

Chinese Mining in the Blue Mountains

Life and Work Along the Middle Fork of the
John Day River, Malheur National Forest

By Chelsea Rose and Katie Johnson



SOULA Report No. 2021.11

2022

Findings: (+)
Happy Camp Sites 06040302388 and 06040300322
Ab Heng Site 06040300020
Ab Yee Site 06040301333
County: Grant
Project Type: Archaeological Testing
Agency ID: SOULA 2018.10, 2019.07, and 2021.11

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Acknowledgements

This project was born at the 2015 Northwest Anthropological Conference (NWAC) in Eugene, Oregon when archaeologists from the Southern Oregon University Laboratory of Anthropology and the Malheur National Forest each presented on Chinese diaspora research. From there, this partnership has grown to include a variety of state, federal, and local collaborators from across the state. As a result, the research presented below is a group effort, and its success is due to the hard work, passion, and cooperation of a whole host of folks. In addition to our major project partners Don Hann and Katee Withee, we would also like to thank Tatiana Watkins, Pete Cadena, Allie Wenzl and the MNF Heritage Program interns Jackson Gibson, Kim Anderson, Sabin Wright, Micaela Pardue, Laken Parrish, and Michael Porter. We would like to thank the archaeologists who have participated as both paid staff and volunteers over the years, including Jocelyn Lee, Kyle Crebbin, Jacqueline Cheung, Eric Gleason, Tyler Davis, and Madison Noggle, the students of the 2019 SOU archaeological field school Ryland Boyer, Ellen Durkee, Melanie Douville, Brandie Johnson-Valdez, Lachlan Miller, Heather Mogan, Katherine Schmid, and Tracie Stubbs, volunteers from the Confederated Tribes of Umatilla Indian Reservation, Oregon Archaeological Society volunteers Katie Karman, Dave Root, and Doug Reynolds, as well as George and Jane Collier and the participants of the 2018, 2019, and 2021 Passport in Time Project. In addition, we would like to thank Don Merritt of the Kam Wah Chung State Heritage Site, the Oregon Historical Society for sponsoring our local lecture series, and 1188 Brewery for inspiring us to keep going after long days with their “Gam Saan” ale.

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All artifact photography was done by Tyler Davis and drone photography was captured by Cliff Danger. Unless otherwise noted, all maps and illustrations within this report were produced by Katie Johnson, and all photographs belong to the Southern Oregon University Laboratory of Anthropology.

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Introduction

The Southern Oregon University Laboratory of Anthropology (SOULA) was hired by the Malheur National Forest (MNF) to conduct archaeological investigations in preparation for fuels reduction and prescribed burning along the Middle Fork of the John Day River. Due to the potential impact on cultural resources within this area and the known prevalence of mining activities linked with the understudied Chinese migrant population, the following project was implemented. The Oregon Chinese Diaspora Project (OCDP) formally began in 2017 as a partnership between the Southern Oregon University Laboratory of Anthropology (SOULA) and the Malheur National Forest (MNF), and has continued for four field seasons. Over the course of the partnership, SOULA has conducted archaeological excavations at five sites along the Middle Fork of the John Day River, resulting in the recovery of rich data and thousands of artifacts.

This project is a portion of the larger OCDP collaboration, which includes federal, state, and local partners from across Oregon. The project was conceived and initiated in underserved rural communities in southern and eastern Oregon, and has included robust public archaeology and community outreach efforts at all levels. The research generated through this public archaeology and history project is helping rewrite and expand the significant yet neglected role of the Chinese diaspora and Chinese Oregonians in the history of the state. OCDP partners each leverage their limited individual resources and local relationships into a program using innovative ideas and approaches to promote appreciation of Oregon's cultural heritage. To date, the OCDP is the recipient of a 2022 American Association of State and Local History Excellence Award, a 2020 Oregon Heritage Excellence award, a 2020 Bureau of Land Management (BLM) Heritage Heroes Award, and received 2nd place for the Society for Historical Archaeology's Mark E. Mack award for Community Engagement.

While large-scale landscape modifications remain as a testament to historic-era mining activities across the Middle Fork of the John Day River, this project targeted five habitation sites and domestic activity areas that would be both vulnerable to adverse impacts from the planned undertakings and have the potential to provide the most data on the Chinese miners working and living in the region (Figure 1). Prior to the current project, MNF archaeologists had recorded several Chinese habitation sites in the region. Some of the sites had been the focus of previous Passport in Time (PIT) projects (Shelnutt 2014), and others had only been preliminarily documented. The five sites investigated over the course of the project will be described below.

Archaeological fieldwork was conducted under the direction of SOULA archaeologist Chelsea Rose and Don Hann of the MNF. Findings from the 2017 field season are presented in a previous report (Rose and Johnson 2018). The 2018 field season was held July 15-25 and included fieldwork at two sites within the Happy Camp mining complex, the Ah Yee mining site, and Ah Heng I Site (all documents and artifacts from this field season are organized under SOULA project number 2018.10). The 2019 field season occurred as part of the Southern Oregon University OCDP archaeological field school, and investigated the Ah Heng I and Ah Heng II sites between July 21-28 (SOULA project number 2019.07). Due to the COVID-19 Pandemic, there was no field season in 2020. The 2021 fieldwork revisited the Ah Yee Site and was held July 4-10 (SOULA project number 2021.11). All of the artifacts and fieldnotes were taken to SOULA for analysis, and will be returned to MNF for permanent curation. For the sake of clarity, the results of these investigations will be organized and presented by site below.

While this document is at its essence a technical report presenting the archaeological findings from our work on the forest, we are mindful of the harmful legacy that CRM gray literature has had on the study of the Chinese diaspora and modern Chinese American communities. As with other disciplines, uncritically engaged scholarship has led to what historian Jennifer Fang (2021:326) has recognized as the double erasure of Chinese people from Oregon history:

First, racist violence, intimidation social ostracism, and exclusionary laws before and during the Exclusion Era (1882-1943) reduced population sizes and resulted in social, political, and economic marginalization. Next, the producers and reproducers of historical knowledge doubly erased Chinese Oregonians by largely ignoring their experiences or interpreting and diminishing their complexities through an Orientalist or Eurocentric lens.

From its inception, the OCDP has strived to center the Chinese experience, steer clear of the fetishization, exoticification, or essentialized victim or model minority narratives, and to conduct our investigations with transparency, community involvement and input where possible. While we believe we have been successful towards many of these goals, we know that there is much room to grow.

A recent publication by Kelly N. Fong 方少芳, Laura W. Ng 伍穎華, Jocelyn Lee 李紫瑄, Veronica L. Peterson 孫美華, and Barbara Voss entitled *Race and Racism in Archaeologies of Chinese American Communities* (2022) provides important insight and direction for our work and the field as a whole. Many of the themes and comments presented in this article have been incorporated into the report below where possible, including the ideas that “racism is inextricable from everyday life and is not something that is occasional or exceptional,” that archaeologists play an important role in society’s relationship with the past and we should strive to conduct and promote antiracist archaeological projects, and we need to be mindful of the ways in which our discourse or choice of words not only can erase, as noted by Fang (2021), but can also inadvertently perpetuate the racialization of the communities and individuals we are studying (Fong et al. 2022). It is the goal of the OCDP to model best practices, to promote the advancement of Chinese American scholars in the field, and to do our best to respect and honor the legacy of the Chinese Oregonians living and working along the Middle Fork of the John Day River and beyond.

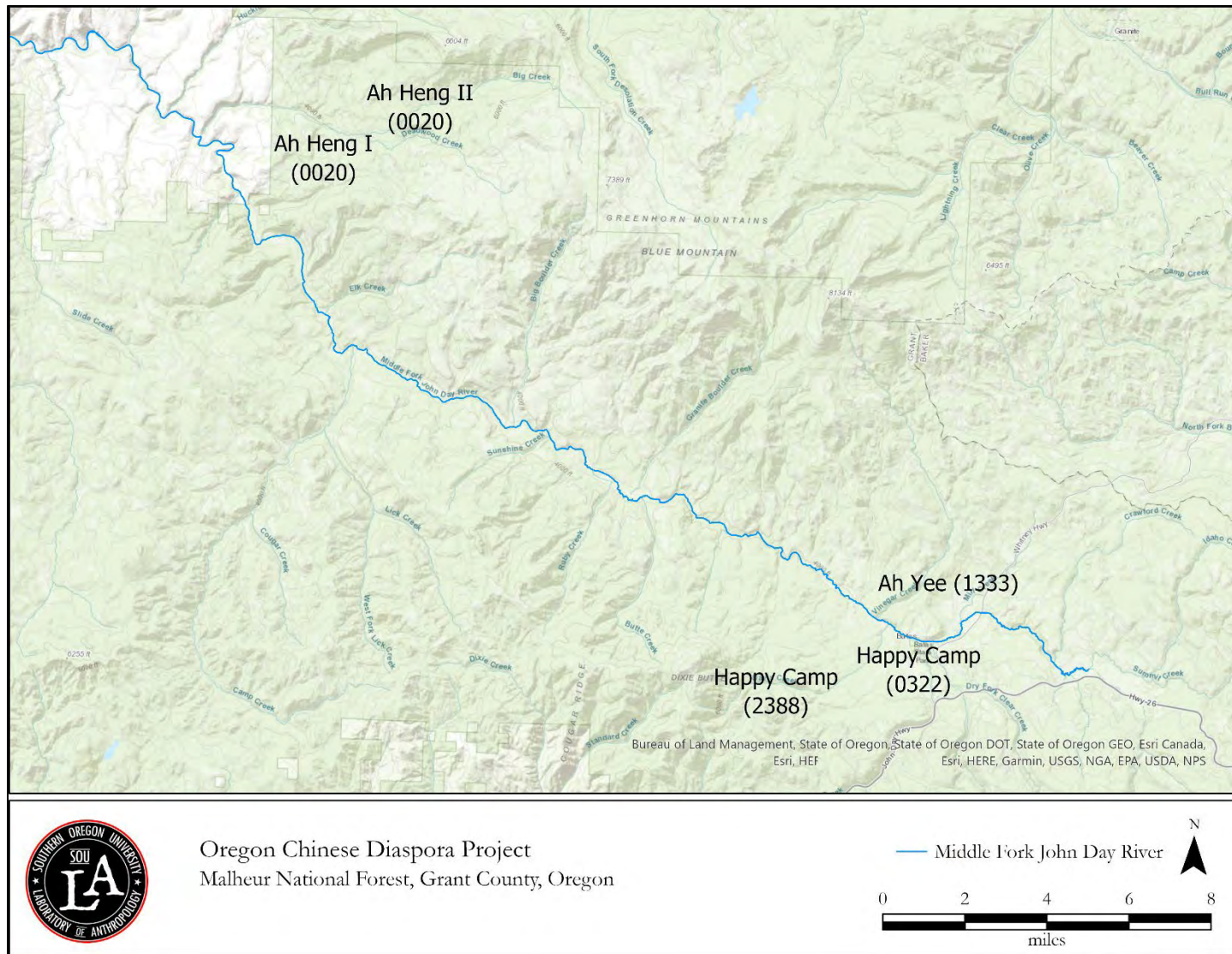


Figure 1. OCDP project sites along the Middle Fork of the John Day River in the Malheur National Forest.

Environmental Context

The project area lies in the Blue Mountain Province of northeastern Oregon and within land administered by the Malheur Nation Forest (MNF). The Blue Mountains, generally speaking, are bordered by the Snake River Canyon to the east, the Owyhee Uplands and High Lava Plains to the south, and to the north and west by the Deschutes-Umatilla plateau (Orr and Orr 2012). The Blue Mountain Province is made up of several smaller ranges of mountains separated by faulted valleys and basins, and generally characterized by a wide uplifted plateau to the west and sculpted mountain peaks, deep canyons, and broad valleys to the east (Franklin and Dyrness 1988). The smaller ranges that make up the province include the Ochoco, Blue, Wallowa, Strawberry, Greenhorn, and Elkhorn ranges (Franklin and Dyrness 1988). The elevations within this province range from 750 meters (2,460 feet) within the valleys of the Ochocos and up to 2,900 meters (9,515 feet) at the summit of Eagle Cap in the Wallowa Mountains.

The Blue Mountain Province has several notable watersheds including the Grand Ronde River, the Powder River, the Imnaha River, and the John Day River. The John Day River is Oregon's longest river, running for 284 miles from its origins in the Blue Mountains to the Columbia River (Orr and Orr 2012; Holburn et al. 2008). The John Day River drains roughly 8,000 square miles and is also the longest undammed river in Oregon (Orr and Orr 2012). The upper John Day River north of Kimberly is a subbasin of the larger John Day River. The Main Stem John Day River originates in the Blue Mountains surrounding Prairie City and flows in a northwesterly direction to its confluence with the North Fork John Day River (Holburn et al. 2008). The Middle Fork John Day River also originates in the Blue Mountains near the town of Bates and flows for 75 miles to its confluence with the North Fork John Day River near Monument, Oregon (Holburn et al. 2008). The Snake River, which makes up the eastern border of the Blue Mountain Province, flows in a northerly direction, and drains "110,000 square miles in western Wyoming, northern Utah, northeastern Nevada, and southeastern Washington" (Orr and Orr 2012:20).

Geologically complex, the Blue Mountains consist of a patchwork of separate terranes which originally formed as groups of volcanic islands and ocean crust in tropical settings much further south of their present latitude (Orr and Orr 2012). During the Paleozoic and Mesozoic eras, these separate terranes then collided with and were annealed to North America through metamorphism, intrusion, and volcanic activity, forming the foundation of the Blue Mountains (Smits 2017; Orr and Orr 2012). The Cretaceous period is represented by upwelling and the intrusion of granitic batholiths followed by intermittent volcanic activities and sedimentation in the Eocene and Oligocene (Smits 2017; Orr and Orr 2012). The Miocene saw extensive lava flows originating in the Blue Mountains, which covered large portions of Oregon with layers of basalt and other volcanic materials. The modern geomorphology of the region has been shaped by alluvial and aeolian deposition and erosion from the Pleistocene to present day (Smits 2017; Orr and Orr 2012).

The Blue Mountain Province can be separated geologically into a western unit and eastern unit with the dividing line lying to the east of John Day, Oregon. The western portion of the Blue Mountain province, where the current project area is located, contains some of the oldest rock outcrops in Oregon, consisting of Paleozoic formations of limestone, mudstone, and sandstone (Franklin and Dyrness 1988). Eocene and Oligocene formations in Clarno and John Day are well known for the vertebrate fossils found within them. Miocene formations of Columbia River basalt

also make up large portions of the western Blue Mountain Province and late Miocene and Pliocene formations consisting of bedded tuffs and silts (Franklin and Dyrness 1988). The lands managed by the MNF were an important source of obsidian for the manufacturing of stone tools due to the volcanic activity in the region. Thirteen geochemically discrete obsidian sources are located on the MNF and have been found to make up a noticeable portion of the stone tool assemblages from sites around the northern Great Basin and southern Columbian Plateau (Gauthier and Huntington 2011).

The soils within the Blue Mountain Province are grouped into two units and include soils within lower elevations formed in grassland and shrub-grassland environments and those in higher elevations formed in forested environments (Franklin and Dyrness 1988). The lower elevation soils are predominately prairie soils and rich black soils with a high pumice content. These lower elevation soils within the western portion of the province are commonly derived from ancient lacustrine deposits, while the eastern portion of the province has an aeolian depositional environment with soil profiles consisting of a silt loam surface horizon and clay loam subsoils (Franklin and Dyrness 1988). Soils associated with the higher elevations of the province consist of soils developed in volcanic ash along broad ridgetops and north-facing slopes and soils developed on mountain side slopes under forest vegetation. The soils are generally deposited in an aeolian environment and vary from a dark brown, fine, sandy loam to a silt loam (Franklin and Dyrness 1988).

The mineral resources within this region are primarily associated with the Baker terrane, which was impregnated within metals during the Mesozoic era (Orr and Orr 2012). This terrane curves across Grant, Baker, and Wallowa counties of Oregon and into Idaho. Broadly speaking, the Blue Mountain Province has produced roughly three quarters of Oregon's gold, most of which occurs within a 40-mile-wide strip between John Day, Oregon and the Snake River in Idaho (Orr and Orr 2012). The presence of minerals, especially gold, drastically changed the fate of eastern Oregon. The mineral extraction activities within this region have impacted large portions of the landscape, removing and/or displacing the finer sediments and leaving the larger rocks as mining tailings. Waterways were also extensively modified for mineral extraction during the early non-Indigenous settlement of this region.

The current project area lies within the *Abies grandis*, or Grand fir, vegetation zone of the forested regions of Oregon and Washington (Franklin and Dyrness 1988). This zone is typical of forested slopes ranging from 1,500 to 2,000 meters above sea level within the Ochoco and Blue Mountains and is generally bounded at its lower elevations by the *Pinus ponderosa*, or Ponderosa pine, zone and the upper elevations by the *Pseudotsuga menziesii*, or Douglas fir, zone. This region has a very moderate climate with increased precipitation and cooler temperatures than lower elevation forests of the region. In addition to the Grand fir (*Abies grandis*), the forests of this zone typically consist of Ponderosa pine (*Pinus ponderosa*), lodgepole pine (*Pinus contorta*), Western larch (*Larix occidentalis*), and Douglas fir (*Pseudotsuga menziesii*) (Franklin and Dyrness 1988). Other less dominant species may include Englemann spruce (*Picea engelmannii*), subalpine fir (*Abies lasiocarpa*), incense-cedar (*Libocedrus decurrens*), sugar pine (*Pinus lambertiana*), western white pine (*Pinus monticola*), mountain hemlock (*Tsuga mertensiana*), and Shasta red fir (*Abies magnifica*) (Franklin and Dyrness 1988). The *Abies grandis* vegetation zone also has a well-developed understory with species consisting of baldhip rose (*Rosa gymnocarpa*), Oregon boxwood (*Pachistima myrsinites*), prickly currant (*Ribes lacustre*), and big huckleberry (*Vaccinium membranaceum*). A variety of herbs are also common to this zone and include

species of Columbia brome (*Bromus vulgaris*), sweet-scented bedstraw (*Galium triflorum*), starry Solomon's plume (*Smilacina stellata*), western meadow-rue (*Thalictrum occidentale*), heartleaf arnica (*Arnica cordifolia*), side-flower miterwort (*Mitella stauropetala*), bigleaf sandwort (*Arenaria macrophylla*), white hawkweed (*Hieracium albiflorum*), twinflower (*Linnaea borealis*), trail plant (*Adenocaulon bicolor*), Piper and Lyall anemone (*Anemone piperi* and *A. lyallii*), wood violet (*Viola glabella*), white trillium (*Trillium ovatum*), queen cup bead lily (*Clintonia uniflora*), wild ginger (*Asarum caudatum*), arctic lupine (*Lupinus latifolius*), and dwarf blackberry (*Rubus lasiococcus*) (Franklin and Dyrness 1988). Many of these species were sought within this landscape by the Native American groups of the region.

The fauna in this region are relatively diverse and consist of a variety of mammals, birds, and fish. A few of the more common mammals that inhabit the region include elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), antelope (*Antilocapra americana*), and bighorn sheep (*Ovis canadensis*). Although now extinct in Oregon, bison (*Bison bison*) and mountain sheep (*Ovis canadensis*) were also once abundant; and while it is not clear if it was their natural habitat, the mountain goat (*Oreamnos americanus*) has been introduced in the Wallowa, Strawberry, and Cascade mountains (Minor et al. 1987:18).

In addition to the large game present in the region, carnivores such as coyote (*Canis latrans*), raccoon (*Procyon lotor*), badger (*Taxidea taxus*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), black bear (*Ursus americanus*), mountain lion (*Felis concolor*), beaver (*Castor fiber*), and porcupine (*Erethizon dorsatum*) are also present. Although hunted out by 1931, Idaho grizzlies (*Ursus arctos*) and the gray wolf (*Canis lupus*) used to populate the area (Minor et al. 1987:19). The gray wolf has been successfully reestablished in the Blue Mountain region. Rabbits and numerous rodents also inhabit the region along with various snakes and amphibians. Avian species such as the golden eagle (*Aquila chrysaetos*), bald eagle (*Haliaeetus leucocephalus*), prairie falcon (*Falco mexicanus*), and woodpecker (*Dryocopus spp.*) are also common in the region, as well as fish species, such as salmon and steelhead (Salmonidae), rainbow trout (*Salmo gairdneri*) and brook trout (*Salvelinus fontinalis*), Dolly Varden trout (*Salvelinus malma*), mountain whitefish (*Prosopium williamsoni*), minnows (*Cyprinidae spp.*), suckers (*Catostomidae spp.*), lamprey (*Entosphenus tridentatus*) and sculpin (*Cottidea spp.*). Freshwater mussel (Unionida) is also present in the waterways of the region.

