geology of the area is dominated by the Lewis Shale Formation consisting of gray marine shale with concretion-rich lenticular sandstone beds. Holocene-aged active and dormant sand dunes are present nearby. As defined by the Natural Resource Conservation Service (NRCS), soils in the general area consist of sandy loam to fine sandy loam alluvium derived from local outcropping of bedrock (sedimentary, igneous, and metamorphic) and residuum derived from mixed parent material. The soil sequence at the Chrysops site follows an A-Bt-Ab-C sequence (Figure 2). The surface A horizon (Stratum III) consists of brown (10YR4/3) Ryark-Cotha complex sandy loam. It represents the accumulation of organic material and humates from surface stabilization and vegetation growth. The Bt horizon formed in Stratum II directly above the cultural horizon and is the result of the illuviation of clay through the profile. It appears to be similar to, but less well developed than, the Bt and Bw soil formation associated with moister Late Holocene environmental conditions occurring within the region beginning after 4500 B.P. The soil occurs throughout the Wyoming Basin, and generally dates between 3000-1500 B.P. (Albanese and Frison 1995; Eckerle 1997). The Ab horizon represents the anthropogenically stained sediment and occupational trample zones containing organics and charcoal resulting from multiple Early Archaic hunter-gatherer occupations at the site (Stratum IIa). The underlying C horizon (Stratum I) reflects a sedimentary unit relatively unmodified by soil formation and derived from eolian deposition.

Vegetation in the general area includes Wyoming big sagebrush, annual grasses including wheatgrass and rice grass, a variety of woody perennials including rabbitbrush and saltbush, and perennial grasses and forbs.

EXCAVATION RESULTS

Excavations at the Chrysops site resulted in documentation of one Early Archaic period component consisting of four occupations. The Chrysops site yielded 16 hearth features, 706 pieces of lithic debitage, 23 chipped stone tools, four groundstone tools, 1,909 faunal remains, and one ornamental object. The primary research goal was to delineate the activities taking place at the site and the spatial relationships associated with the activities (Figure 3).

Eight radiocarbon dates were obtained for the Chrys-

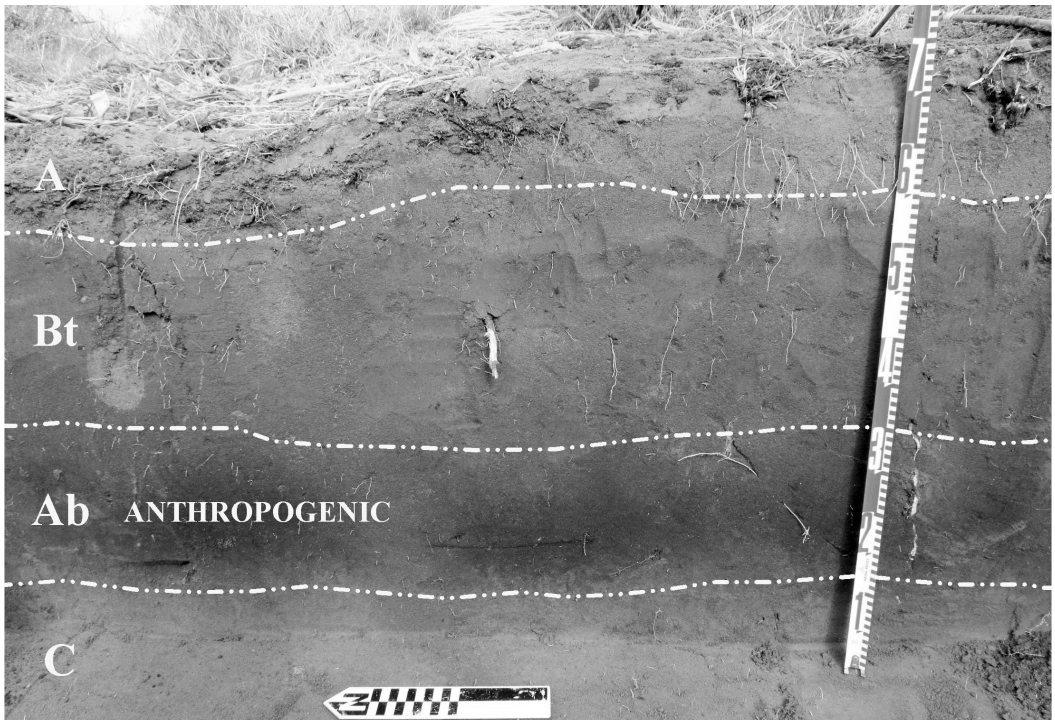


Figure 2: Annotated photograph showing A-Bt-Ab-C soil sequence at Chrysops site (48CR9375).

ops site, including three dates in 2009, and five dates in 2014 (Table 1). The features selected for radiocarbon analysis were chosen based on recovery of charred material suitable for dating from the feature fill and presence of additional cultural material (either faunal or lithic) which could be associated with the radiocarbon dates. The features selected for dating also provided a sample of features appearing to be representative of potential activity areas within the locality based on horizontal and vertical relationships within the broad areas of component stain (Figure 4).

Overall, the calibrated radiocarbon ages for the Chrysops site span almost 800 years from Cal B.P. 6790 to Cal B.P. 6000 which extends from the end of the Great Divide phase into the beginning of the Opal phase. The conventional radiocarbon ages reflect a narrower span of time during the early Opal phase of 530 years (5880 B.P. to 5350 B.P.). Statistical analyses of the radiocarbon results demonstrate repeated use of the site locality over 800 years, perhaps culminating with a short period of increased or intensified use in the early Opal phase. Based on interpretations of the recovered materials, Chrysops site is an Early Archaic aged component consisting of four occupations (Figure 5).

Occupation 1 dates to 5880 ± 40 B.P. The occupation is represented by two basin hearth features, lithic debris (n=39), faunal debris (n=90), chipped stone tools (n=4), one groundstone tool, and thermally altered rock (n=25). These remains and the distribution of the remains associated with Occupation 1 relative to the two basin hearth features led to the interpretation of a small transient camp in which occupants prepared and consumed recently acquired small game, maintained a curated tool kit, and possibly worked material into early stage tool forms for completion elsewhere (Figure 6).

Occupation 2 is represented by a single basin hearth feature located about 45 m northwest of Excavation Block 1. The isolated basin hearth feature was truncated by construction of the pipeline and was recovered during the 2009 testing project. A radiocarbon date of 5760 ± 40 B.P. was returned for the feature which had no associated cultural material remains.

Occupation 3 dates between 5570 ± 30 B.P. and 5490 ± 30 B.P. The occupation includes twelve basin hearth features, 667 pieces of lithic debris, 21 chipped stone tools, two groundstone tools, one stone pendant, 75 scattered pieces of thermally altered rock, and 1,819 faunal remains. These remains were dispersed into three separate activity areas within the larger locality. Occupation 3 was interpreted to represent an open air, non-residential processing camp repeatedly visited by hunter-gatherer groups as part of a highly organized, logistical subsistence strategy.

The final occupation of the Chrysops site (Occupation 4) is represented by a single basin hearth feature recovered during the 2009 testing project at the northwest edge of Excavation Block 1. The hearth feature returned a conventional radiocarbon age of 5350 ± 40 B.P. and

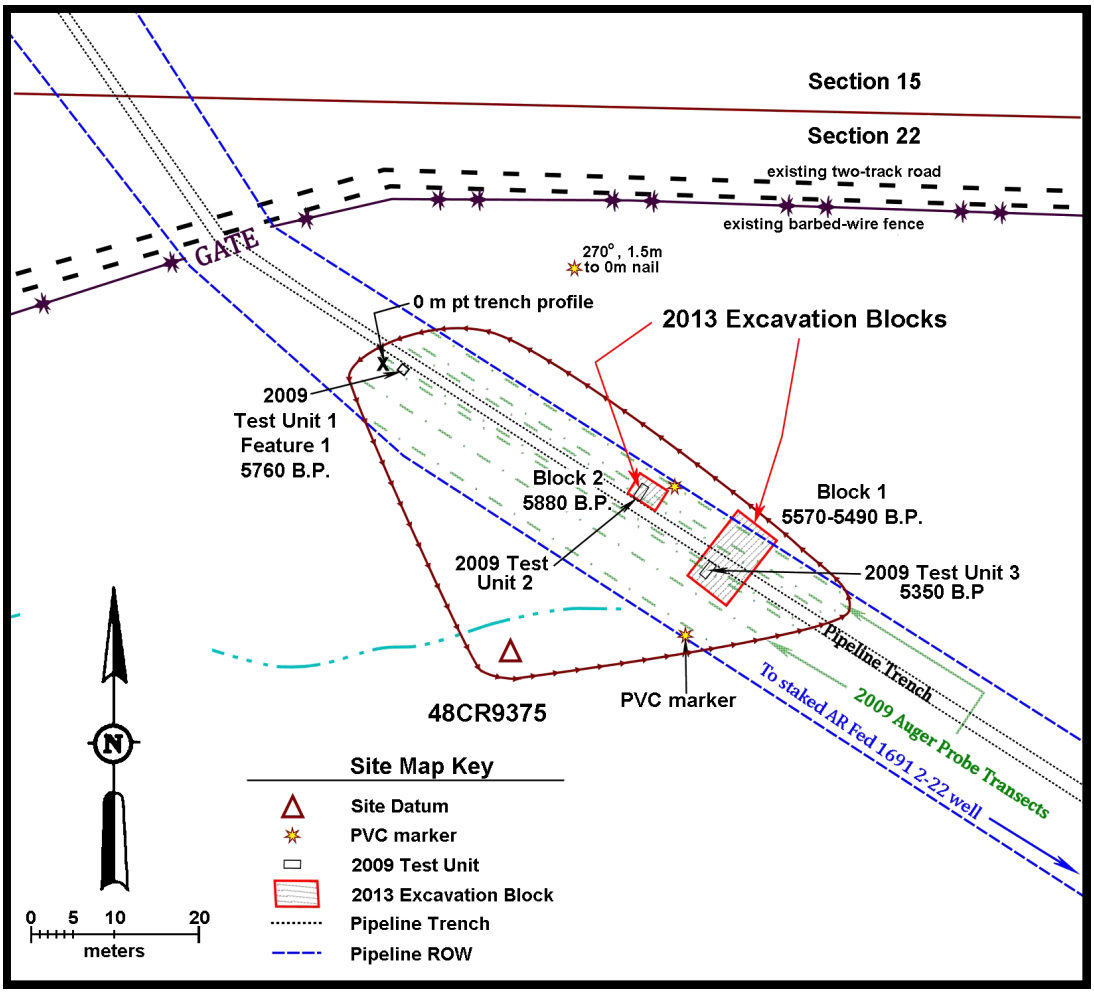


Figure 3: Sketch map of 48CR9375 showing location of 2009 test units and 2013 excavation blocks.

represents Occupation 4. The material remains from the feature consisted entirely of faunal material (n=41) including large mammal remains (59%) and game bird remains (41%). Another 31 faunal specimens, three pieces of lithic debris, and one utilized flake were identified in screened sediments from the 2009 test unit. The final occupation of the Chrysops site is associated with remains displaying material and spatial continuity with

Table 1: Radiocarbon dates from Chrysops site (48CR9375).

FEATURE NUMBER	BETA #	MEASURED AGE B.P.	CONVENTIONAL AGE B.P.	CALIBRATED AGE B.P. (2σ)	CALIBRATED AGE B.C.	MATERIAL
1	27061	5730 ± 40*	5760 ± 40	Cal BP 6660 to 6450	Cal BC 4710 to 4500	organic sediment
2	27060	5850 ± 40*	5880 ± 40	Cal BP 6790 to 6640	Cal BC 4840 to 4690	charred material
4	27062	5300 ± 40*	5350 ± 40	Cal BP 6280 to 6000	Cal BC 4320 to 4050	charred material
6	404116	5510 ± 30	5550 ± 30	Cal BP 6400 to 6290	Cal BC 4450 to 4340	charred material
8	404117	5560 ± 30	5570 ± 30	Cal BP 6405 to 6295	Cal BC 4455 to 4345	charred material
9	404118	5480 ± 30	5500 ± 30	Cal BP 6315 to 6280	Cal BC 4365 to 4330	charred material
15	404119	5470 ± 30	5490 ± 30	Cal BP 6310 to 6275	Cal BC 4360 to 4325	charred material
				Cal BP 6230 to 6220	Cal BC 4280 to 4270	
16	404120	5500 ± 30	5530 ± 30	Cal BP 6395 to 6365	Cal BC 4445 to 4415	charred material
				Cal BP 6355 to 6285	Cal BC 4405 to 4335	

*Radiocarbon date obtained from feature recovered during 2009 testing project.