Cultural Context

Precontact Occupation of the Region

The Blue Mountains represent the divide between the Columbia Plateau cultural area to the north and the Northern Great Basin cultural area to the south. While the Middle Fork John Day River region is generally considered to be within the area defined as the northern Great Basin Cultural area, the dividing line would have been fluid in nature and lack the European ideals of land ownership and rights. Archaeologically, the cultural materials are generally more closely related to the Columbia Plateau cultural area. Extensive research has been conducted in the larger Columbia River Plateau/Northern Great Basin region and helped to create the framework for understanding the Indigenous populations, as well as their interactions with the landscape and each other throughout time. For instance, the Fivemile Rapids Site near The Dalles was excavated by Luther Cressman and helped to establish the long-term importance of salmon fishing along the Columbia River. With a date of 9,785 BP on some of the earliest cultural levels, Cressman hypothesized that the occupation of the site could have dated to as early as 11,000 BP (Connolly et al. 1993). Likewise, use of the Wildcat Canyon site, located within the middle Columbia River region, dates from 9,000 BP until the historic period, representing multiple cultural phases and the different adaptations that occurred in response to the changing environmental and cultural pressures. These and other excavations have allowed archaeologists to detail the Indigenous history of the Great Basin and Columbia Plateau. This history spans more than 14,000 years and describes complicated changes in material culture and settlement patterns, often corresponding to climatic changes that altered opportunities for cultural ecological practices.

The archaeological evidence of habitation within the Northern Great Basin and Columbia Plateau cultural areas has been grouped into multiple phases and named after the sites that best represent the cultural characteristics and chronology (Figure 2). For the Northern Great Basin, the earliest defined phase is referred to as the Paisley Period and dates to between 15,700 to 12,900 years ago. This phase is named for the findings at the Paisley 5 Mile Point Caves (35KL3400) where human DNA has been dated to roughly 14,500 cal. BP (Aikens et al. 2011). The earliest dates associated with this phase are still being developed but are associated with a growing assemblage of radiocarbon and obsidian hydration dates obtained from Fork Rock Cave, the Connley Caves, and the Paisley Caves (Aikens et al. 2011:49). This phase incorporates the pre-Clovis and Clovis traditions and terminates in the Younger Dryas climate event, a late Pleistocene cold surge (Aikens et al. 2011). The populations present during the Paisley phase had strong genetic ties to Siberian and Asian populations. Coprolite analysis at the Paisley Caves provide evidence that inhabitants were eating “bison, camelids, horse, canids (dog, fox, coyote, and wolf), deer, mountain sheep, pronghorn antelope, perhaps peccaries (small pigs), and sage grouse” along with a variety of plants (Aikens et al. 2011:59). The population of this phase was highly mobile and routinely covered great distances in the pursuit of resources. The stone tool assemblage from this phase includes “lanceolate, Clovis fluted, and Western Stemmed projectile points” along with a variety of other knapped stone tools and occasionally handstones used for “grinding, pounding, abrading, and polishing” (Aikens et al. 2011:59).

The Fort Rock Period dates to between 12,900 and 9,000 years ago. This period follows a rapid cooling trend marking the end of the Paisley Period and is named for the Fork Rock Cave in Central Oregon. This Early Holocene drying trend resulted in the deep pluvial lakes of the Pleistocene being reduced in size and depth resulting in localized shallow lakes and marshes (Aikens

et al. 2011). The cultural assemblages from sites dating to this period indicate a subsistence focus around these shallow-water wetlands. The tool assemblages were much larger and had a greater variety during the Fort Rock Period and consist of “Western Stemmed points, lanceolate and large foliate projectile points, crescents, large scrapers, and graters” (Aikens et al. 2011:61). Groundstone tools are also present in these assemblages which were used for processing seeds, roots, and dried meat. Although archaeological sites dating to this period are more abundant, the subsistence practices still resulted in the population being dispersed across the landscape (Aikens et al. 2011). The period also marks the loss of the large Pleistocene game such as horses and camels, although bison, elk, and deer would have been available.

The Lunette Lake Period dates to between 9,000 and 6,000 years ago and spans the eruption of Mt. Mazama about 7,600 BP. This period is marked by an increase in temperature and aridity with drought like conditions, although for a short time after the eruption of Mt. Mazama there appears to have been a localized increase in water levels and a potentially cooler climate (Aikens et al. 2011). The populations appear to have had increased mobility during this period, likely a result of the sparseness of resources. Most of the sites that have been recorded from this period consist of temporary hunting and foraging camps. The projectile point assemblages of this period were predominantly leaf shaped and have been found in association with small game and waterfowl. Additionally, the well-formed scrapers and graters found during the Fort Rock Period are absent during this period and appear to have been replaced by expedient tools (Aikens et al. 2011). New technological styles and concepts are introduced during this period, including the Northern Side-notched projectile point. This is believed to be a result of the increased mobility of the populations resulting in more frequent interactions across regional boundaries (Aikens et al. 2011).

The Bergen Period dates to the Middle Holocene, between 6,000 and 3,000 years ago. This period is associated with more moderate temperatures and increased precipitation resulting in raising water levels in lakes and marshes across the region (Aikens et al. 2011). The defining characteristic of the period is the construction of houses and food storage pits near marshes across the region indicating an increase in residential sedentism (Aikens et al. 2011). The abundance of lowland subsistence resources during this period likely helped to foster the increasing population and economic productivity. This period is also highlighted by an increase in artistically embellished artifacts indicating both resource redistribution and increased social interactions (Aikens et al. 2011).

The final period which spans from 3,000 years ago to contact with European explorers and fur trappers is documented as the Boulder Village Period. The period falls within the Late Holocene and is characterized by alternating weather patterns between extended periods of increased precipitation and then drought. This period marks an emphasis on resources associated with marshes, lakes, and rivers with semi-permanent settlements often being associated with resource rich bodies of water. Communities during this period increased in size and were more concentrated while becoming progressively more dependent on abundant seasonal resources such as fish and upland roots. Social stratification becomes apparent during this period with evidence of segregation and status within communities as well (Aikens et al. 2011). Another element of this period is the increase in conflict, raiding, and trade across the larger region. The raiding of neighboring groups for goods and slaves has been documented ethnographically and appears to have been particularly associated with the Boulder Village Period (Aikens et al. 2011).

Cultural History of the Northern Great Basin

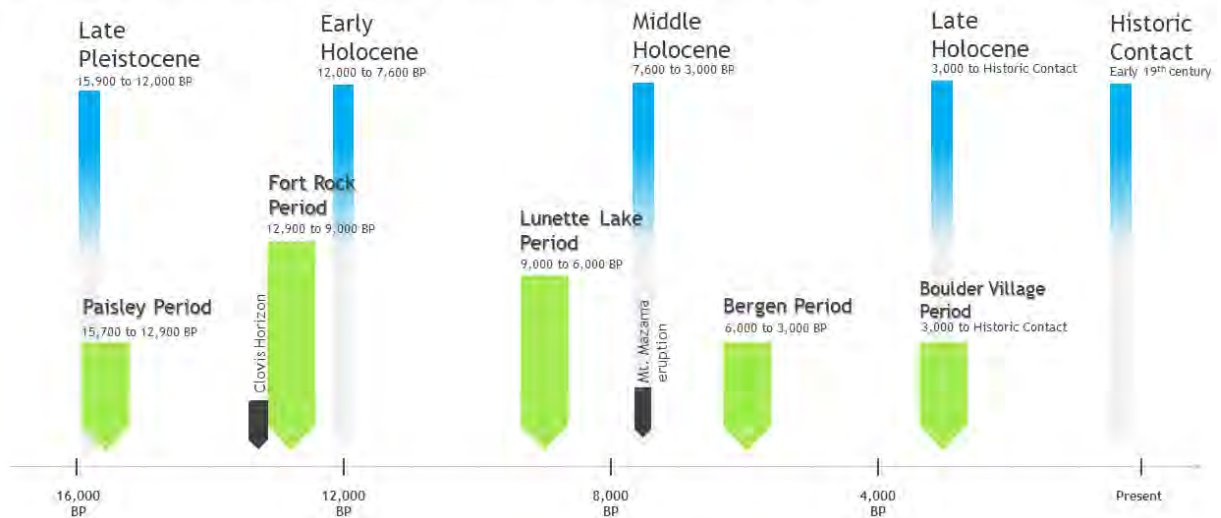


Figure 2. Cultural History of the Northern Great Basin, data derived from Aikens et al. 2011.

The earliest age defined artifacts from the Columbia Plateau are the Clovis fluted projectile points (Figure 3). While these points have not been dated locally, other well dated finds place this tool technology between 13,200 and 12,800 years ago (Aikens et al. 2011). The Clovis points recovered from this cultural area consist of surface finds in the upper elevations in The Dalles, Blalock, and Umatilla in Oregon. This early period is represented by a highly mobile, low density population that took advantage of the regional resources.

The Middle Holocene (7,600 to 3,000 BP) represents a period of significant population growth within the Columbia Plateau cultural area. During this period, what is now The Dalles and the nearby Celilo Falls become a major focal point centered around the abundant fishing resources of the Columbia River (Aikens et al. 2011). The importance of this area is confirmed through the presence of numerous archaeological sites along the river which date to this period. Likewise, evidence of salmon fishing along Oregon tributaries, including the Deschutes, John Day, and Umatilla rivers, are present during this period (Aikens et al. 2011). During this period, the highly mobile broad-spectrum foraging of the Pioneer Period is abandoned for a socioeconomic shift towards centralized communities and strategic resource procurement and storage (Aikens et al. 2011).

After 3,000 years ago the Indigenous settlements along the Columbia River, specifically the region near The Dalles, flourish as a fishing and trading center for the larger Columbia Plateau cultural area (Aikens et al. 2011). During this period communities along the Columbia River grow in size and, while the number of interior Plateau communities decreases, those that remain become larger in size (Aikens et al. 2011). Social complexity, artistic elaboration, and intergroup competition and stress increase during this period as the population continues to increase. Defensive settlements along with the bow and arrow appear during this period as a “prosperous and socially elaborate fishing/hunting/trading society is established” (Aikens et al. 2011:178).

The historic period of this region officially begins with the Lewis and Clark explorations of the Columbia River in the early 1800s, however, impacts from mariners along the coasts of Oregon likely had far reaching implications starting as early as the 1500s with the introduction of European goods and diseases (Aikens et al. 2011).

Cultural History of the Columbia Plateau

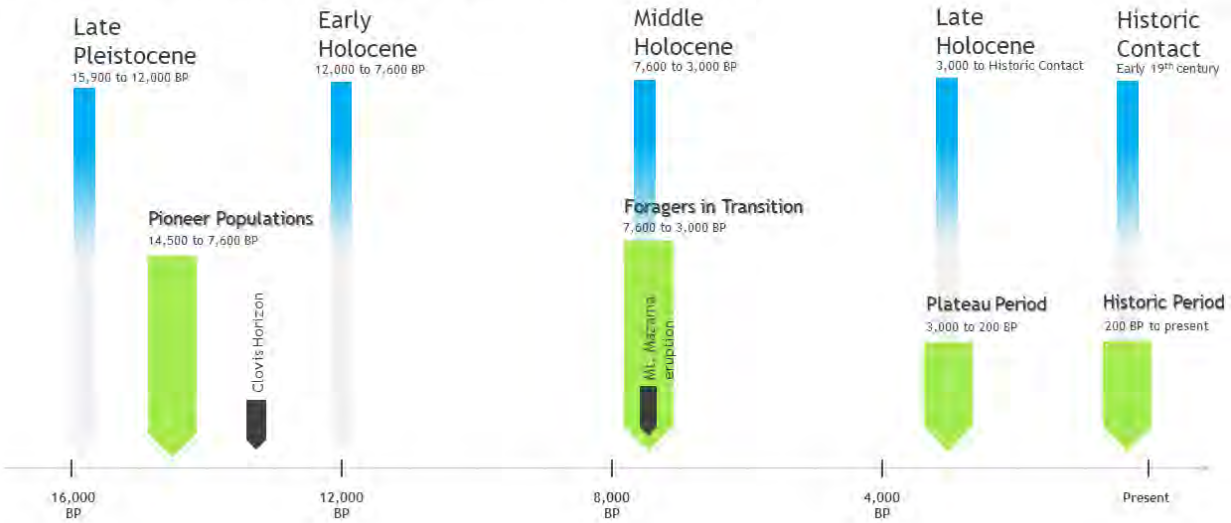


Figure 3. Cultural History of the Columbia Plateau, data derived from Aikens et al. 2011.

The Blue Mountains were traditionally used by the Southern Columbia Plateau groups, the Umatilla, Cayuse, and Warm Springs, and later by the Northern Paiute (Smits 2017). The region lies at the boundary zone between the Columbia Plateau and the Great Basin, two geographically and culturally distinct regions. As described by O.C. Stewart, at the time of non-Indigenous contact, the Blue Mountain region was used by the Tenino cultural group of the Columbia River Plateau to the north, the *Hun'nipwi'tika* (*buni'bui*, root eaters) band of the Northern Paiute, the Umatilla, and the Cayuse (Stewart 1939). The Tenino and *Hun'nipwi'tika* are distinct in their language and culture, as well as their ecological relationships. The Tenino people of the Columbia River Plateau inhabited the area from The Dalles to Arlington along the south bank of the Columbia River, with their territories extending south up the tributaries of the Columbia River, including the John Day River (Connolly et al. 1993). The village made up the main political unit of this cultural group, with each village maintaining autonomy from others. The villages were led by a headman who obtained the position through characteristics such as wealth, charity, and wisdom.

The Tenino's semi-permanent winter villages were usually located several miles inland from the Columbia River, protected from the elements. In early spring, winter villages would be dismantled and less architecturally substantial summer villages were set up along the Columbia River for salmon fishing. Salmon was the primary form of subsistence for the Tenino as well as other Columbia River Plateau groups. By mid-April, the villages would disperse further as smaller groups would move upland to gather roots and berries and hunt game. After the final salmon run of the year and the last of the berries and roots had been collected, the summer villages would be

dismantled and the winter villages would be reestablished and locally available resources would be exploited, such as indigenous fish, including trout, suckers, whitefish, chub, and lamprey, and local birds and mammals would be hunted or trapped (Connolly et al. 1993:16; Murdock 1958:300-301). Throughout these seasons of harvest, important social and political ceremonies and gatherings would also take place, providing a venue for the reaffirmation of leadership and kinship ties, the distribution of resources, and the establishment of new relations through marriage and trade.

Linguistic studies indicate that the Northern Paiute (the Numic-speaking neighbors of the Tenino) migrated to the Northern Great Basin from southern California within the last 1,000 years (see Oetting 1989). The ecological characteristics of the Northern Great Basin fostered a more mobile settlement pattern centered on small family groups rather than the more sedentary settlement patterns employed by the Tenino and other groups living out of the Columbia River Plateau to the north. The current project area is located within what was recorded by anthropologists Stewart (1939) and Blyth (1938) as being within the territory of the Northern Paiute and Tenino. Some confusion exists over the precise band and is likely due, in part, to the greater degree of flexibility associated with resource procurement and access by the cultural groups of the region. Generally speaking, for the Paiute, the names given to a group was based on the resources in the area and would change as the people moved out of and reentered the particular areas (See discussions in Oetting 1989; Fowler and Liljeblad 1986:437). Flexibility characterized the political and ecological landscape of the Northern Paiute. Families were politically autonomous but interacted through reciprocity with families that shared the same larger territory. The number of people in a given group would vary year to year dependent on the availability of resources, with the boundaries between groups and families often fluctuating (Connolly et al. 1993:14; Oetting 1989).

The subsistence patterns of the Northern Paiute occupying the region associated with the current project area were predicated on the availability of resources. During the winter season, stored foods and continued foraging and hunting of local resources provided the main subsistence until the first roots became available in early spring and the winter camps were abandoned (Stewart 1939). Summer was a period of high mobility and social reorganization as other groups were encountered at seasonally reoccupied resource areas. During this period, important ceremonies were often held in association with the gathering of resources. Seeds, roots, and bulbs were collected and salmon was harvested from the John Day, Malheur, and Drewsey rivers (Connolly et al. 1993:15). By late summer the smaller groups would congregate to the south of the current project area at Malheur Lake to collect rabbit and hold communal rabbit drives (Connolly et al. 1993). By early fall the people of this region would begin moving up into the mountains to collect pine nuts, chokecherries and hunt large game. Winter camps were returned to by November, and new houses were constructed or the old ones were rebuilt. These camps were typically located in wooded areas near springs and sheltered from the elements, such as strong winds and heavy snow (Connolly et al. 1993:15).

As Connolly (1990) suggests, although the Tenino and Northern Paiute were distinct in their language and culture, the boundary that is often imposed is not realistic in an area where interrelatedness is essential for the cultures of this region. Stone tool typologies derived from archaeological analysis reaffirm this, as projectile point types from both the Great Basin and Columbia River Plateaus are found across this region indicating a shared use by both cultural groups. Additionally, there is a correspondence in technological developments throughout the region indicating an elasticity of, at least, the ecological facets of culture. The archaeological record indicates that the region was the most intensively inhabited between the Middle and Late Holocene

(between 3,000 and 500 years ago), although the severe erosion of upland sites has likely erased many of the sites from earlier periods (Reid et al. 1989).

As settlement of the American West gained momentum after the discovery of gold, the United States governments began to negotiate treaties with the tribes throughout Oregon and Washington. In 1855 the Cayuse, Umatilla, and Walla Walla tribes ceded 6.4 million acres of land to the United States government, and under the treaty between the United States and the “Tribes of Middle Oregon,” another 10 million acres was ceded (Smits 2017). The reserved lands became the Confederated Tribes of the Umatilla Indian Reservation and the Confederated Tribes of the Warm Springs Reservation (Smits 2017). In 1871, a treaty between the United States and the Northern Paiute groups (Burns Paiute Tribe) was drawn up but never ratified, and in 1872 the Malheur Reservation was established under an executive order of President Grant. The reservation was abandoned by 1878 with the Northern Paiutes being displaced to locations such as Fort Bidwell California, the Warm Springs, Umatilla, and Klamath reservations of Oregon, Fort Simcoe and Fort Vancouver of Washington, and reservations in Nevada such as Fort McDermitt, Pyramid Lake, Miller Creek, and Duck Valley (Fowler and Liljebad 1986).

Historic-era Occupation of the Region

The non-Indigenous presence in the region began in the early 19th century with American and British fur trade. The John Day River was named after a Virginian with the Pacific Fur Company’s 1811-1812 expedition to Astoria led by Wilson Price Hunt (Smits 2017). Subsequent expeditions by Donald MacKenzie and Alexander Ross of the Northwest Company, and Peter Skene Ogden and John Work of the Hudson’s Bay Company between 1818 and 1831, resulted in a consistent non-Indigenous presence in the region and produced some of the earliest documentation of the people, environment, and landforms. Beginning in the 1840s with the establishment of the Oregon Trail, EuroAmericans began crossing through what is now northeastern Oregon. However, their destinations were primarily the Willamette Valley and the area west of the Cascades. This initially limited the sustained interaction with the Native populations of the region.

Permanent resettlement of the Blue Mountains did not occur until the discovery of gold in 1861 and the 1862 passage of the Homestead Act. Gold was first found in what is now known as Canyon Creek by a group of miners headed to Idaho and led to a rapid resettlement of the region by non-Indigenous populations, many coming directly from previous gold strikes in California and southern Oregon (Mosgrove 1980:36). Access to the region improved over time as wagon roads were improved. The community of Canyon City was established along the gold-bearing Canyon Creek, and other towns soon followed. Mining resulted in the establishment of short- and long-term communities across the region. The rapid repopulation of the region led to a violent displacement of the Indigenous populations, often with the direct support of the United States military (Hann 2021). However, “although violent and relentless, their displacement was ultimately unsuccessful” and the region remains home to members of the Burns Paiute Tribe, the Confederated Tribes of Warm Springs, and the Confederated Tribes of the Umatilla Indian Reservation (Hann 2021:345).

The first wave of mining in the Blue Mountains consisted of placer mining. This type of mining targets the accumulation of gold in alluvial deposits through the use of water. Techniques range from simple to complex, and include the use of hand tools such as pans and shovels, along with picks, often in conjunction with rockers, long toms, sluice boxes, and other basic infrastructure that could aid in increasing the volume of water passing through the gold-bearing sediments. The reliance on water for this work would often result in the construction of extensive water systems

that utilized ditches, dams, and reservoirs to store and control the flow of water across large distances as miners moved across the landscape. Hydraulic mining required great capital investment and effort, as it targeted ancient river and stream beds through the use of pressurized water. Hydraulic monitors, or giants, were huge metal hoses that literally washed away mountains in search of gold. Regional placer mining was dominated by Chinese migrants by the end of the 1860s, who mined into the late-19th century and early 20th century. By the 1880s, lode, or hard rock, mining became more prevalent. However, placer mining made a comeback in the 20th century through the use of large-scale mechanical dredge mining (Modelski and Withee 2022; Libbey 1939). Small scale placer mining never really stopped and saw a resurgence in popularity during the Great Depression. Isolated mining claims continue to be worked within the gold-bearing drainages of the MNF to this day.

While the regional gold rush brought new settlers to the area and would remain a key industry into the 1940s, homesteaders were establishing themselves in the 1860s and ranching, and later logging, would provide the main economic stability in the region (Modelski and Withee 2022). Cattle ranching originally dominated the area, and the influx of sheep ranching in the 1880s provided unwanted competition. Conflict for grazing rights between these two groups led to the establishment of the Blue Mountains Forest Reserve in 1906. The Malheur National Forest was established from within the Blue Mountain Forest in 1908 and further divided into districts for grazing (Mosgrove 1980).

Local logging was initially done to meet the lumber needs by the local mining operations. By the early 20th century timber became a major export, facilitated by the new railroad connection between the region and distant markets. The Sumpter Valley Railway linked the communities of Sumpter and Baker City in 1896 and extended to the mill community of Austin by 1905 (Modelski and Withee 2022; Smits 2017). A larger mill was established at nearby Batesville (shortened to Bates in 1921), which remained in operation until 1975. Various spur lines were constructed across the region in the early-20th century in order to access, often remote, stands of timber. Small communities were regularly established at mill sites, while temporary camps were set up along the rail line for timber harvests. The U.S. Forest Service sponsored various historical timber harvests within the MNF lands, which supported sawmills across the region. By the 1930s trucks began to replace the rail line for transporting materials to and from the region, and by the 1940s the local rail lines were obsolete (Modelski and Withee 2022).

Chinese Mining in the Blue Mountain Region

The majority of the Chinese migrants coming to North America in the mid to late-19th century were from the Guangdong (廣東 Kwangtung) Province of Southern China. Like countless others, Chinese migrants came to the Blue Mountain Region to mine for gold. Many likely traveled from the Jacksonville area in southwestern Oregon, which was home to the earliest Chinese community in the Pacific Northwest (Rose and Johnson 2016). While the first documented Chinese mining claim in the area dates to 1866, it is likely that the Chinese men were part of the earliest wave of miners (Hann 2021). In the words of historian Mae Ngai (2021:4), “The gold rushes occasioned the first mass contact between Chinese and Euro-Americans. ... they met on the goldfields both in large numbers and on relatively equal terms, that is, as voluntary emigrants and independent prospectors.” For a more comprehensive overview of Chinese immigration to the United States, see Hsu (2002) or Rose and Kennedy (2020).

While gold may have brought the initial wave of Chinese migrants to the Blue Mountains, many found work in other economic areas of the developing region. Chinese men served as laborers on infrastructure projects, such as ditch or canal construction, and hauled rocks and boulders from hydraulic operations in Canyon City (Edson 1970:16, 19). Census records show that Chinese people made up 42% of Grant County in 1870, and controlled 83% of the placer claims in Grant County by the 1880s according to Federal mining reports (Fang 2021:324; Lee 2020; Hann and Rose 2018:1; Raymond 1872). Chinese communities often grew alongside towns at major mining centers, and Chinese-owned stores and businesses established in Canyon City, Granite, John Day, Prairie City, Mt. Vernon, Sparta, and Susanville by the late 19th century reflect the spread of these mining endeavors across the region (Wegars 1995:11). Many of these communities provided a range of supplies, services, and support to their residents and the remote mining camps that surrounded them. For example, in 1880 the John Day Chinatown was home to several laundries, two blacksmiths, a shoemaker, hog dealer, laborers, cooks, gamblers, a tailor, a jeweler (Chung 2011:66). Nearby Canyon City had merchants, woodchoppers, physicians, opium dealers, gardeners, restaurant owners and cooks (Chung 2011:67). These communities would have seen an influx of inhabitants during holidays or the off-seasons, and miners may have sought supplemental employment during these periods. Due to the seasonal availability of water and the harsh winter, the average mining season was less than three months (Edson 1970:16), however, through the use of ditches and reservoirs this could be extended to six months.

Chinese mining companies continued to dominate in the 1880s, but the population centers were in sharp decline by the 1890s. This is in large part due to the effects of escalating racism towards Chinese immigrants and Chinese Americans. While Chinese people endured xenophobia and targeted discrimination from the earliest mining days, from 1875 to 1943 anti-Chinese sentiment was codified into a series of “treaties, laws, legal opinions, administrative rules, and regulations” that “increasingly circumscribed the free movement of Chinese immigrants inside the United States and strictly limited the inflow of new migrants of Chinese descent” (Rose et al. 2021:412). The most infamous of these laws is the 1882 Chinese Exclusion Act and its subsequent amendments. Having to consistently navigate a complex landscape of exclusion would have intimately impacted the lives and decision-making processes for every Chinese Oregonian. In her 2018 book, *The Chinese Must Go*, historian Beth Lew-Williams provides a comprehensive discussion on the evolution and generational impact of Chinese Exclusion and notes that violence of this era has been overlooked and misunderstood by its comparison to the violent histories of Indigenous and African Americans (Lew-Williams 2018:3). She argues that anti-Chinese violence, which took many forms, is a “distinct phenomenon that must be considered on its own terms” (Lew-Williams 2018:5). While historians have identified relatively few incidents of physical interpersonal violence in Grant County, its structural and institutional manifestations would have impacted access, opportunity, and stability for the Chinese men and women building their lives in eastern Oregon. As such, with mining in decline, many residents chose to move to Portland where business was booming and “anti-Chinese legislation was ignored when it was financially profitable” (Lee 2020:40-41, 90). The result of which, is that a county that once had over 40% of its population comprised of Chinese immigrants, is now home to none of their decedents.¹

¹ According to the 2020 Census, 0.3% of the 7,233 Grant County residents identified as Asian.

While rural Chinatowns were in decline by the late 19th century, there is increasing evidence to suggest that Chinese mining companies continued to work their claims in remote parts of the county, including along the Middle Fork of the John Day River. Don Hann (2021) identified at least one Chinese mining company in operation until 1915, and 85-year-old Yee Sing was listed as a miner in the 1930 census. Historian Sue Fawn Chung's research indicates that Chinese produced more than 14% of the region's gold and silver in 1892, and has identified Ah Mow (aka Ng Moo) living in John Day as a miner in 1893 (Chung 2011:69). While it is clear that Chinese Americans comprised a significant number of the early population, those figures are likely an undercount, and this erasure only got worse over time with increasing anti-Chinese sentiment. It can be difficult to track historical populations in general, and Chinese immigrants in particular, as they were understandably hesitant to self-report to institutions and organizations that were often unapologetically working towards their exclusion.

Within Oregon, and likewise Grant County, regulations and laws prohibited Chinese migrants from purchasing mines on paper. However they do not seem to have been consistently enforced. These laws were often ignored or implemented at the pleasure of the men in power (Chung 2011:49). In most cases, Chinese individuals and companies were welcomed to purchase what were perceived to be spent or unprofitable claims or properties (Hann 2021; Chung 2011:49). This has led to a disjointed historical account of the scale and scope of Chinese mining in the region. Many locations, such as the ones within our current project areas, have an archaeological signature that is at odds with the documentary record. The circumstances under which Chinese miners bought and sold mining claims were influenced by a variety of factors that are largely invisible to us now. Many of their workaround solutions that allowed them to participate within the system rigged against them, undercounts and underrepresents their presence on the landscape and within the industry.

The Chinese migrants mining in the Blue Mountains, and likely elsewhere, are believed to have been organized into companies referred to as 'kongsi' (公司 gongsi, or company). This system was developed in China during the Qing Dynasty as a means to operate outside of restrictive financial and social systems (Hann 2021). The 1880 Census lists nineteen mining companies representing 230 men (Table 1, Chung 2011:60). In this system costs could be shared, and profits from the endeavors were split among the individuals based on their initial contribution to the company (Hann 2021; Chung 2011). However, other systems did exist, as seen with the Ah Hee mines of northeastern Oregon and Gin Lin mining operations in southwestern Oregon that hired wage laborers to operate the mining operations (Hann 2021).

Table 1. Chinese Mining Companies listed in Grant County the 1880 Census Population Schedule (data compiled by Chung 2011:59).

Company Name	Number in Company
Yung Gon Company	24
Gum Gow Company	21
Sip Goon Company	19
Ah Buck Company	12
Ah Hy Company	12
Wan Goon Company	11
Ah Gin Company	11
An Goon Company	11
One Goon Company	11
Kin Goon Company	11
Suig Lee Company	11
Kam Wa Company	11
Ah Hog Company	11
Tong Goose Company	11
Po Lin Company	10
Mow Company	10
Ye Ling Company	8
Sing Goon Company	11
Ding Company	4

Many of the Chinese migrants came to the region with their own extensive knowledge and expertise in mining (Hann 2021; Chung 2011). This allowed for second-hand claims to become profitable through the construction of extensive systems of ditches and reservoirs allowing for the control and manipulation of water, in some cases from distance sources. While many of these features are not unique to Chinese miners, archaeological evidence has shown that some of the retaining walls and reservoirs were constructed using Chinese vernacular architecture techniques such as rammed earth, or han-t'u (夯土), construction (Withee 2021; Rose and Johnson 2018; Steeves 1984:141-143). Likewise, specialized tools were used, often ones being modified from European style tools (this will be discussed in detail below).

Grant County is home to the most notable example of Chinese American resilience and success in Oregon. The Kam Wah Chung (金華昌) State Heritage Site serves as a tangible marker of the legacy of businessman and entrepreneur Lung On (梁光榮) and acclaimed herbalist Ing Hay (伍予念), and is increasingly recognizing the many stories of the Chinese men and women who lived in the John Day Chinatown community that once surrounded the store (see Lee 2020; Rose and Johnson 2020; Chung 2011, 2005). However, the mountains that border this community contain equally notable remnants of the Chinese diaspora that once called this region home. The complex and extensive network of mining done by Chinese companies in the 19th and early 20th century not only marks the scope and scale of these endeavors, but also the skill required to manipulate the landscape, the economic contributions that benefited local, state, and international interests, and the fact that the duration of these operations far exceeds the assumptions of 20th century historians and scholars. After spending decades working in the region and observing the remnants of Chinese peoples living and working across the MNF, archaeologist Don Hann has argued that,

the disconnect between the earlier depictions of Chinese mining companies and the later portrayal of the Chinese as unskilled laborers is a form of cultural amnesia, where, in this case, the biases of the dominant Euro-American population have diminished the contribution of Chinese immigrants to the formation of modern Oregon (2021:344).

We hope that the work outlined in this report will help to correct this oversight by sharing details and new data gleaned from archaeological investigations into three mining areas associated with Chinese kongsi operating along the Middle Fork of the John Day River.

Archaeological Methods and Findings

Archaeological fieldwork for this project was conducted over four years under the direction of SOULA archaeologist Chelsea Rose and Don Hann of the MNF. The 2017 field season focused on two sites within the Happy Camp mining complex and is presented in Rose and Johnson 2018. The 2018 field season was held July 15-25 and included fieldwork at two sites within the Happy Camp mining complex, and one site within the Ah Heng Mining complex (Ah Heng I), and at the Ah Yee mining site. The 2019 field season occurred as part of the Southern Oregon University Oregon Chinese Diaspora Project archaeological field school, and focused on two sites within the Ah Heng mining complex between July 21-28 (Ah Heng I and Ah Heng II). Due to the COVID-19 Pandemic, there was no field season in 2020. The 2021 field season focused on the Ah Yee mining site, and was held July 4-10. Three of these projects were accompanied by concurrent MNF-led Passport in Time (PIT) projects, which are described in Hann and Rose 2018, Withee 2019, and Watkins 2021 respectively.

The archaeological methods employed during this project varied depending on the size and conditions at each site. In general, SOULA's work followed the team of MNF archaeologists and PIT project volunteers who cleared the sites of vegetation and conducted metal detection surveys to enhance visibility and identify key site loci. The amount of excavation was then determined based on those findings through consensus between SOULA and MNF project leads. A description of the specific archaeological treatments for each site will be presented below. In general, it included a mix of traditional 50 cm by 50 cm quarter test units (QTUs), 1 m by 1 m test units (TU) excavated in arbitrary 10 cm levels, and shallow surface scrapes that were excavated stratigraphically. All sediment was screened through 1/8" hardware mesh. In addition to the controlled excavations, surface scatters and diagnostic items flagged during the metal detection surveys were GPS'd, described, and photographed. With few exceptions, these materials were not collected. All recovered artifacts from the project were brought back to SOULA for analysis, and will be returned to the MNF upon the completion of the project for permanent curation.

As the archaeological resources described in this report primarily date to the historic-era, the artifacts were organized and analyzed using the Sonoma Historic Artifact Research Database (SHARD) created by the Anthropological Studies Center at Sonoma State University. This classification system is based on the artifact typology originally proposed by Stanley South in 1977, and allows for material culture to be placed into four broad functional categories: *Activities*, *Domestic*, *Personal*, and *Structural*. The functional categories are divided into subcategories which allow for organization of artifact types into discrete searchable groups. The *Activities* category covers artifacts related to writing, transportation, firearms, and commerce. The *Domestic* category contains artifacts related to the home, cooking, and food consumption. The *Personal* category encompasses artifact types such as toys, clothing, grooming and health, and items related to social drugs such as tobacco, opium, and alcohol. The *Structural* category covers artifacts related to building materials, hardware, and fixtures. Artifacts having multiple potential uses (such as bottles, wire, flat glass), are assigned to an *Indefinite Use* category. Material that could not be identified (i.e. amorphous fragments of metal or wood) is assigned to an *Unidentified* category. Upon classification, all materials were entered into the customized SOULA curation catalog database under SOULA catalog numbers 2018.10, 2019.07, and 2021.11. Artifact discussions below will note when describing the assemblage in terms of total artifact count (n=number of artifacts recovered) and minimum number of individual items represented (MNI). Artifacts listed in the vertical distribution charts either date to the historical

period occupation of the site, or are noted as P (precontact), H (historical era), or M (modern) when multiple temporal ranges are represented.

While countless studies have shown that the material culture of the Chinese diaspora is not limited to ethnic markers, there are a suite of Chinese manufactured items that are commonly found. Most recognizable are the distinctive Chinese brown-glazed stoneware (CBGS) vessels that contained liquor or pickled, preserved, and dried foods. The contents of these vessels can often be inferred by their form, with spouted vessels commonly associated with soy sauce, wide mouth jars with preserved vegetables, and the more decorative jars with pickled ginger. Typologies can be found in Southern Oregon University (2018), Choy (2014), Yang and Hellman (1998, 2013), and Brott (1987). These wares were manufactured at kilns in the Guangdong Province, such as the Nanfeng kiln in Shiwan (石湾), many of which are still in operation today (Choy 2014). While these sturdy vessels were imported and purchased for their contents, once empty they became useful containers in their own right and were often reused. Large barrel jars were sometimes employed for rainwater catchment, and wide mouth jars were handy for a variety of uses, including for the storage of sourdough starter as seen with Chinese American pioneer Polly Bemis (Wegars 2020).

Also of note are the *mín yáo* (民窑, folk ware) Chinese porcelain and porcelaneous stoneware tableware vessels. These wares were produced for domestic use, as well as for the Chinese diaspora, and are most commonly represented by four patterns: Bamboo (竹花 *zhú huā*), Double Happiness (双喜 *shuāng xǐ*), Winter Green (冬青 *Dōng qīng*), and Four Season Flower (四季花 *sì jì huā*) (Choy 2014). The blue-and-white Bamboo and Double Happiness patterns are known as *qing hua* (清华). These vessels were manufactured in eastern Guangdong and are only found as medium sized bowls in the United States, although a greater variety of vessel forms can be found in China (Choy 2014). Winter Green and Four Season Flower patterned ceramics were manufactured in the Jiangxi (江西) Province and can be found on a variety of vessel forms including bowls, alcohol and tea cups, and spoons (Choy 2014). Winter Green vessels have a distinctive pale green glaze and are often misidentified as celadon (Choy 2014). Four Season Flower ceramics have a hand painted polychrome pattern with flowers associated with the four seasons: peony for spring, the lotus for summer, the chrysanthemum for fall, and the plum for winter (Choy 2014).

Happy Camp Historic Mining Complex

Two archaeological resources investigated during this project fall within the larger Happy Camp mining complex (35GR2638 /0604301206), a landscape that was extensively mined from the early 1860s up to the 1900s. The site was originally documented in 1991 and spans over 1,422 acres. The site includes features such as reservoirs, lateral ditches, head races, wash pits, placer cuts, associated tailings, tail races, settling ponds, and habitation sites. Due to the size and complexity of the site, some of the resources recorded in this area have been grouped into different feature complexes and in some cases have also been given an individual site number. SOULA's investigations focused on Site 06040302388 and Site 06040300322. There is some discrepancy on the site names in the literature, and we have worked with the MNF to try to establish consistency for the resources within our project area. To avoid future confusion, the two sites will be referenced by their distinct site numbers below.

Over a dozen sites have been previously recorded within the area, four of which are associated with twentieth century railroad logging and not included in the mining district (see sites 0604030222, 06040300325, 06040300326, and 06040301327), and one of which consists of six blazed trees believed to be associated with a trail system documented on the 1882 General Land Office (GLO) map (06040301727) (Withee 2017). Nine additional habitation sites have been recorded within the Happy Camp mining complex. Each have been given individual site numbers but are considered to be part of the larger mining district. Happy Camp Site 06040302388 and Happy Camp Site 06040300322 will be discussed in detail as part of the project narrative below, but the remainder will be briefly described here as presented by Katee Withee in the 2017 site form:

- Site 06040300321 is listed as the “heavily deteriorated remains of a log cabin and refuse scatter in association with a number of mining features.” When the site was recorded in 1986 it was listed as having 150-200 “solder sealed cans and twenty pocket tobacco tins” and an occupation date ranging between the late 1800s and early 1900s.
- Site 06040300324 is described as containing stove parts and structural remains, such as burned lumber and a small hearth. The specific use of the structure is unknown but is believed to have been used as a dwelling between the late 19th to early twentieth century.
- Site 06040300327 is listed as “a cabin site associated with placer mining features.” The cabin is noted on maps and survey documents from the 1950s, and the cultural materials associated with the site place the occupation of the cabin within the Depression-era or later.
- Site 06040300328, also known as “The Opium Cabin,” was originally recorded in July 1984 by seasonal Forest Service archaeologists during a cultural resources survey for the Deerhorn Timber Sale (McClure 2013). Of the habitation sites listed here, this resource has received the most attention by archaeologists over the years. The cabin was initially described as having one stone wall and being semi-subterranean, which was reportedly typical of Chinese mining cabins noted elsewhere in the Blue Mountains (McClure 2013:1). Cultural materials associated with the cabin included opium paraphernalia, CBGS vessel fragments, hobnailed rubber boot fragments, metal container fragments with Chinese characters embossed on them, Chinese vegetable oil container fragments, Winter Green ceramic fragments, and an Asian coin (Withee 2017). Due to the preservation of the site, it was determined to be eligible for listing on the National Register of Historic Places (Figure 4). The site was revisited during a timber survey in 2000 and found to be in good condition. However,

during a routine visit in 2013, it was discovered that the site had been damaged by looting activities. Archaeological testing was conducted in 2014 to assess the damage to the site and whether it retained enough integrity to be considered eligible to the National Register (Shelnutt 2014). The project was led by MNF archaeologist Kay Shelnutt and done in conjunction with a Passport in Time project. The testing consisted of 18 1 m by 1 m units placed in and around the cabin and the screening of soil displaced by the looting activities. The testing resulted in the determination that the site still maintained enough integrity to be considered significant and eligible to the National Register.

- Site 06040300414 is listed as “a cabin site and dump associated with placer mining features.” The cabin is described as “constructed from peeled logs with U-shaped ax cut notching.” A visit to the site in 2014 noted that two corners of the cabin were still standing with up to eight log courses remaining. The cultural assemblage indicated the resource was occupied between the 1880s and the 1920s and included bitters bottle fragments, stove parts, cooking pans, crockery fragments, a clock, a lard bucket, ceramic tableware fragments, and a number of other containers and cans.
- Site 06040300421 is described as a small structure and refuse dump adjacent to placer mining features and dating to the 1920s or later. The site was described as not eligible in 1986.
- Site 06040301828 consists of a structural platform and refuse scatter directly associated with a placer cut and tailrace. The artifacts present within the site include domestic material, stove parts, windowpane glass, solder sealed cans, and solarized amethyst glass.