Figure 4: Feature clusters encountered in Block 1 at Chrysops site. Top: west portion of block; Bottom east portion of block. View is looking at grid north.

Occupation 3 and further supports the interpretation of the locality as a non-residential processing camp repeatedly used by Early Archaic hunter-gatherer occupants of the Atlantic Rim area.

SPATIAL ORGANIZATION OF REMAINS – OCCUPATION 3

The distribution of cultural material and features across a site provide information about the cultural use of space. Attempting to identify activity areas or site types and attributing specific functional behaviors to activity areas based on spatial patterning of cultural remains needs to be approached with caution because of the complex nature of the potential agents acting on archaeological sites. Reoccupation of sites, curation, re-use of certain implements by hunter-gatherers, and technological change are examples of cultural agencies affecting sites. Erosional processes and animal activities (e.g. burrowing) are examples of natural agents affecting sites. Cultural materials associated with Occupation 3 (5570-5490 ± 30 B.P.) at

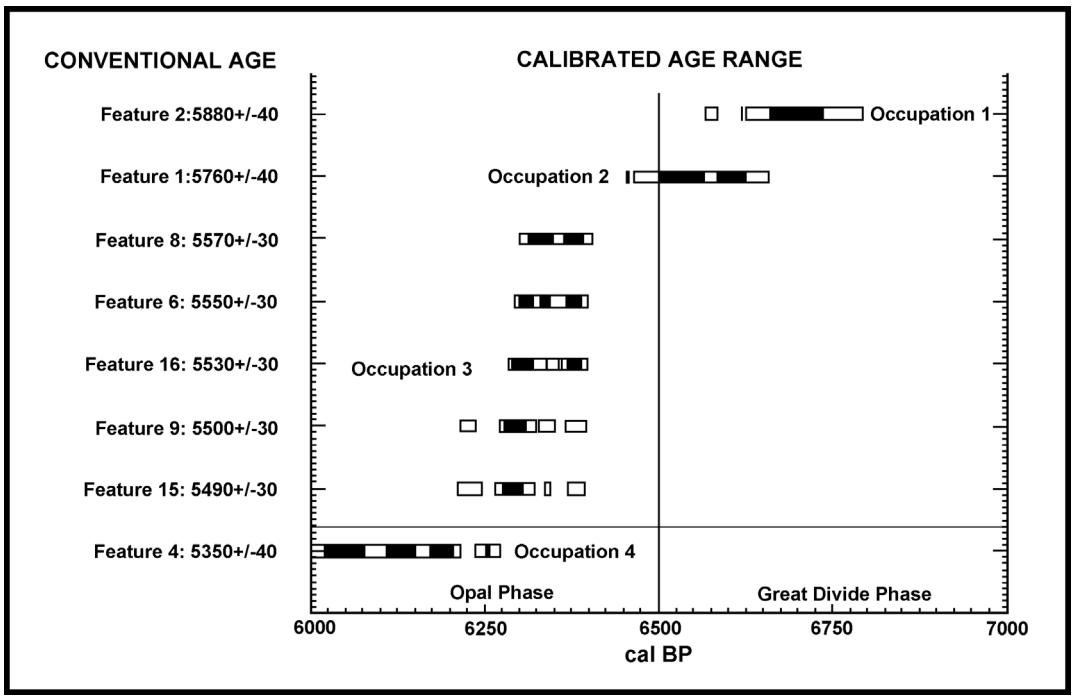


Figure 5: Conventional radiocarbon ages and 2-sigma calibrated age ranges for features from Chrysops site (48CR9375). Dates were basis for defining site occupation periods.

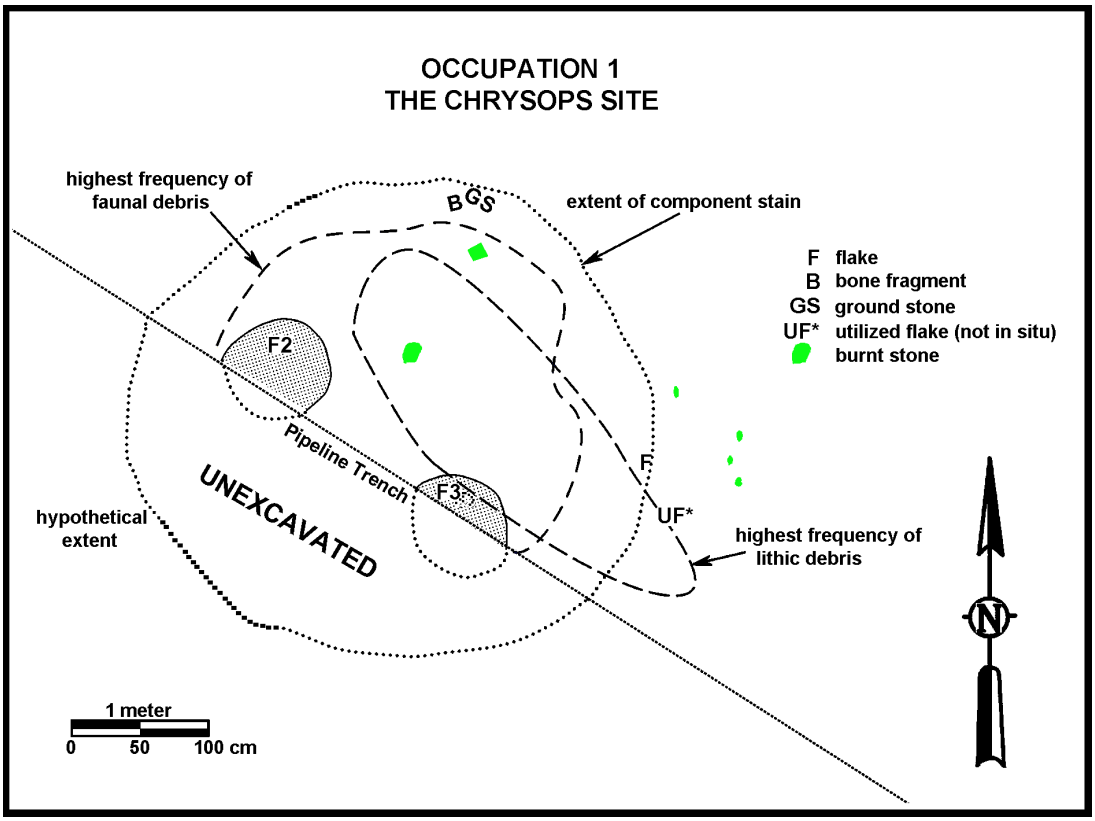


Figure 6: Plan view map showing likely forward toss and main drop zone of materials associated with Features 2 and 3 (Occupation 1) at 48CR9375.