In addition to the above previously recorded habitation sites within the Happy Camp mining complex, a variety of mining related features have also been documented. These include lateral ditches, water transportation ditches, reservoirs, head boxes, gate structures, head races or penstocks, placer cuts or wash pits, tailings piles, settling ponds, tail races, and prospect pits. In 2017 SOULA excavated a portion of an earthen damn within the Happy Camp mining complex (Site 06040301206) and found that the construction techniques were consistent with the use of vernacular construction technique known as han-t'u (Rose and Johnson 2018; Steeves 1984).



Figure 4. Don Hann (white baseball cap) gives the 2018 PIT project volunteers a tour of the cabin at the Happy Camp Site 06040300328.

Happy Camp Site 06040302388

SOULA conducted two rounds of archaeological investigations at the Happy Camp Site 06040302388. The first round was in 2017 and consisted of a limited survey and the excavation of two 1 m by 1 m units (see Rose and Johnson 2018). The findings confirmed that the site was related to the Chinese American occupation of the area, and as a result, SOULA returned to the site in 2018 in conjunction with a PIT project. The findings from this fieldwork will be described below. The artifact assemblage suggests a short-term occupation of the structure in the early 20th century. This corresponds well with a 1901 federal mining report that notes that “on the east side of Dixie Butte are the old placers of Happy Camp, still worked at on a small scale by Chinese” (Lindgren 1901:712).

Happy Camp Site 06040302388 is located roughly 500 meters north of Davis Creek on a secondary ridge with an eastern aspect towards the confluence of Davis Creek and the Middle Fork John Day River. The area has moderate timber coverage consisting of Ponderosa and lodge pole pine and, while there does not appear to have been any logging activities in the area within the last 50 years, cut stumps are present outside of the immediate site area. The NRCS list the soils for this site as an Olot-Wonder Complex (map unit 4176AO). This soil type is associated with mountain slopes and plateaus with a 0-15% slope and consists of a thick mantle of ash over colluvium and

residuum derived from basalt (NRCS 2022). The typical soil profile includes a thin layer of decomposing plant material (less than 1 inch) followed by up to 20 inches of ashy silt loam followed by a very gravely silty loam and an extremely cobbly silty clay loam. Bedrock is generally reached roughly 37 inches below the ground surface (NRCS 2022).

This site consists of the remains of a single structure located on a sloping ridge near the head of two large placer cuts, associated head races, and a lateral ditch. These mining features are documented separately as the Happy Camp Placer Mine Site 06040301206. No organic remains of the structure were identified on the site surface, but the outline of a rectangular structure is visible through shallow, parallel linear depressions which could have held the cabin's sill logs or structural components associated with a tent. When first identified by MNF, the site was in a dense pine and larch forest with thick ground cover. A small scatter of metal cans, miscellaneous metal fragments, a cast iron pan fragment, a shovel head, bottle glass and ceramics were all that were visible on the site surface. The site was linked with the Chinese miners in the area through the presence of a CBGS sherd and a Winter Green cup rim.

The 2017 excavations were aimed at determining whether the linear depressions were associated with a cabin feature. As such, one 1 m by 1 m TU was placed on the inside (TU 1) and one (TU 2) was placed just outside of the proposed footprint of the cabin feature. The test unit outside the feature produced limited material, but the unit within the feature produced over 200 CBGS fragments representing a minimum of four liquor bottles. The recovered artifacts date to around the turn of the 20th century (Rose and Johnson 2018).

The 2018 investigations followed the clearing of the site by the PIT volunteers, who also conducted a metal detection survey to help identify site loci (Figure 5). SOULA subsequently laid out a 15 by 15-meter grid based on the concentration of metal detection hits and visible surface features. The cabin feature was delineated based on the two parallel depressions, making a footprint of roughly 35' by 26'. A total of four (4) 1 m by 1 m TUs were excavated within the grid: one unit (TU 3) was placed to the west of the cabin and three units (TU 4, TU 5, and TU 6) placed within the footprint of the feature in an effort to better understand the function and layout of the structure (Figure 6). These units were oriented with the main grid, and not in line with the orientation of the 2017 units. All units were excavated using 10 cm levels, and measurements were taken off a corner datum at 10 cm above the ground surface. As the ground surface was uneven, the first excavation level (0-10 cm below datum) was sometimes a shallow scrape used to create a flat surface for the following level.



Figure 5. View north across Happy Camp Site 206040302388 with the flags marking the metal detection hits in the foreground. The tent in the background marks the central screening area.

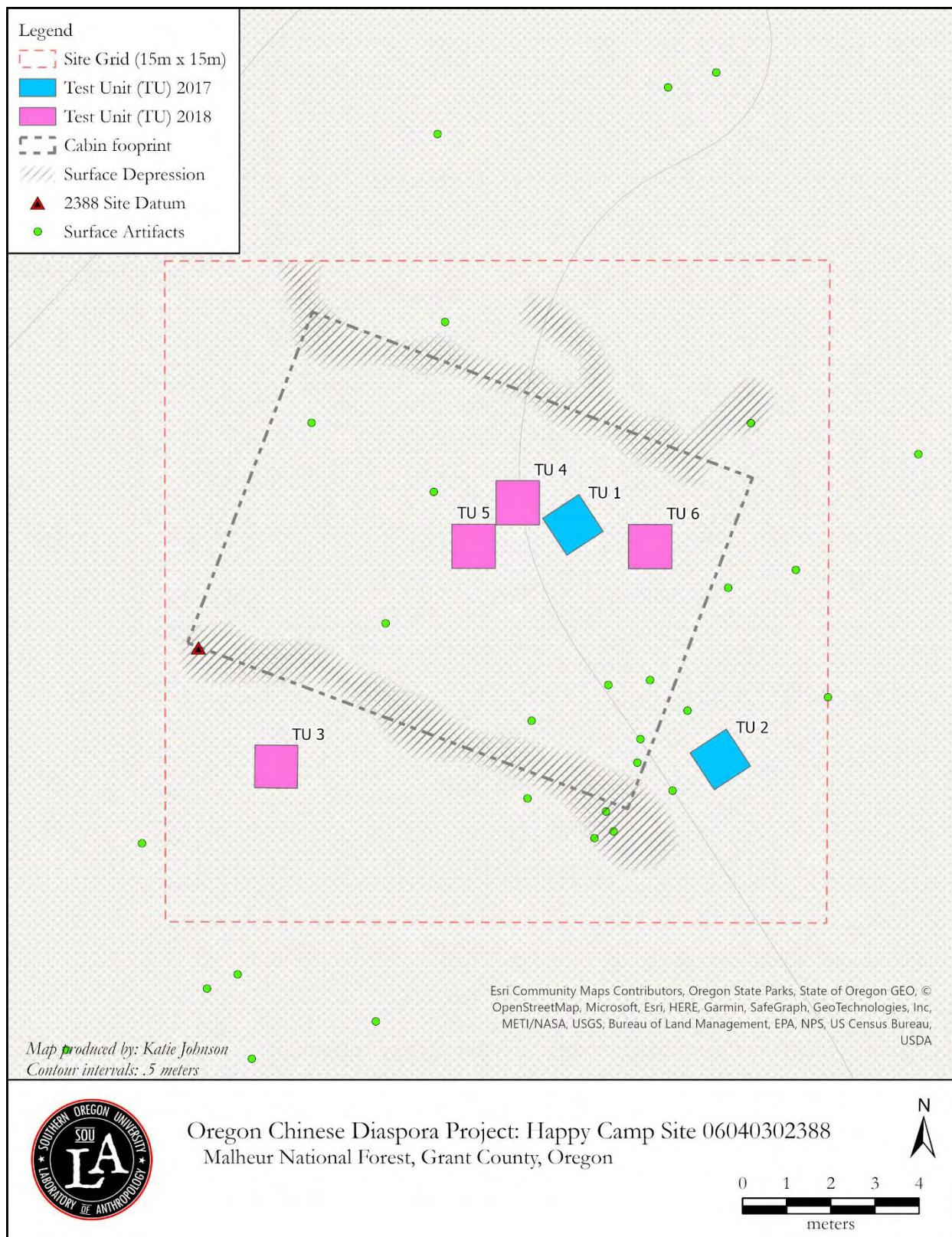


Figure 6. Happy Camp Site 06040302388 map with features and excavation units from both field seasons noted.

TU 3

TU 3 was excavated outside of the structure in an area to the west where surface artifacts were observed by the MNF archaeologists (grid coordinates 11s/2e). The unit was roughly 1 m south of the cabin wall (as marked by the linear depression) and was excavated to 50 cm below the ground surface (Figure 7). Soils observed within the unit largely consisted of dark yellowish brown (10YR 3/4) silty ashy loam with a high organic content and pine duff on the surface. There was a relatively low angular content, although medium sized cobbles were observed in the southwest corner of the unit in level 4. A total of eight artifacts were recovered from the unit, including seven wire nails and an amber glass bottle fragment.



Figure 7. Plan view of TU 3 at 50 cm below datum.

TU 4

TU 4 was placed within the cabin footprint on the grid at 5s/7.5e and was excavated to 40 cm below datum (Figure 8). The unit was placed near TU 1 (excavated in 2017), which is not oriented with the 2018 grid. Soils within the unit consisted of dark yellowish brown (10YR 4/4) silty ash and loam. Structural wood was observed along the east side of the unit and is believed to reflect the remains of the cabin. A total of 383 artifacts were recovered from the unit, the bulk of which were recovered from the top 20 cm (roughly 10-30 cm below datum).



Figure 8. Plan view of TU 4 at 20 cm below datum with the structural wood and artifacts visible. An opium can is visible in the bottom right of the image (southwest unit corner) and two ferrous cans can be seen along the right (southern wall) of the unit.

TU 5

TU 5 was placed off the southwest corner of TU 4, within the cabin footprint on grid 6s/6.5e and was excavated to 40 cm below datum (Figure 9). There was a small mound in the southwest corner of the unit. Soils within the unit consisted of fine greyish brown silty ash and pine needle duff transitioning to a dark yellowish brown (10 YR4/4) silty ash. The bulk of the artifacts were observed coming from the northern part of the unit. A total of 367 artifacts were recovered from the unit, most from the top 10 cm (0-20cm below datum).



Figure 9. View north of TU 5 (bottom left) and TU 6 (top right) at 40 cm below datum.

TU 6

TU 6 was placed within the cabin footprint at grid 6s/10.5e roughly 4 m north of TU 2, and just east of TU 1. The unit was excavated to 40 cm below the surface (Figure 10). Soils within the unit consisted of a brown (10YR 5/3) sandy silt with ash transitioning to a dark yellowish brown (10YR 4/6) sandy silt. An area of mottled and burned earth was observed near the center of the unit at 20 cm below the surface (30 cm below datum). A total of 189 artifacts were recovered from the unit, again with most coming from the top 20 cm.



Figure 10. TU 6 at 40 cm below datum.

Happy Camp Site 06040302388 Artifact Assemblage

A total of 1,015 artifacts were recovered from the 2018 excavations at Happy Camp Site 06040302388. Of these, 68 items were recorded as surface finds associated with the metal detection and pedestrian survey, and the remainder were recovered from the excavation units. Only eight items were found in TU 3, and the remainder of the assemblage was recovered from the units placed within the cabin footprint. No precontact materials were observed during project testing.

The 68 diagnostic items identified opportunistically and during the metal detection survey were mapped, described, photographed, and left in situ. Unsurprisingly, this assemblage was dominated by ferrous metal items, primarily cans (Figure 11). The artifacts recovered from the units were largely found within shallow deposits (Table 2). The assemblage will be grouped and discussed by functional category below.

Table 2. Vertical distribution of artifacts from Happy Camp Site 06040302388 by unit.

Unit	0-10	10-20	20-30	30-40	40-50	Notes
TU 3*	0	5	1	2	0	Outside of cabin footprint.
TU 4	5	267	111	0	/	
TU 5	0	334	33	0	/	
TU 6	6	137	46	0	/	
<i>Totals</i>	<i>11</i>	<i>743</i>	<i>191</i>	<i>2</i>	<i>0</i>	

*TU 1 and 2 were excavated in 2017

Unless otherwise noted, all counts represent historic-era items.



Figure 11. Two hand soldered hole-in-cap cans (GPS 3) observed at the site. These cans date to the 1840s-1920s. Note: the can on the right has punched holes around the rim, perhaps suggesting it was being repurposed.

Artifacts Assigned to the Activities Functional Category

A total of three artifacts were assigned to the Activities functional category. This included a bullet casing and fragments from two shovels.

Artifacts Assigned to the Domestic Functional Category

A total of 109 artifacts were assigned to the Domestic functional category. This included an evaporated milk can and an oil can assigned to the **Food** group. An oil lamp made from a modified opium can was assigned to the **Heating and Lighting** group (Figure 12), and over 70 items were assigned to the **Food Storage** group. These items included fragments of CBGS vessels and lids, and numerous fragments from a Chinese glazed stoneware spouted jar with an unusual green exterior

glaze (Figure 13). The remainder of the assemblage was assigned to the **Food Preparation and Consumption** group and consisted of a ferrous pan and long handled cooking pot, along with over 30 fragments of mín yáo wares, representing Winter Green (n=5) (Figure 14), Four Season Flowers (n=19) (Figure 15), and an unidentified polychrome designs (n=7) (Figure 16).



Figure 12. Brass opium can modified for use as an oil lamp (*specimen 2018.10-0033*). The cotton or fabric wick is within a rolled piece of brass, likely repurposed from another opium can.

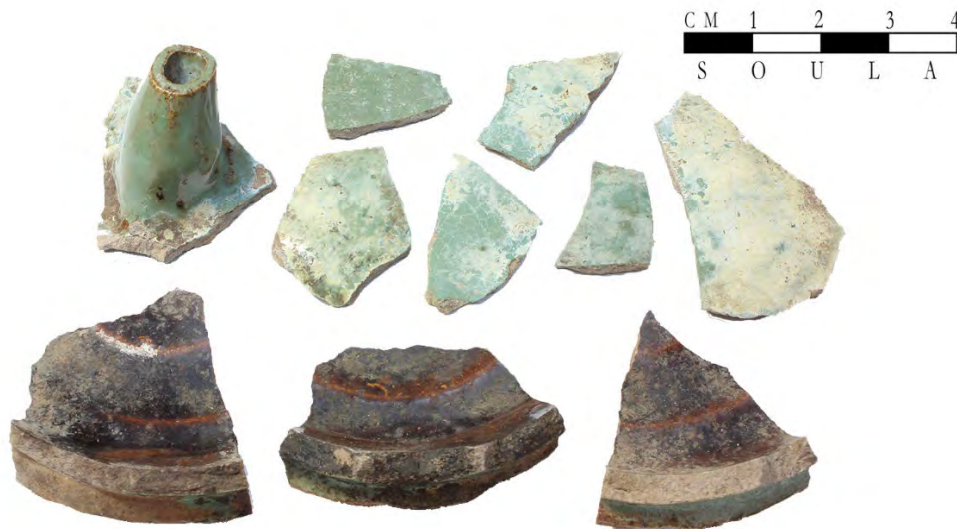


Figure 13. A Chinese glazed stoneware vessel with brown interior glaze and a pale green exterior glaze (*specimen 2018.10-0071*).

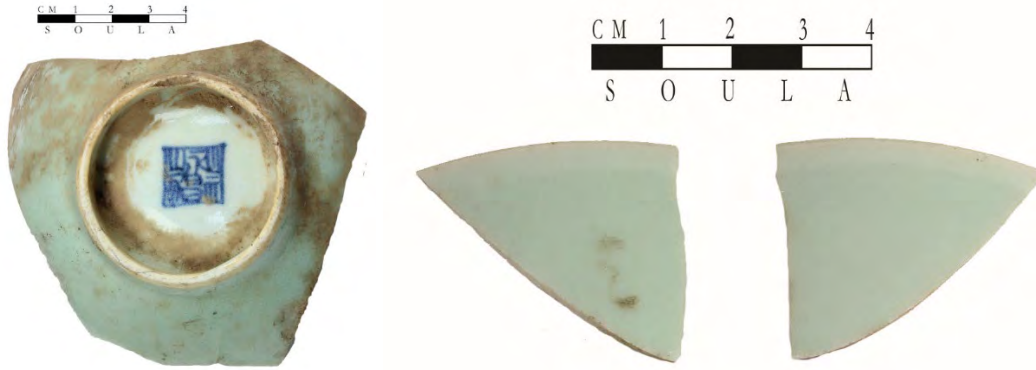


Figure 14. Winter Green tableware recovered from the site. Left: bowl with stamped base (*specimen 2018.10-0001*). Right: teacup fragments (*specimen 2018.10-0110*).

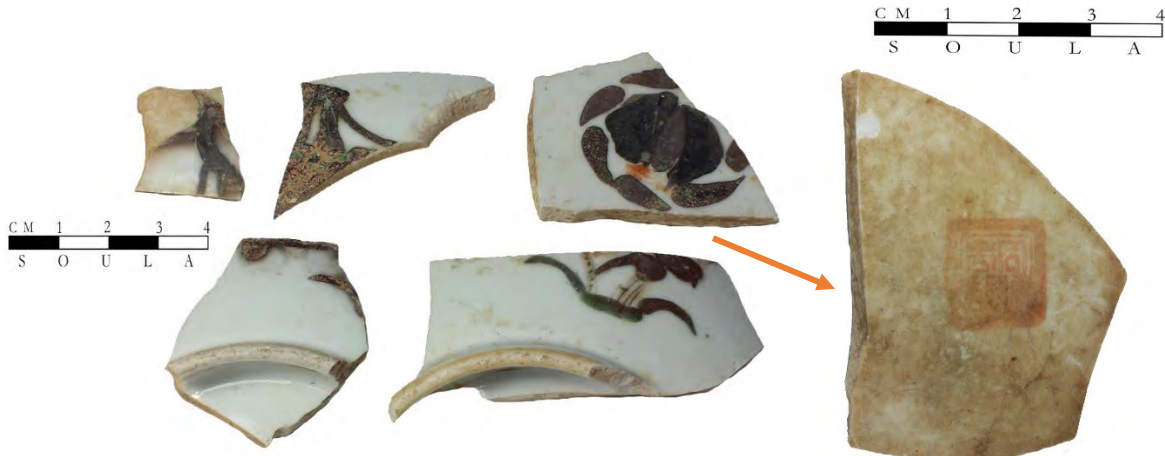


Figure 15. Porcelain Four Seasons Flowers bowl with a stamped maker's mark on the base (*specimen 2018.10-0094*).

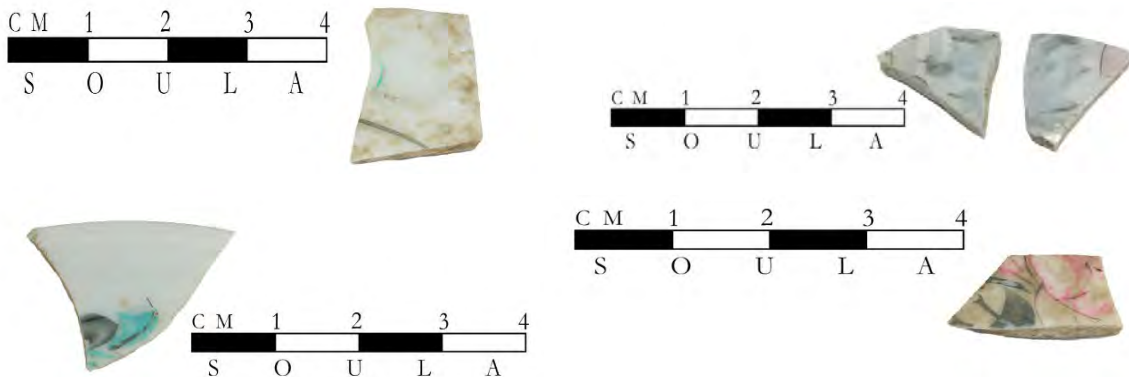


Figure 16. Polychrome Chinese porcelain vessel fragments. From top left: unidentified polychrome pattern vessel fragment (*specimen 2018.10-0036*, *specimen 2018.10-0060*). Bottom, from left: Four Season Flower rim (*specimen 2018.10-0083*), Four Season Flower vessel fragment (*specimen 2018.10-0009*).

Artifacts Assigned to the Indefinite Use Functional Category

A total of 443 artifacts were assigned to the Indefinite Use functional category, 84% of which represented **Miscellaneous Containers**. The assemblage included bottles in amber, amethyst, aqua, and colorless glass, as well as over 200 can fragments and 70 CBGS fragments that were not able to be identified to vessel form. The cans represented hole in cap cans, crimped seam cans, and larger diameter cans that could have contained oil. The remainder of the assemblage included a single tack, four fragments of unidentified whiteware ceramic, and an agate that possibly represents a manuport (Figure 17).