the Chrysops site were encountered in Excavation Block 1; particularly in association with component staining manifested in two spatially distinct areas (see Figure 4). Although the homogeneity of Stratum IIa did not reveal any visible stratigraphic separation of the materials, or the component stain, a lull in material frequency was noted at an elevation corresponding with the intensification of both areas of component stain. This was seen as a potential marker within the pattern of repeated use of the site during Occupation 3 by prehistoric inhabitants. The density values by square meter for each artifact group across the excavation area were mapped using a technique referred to as trend surface analysis (Hodder and Orton 1976). This analysis smooths the data and creates graduated density contours. Analyses at this level suggest differences manifest in the type and amount of cultural material across space. These density plots were then examined for concentrations of various classes of materials, ultimately leading to the identification of potential activity areas within the larger locality. Contour density maps of the cultural materials encountered outside of features and associated with Occupation 3 were created to examine the spatial distribution of total lithic debris, lithic material types, total faunal remains, large mammal faunal remains, and small mammal faunal remains. The data were also divided into upper (98.20 cmbd to 98.00 cmbd) and lower elevations (98.00 to 97.65 cmbd) to explore whether there was any perceivable patterning in the materials related to the component stain (which intensified at 98.00 cmbd) which might be indicative of a temporary structure not distinguishable during excavation, such as accumulation of debris along or near the margins of the staining. In the faunal assemblage, the total amount of remains recovered from the upper elevations was insufficient to create meaningful contour density maps.

Compiled sketch maps are presented (Figures 7-9) showing hypothetical activity areas based on the perceived patterned discard of lithic debris, faunal remains, and tools associated with Occupation 3. The basic division of the larger locality into activity areas was predicated on the arrangement of hearth features within broad areas of component stain, and informed by the contour density maps of recovered materials. The purpose of the exercise was not to create a time-line of activities during the occupations but to demonstrate the patterns repeated across this span of site use. The influence of post-depositional agents (both cultural and non-cultural) is acknowledged.

As a complete assemblage, the cultural remains from Occupation 3 suggest the locality functioned primarily as a meat processing site probably within a larger, logistical system of activity specific localities (e.g. residential base camps, non-residential procurement camps). It was probably not a residential camp, but rather a place of short-term occupation repeatedly visited to accomplish similar tasks over time. Based on the composition of the faunal assemblage, particularly the prevalence of limb elements, occupants likely selectively transported portions of medium and large game animals to the site for processing.

The processing of large game appears to have occurred almost exclusively in the Western Activity Area (Figure 7). This 6-9 m² area contains two hearth features, Feature 5 and Feature 6 (5550 ±30 B.P.) and a locus of large mammal faunal remains, including several point plotted long bone flakes, rib shafts, and a radius shaft bearing an impact notch. Four final biface tools were discarded in this area, including a side-notched with short stem projectile point fragment. While lithic debris was encountered in this area, it was sparse and contour density maps did not display any potential locus of activity or discard for lithic debris in this area. Likewise, the faunal remains of small mammals were also encountered in this area but not in significant quantities relative to large mammal remains. The faunal material recovered from Feature 6 was comprised almost entirely of large mammal remains, while the few unidentifiable fragments recovered from Feature 5 (n=4) were small mammal-sized remains.

In contrast, the Central Activity Area (Figure 8) appears to have been the locus of multiple tasks. Whether the timing of any of these activities coincided with each other is unknown, although likely. This activity area occupies a space of about 14 m², contains five hearth features (Features 7-11), a locus of small mammal processing, two loci of large mammal processing, two loci of tool maintenance, and a larger area of possible tool production. Two of the hearth features (Feature 8; 5570 ± 30 B.P. and Feature 9; 5500 ± 30 B.P.) contained 35% of the faunal material recovered from feature contexts for Occupation 3. Feature 8 contained predominately large mammal faunal material while Feature 9 contained predominately small mammal faunal material. Three of these loci (small and large mammal processing, tool maintenance and tool production) overlap in an area of around 6 m² in the southwestern portion of the activity area; however; there was no indication during excavation this area was a midden (see Figure 8). Among the stone tools associated with this activity area are several biface preforms, a thermally shocked medial distal fragment from a projectile point, an indeterminate biface fragment (also thermally shocked), and a mano. The stone pendant was also recovered from this activity area.

The Eastern Activity Area was a loci of multiple tasks, similar to the Central Activity Area (Figure 9). This activity area occupied a space of around 10 m², and contained five hearth features (Features 12-16), a locus

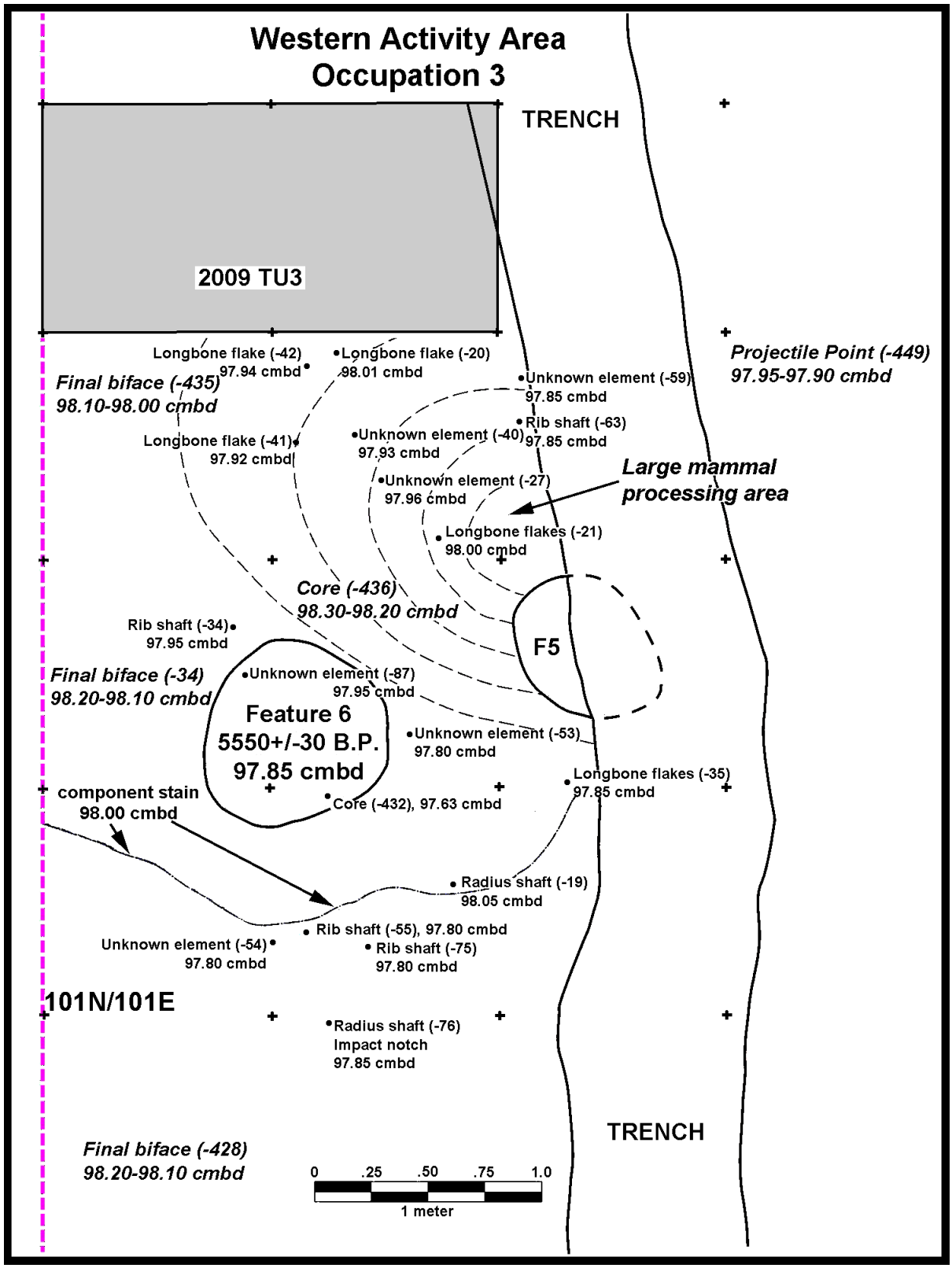


Figure 7: Sketch map showing hypothetical activity area including hearth features, animal pro-cessing areas and point plotted artifacts from Occupation 3 at Chrysops site. Italicized type indi-cates artifacts recovered from the screen.

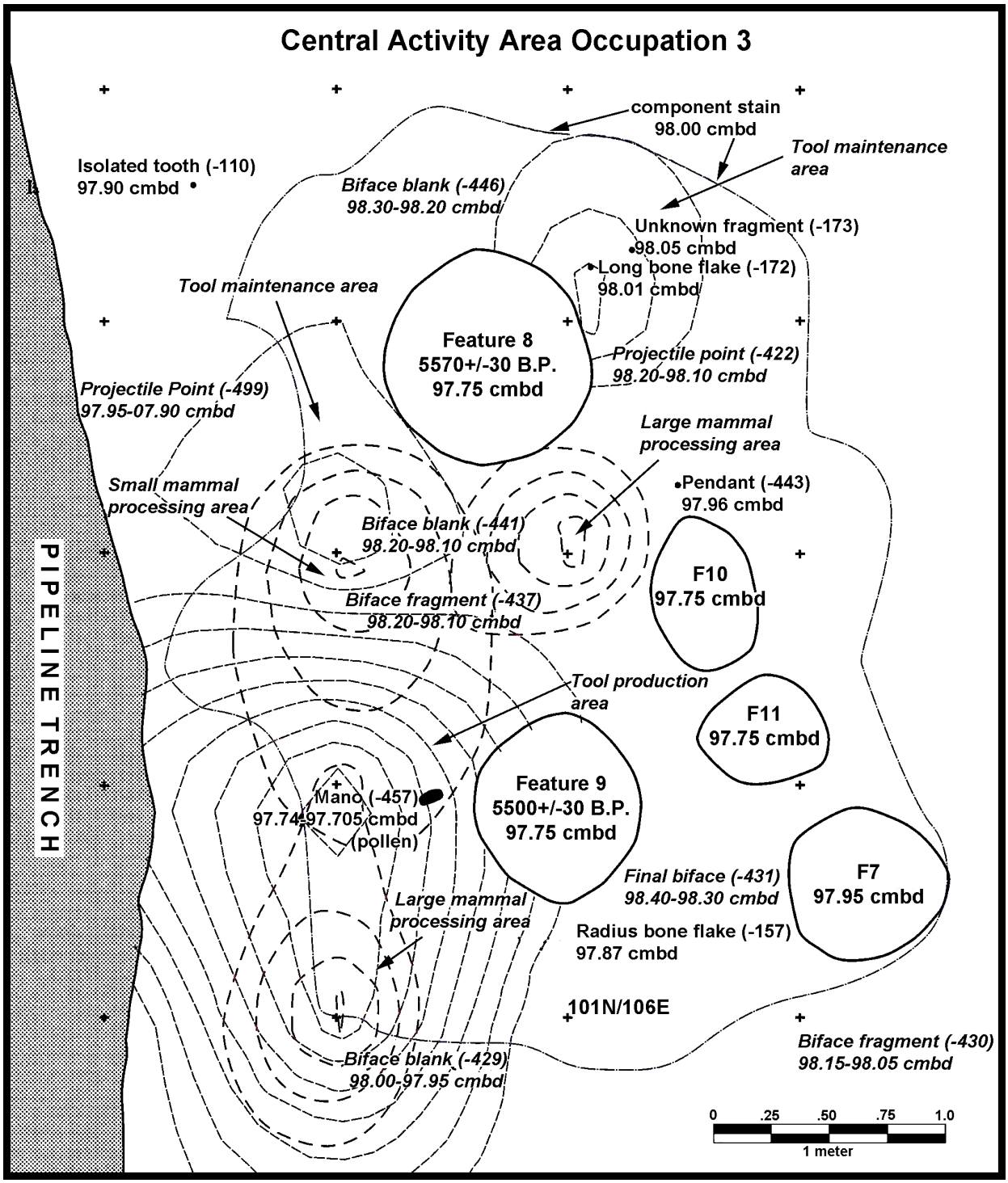


Figure 8: Sketch map showing hypothetical activity area including hearth features, animal pro-cessing areas, tool maintenance and production areas, and point plotted artifacts from Occupation 3 at Chrysops site. Italicized type indicates artifacts recovered from the screen.