Figure 17. Left: A sample of the container glass recovered from the site, including amber bottle glass (*specimen 2018.10-0096*), and heat altered aqua and colorless glass (*specimen 2018.10-0106*). Right: agate cobble manuport (*specimen 2018.10-0018*).

Artifacts Assigned to the Personal Functional Category

A total of 164 artifacts were assigned to the Personal functional category. A single 4-hole sew through Prosser porcelain button was placed in the **Clothing** group, and the remainder of the assemblage is associated with **Social Drugs**. Alcohol was represented by amber bottle glass (n=39) and fragments of multiple CBGS liquor jars (n=96) (Figure 18). Opium was represented by 27 opium can fragments, and tobacco consumption on the site was represented by a single tobacco pull tab (Figure 19).



Figure 18. A sample of the CBGS alcohol jars recovered from the site (left: *specimen 2018.10-0069* and *2018.10-0068*, right: *specimen 2018.10-0095*).



Figure 19. A sample of the opium and tobacco items recovered from the site. Brass opium can fragments (*specimen 2018.10-0075*), and a ferrous tobacco pull tab on the top right (*specimen 2018.10-0029*).

Artifacts Assigned to the Structural Functional Category

A total of 291 artifacts were assigned to the Structural functional category. Of these, 158 artifacts were placed in the **Hardware** group, including 14 cut nails and 144 wire nails (Figure 20). The remainder of the assemblage was placed in the **Material** group and consisted of six fragments of wood and 127 fragments of pane glass (Figure 21).



Figure 20. A sample of the nail assemblage recovered from the site. Left: cut nails (*specimens* 2018.10-0051 and *specimen* 2018.10-0088) and wire nails and tacks (*specimen* 2018.10-0023, *specimen* 2018.10-0022, *specimen* 2018.10-0119, *specimen* 2018.10-0090, *specimen* 2018.10-0120, and *specimen* 2018.10-0101).



Figure 21. A sample of the structural material recovered from the site, including wood (*specimen* 2018.10-0115) and aqua pane glass (*specimen* 2018.10-0043).

Artifacts Assigned to Other Categories

The remainder of the assemblage consisted of two charcoal samples and three fragments of faunal material. The faunal specimens included two fragments of calcined bone and one mammal long bone. The faunal materials were recovered from within TU 5 level 2 (10-20 cmbd). The materials were all designated as medium sized mammal and two were calcined.

Summary of Findings at the Happy Camp Site 06040302388

SOULA conducted archaeological excavations at the Happy Camp Site 06040302388 in 2017 (see Rose and Johnson 2018) and in 2018. Archaeological investigations at the site included the excavation of six (6) 1 m by 1 m excavation units (TU 1-TU 6). TU 1 and TU 2 were excavated in 2017, and TU 3 through TU 6 in 2018 resulting in the recovery of 1,015 artifacts. The 2018 excavations further support the 2017 findings that the archaeological deposits at Happy Camp Site 206040302388 are consistent with a short-term domestic occupation in the late 19th to early 20th century.

The presence of wire nails, wood, and flat glass suggest that a structure was present at the site, and it is believed to be associated with the two linear depressions seen on Figure 6 above. These depressions could have been associated with logs used as a sill plate, which would make the building roughly 35' by 26'. This would be quite large for a miner's cabin, so perhaps the depressions played an alternative role for the structure, such as drainage. If the building was a hybrid structure manufactured with both wood and canvas, the depressions could have been where the canvas edge was secured, however, the presence of structural wood in the units and the pane glass would suggest it was an expediently constructed wooden building, perhaps serving as a bunkhouse for multiple men.

While the site contained a suite of material similar to the other sites described in this study, the ceramic assemblage was distinctive. Vessels had stamped bases, there were polychrome designs that are outside of the four most commonly observed mín yáo folkwares, and there was a unique green glazed Chinese stoneware spouted jar. This distinctive glaze is rare, but not unheard of, and has been observed by Gary Weitz, who has a large selection of curated Chinese material culture from the North American diaspora. This could indicate that the men at this site had access to different goods, either due to temporal or spatial differences in market access.

Unlike the majority of the other sites presented below (and within the Happy Camp mining complex), Happy Camp Site 06040302388 did not have a rock hearth feature. This could be because the site reflects a later occupation and these features were not as common, that an established building was purchased along with a claim, or it was occupied for a shorter duration than the other sites. Due to its location within the larger complex, it is also possible that this residential structure was served by a communal kitchen located elsewhere. This is further suggested by the overall lack of faunal (food related bones) present at the site, indicating the food preparation and consumption was not a major activity occurring within the vicinity.

Happy Camp Site 06040300322

Happy Camp Site 06040300322 was first recorded in 1984, and was described as a cabin consisting of the remnants of a lower log course and dry stacked masonry wall with a large refuse scatter of domestic and mining related artifacts. Both square and v-notched logs were observed in the semi-subterranean cabin ruins, and the cracks were observed to have been chinked with split sticks (Withee 2016). The site was determined to be eligible for listing on the National Register of Historic Places (Steggell 1984). A number of artifacts consistent with a late 19th to early twentieth century Chinese occupation of the site were also recorded, including CBGS, hobnailed rubber boot fragments, a fragment of a Chinese vegetable oil container, and opium paraphernalia. A small assemblage of artifacts from the site believed to have been collected in the 1980s were recently uncovered in storage and are presented below following the 2018 artifact assemblage. Evidence of looting was observed at the site, however, robust deposits still appeared to be present. MNF conducted a PIT project at the site in 2016 under the direction of Robert Dickenson. While the activities and findings of this project have yet to be reported on, the project appears to have consisted of a pedestrian survey and targeted inventory of surface artifacts.

The site is located in a lodge pole pine thicket to the southwest of the confluence of the Middle Fork John Day River and Davis Creek and within an area that has been extensively mined. The NRCS lists the soil type for this area as a Bennettcreek-Fivebeaver complex (map unit 4173AO). This soil type is typical of mountain slopes and plateaus with a 0-15% slope and is derived from colluvial deposits of hard igneous extrusive rocks with a thin upper mantle of mixed volcanic ash (NRCS 2022).

This site includes the remains of one relatively substantial domestic structure, and the scale of the artifact scatter suggests that additional structures or outbuildings were present. The site is located near the outlet of the tailraces from several large placer cuts. These mining features are documented separately as the Happy Camp Placer Mine Site 06040301206. A stacked rock feature is located on the west side of the dugout cabin feature, which appears to be a hearth or cooking feature. It is comprised of large, dry-stacked rounded and subrounded cobbles with large slabs of flat basalt surrounding the firebox. While several similar rock features have been observed within the forest (including in the Ah Heng and Ah Yee sites described below), this represents the largest one recorded to date. These features have often been misidentified as ‘ovens,’ but are instead believed to represent open-topped cooking features designed to accommodate woks. As will be made clear over the course of this report, these cooking features vary in size, style, and placement, yet appear to be consistent in design and function.

Prior to SOULA’s 2018 fieldwork at Site 06040300322, PIT volunteers cleared the brush and small trees from the area, and carefully removed vegetation and duff from the stacked stone feature (designated Feature A). This included a superficial surface scrape within a 5.5 by 5.5 meter area surrounding the feature. A pedestrian survey and metal detector survey were also conducted in order to pinpoint surface artifacts and areas believed to contain subsurface concentrations of metal. As with the previous site, these items were mapped and documented and largely left in situ. A 12 by 8 meter grid was placed over the main site locus, and three (3) 1 m by 1 m TUs were excavated within this grid, with TU 1 and TU 2 targeting structural components and TU 3 placed outside of the cabin footprint (Figure 22 and Figure 23).

To the northeast of the site there was a scatter of 20th century materials believed to represent a subsequent occupation of the area. While we have not found supporting documents, during his site visit to the project, Robert Dickenson indicated that his 2016 PIT project established that this site component was associated with the railroad and not mining in the vicinity. As such, it was not included within this study.

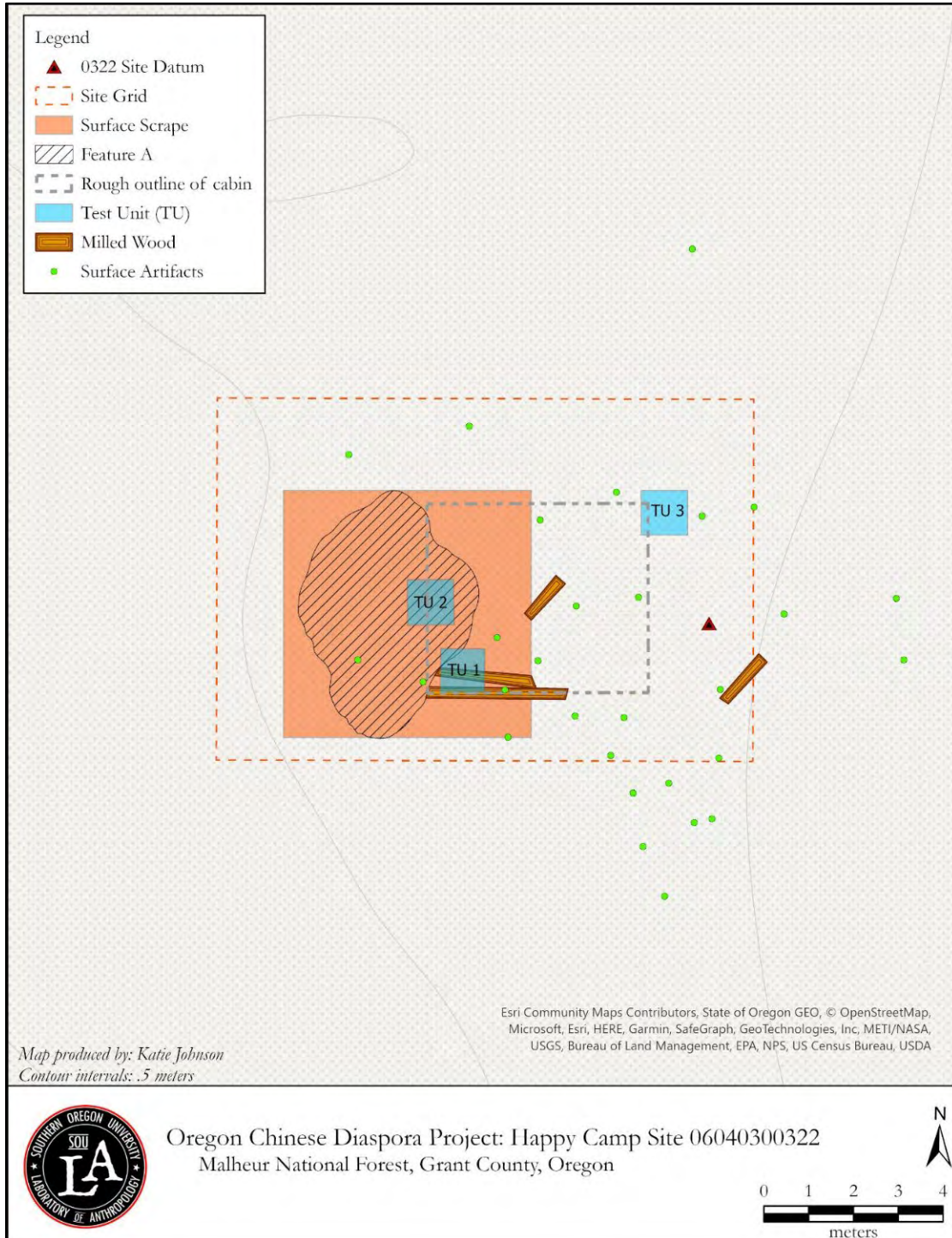


Figure 22. Site map of Happy Camp Site 06040300322 with excavation units and features noted.



Figure 23. View east across the site with the backside of the rock feature in the foreground. The grid can be seen on the right of the image, and the flags mark metal detection hits.

TU 1

TU 1 was placed east of the rock feature along the wooden sill plates that mark the southern side of the dugout style cabin (northwest corner grid coordinates 5.5s/5e) (Figure 24). The unit was excavated to 80 cm below the ground surface, however, this was due to the slope in the unit where it abutted against the sill plate cut into the ground making the structure semi-subterranean. The excavation was aimed at determining how many logs remained in the dugout wall of the structure. The unit datum was established at a high point on the southwest corner, and there was up to a 50 cm difference in the surface of the unit. The greatest difference was between the southwest and the northeast corner of the unit. As such, Level 8 represented an excavated depth of 80 cm in some portions of the unit, and 40 cm in others.

Soils within the unit consisted of a dark organic loam and duff on the surface, followed by a brown silt (10YR 4/3) in the northwest corner and a dark yellowish-brown (10YR 4/4) silt in the southwest corner, with a few small gravels. A uniform yellowish-brown silt (10YR 5/4) was encountered at the base of the unit (Figure 25). A total of 107 artifacts were recovered from TU 1, the bulk of which were recovered from the surface levels. Only 25 artifacts were recovered from the first five levels, which largely represent the excavation of the dugout cabin wall, including wood and nails (both cut and wire), can fragments, shovel fragments, and two fragments of a CBGS utilitarian vessel. A total of 82 artifacts were recovered from levels 6-8, which represents the surface levels in the bulk of the unit. This included a fragment of a Winter Green cup, can and bottle fragments, nails, sheet metal, and clay likely used as chinking.



Figure 24. View west of the TU 1 excavation in progress. The steep slope of the unit can be seen where it abuts into the bermed wall. TU 2 can be seen in the background.



Figure 25. View south of TU 1 at 80 cm below datum. Portions of the wooden logs can be seen on the back (south) and right (west) side of the unit. The rocks in the foreground are part of the collapse from the rock feature. Part of a shovel (the step) is protruding from the east sidewall.

TU 2 (Feature A)

Prior to SOULA's work at the site, the PIT project carefully removed the vegetation and duff from the rock feature. As it was cleared, a distinct hearth / firebox area could be seen within the feature, supporting its use for cooking (Figure 26). MNF divided the hearth box into two halves (left half and right half), and screened the duff and surface soils that they removed as part of exposing the feature. A total of 93 artifacts were recovered from the feature exposure. After the feature was cleared and mapped, SOULA placed a 1 m by 1 m unit over the hearth area (TU 2), the northwest corner of which was 4s/4.45e on the site grid. The unit was then excavated using 10 cm levels. Rocks that appeared to be in their original location within the hearth were left in place during the excavation, allowing us to observe that despite the fact that there was some collapse, the main hearth feature was still intact. The excavations revealed the hearth / firebox was constructed using flat upright stones and faced into the cabin (to the east) (Figure 27). Large upright stones on the north and south of the firebox held up a flat stone that may have been used to support a wok or serve as a cooking surface (Figure 28). This stone was displaced in the collapse, but was recovered from in front of the two vertical supports. The sediments removed from the unit consisted of dense layers of ash and charcoal, underlaid by a distinct transition to the native soil. Soils within the hearth were screened separately.

A total of 557 artifacts were recovered from the controlled excavation levels. This included a robust faunal assemblage (n=263), as well as tableware, cans and bottles, miscellaneous metal, a ball clay pipe, and structural materials including wire and cut nails, and wood.



Figure 26. View west of TU 2 after MNF cleared the surface duff and collapsed rocks.



Figure 27. Plan view of TU 2 with the excavation in progress. The left image shows both in situ and collapsed rocks, and the right image shows the intact portion of the firebox. The “outside” portion of the hearth is down to native soil, and the inside still has the ashy charcoal matrix.



Figure 28. TU 2 at 110 cm below datum, with native soil visible across the floor of the unit. Note that the upright stone at the edge of the firebox is still present at this level indicating an intentional placement within the native soils during construction of the feature.

TU 3

TU 3 was placed outside of the dugout cabin footprint in an area where rubber boot fragments were concentrated (northwest corner on grid 2s/9.5e) (Figure 29). Soils within the unit consisted of a brown silty ash (10YR 3/4) transitioning to a uniform yellowish-brown silt (10YR 4/4) prior to its termination at 40 cm below datum (Figure 30). The unit surface sloped to the east. A total of 41 artifacts were recovered from the unit, the bulk of which was recovered from the surface layers. Of this, more than half (66%) were boot fragments, with a small cut nail assemblage (n=9), amber bottle glass, and miscellaneous metal making up the remainder of the assemblage.



Figure 29. View east of TU 3 in progress.



Figure 30. View north of TU 3 at 40 cm below datum.

Happy Camp Site 06040300322 Feature A Artifact Assemblage

A total of 1,174 artifacts were recovered from the Happy Camp Site 06040300322. The bulk of the assemblage (70%) was recovered from Feature A. Due to the discrete nature of the rock pile and hearth, the artifact assemblage from that feature will be presented separate from the remainder of the assemblage. Only one precontact item was recovered, consisting of an obsidian flake found level 8 of TU 1. In addition to the material recovered from the excavations, a total of 180 surface artifacts were GPS'd and selected diagnostics were collected. The bulk of the surface artifacts consisted of can fragments, but cast iron stove parts, shoe, and bottle fragments were also observed. A vertical distribution of the artifacts by unit is presented below in Table 3. A small assemblage of items (n=19) recovered in the 1980s is also presented below.

Table 3. Vertical distribution of Happy Camp Site 06040300322 artifacts by unit.

Unit	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	Notes
TU 1									The distribution shown here is misleading, as the western side of the unit was up to 50 cm higher than the remainder of the unit.
P	0	0	0	0	0	0	0	1	
H	14	3	1	1	6	34	42	5	
TU 2	148	248	156	5	/	/	/	/	93 artifacts were recovered during the MNF feature exposure and are not reflected here. Controlled excavation within TU 2 began at 70cm below datum and terminated at 110cm.
TU 3	18	23	0	0	/	/	/	/	
<i>Total</i>	<i>180</i>	<i>274</i>	<i>157</i>	<i>6</i>	<i>6</i>	<i>34</i>	<i>42</i>	<i>6</i>	

Unless otherwise noted, all counts represent historic-era items.

TU 2/ Feature A Artifact Assemblage

A total of 825 artifacts were recovered from the Feature A clean-up and TU 2 excavation. Faunal material made up 52% of the assemblage, followed by cans and container glass, and a relatively modest structural assemblage.

Artifacts Assigned to the Activities Functional Category

Two artifacts were assigned to the Activities functional category, consisting of a triangle file (Figure 31), and what could be a rib to an umbrella.



Figure 31. Triangle file recovered from Feature A (*specimen 2018.10-1554*).

Artifacts Assigned to the Domestic Functional Category

A total of 16 artifacts were assigned to the Domestic functional category, consisting of two CBGS utilitarian vessel fragments assigned to **Food Storage** and 14 fragments of mín yáo ware assigned to **Food Preparation and Consumption** group, consisting of Winter Green bowl fragments (MNI 2) (Figure 32).

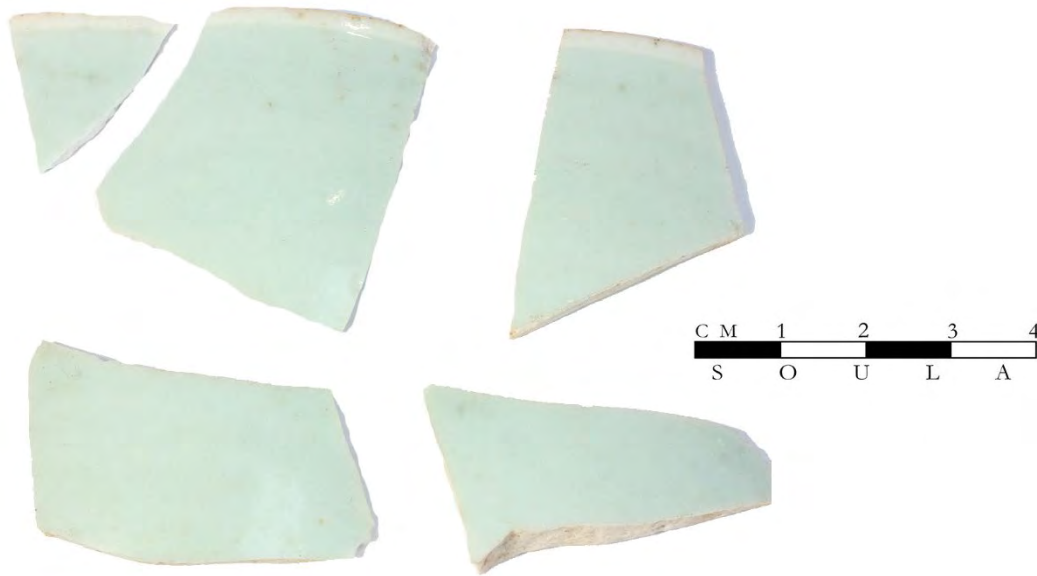


Figure 32. Winter Green bowl fragments. From top left: rim fragments (*specimen 2018.10-1529, specimen 2018.10-1527*), Bottom, from left: body fragments (*specimen 2018.10-1528, specimen 2018.10-1526*).