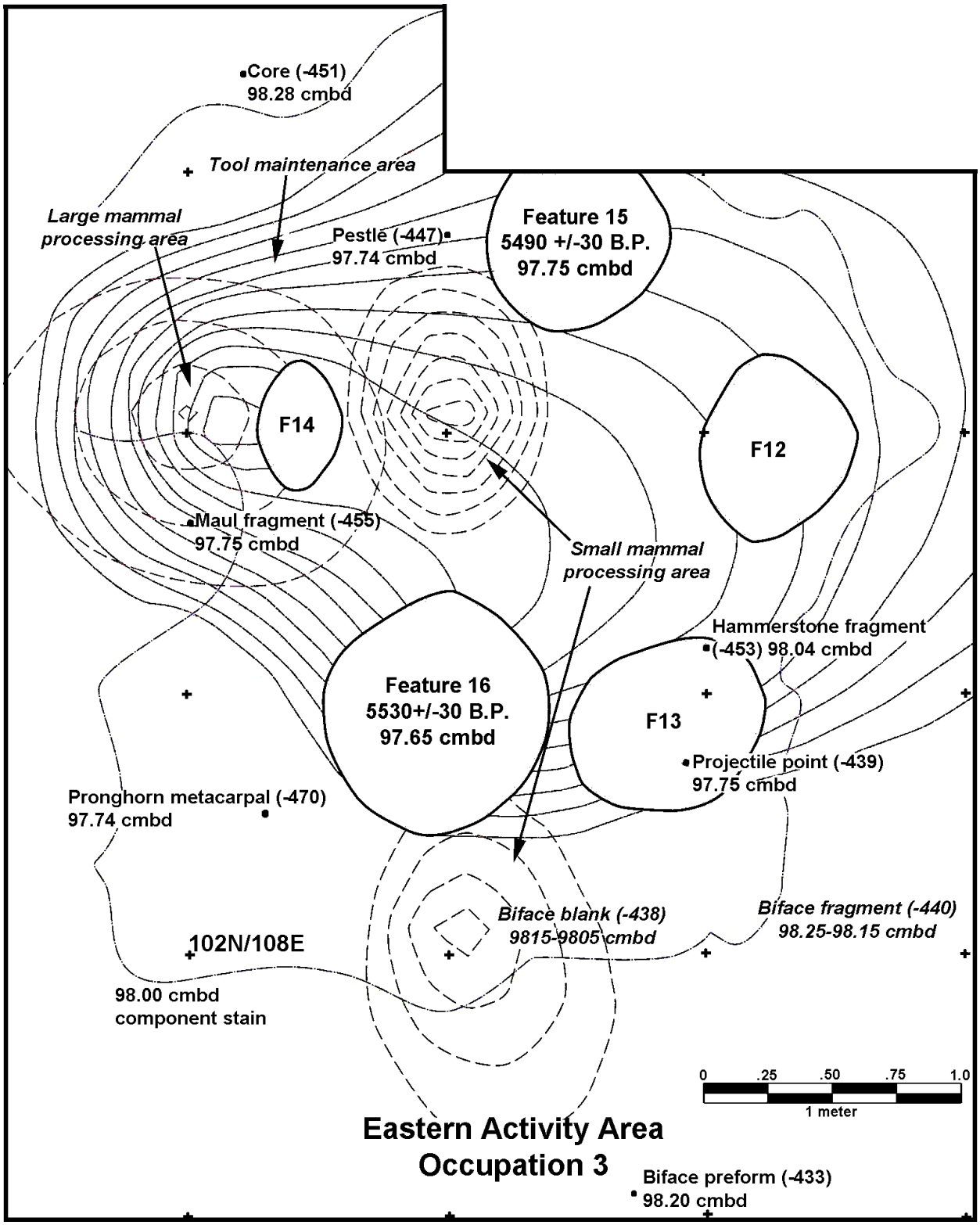


Figure 9: Sketch map showing hypothetical activity area including hearth features, animal pro-cessing areas, tool maintenance area, and point plotted artifacts from Occupation 3 at Chrysops site. Italicized type indicates artifacts recovered from the screen.

of large mammal processing, two loci of small mammal processing, and a locus of tool maintenance. Interestingly, the focal points of lithic debris, large mammal remains, and one locus of small mammal remains surround Feature 14, the fill of which contained no faunal remains, and only one burnt tertiary flake. In contrast, faunal remains in the fill of Feature 15 (5490 ± 30 B.P.) and Feature 16 (5530 ± 30 B.P.) were dominated by small mammal remains and each locus of small mammal materials is adjacent to each of these features. A few stone tools were point plotted in this activity area including a maul (in two pieces), a hammerstone, a pestle, a thermally shocked projectile point fragment, and a core. A biface blank, and the medial lateral portion of an indeterminate biface were also recovered from this activity area (Figure 9).

SUMMARY

The Chrysops site consists of an early Opal-aged component with four occupations dating from 5880 ± 40 B.P. to 5350 ± 40 B.P. The site was formed by the slow accumulation of materials within confined episodes of use joined by post-depositional processes (Malinsky-Buller et al. 2011). Thirteen hearth features, 706 pieces of lithic debris, 23 chipped stone tools, four groundstone tools, and 1,909 faunal specimens were recovered during the excavation. The composition and distribution of the material remains and hearth features excavated at the site were identified as two temporally, spatially, and functionally distinct occupations. Occupation 1 was probably a short term transient camp where the mundane tasks of survival occurred. The material remains suggest Occupation 3 used the locality as a processing camp where meat and marrow from both large and small game animals were prepared for future use. More importantly, the remains at the Chrysops site infer some continuity over time in the activities carried out at the site, indicating a measure of stability in the subsistence strategies used by the hunter-gatherer groups who revisited the site during the period of occupation.

ACKNOWLEDGEMENTS

Excavations at the Chrysops site was conducted by Western Archaeological Services as part of the Sun Dog Pod F and Pod F South monitoring project, specifically the AR Federal 1691 2-22 pipeline. We would like to thank Warren Resources for funding the excavation and their support throughout the project. The author would like to thank the field operations personnel of Anadarko Exploration and Production and Warren Resources who helped to protect the site area in the 5 year interim between the discovery and excavation of the site. Thanks also to the field crew Zak Bolender, Jason Blood, Dan Bush, David Faas, Lauren Frink, Jonathan Green, Jonathon Ingles, Natasha Musalem, Audrey Pazmino, Liz Burt, Samantha Fawcet, and Emily Taber for their fortitude during the deer fly hatch. Gratitude is also expressed to Brent Buenger for his advice and assistance during the fieldwork phase of the excavation and to Mandy Klein who helped with analysis of artifacts from the site.