Artifacts Assigned to the Indefinite Use Functional Category

A total of 246 artifacts were assigned to the Indefinite Use functional category. This included 222 **Miscellaneous Container** fragments, representing cans (n=180), amber and colorless glass bottles, as well as ferrous and colorless glass container fragments. A total of 20 **Miscellaneous Metal** items were recovered, consisted of wire, sheet metal, metal strapping, and cast iron. The remainder of the assemblage was comprised of flat glass.

Artifacts Assigned to the Personal Functional Category

A total of 49 artifacts were assigned to the Personal functional category. Of this, nine artifacts were placed in the **Clothing** group, and consisted of fasteners such as a ferrous “Mode de Paris” button, rivets, a snap, and two suspender clips (Figure 33). This represents the entirety of the clothing fasteners recovered from the site. **Footwear** items (n=40) included hobnails, eyelets, as well as leather and rubber fragments. A ball clay tobacco pipe stem was recovered from the **Social Drugs** group (Figure 34).



Figure 33. A sample of the clothing fasteners recovered from Feature A. From left: Suspender clips (*specimen 2018.10-1553*, and *specimen 2018.10-1562*). Top row, from left: Mode de Paris button (*Specimen 2018.10-1575*), ferrous stem button (*specimen 2018.10-1543*), rivet with fabric (*specimen 2018.10-1541*). Bottom row, from left: riveted button (*specimen 2018.10-1552*), alloy rivets with fabric (*specimen 2018.10-1540*, *Specimen 2018.10-1542*) and an alloy snap button (*specimen 2018.10-1574*).



Figure 34. Ball clay tobacco pipe stem (*specimen 2018.10-1620*).

Artifacts Assigned to the Structural Functional Category

A total of 68 artifacts were assigned to the Structural functional category. This included over 60 **Hardware** fasteners, representing six cut nails and 56 wire nails. The remainder of the assemblage was comprised of wood.

Artifacts Assigned to Other Categories

Other items in the TU 2 / Feature A assemblage included nine charcoal and wood samples and 435 faunal specimens. Five soil samples, totaling 5.8 liters of soil, were sent to Virginia Popper at University of Massachusetts, Boston for macrobotanical analysis (Appendix A). During this analysis, a small assemblage of seeds, charcoal, and plant remains were observed. No cultivated plants were recovered, and only one edible species, *Vaccinium* spp. (mountain or big huckleberry), was identified. The remainder of the assemblage reflected the local vegetation (both trees and understory shrubs and plants).

A total of 435 faunal specimens (weighing 186.92 grams) were recovered during the field excavations as site Happy Camp Site 06040300322. The bones were identified to the lowest taxonomic group using SOULA's in-house comparative collection, along with a number of reference manuals and online resources (see Beisaw 2013; Adams and Crabtree 2012; Smart 2009; Olsen 1990, 1968; Wheeler and Jones 1989; Cannon 1987). Each specimen was also identified to element, where possible, and any diagnostic markings associated with butchering or preparation were also recorded along with if the specimens had been burned or were calcined.

All of the faunal material recovered from the site were from unit TU 2 (Table 4). Six specimens were recovered during the initial feature cleanup, and the majority of the materials recovered were from Level 1 (32%; nisp=138) and Level 2 (49%; nisp=213) with only 17% (nisp=76) being recovered from Level 3, and two individual specimens from Level 4.

Of the 435 individual specimens recovered, 372 were categorized as mammal and 63 as bird. However, fragmented eggshell made up 75% of the identified bird specimens by count, which skews the representation of bird within the assemblage. Overall, the recovered faunal material was in poor condition and relatively undiagnostic. This is in part due to the poor preservation conditions, and the fragmented and calcined nature of the specimens. These combined effects made the identification of the materials difficult beyond broad taxonomic categories. A partial mandible and a metapodial identified as a species of artiodactyl make a notable exception and could represent a native species of goat/sheep, such as pronghorn antelope or bighorn sheep, or a domesticated species of goat/sheep (Figure 35). Two tooth fragments and a single phalanx were identified as domesticated pig (*Sus scrofa*), and the remainder of the specimens consisted of medium mammal (nisp=141) and unidentified mammal (nisp=226).



Figure 35. Sample of the faunal specimens recovered from TU 2. From top: Artiodactyl mandible (*specimen 2018.10-1595*), Artiodactyl metapodial (*specimen 2018.10-1578*), unidentified calcined and burned bone and pigs' teeth (*specimen 2018.10-1640*), unidentified bird bone (*specimen 2018.10-1637*).

The 16 fragments (non-eggshell) identified as bird were grouped into a medium bird category. This size range is generally associated with chicken- or duck-sized birds and could represent a variety of domesticated or wild birds. The presence of eggshell at the site may indicate that chickens or other domesticated egg laying species were being raised on site for egg production as well as meat.

Table 4. Faunal specimens recovered from Happy Camp Site 06040300322 by taxon and element.

Taxon/Element	NISP	Weight (g)
Bird	63	2.02
Medium bird	16	1.32
diaphysis	7	0.50
phalanx	2	0.24
tarsometatarsus	1	0.04
unidentified fragments	6	0.54
Unidentified bird	47	0.70
eggshell	47	0.70
Mammal	372	184.90
Artiodactyl	2	64.20
mandible	1	43.80
metapodial	1	20.40
<i>Sus scrofa</i> (Domestic pig)	3	3.20
phalanx	1	1.10
teeth	2	2.10
Medium mammal	141	90.90
rib	7	4.80
unidentified fragments	130	82.60
vertebra	4	3.50
Unidentified mammal	226	26.60
unidentified fragments	226	26.60
Grand Total	435	186.92

The Remaining Happy Camp Site 06040300322 Artifact Assemblage

The following will describe the remaining artifact assemblage, which was recovered from TU 1 and TU 3, and represents the recorded surface artifacts. A total of 328 artifacts were recovered from these site components, 55% (n=180) of which were the GPS'd surface finds.

Artifacts Assigned to the Activities Functional Category

A total of six items were assigned to the Activities functional category. This included two handmade grizzly fragments (Figure 36), penstock, and two shovels assigned to the **Tools** group (Figure 37), and a 20th century graphite pencil assigned to the **Writing** group, which is likely an intrusive artifact from the subsequent occupation associated with the railroad (Figure 38).



Figure 36. An oil can modified into a grizzly fragment, front and back (*specimen 2018.10-1765*) mapped with the GPS surface finds (GPS 92). This artifact was not collected.



Figure 37. A shovel “step” recovered from TU 1 (*specimen 2018.10-1501*).

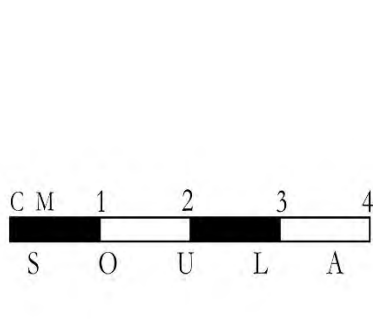


Figure 38. Graphite pencil (*specimen 2018.10-1507*).

Artifacts Assigned to the Domestic Functional Category

A total of 17 items were assigned to the Domestic functional category. This included oil, meat, and evaporated milk cans, and two modern soda bottles placed in the **Food** group, one ferrous metal pan (Figure 39), and one fragment of a Winter Green cup placed in the **Food Preparation and Consumption** group. One fragment of a CBGS vessel and a lunch pail made from a modified coffee can were assigned to the **Food Storage** group.

Other Domestic items included a mattress spring associated with **Furnishings**, part of an enamelware wash basin associated with **Laundry**, and aqua chimney glass, cast iron stove parts, and a Pearl Oil can associated with **Heating and Lighting** (Figure 40). Pearl Oil was a highly refined cook stove and lamp oil made by the Standard Oil Company. The Standard Oil Company had a bulk plant in Baker City by 1920, but prior to that the fuel needed to be imported from California (Smith 2022).



Figure 39. From left: ferrous metal pan (*specimen 2018.10-1755*) and a cast iron stove door (*specimen 2018.10-1690*). These items were GPS'd and left in place.



Figure 40. Oil can recovered from the site (*specimen 2018.10-1796*).

Artifacts Assigned to the Indefinite Use Functional Category

A total of 205 items were assigned to the Indefinite Use functional category. As was seen across the archaeological project areas, the assemblage was dominated by cans placed in the **Miscellaneous Container** group (n=87) (Figure 41 and Figure 42). Other containers that could not be identified to contents or function included bottles in amber, amethyst, aqua, and colorless glass, as well as an amethyst glass jar. **Miscellaneous Metal** items (n=57) included metal strapping, wire, sheet metal, can handles, and ferrous metal mesh. Other items in the assemblage included burned earth or bisque (n=24), recovered in TU 1, that may represent chinking or part of the structure (Figure 43).



Figure 41. Two views of a cylindrical can with a threaded rim finish (*specimen 2018.10-1500*).



Figure 42. Can lids (*specimen 2018.10-1557* and *specimen 2018.10-1556*).



Figure 43. A sample of the burned earth or bisque recovered from TU 1 that could represent chinking used in the structure (*specimen 2018.10-1523*, *specimen 2018.10-1525*).

Artifacts Assigned to the Personal Functional Category

A total of 74 items were assigned to the Personal functional category. This included 64 **Footwear** fragments consisting of rubber and leather boot pieces, along with hobnails and eyelets (Figure 44- Figure 46). An enamelware washbasin was placed in the **Grooming and Health** group, and the remainder of the assemblage was placed in the **Social Drugs** group. This included two amber beer bottles (one being a modern Budweiser “Beechwood” bottle), and two amber glass bitters bottles. Three opium can fragments and three tobacco cans were also recovered.



Figure 44. A sample of the boot soles recovered from the site (*specimen 2018.10-1666* and *specimen 2018.10-1686*).



Figure 45. A sample of the footwear items recovered from the site. From left: boot leather and eyelets (*specimen 2018.10-1573*), rubber boot fragment (*specimen 2018.10-1596*), hobnails (*specimen 2018.10-1592*).



Figure 46. A sample of the rubber boot fragments recovered from the site (*specimen 2018.10-1665*, and *specimen 2018.10-1659*).

Artifacts Assigned to the Structural Functional Category

A total of 24 artifacts were assigned to the Structural Functional Category. This included cut (n=13) and wire nails (n=7) assigned to the **Hardware** group, and pane glass and wooden logs assigned to the **Material** group (Figure 47).



Figure 47. A sample of the Structural materials recovered from the site. From left: wire nails (*specimens* 2018.10-1532, 2018.10-1533, 2018.10-1535), wood (*specimens* 2018.10-1546, 2018.10-1545).

Artifacts Assigned to Other Categories

Other items in the assemblage included a single obsidian flake (Figure 48) and a single charcoal sample.

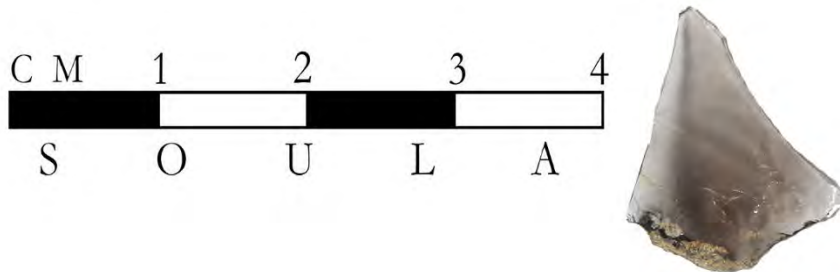


Figure 48. Obsidian primary flake with cortex (*specimen* 2018.10-1524).

Malheur National Forest 1980s Assemblage

In addition to the above assemblage recovered during the 2018 SOULA and PIT project, a small cache of previously collected materials was found in storage by Don Hann. These items are believed to have been collected in the 1980s by MNF staff, and a selection of them were sent to SOULA to be included in this project and will be presented below. A total of 18 artifacts representing 13 items were sent to SOULA for analysis. Of these, two items were assigned to the Domestic functional category, including a body fragment from a CBGS food storage vessel and the base of a colorless glass lamp chimney (Figure 49). A rectangular oil can lid (Figure 50) and a flattened can modified to serve as a vegetable grater also reflect Domestic activities at the site (Figure 51). Personal items included a “cage stud” snap button patented on June 11, 1889 (Figure 52), a ball clay tobacco pipe stem, burnished redware and grayware opium pipe bowls, and a minimum of two CBGS alcohol jars (Figure 53). Of particular interest is an item manufactured from a flattened opium can, two wire nails, and a piece of wood (Figure 54). Its intended function has yet to be identified.

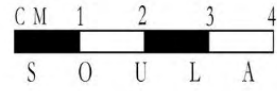


Figure 49. Colorless glass lamp chimney base (*specimen 2018.10-1770*).

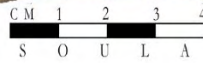


Figure 50. Top panel of a rectangular oil can (*specimen 2018.10-1771*).

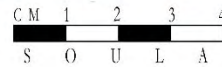
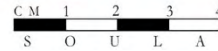


Figure 51. Front and back image of the flattened can modified into a grater (*specimen 2018.10-1772*).

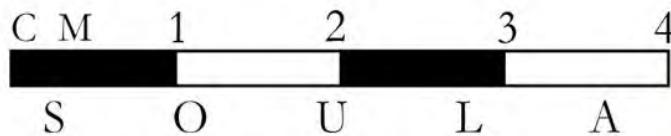


Figure 52. Patented "Cage Stud" snap button with embossed patent date of "PAT June 11 1889."



Figure 53. Left: Opium pipe bowls in redware (*specimen 2018.10-1774*) and grayware (*specimen 2018.10-1775, 2018.10-1776*) pastes. Right: CBGS vessels. From top left: food storage vessel (*specimen 2018.10-1782*), two refitted alcohol jar body fragments (*specimen 2018.10-1779*). Bottom: three refitted alcohol jar base fragments (*specimen 2018.10-1782*), two refitted fragments of an alcohol jar base (*specimen 2018.10-1778*).



Figure 54. Multiple views of the modified opium can container. The item has been flattened and fitted with two intentionally bent wire nails and a oval wood fragment.

Summary of Findings at the Happy Camp Site 06040300322

SOULA conducted archaeological excavations at the Happy Camp Site 06040300322 in 2018. The project included a surface survey and the excavation of three (3) 1 m by 1 m units, leading to the recovery of 1,174 artifacts. The investigations supported the earlier assessment that the site consisted of a late-19th century domestic occupation associated with nearby mining.

Our work at the site focused on the dugout cabin. Visible surface features suggest that the cabin would have measured roughly 16' by 14' feet, with a rock feature on the western end. Excavations revealed that this feature faced into the cabin, and served as a cooking hearth. It was constructed in a manner similar to modern 'rocket stoves' with a well-insulated firebox that allowed

for the maximization of heat and efficiency from a small fire. Also of note, is that all of the clothing remains were recovered from within the rock feature. This could suggest the warm rocks were being used to dry clothing or that discarded clothing was being used as fuel.

The other site component of note was the high number of boots. They were observed in both rubber and leather, and many had hobnails added to the heel for traction (Figure 55). Lee (2020:78) observed “boot tacks” for sale in the Kam Wah Chung and Company store ledgers, reflecting the ways in which mass produced EuroAmerican footwear was being modified to serve the miners need for additional traction when working in wet and muddy conditions. These artifacts were observed at other sites on the forest, some of which are presented in this report, as well as the Shanghai Gulch Site in Baker County (Lee 2020:78; Steeves 1984).



Figure 55. A boot heel with nails added for increased traction. Surface find GPS 67, not collected.

The faunal material recovered from the site was highly fragmented and dominated by calcined fragments. The identifiable specimens indicate that domesticated pig was being eaten at the site and potentially domesticated bird, such as chicken, is suggested by the eggshell present within the assemblage. The Artiodactyl could represent native species of antelope but could also be a domesticated sheep/goat. Additional DNA analysis would be needed to further identify the specimens grouped within this category given the similarities between the species.

Within the Happy Camp Site (06040300322) assemblage the fragmentary nature of the bones is likely a result of similar processing techniques which have been documented within Chinese

migrant assemblages across the west coast. For instance, pigs have been documented as being purchased whole by Chinese individuals or groups and then processed in a traditional method of quartering and smoking them for preservation. The larger portions are then processed as needed for individual meals and bone broth production. This would leave the specimens with secondary processing evidence, such as bones that have been both sawn and chopped and potentially with patina from boiling them. The high quantity of fragmented and calcined specimens is likely a result of these food preparation practices.

Ah Heng 亞慶 Mining Complex Site 06040300020

The Ah Heng Site 06040300020 is located on a major southwest-draining tributary of the Middle Fork John Day River several miles downstream from the Happy Camp and Ah Yee sites. The Ah Heng Company leased the mining claim and associated ditches and equipment from two EuroAmerican miners named A.K. Jackson and J.A. Wallace of Grant County on May 31, 1887 for \$4,000 for a term of six years (representing over \$100,000 in today's money). The six-year lease covered seventeen acres and included the following associated property: one mining ditch, all flumes, sluices, drains and a log cabin. Newspaper accounts reported that the men “cleaned up and ‘vamoosed’ the ranch” by June of 1888 (*Grant County News* 5 June 1888). However, the archaeological signature suggests that the site was occupied for more than one season, perhaps indicating that there was a pause in activities, the newspaper account was incorrect, or multiple mining companies worked the site over time.

The Ah Heng Site 06040300020 was first recorded by MNF in the 1990s. At that time, the structural remains of four buildings were observed and described based on the presence of wood and artifacts. Evidence of looting was also observed at this time. The site has since been further inventoried as part of a large mining landscape that contains both domestic and industrial activity areas associated with the Chinese occupation of the site. Despite that fact that gold mining continued in the vicinity into the 1980s, intact portions of the historical Ah Heng mining complex remain as a testament to the investment by the company, in particular, the areas near the head of the mine. Penstock, a ditch network and one of the largest earthen dams in the area remain, along with the wide flat valley below the dam, which was created when the gold-bearing gravels were washed away. The site has been interpreted for the public through a virtual tour and story map.

SOULA worked at two locations within the Ah Heng mining complex. As they both are designated as part of Site 06040300020, they are described as Ah Heng I and Ah Heng II below. Investigations occurred at the Ah Heng I site component in 2018 and 2019, and testing occurred in Ah Heng II in 2019. Both field seasons were done in conjunction with a PIT project directed by MNF archaeologists (Hann and Rose 2018; Withee 2019). While the investigations were focused on habitation sites, the remains of a blacksmith shop were uncovered at the Ah Heng I site during the 2019 work.

Ah Heng I (Site 06040300020)

Ah Heng I Site 06040300020 is located at the base of a northwestern facing slope of the Blue Mountains on the south side of a drainage of the Middle Fork John Day River. The site sits on a gently sloping terrace between two drainages and contains stands of dense timber punctuated by small open meadows. The soils for this area are listed as a Meaufun-Sharpridge-Humarel complex (map unit 3418AO). This soil type is associated with mountain slopes with a 0-15% slope and has a typical soil profile consisting of a thin layer of decomposing plant material followed by one to 14 inches of ashy loam, 14 to 19 inches of sandy clay loam, 19 to 33 inches of clay, 33-60 inches of clay loam, and then bedrock (NRCS 2022). The soils consist of a thin mantel of volcanic ash related to the eruption of Mount Mazama over colluvium and residuum derived from andesitic and basis tuff (NRCS 2022).

SOULA conducted archaeological investigations within the Ah Heng I site component in 2018 and 2019 (Figure 56 and Figure 57). As with the other sites, the 2018 work followed vegetation

clearing and metal detection surveys conducted by the MNF and the PIT volunteers. SOULA then established a testing grid with QTUs placed at 5 m intervals (QTU 1-QTU 13). A single 1 m by 1 m unit (TU 1) was excavated in an area that appeared to be within a cabin feature. These excavations indicated that a rich and complex archaeological deposit was present across the Ah Heng I site. The metal detection survey also identified a dense cache of ferrous artifacts to the east of the habitation area, which appears to represent a discrete location where broken tools and scrap metal was being stored and repurposed for other uses.

In 2019, SOULA returned to the site and continued excavations in TU 1, and excavated an additional four QTUs (QTU 14-QTU 17) in areas not covered by the first round of testing. In addition, a 5 m by 6 m wide exposure surface scrape was established over the concentration of shovels and metal items identified in 2018. Once the duff was removed, a single 1 m by 1 m test unit (TU 2) was placed over an area believed to have a high concentration of artifacts related to the activities in this part of the site.