REFERENCES CITED

Albanese, John P., and George C. Frison
1995 Cultural and Landscape Change during the Middle Holocene, Rocky Mountain Area, Wyoming and Montana. In *Archaeological Geology of the Archaic Period of North America*, edited by E. Arthur Bettis III, pp. 1-19. Geological Society of America Special Paper 297. Geological Society of America, Boulder.

Eckerle, William P.
1997 Eolian Geoarchaeology of the Wyoming Basin: Changing Environments and Archaic Subsistence Strategies in the Holocene. In *Changing Perspectives of the Archaic on the Northwestern Plains and Rocky Mountains*, edited by Mary Lou Larson and Julie E. Francis, pp. 139-167. University of South Dakota Press, Vermillion.

Binford, Lewis R.
1980 Willow Smoke and Dog's Tails: Hunter-Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45:4-20.

Hodder, Ian, and Clive Orton
1976 *Spatial Analysis in Archaeology.* Cambridge University Press, Cambridge.

Pastor, Jana V., Stacy R. Goodrick, Brent A. Buenger, and David Darlington
2015 A Chronicle of Past Land Use in the Upper Green River Basin: Class I Inventory Report for the LaBarge Platform. Prepared for AECOM. Submitted to the Bureau of Land Management Pinedale Field Office. Western Archaeological Services, Rock Springs, Wyoming.

Malinsky-Buller, Ariel, Erella Hovers, and Ofer Marder
2011 Making Ttime: 'Living Floors', 'Palimpsests' and Site Formation Processes – A Perspective from the Open-air Lower Paleolithic Site of Revadim Quarry, Israel. *Journal of Anthropological Archaeology* 30:89–101

Heidi Humphreys
Western Archaeological Services
Rock Springs, Wyoming 82901

THE WYOMING ARCHAEOLOGIST GUIDELINES FOR CONTRIBUTORS

GENERAL INFORMATION

The Wyoming Archaeologist accepts papers from professional archaeologists, students, and avocational archaeologists. Subjects published in *The Wyoming Archaeologist* include, but are not limited to, archaeological reports on sites in Wyoming and adjacent areas, descriptive project summaries, preliminary results of significant studies, archaeological method and theory, ethnographic studies, regional history, and book reviews. Submissions by professional archaeologists will be sent for peer review before acceptance.

As noted on the inside front cover of each issue of *The Wyoming Archaeologist,* authors submitting manuscripts for consideration should follow the style guidelines of the journal *American Antiquity* as revised in June 2017 and updated in July 2018. The style guide is available on the Society for American Archaeology website at:
https://documents.saa.org/container/docs/default-source/doc-publications/style-guide/saa-style-guide_updated-july-2018c5062f7e55154959ab57564384bda7de.pdf?sfvrsn=8247640e_6

MANUSCRIPT

Authors should submit a manuscript to the *Wyoming Archaeologist* editor via email. Optionally, a CD or flash drive may be mailed to the editor. NOTE: paper copies are no longer desired. The manuscript should be double-spaced, with all pages numbered, and provided as an MS Word file. The maximum length of the manuscript text (including References Cited) should not exceed 40 pages (do not count photos, illustrations, or tables). Do not include a Table of Contents. For the Title page, provide a current mailing address and email address for each author, as well as an Abstract. Do not incorporate tables, figures, or photos in the manuscript-submit each one as a separate file. Tables need to be provided in MS Word format. Figure captions need to be provided as a single list in MS Word format. Wide tables can be published in landscape format, but tables wide enough to require two pages are discouraged. See a recent issue of *The Wyoming Archaeologist* for general layout, in-text citation style, and especially, the format for References Cited.

PHOTOGRAPHS

Electronic files are preferred over physical prints. Scanned photos should be provided at 300 dpi (no less than 150 dpi). Photos from camera phones or digital cameras will vary from 72 dpi to 350 dpi or more. Photographs at 200 to 350 dpi are preferred. If you used camera phones, do not zoom in. Additional resolution is lost. Photos of artifacts should include a bar scale, or include a descriptive scale in the caption. Provide photos in JPG, JPEG, TIF, TIFF, PNG, or BMP format.

If sending a physical print, the photo should be no larger than 8 x 10 inches. Black and white prints with good contrast are preferred. Do not send photographic film negatives. Label physical prints on the back with a soft lead pencil (not ink)--only note the figure number, not the figure caption.

LINE DRAWINGS/ILLUSTRATIONS

As with photographs, electronic files are preferred. Image resolution should be provided at 300 dpi. A bar scale (not a ratio such as 1 ern = 5 m) should be included on all maps. Provide drawings or illustrations in TIF, TIFF, PNG, or EPS format.

If original line drawings are submitted on paper, larger is better to ensure the best reproduction, but no larger than 8.5x11 inches. Use only black ink on acetate, mylar, smooth Bristol paper, or smooth Bristol board. Hand-written labels and keys must be large enough to be legible when reduced. Do not use stick-on letters. Additional information concerning drafting of line drawings, maps, artifacts, etc., can be found at: https://www.cambridge.org/core/services/authors/journals/journals-artwork-guide.

ADDITIONAL CONSIDERATIONS

The full layout page size is 6.5 inches wide and 9 inches in height. You may size photographs, line drawings, or illustrations accordingly, but it is not required – the printing company can handle the layout. If you create a full page photo or illustration, use a maximum height of 8.5 inches, which will allow up to three lines of text for the figure caption. Sizing images or figures is not required – the printer will do that for you. Original materials submitted, such as photos, paper, CD, or flash drive, will not be returned unless specifically requested. A copy of the *Wyoming Archaeologist* contributor guidelines can also be found in the *Wyoming Archaeologist* section of the WAS/WAPA website:
http://www.wyomingarchaeology.org/the-wyoming-archaeologist.html

2019 CHAPTER INFORMATION

Absaroka Chapter

Chapter Address – PO Box 181 – Cody 82414-0181
Bonnie Smith, President – 310-308-2300
1231 Chalk Rd – Powell 82435-4701
Email bonnies@centerofthewest.org
Chris Finley, Vice President – 307-272-9031
870 Road 1 ½ - Deaver 82421-9700
Eric Rossborough, Secretary – 608-843-3558
1921 Sheridan Ave – Cody 82414-3932
Email ericr@centerofthewest.org
Sara Murray, Treasurer – 307-899-4561
1335 Rumsey Ave – Cody 82414-3712
Email saramur@yahoo.com

Ancient Trails Chapter

Cher Burgess – President – 605-343-1567
PO Box 562 – Sundance 82729-0562
Lucille Dumbrell – Vice President – 307-746-2268
203 Grandview Dr – Newcastle 82701-0656
Email lucilld@rtconnect.net
Alice Tratebas – Secretary/Treasurer – 307-746-6621
PO Box 883 – Newcastle 82071-0883
Email atrateba@blm.gov; atratebas@aol.com

Casper Chapter

Dr. Mavis Greer, President – 307-473-2054
PO Box 51874 – Casper 82601-1874
Email mavis@greerservices.com
Dr. John Greer, Secretary – 307-473-2054
PO Box 51874 – Casper 82601-1874
Email jgreer@greerservices.com
Carolyn M Buff, Treasurer – 307-234-5424
1617 Westridge Terrace – Casper 82604-3305
Email jcbuff@bresnan.net

Cheyenne Chapter

Dan Bach, President/Secretary/Co-Treasurer – 307-514-2685
1971 Cheshire Dr – Cheyenne 82009
Email macrofloral@msn.com
Jeremy Manley, Vice President – 307-640-5910
PO Box 21313 – Cheyenne 82003-7025
Email manley@hotmail.com
Russ Kaldenberg, Co-Treasurer – 307-772-9317
14044 Hemlock St – Pioneer Point, Trona CA 93562
Email rkaldenberg@asmaffiliates.com

Fremont County Chapter

Bill Elder, President - 307-349-1282
3 Elizabeth Cir – Lander 82520-9229
Email wye1017@cwc.edu
Leniegh Shrinar, Vice President - 307-856-6653
146 Mazet Rd – Riverton 82501-8823
Email lschrin2@gmail.com
Nancy Kindle, Secretary – 307-856-1758
PO Box 762 – Riverton 82501-0762
Email nkindle@gmail.com
Larry Amundson, Treasurer – 307-856-3373
85 Goose Knob Dr– Riverton 82501-8306
Email larryamundson@wyoming.com

June Frison Chapter

Rachel Shimek, President – 515-231-2003
100 S 8th St #1 – Laramie 82070-2003
Email rshimek@uwyo.edu
John Laughlin, Vice President
900 S 10th St – Laramie 82070-4607
Email john.laughlin@wyo.gov
Carmen Clayton, Secretary – 307-742-7669
855 N Pine – Laramie 82072
Email Carmen.clayton@wyo.gov
Sarah Allaun, Treasurer
Dept Anthro 1000 E University Ave
Dept 3431 - Laramie 82071-2001
Email sallaum@uwyo.edu

Pumpkin Buttes Chapter

Tommie Butler, President – 307-682-7447
205 Overland Tr – Gillette 82716-4328
Email tombutler@bresnan.net
Denise Tugman, Vice President – 307-351-6919
PO Box 3182 – Gillette 82717-3182
Email dtugman@lsi-inc.us
Mike Stone, Secretary/Treasurer – 307-682-6298
2279 State Hwy 50 – Gillette 82718-9346
Email mak90_98@yahoo.com

Sheridan/Johnson County Chapter

Jenny Aiello, President – 406-579-6832
1222 Woodwind Dr – Sheridan 82801
Email janagra@cra7.ky.com
Christine Varah, Vice President – 321-693-2846
2038 Pima Dr – Sheridan 82801
Email cvarah@swca.com
Colin Ferriman – Vice President – 307-674-1702
850 Val Vista – Sheridan 82801
Email crferriman@cra7-ky.com
Viola Gardner – Secretary/Treasurer – 307-684-7759
614 N Burritt Ave – Buffalo 82834
Email viola.gardner@wyo.gov

Sweetwater County Chapter

Inactive

Upper Green River Basin Chapter

Sam Drucker, President – 307-367-2226
PO Box 456 – Pinedale WY 82941-0456
Email james814@centurytel.net
Dave Vlcek, Vice President – 307-367-6365
PO Box 184 – Pinedale 82941-0184
Email davev69@live.com.mx
Clint Gilchrist, Secretary/Treasurer – 307-367-6763
PO Box 662 – Pinedale 82941-0662
Email clint@sublette.com

Wyoming Archaeological Foundation

Brigid Grund, President, Member at –Large
880 Cresswell – Boulder CO 80303-2715
Email bgrund@uwyo.edu
(term expires 2020)
Dr. Mary Lou Larson, Secretary – ex officio - 307-766-5566
2418 Crazy Horse Way – Laramie 82070-5550
Email mlarson@uwyo.edu
Marcia Peterson, Treasurer – ex officio - 307-399-7914
2014 Sheridan St – Laramie 82070-4320
Email marcia.peterson@wyo.gov
Sylvia Huber, WAS President – 307-307-527-7523
PO Box 522 – Cody 82414-0522
Email eagleofcody@tctwest.net
(term expires 2020)
Denise Tugman, Member-at-Large – 307-351-6919
PO Box 3182 – Gillette 82717-3182
Email dtugman@lsi-inc.us
(term expires 2019)
Dr. Spencer Pelton, State Archaeologist – ex officio – 307-766-5564
Dept Anthro – 1000 E University Ave
Dept 3431 – Laramie 82071-3431
Email spencer.pelton@wyo.gov
Dr. Jason Toohey – George C. Frison Institute Dir – 307-399-5437
3901 Grays Gable Rd – Laramie 82072-6901
Email toohey@uwyo.edu
Dr. George Frison, ex-officio – 307-745-9277
Dept Anthro – 1000 E University Ave
Dept 3431 – Laramie 82071-34431
Dr. Marcel Kornfeld – Hell Gap Site Manager – 307-745-9636
2418 Crazy Horse Ln – Laramie 82070-5550
Email anpro1@uwyo.edu

Carolyn M Buff
Wyoming Archaeological Society
Executive Secretary/Treasurer
1617 Westridge Terrace
Casper, WY 82604-3305

Non-Profit Org.
U.S. POSTAGE
PAID
Laramie, WY
82070
Permit No. 24

THE WYOMING Archaeologist

VOLUME 62; NUMBER 1; 2018

Table of Contents