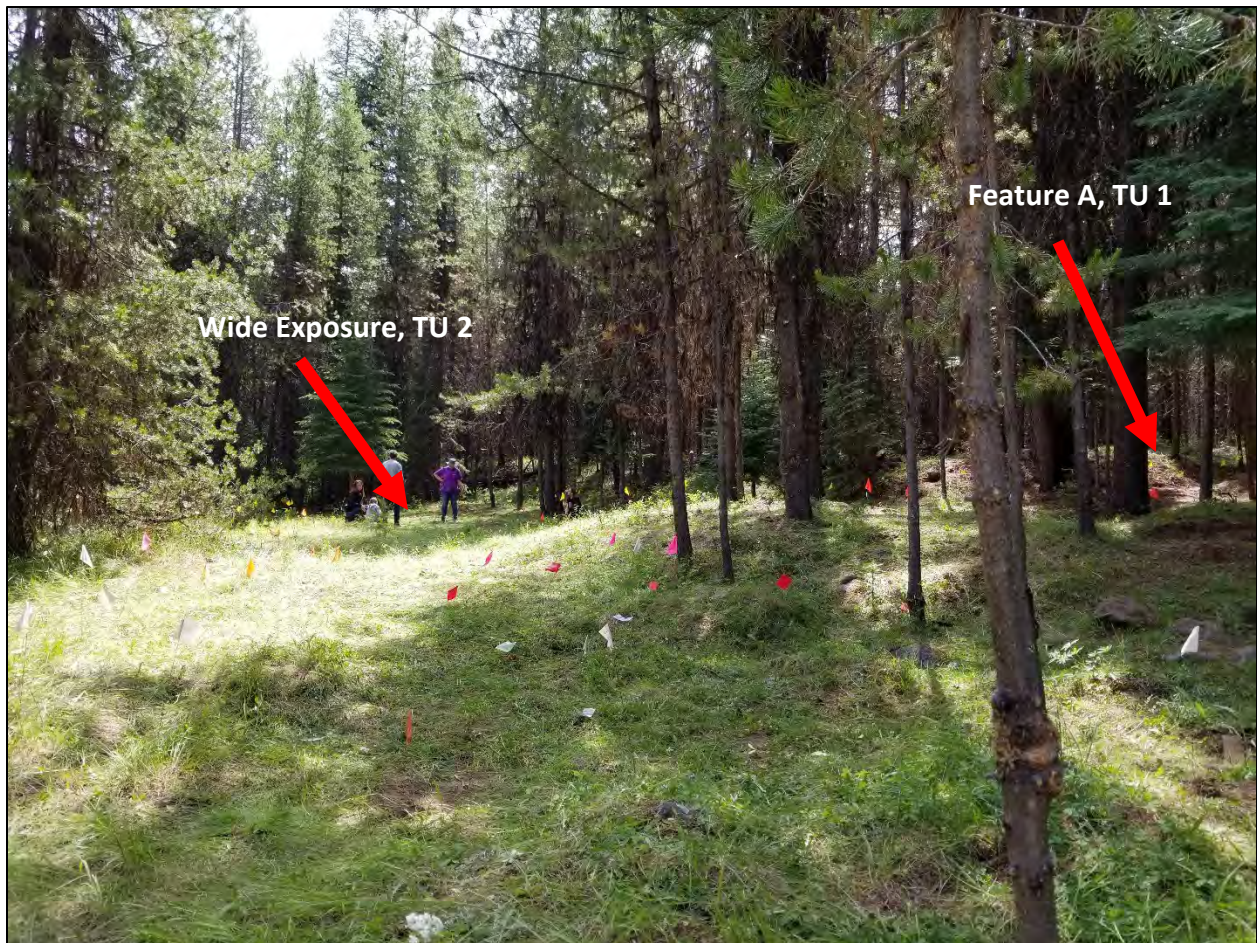


Figure 56. View east across Ah Heng I with excavation areas noted.

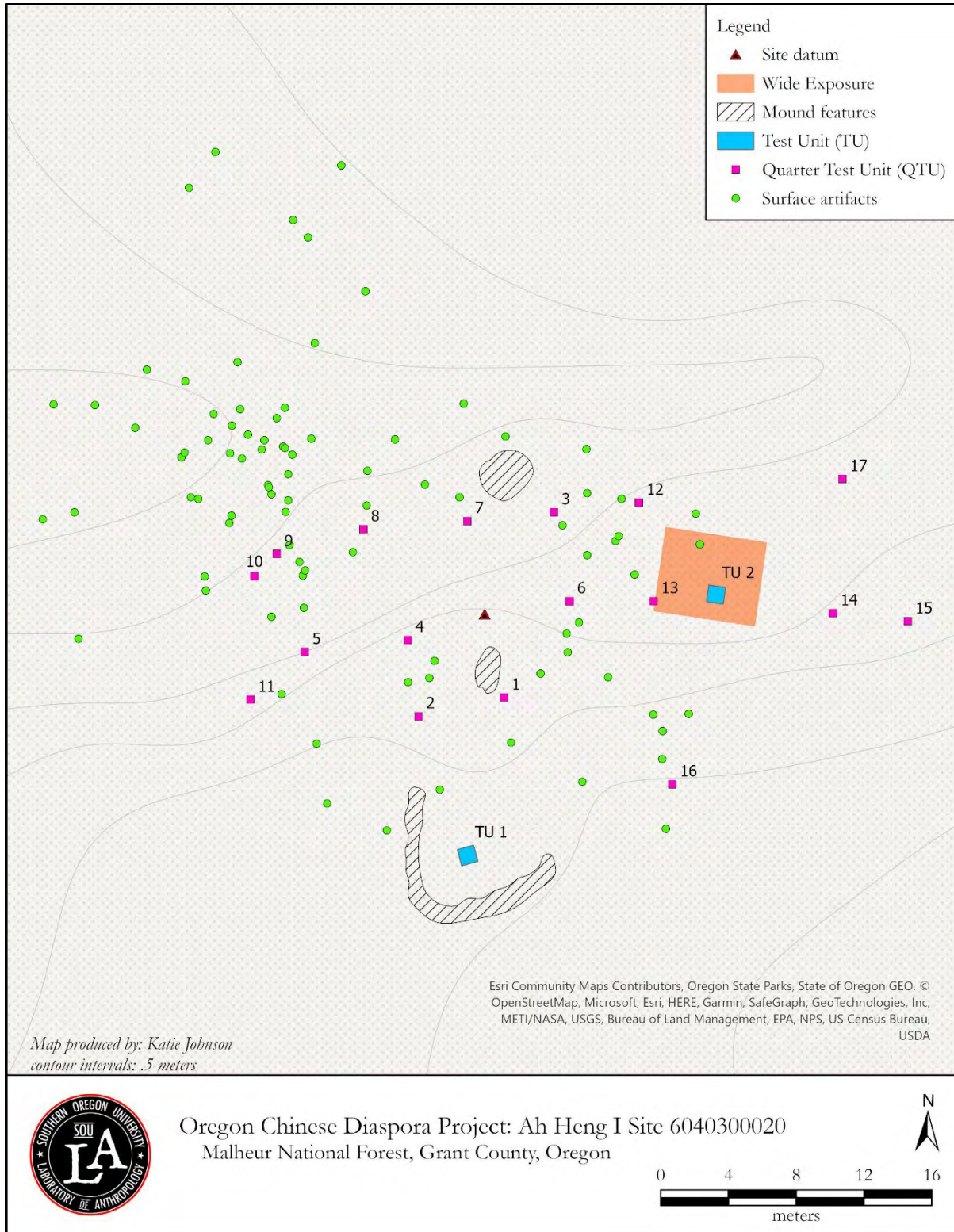


Figure 57. Ah Heng I site map with features and excavation units noted. The surface artifact concentration on the northwest side of the site was associated with items eroding from the upper terraces where the site was located in a seasonal drainage.

TU 1

TU 1 excavations began in 2018, in an area designated as “Feature A,” which included a rectangular cut surrounded by a shallow ditch or depression (Figure 58). This is presumably the location of the main cabin associated with the site. The unit was placed near the south side of the cut, about 1.2 m north of the center of the ditch and 2.35 m east of the western ditch. The surface of the unit sloped down to the north. The top 40 cm were excavated in 2018. As the feature deposits were substantial, the unit was returned to as part of the 2019 field season. Soils within the unit consisted of a moderately compact brown (10YR 5/3) fine silty sand with roughly 5% gravels, transitioning to a mottled brown silt loam with pockets of dark brown (10YR 4/3) and dark yellowish brown (10YR 4/4) at roughly 40 cm below datum. The unit was terminated at 70 cm below datum (60 cm below surface), which was a full 10 cm into a dark greyish brown (10YR 4/2) silty, fine-sand subsoil.

Excavations suggested that Feature A represented the remains of a cabin. A 12” wide by roughly 6” thick piece of structural wood was encountered at 40 cm below datum, and it appeared to represent either a rough cut squared off timber or a split log (Figure 59). Machine cut nails were found embedded into the timber, in an orientation that suggested that it was not an in situ floorboard but rather a collapsed part of the structure. The beam was on top on another timber, measuring roughly 8” by 4” and both were sitting on the occupation surface, which included alcohol bottles and opium paraphernalia, faunal remains, and a few personal items within a rich dark brown silt loam (Figure 60 and Figure 61). A total of 441 items were recovered from TU 1. The modest assemblage was comprised largely of structural materials such as cut nails, suggesting the structure was built prior to the Ah Heng Company’s occupation in the late 1880s. The assemblage also contains a large amount of opium paraphernalia by count (n=159), but many of the items (cans and paper labels) are highly fragmented and reflect a much smaller MNI.

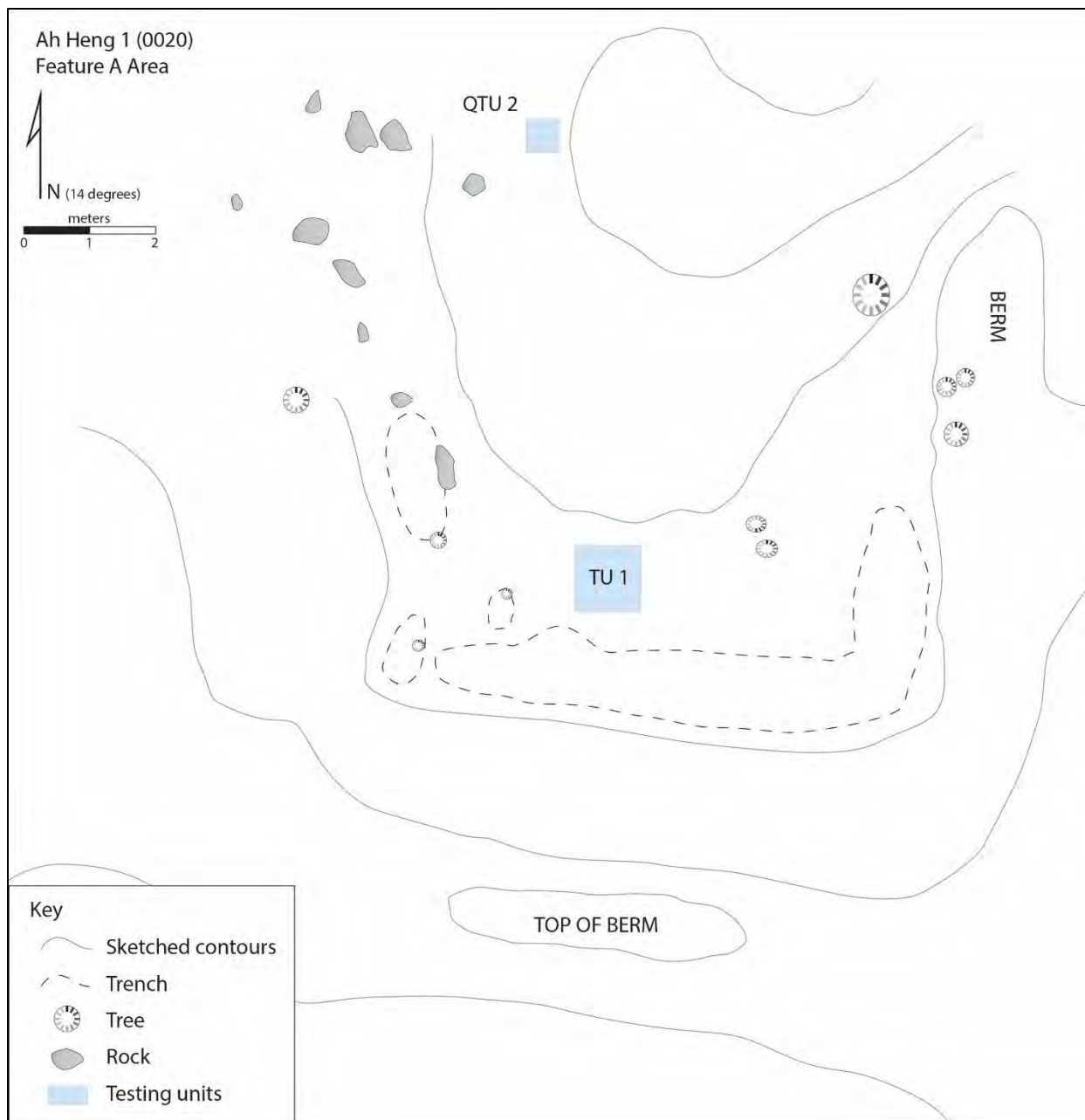


Figure 58. Sketch map of Feature A with excavation units noted. Original illustration by Eric Gleason.



Figure 59. View south of TU1 with the 12" structural timber in situ.



Figure 60. View south of TU 1 at 70 cm below datum (roughly 60 cm below surface).

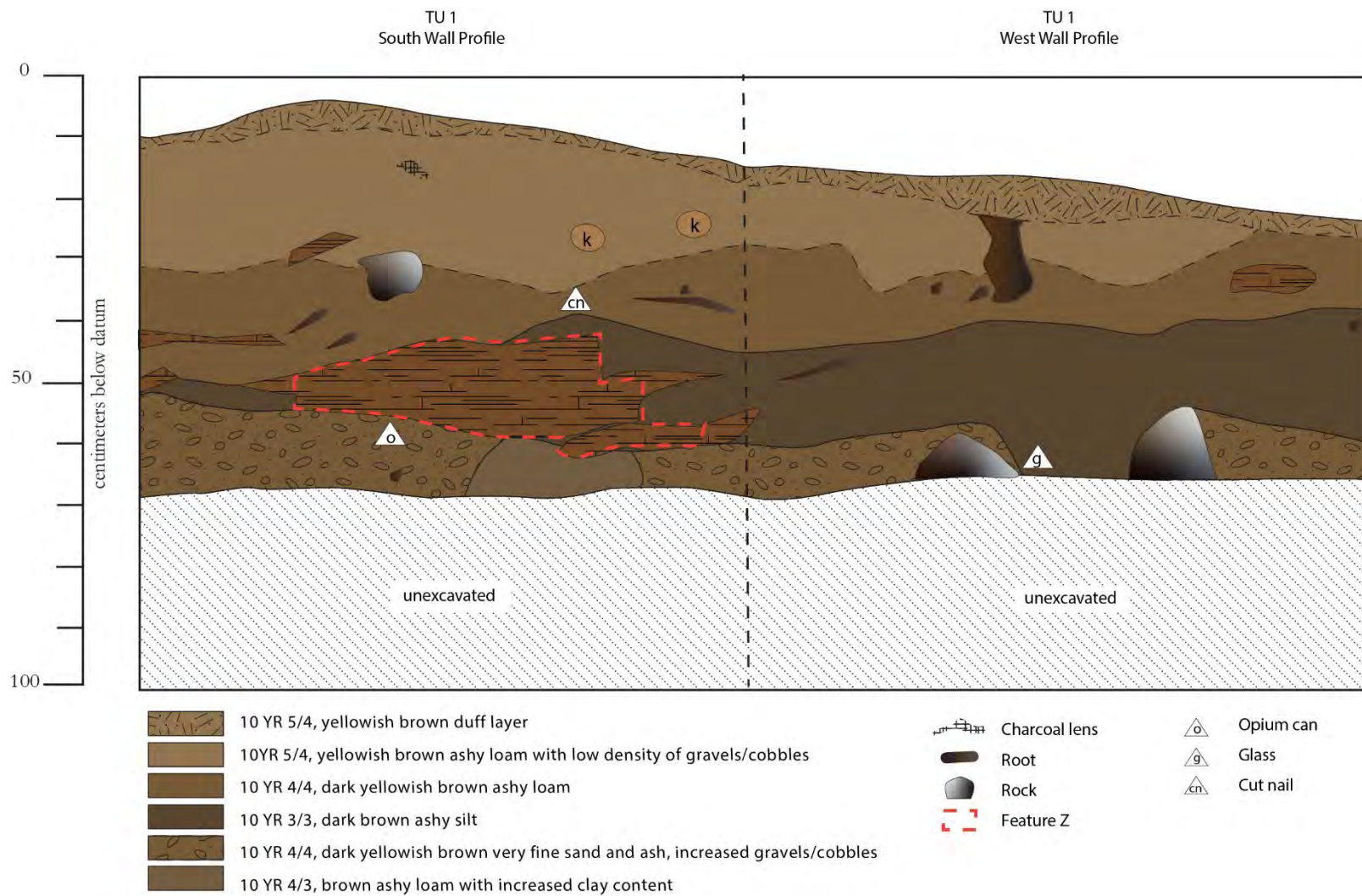


Figure 61. TU 1 south and west wall profile illustration.

The Wide Exposure and TU 2

A 5 m by 6 m Wide Exposure grid was placed in the area where a concentration of metal was discovered in 2018. The Wide Exposure was organized by 1 m by 1 m units, five meters north to south, and six meters east to west (Figure 62). Each unit was then scraped down past the duff layer, and all sediment was screened and the recovered materials were organized by grid unit. Where possible, artifacts were left and mapped in situ. The soils observed in the Wide Exposure scrape primarily consisted of forest duff and a medium brown ashy silt with roughly 10% coarse sand (Figure 63).

TU 2 was placed at N1E3 on the Wide Exposure grid, with the pile of shovels observed in 2018 in the northeast corner of the unit. Soils in the unit consisted of a brown (10YR 4/3) fine sand and ash with less than 5% angular content, transitioning to a lighter brown (10YR5/3) very fine sand and ash mottled with burned/oxidized soil by 40 cm below datum (30 cm below surface) (Figure 64). By 50 cm the soils became increasingly mottled with charcoal staining, burned soils, and a compact undulating surface with burned wood and fire cracked cobbles (Figure 65). The soils in this layer consisted of a dark brown (10YR 3/3) very compact fine sand and ash mottled with a yellowish brown (10 YR 5/6) very fine sand and ash. This layer transitions to a dark yellowish-brown (10 YR 4/4) coarse sand with 70% cobbles and rounded gravels by the termination of the unit at 70 cm below datum (60 cm below surface) (Figure 66 -Figure 68). A total of 2,944 artifacts were recovered from the Wide Exposure units, with 2,280 being recovered from TU 2. While this included tools and tool fragments, structural debris, and some tableware, nearly 30% of the assemblage is comprised of metallurgy waste including coal, slag, and clinker fragments.



Figure 62. View southeast of the Ah Heng I Wide Exposure in progress.

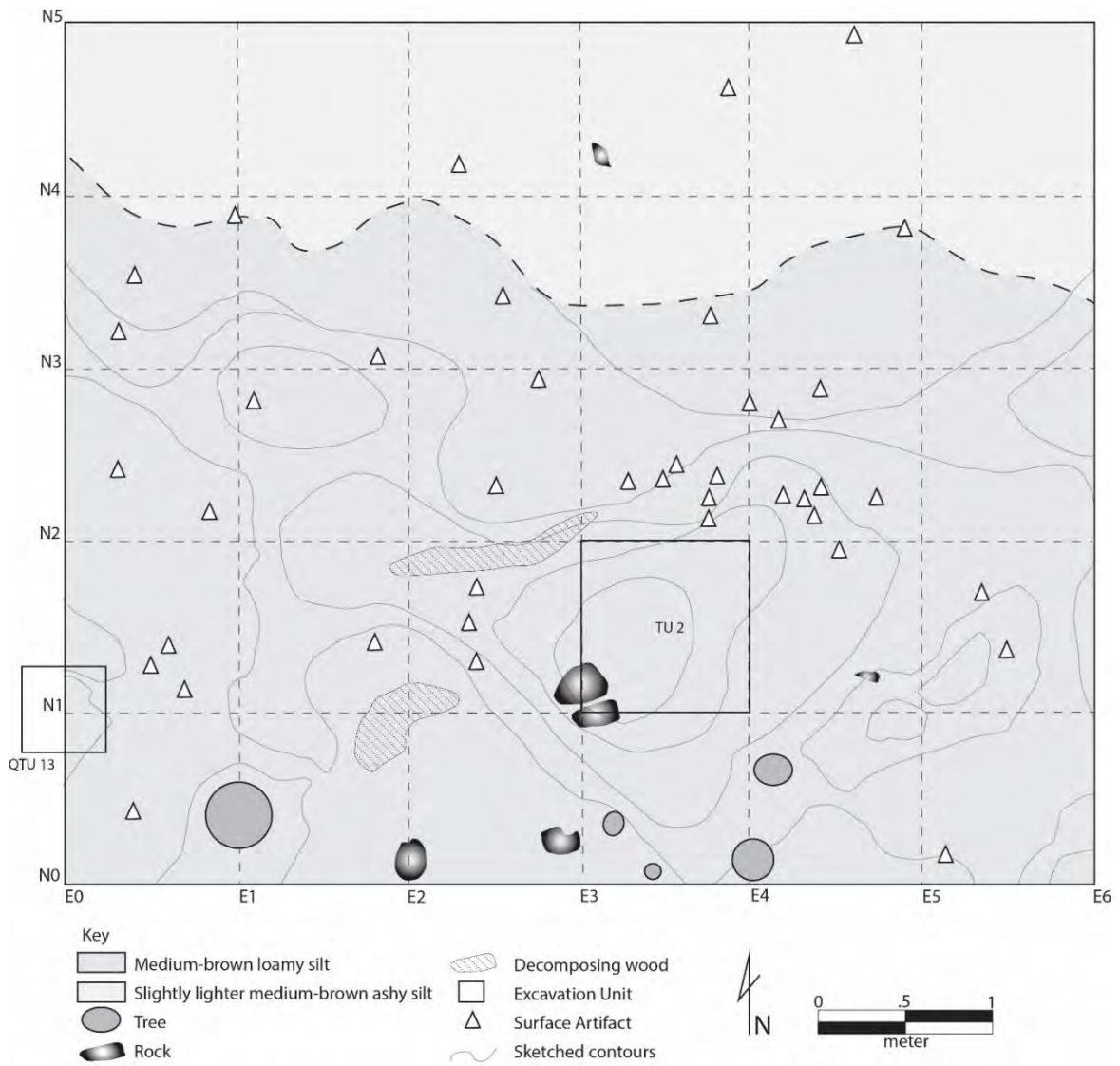


Figure 63. Plan view of the Wide Exposure surface scrape, with artifacts and TU 2 noted.



Figure 64. View north of TU 2 at Level 1 (0-20 cmbd). The shovel pile that originally flagged the feature is pedestalled in the northeast corner of the unit.



Figure 65. View north of TU 2 at 52-56 cm below datum, with the burned wood and heat altered soil visible in Level 5.



Figure 66. View north of the bottom of TU 2 at 70 cm below datum.



Figure 67. View south of TU 2. The Wide Exposure scrape can be seen surrounding the unit.

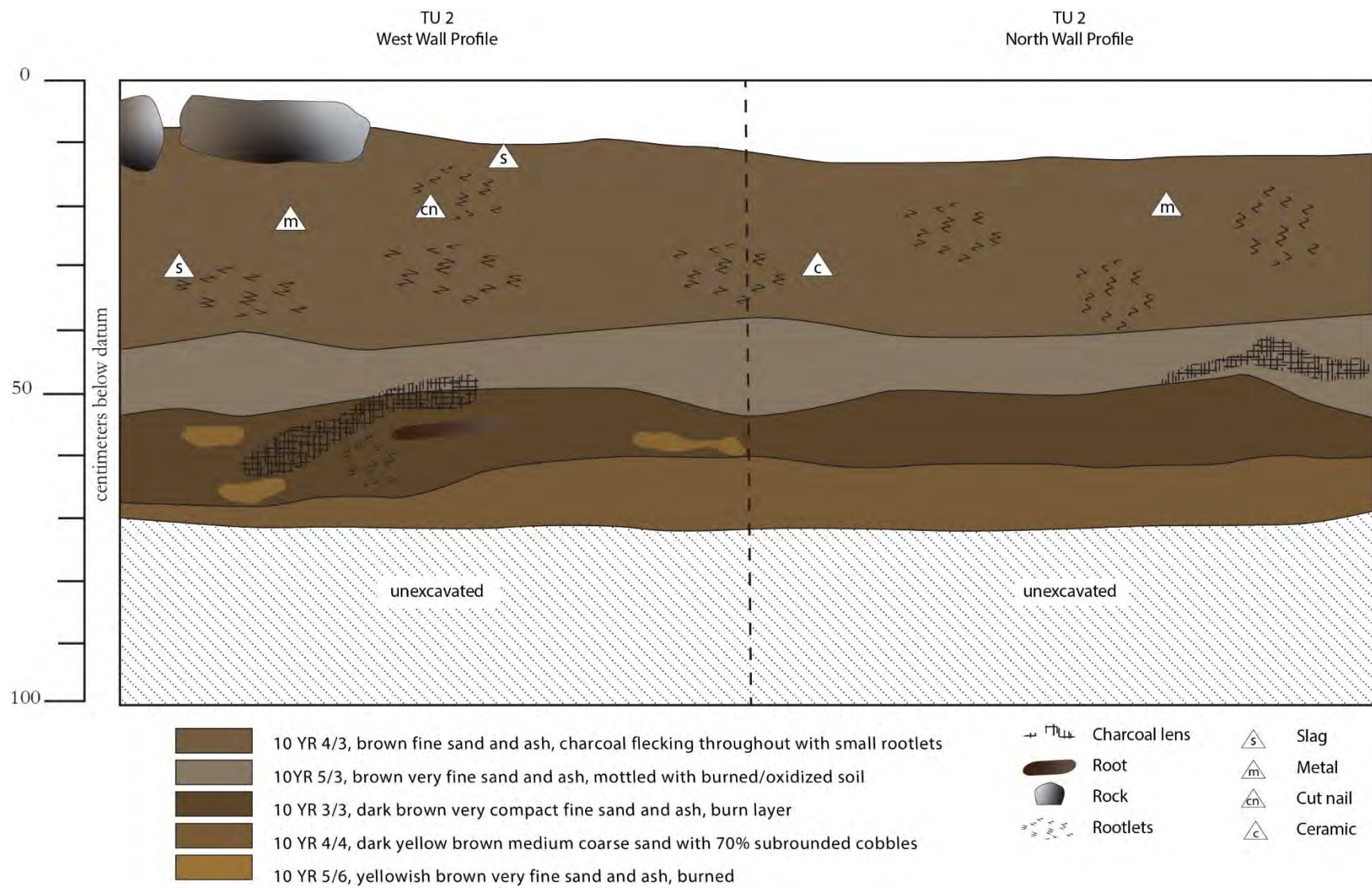


Figure 68. West and north TU 2 wall profiles.

QTUs

A total of 17 QTUs were excavated over the two field seasons. A description of the soils found within each unit can be found below in Table 5. The QTUs were placed roughly 10 m apart somewhat arbitrarily across the site due to landscape features that were either being targeted or avoided. In general, the QTUs captured site noise and highlighted areas where refuse was being disposed of or eroding down the slope from the cabin. The QTUs, paired with the metal detection survey, helped to identify a discrete boundary for the site. A total of 1,053 items were recovered from the QTUs, roughly reflecting the same distribution and type of artifacts visible on the surface.

Table 5. Description of soils observed within the Ah Heng I QTUs.

Unit	Depth	Soil Description	Notes
QTU 1	0-60	Duff transitioning to a light brown sandy loam, with roots and a trace amount of small rounded gravels.	
QTU 2	0-50	Duff transitioning to brown silty loam (10YR 3/3) with a trace amount of rounded gravels.	
QTU 3	0-60	Dark brown silty loam (7.5YR 3/2) transitioning to very dark brown (7.5YR 2.5/2) with depth. An ashy deposit was observed between 30-50cm.	
QTU 4	0-50	Brown silty loam (10YR 3/3) with trace amount of small gravels.	
QTU 5	0-60	Brown silty loam (10YR 3/3) with trace amount of small gravels.	
QTU 6	0-50	Brown silty loam (10YR 3/3) transitioning to a dark yellow brown (10YR 3/4) sandy silt with trace amount of small gravels.	
QTU 7	0-50	Dark brown (7.5YR 3/2) sandy loam with ~20% rounded gravels transitioning to a dark yellowish brown (10YR 3/4) sand and cobble matrix by 40 cm.	
QTU 8	0-70	Brown sandy loam (10YR 3/3) with roughly 25% rounded gravels, transitioning to a dark yellowish brown (10YR 3/4) sandy loam that appeared to have iron flecking and fewer gravels with depth.	
QTU 9	0-40	Brown sandy loam (10YR 3/3) and ash with ~15% rounded gravels. A compacted layer was encountered at 30 cm and a layer of large cobbles with a dark yellowish brown (10YR 3/4) iron-flecked soil was encountered at 40 cm.	
QTU 10	0-40	Brown sandy loam (10YR 3/3) transitioning to the dark yellow brown (10YR 3/4) sandy loam with iron flecking.	
QTU 11	0-40	Loose brown (10YR 3/3) silty loam with trace amounts of small rounded gravels.	
QTU 12	0-30	Loose brown (10YR 3/3) silt transitioning to a layer of sand and cobbles.	
QTU 13	0-40	Brown (10YR 3/3) silty loam with a small amount of alluvial gravels. The matrix transitions to a dark reddish brown (5YR 3/2) silt with charcoal flecking at roughly 20 cm and turns to dark yellowish brown (10YR 3/6) sand by 37cm.	In southwest corner of the Wide Exposure.
QTU 14	0-50	Brown (10YR 3/3) silty loam with trace amounts of small rounded gravels, becoming mottled with charcoal, dark yellow brown (10YR 3/4) compacted silt and grey clay between 30-40 cm.	
QTU 15	0-60	Brown (10YR 3/3) silty clay loam with increasing sand content beginning at 30cm.	
QTU 16	0-70	Dark yellowish brown (10YR 3/4) silty loam with a trace amount of gravels transitioning to 10YR 3/6.	
QTU 17	0-50	Dark yellowish brown (10YR 3/6) silty loam transitioning to a sandy cobble layer by 20 cm. By 30 cm the cobbles make up >75% of the unit.	

Ah Heng I Artifact Assemblage

A total of 1,312 artifacts were recovered from the 2018 excavations, and 3,263 were recovered during the 2019 excavations. Of these, 148 were GPS'd surface finds, 441 were recovered from TU 1, 2,944 were recovered from TU 2 and the Wide Exposure, and 1,053 were recovered from QTUs across the site. Due to the discrete nature of the deposits in TU 1 and TU 2, representing a cabin and blacksmithing area respectively, the artifact assemblages for these two areas will be presented individually below, followed by the artifacts from the surface and QTUs. A vertical distribution of artifacts is presented by unit in Table 6 below.

Table 6. Vertical distribution of Ah Heng I artifacts within 2018 and 2019 excavation units.

Unit	0-10	10-20	20-30	30-40	40-50	50-60	60-70
TU 1							
P	0	0	0	0	0	1	0
H	551	75	85	36	65	158	7
TU 2							/
P	0	0	1	1	0	0	
H	875	875	586	153	67	43	
QTU 1	0	17	10	1	0	/	/
QTU 2	8	18	4	0	0	/	/
QTU 3	51	33	76	30	1	1	/
QTU 4	4	3	0	0	0	/	/
QTU 5	10	26	47	44	5	/	/
QTU 6	2	2	0	0	0	/	/
QTU 7						/	/
P	0	1	0	0	0		
H	10	3	18	2	3		
QTU 8	9	70	60	35	34	10	4
QTU 9	60	44	26	5	0	/	/
QTU 10	2	6	14	2	0	/	/
QTU 11	7	16	11	10	2	/	/
QTU 12	2	0	0	0	0	/	/
QTU 13	103	61	9	0	0	/	/
QTU 14	2	2	0	0	0	/	/
QTU 15						/	/
P	0	0	0	1	0		
H	0	12	2	0	0		
QTU 16	1	0	0	0	0	/	/
QTU 17	0	0	0	0	0	/	/
<i>Total</i>	<i>1,697</i>	<i>1,264</i>	<i>949</i>	<i>320</i>	<i>177</i>	<i>213</i>	<i>11</i>
	2019 excavations						

Unless otherwise noted, all counts represent historic-era items.

TU 1 Artifact Assemblage

TU 1 was placed within the feature (Feature A) believed to be the remains of a Chinese-occupied cabin. This feature was mapped and excavated over the 2018 and 2019 field seasons. In total, 441 artifacts were recovered from the unit. Although this feature is consistent with a domestic structure, the artifact assemblage is relatively small and limited. This could suggest that more robust deposits remain elsewhere within the cabin footprint. The scatter observed on the surface and

within the QTUs most likely represents household debris associated with this structure and the adjacent blacksmithing activity area.

Artifacts Assigned to the Activities Functional Category

A total of four artifacts were assigned to the Activities functional category. This included two paper cartridge center fire shells, a percussion cap assigned to the **Firearms** group, and a rasp file assigned to the **Tool** group.

Artifacts Assigned to the Domestic Functional Category

No Domestic artifacts were recovered from TU 1.

Artifacts Assigned to the Indefinite Use Functional Category

A total of 43 artifacts were assigned to the Indefinite Use functional category. **Miscellaneous Containers** (n=28) included cans, aqua glass bottle fragments, and containers in aqua and colorless glass. **Miscellaneous Metal** included a tack, rivets, and sheet metal fragments.

Artifacts Assigned to the Personal Functional Category

A total of 203 artifacts were assigned to the Personal functional category, including a button and rivet assigned to the **Clothing** group, 31 **Footwear** fragments including rubber and leather boot fragments, hobnails, and eyelets. A single aqua glass medicine vial was assigned to the **Grooming and Health** group, and the remainder of the assemblage was assigned to the **Social Drugs** group. This included a tobacco pull-tab, fragments of olive glass CBGS alcohol bottles, and 159 artifacts associated with opium paraphernalia (Figure 69). This included pipe bowls in redware (n=31) and greyware (n=11) pastes, opium can and label fragments (n=109), and opium lamp fragments.



Figure 69. A sample of the opium related artifacts recovered from TU 1. From left: opium can fragments (*specimen 2018.10-0525*), fragments of a paper label from an opium can (*specimen 2018.10-0526*), burnished redware opium pipe bowl (*specimen 2018.10-0567*), burnished greyware opium pipe bowl (*specimen 2018.10-0566* and *specimen 2018.10-0511*). Right image: opium can lid with cartouche (*specimen 2018.10-0958*).

Artifacts Assigned to the Structural Functional Category

A total of 182 artifacts were assigned to the Structural functional category. The assemblage was dominated by **Hardware**, including cut nails (n=163), wire nails (n=2), and brad nails (n=3). The remainder of the assemblage was comprised of **Material** such as wood, mortar, and pane glass.

Artifacts Assigned to Other Categories

Other artifact categories in the assemblage included seven Faunal specimens weighting 13.46 grams, and one obsidian flake. The faunal specimens recovered from TU 1 consisted of an artiodactyl tooth fragment, five pig mandible fragments (MNI 1), and an unidentified medium mammal bone fragment. The Artiodactyl tooth fragment was recovered from within Level 1 (0-20 cmbd) and could represent native or domesticated species (Figure 70). The remaining faunal specimens were recovered from within Level 6 (50-60 cmbd). This is within the cultural deposits believed to be associated with the inside of the collapsed cabin feature.



Figure 70. Artiodactyl tooth fragment recovered in TU 1 (*specimen 2018.10-0501*).

Wide Exposure and TU 2 Artifact Assemblage

A total of 2,944 artifacts were recovered from TU 2 and the Wide Exposure, the bulk of which appear to be associated with the blacksmithing occurring on the site. A total of 664 artifacts were recovered from the surface scrape, including those that were mapped in situ, and the remaining 2,280 were recovered from TU 2.

Artifacts Assigned to the Activities Functional Category

A total of 925 artifacts were assigned to the Activities functional category. This was dominated by clinker fragments associated with **Blacksmithing** (n=884), along with a cobble that was modified for use as an improvised anvil and had slag melted on top (Figure 71), bar metal, and what appears to be “pig iron” made on site from recycled metal scrap (Figure 72). The remainder of the assemblage included two glass gastroliths and 10 horseshoe nails associated with **Animal**

Husbandry, two bullets assigned to the **Firearms** group, and **Tools** including picks, chisel, files, a saw blade (Figure 73), nail header (Figure 74), and a dozen shovels.

The presence of several pick tips suggests that these items were being collected for reuse or repurposing (Figure 75). One pick has the distinctive markings that show it was removed from the rest of the pick head through the use of a hot chisel. Most notable, however, are the distinctive pick handle support attachments that have been found across the site (Figure 76, see Figure 88 below for a complete example). Three of these were found within the blacksmith assemblage, and another example was found in the metal detection survey.



Figure 71. Stone cobble with melted slag (*specimen 2019.07-0389*). This cobble has chipping on one side (right image), suggesting it may have been used as an improvised anvil.



Figure 72. A sample of the metalworking scrap. From top: bar metal that has been modified by the blacksmith (*specimen 2019.07-0317*). Middle row, from left: pig iron or bar metal fragments (*specimens 2019.07-0417, 2019.07-0366, 2019.07-0333*).



Figure 73. From left: A fragment of a saw blade (*specimen 2019.07-0315*), tang from a file (*specimen 2019.07-0361*), and a chisel fragment (*specimen 2019.07-0332*).



Figure 74. From left: a hand forged nail header (*specimen 2019.07-0474*) and two wrought nails that might have been made on site using this tool (*specimens 2019.07-0422 and 2019.07-0356*).



Figure 75. A sample of the pick parts recovered from the Wide Exposure area. From left: pick tip that was removed with a chisel (*specimen 2019.07-0489*), and pick tips (*specimen 2019.07-0307* *specimen 2019.07-0414*, and *specimen 2019.07-0234*).



Figure 76. Pick handle supports from across the site. A complete pick handle support (*specimen 2019.07-0045*), and two broken distal ends: *specimen 20-19.07-0362* (top), and *specimen 2019.07-0261* (bottom).

Many of the shovels recovered from this part of the site appear to have been cached for use by the blacksmith. Several show modifications towards this end, including one that has been folded into a scoop (Figure 77), and several that have the bottom and / or sides cut. The transition from a rounded spade to rectangular tool appears to be the intention, as several of the modified flat edged shovels show significant use wear (Figure 78). Other shovels in the assemblage appear to have been

discarded or abandoned mid-modification, as the sides are only partially cut. The scraps removed from the modified shovels are believed to have been repurposed and were likely melted down with other scrap into bar metal that could then be used to construct new tools.

One shovel had a maker's mark from the Oliver Ames and Sons Corporation dating to between 1876-1901 (Easton Historical Society 2004). The Ames Shovel Company was established in 1776 by Captain John Ames in Massachusetts, and operated there for more than two centuries. By 1879 the company was reportedly producing 3/5ths of the world's shovels. The company was made popular by supplying gold miners, and later, railroad workers. Oakes Ames, one of the men behind the company, served as a U.S. Congressman and was infamous for his instrumental role in the Union Pacific's completion of the Transcontinental Railroad and the subsequent scandals (American Experience 2022). In 1901, the company reorganized as the Ames Shovel and Tool Company, Inc, and it continues to this day in Pennsylvania under the moniker Ames True Temper (Easton Historical Society).



Figure 77. Shovel with the sides modified and bent into a scoop (*specimen 2019.07-0244*).



Figure 78. A sample of the shovels from the Blacksmith shop area. Several of the shovels have been modified to have straight sides and bottom edge. Significant usewear is visible on some specimens, indicating that the flat edge was a desired feature. Other shovels have partial side cuts, perhaps discarded mid-modification. The removed sections of the shovels are believed to have been saved and repurposed as well. Top row, from left: shovel with an Oliver Ames and Son Corp. makers mark on the collar (*Specimen 2019.07-0481*), shovel that is cut on one side and has the start of a cut on the other side (*specimen 2019.07-0487*), shovel that has been cut on one side (*specimen 2019.07-0490*). Middle row, from left: shovel with one side cut and one side partially cut (*specimen 2019.07-0487*), modified shovel (*specimen 2019.07-0037*), modified shovel (*specimen 2019.07-0050*), shovel (*specimen 2019.07-0036*). Bottom row, from left: modified shovel (*specimen 2019.07-0049*), modified shovel with edge usewear (*specimen 2019.07-0479*), modified shovel with edge usewear (*specimen 2019.07-0484*).

Artifacts Assigned to the Domestic Functional Category

A total of 108 artifacts were assigned to the Domestic functional category. This included a white improved earthenware cup, and 100 fragments of CBGS **Food Storage** vessels in shouldered, utilitarian, and wide mouthed forms. The remainder of the assemblage was comprised of seven cast iron wok fragments assigned to the **Kitchen** group (Figure 79). These fragments did not have any decorations or modifications. While these items likely reflect the use of woks at the site, the presence of the fragmented pieces also suggests that broken woks were repurposed as scrap along with the other ferrous items.



Figure 79. Wok fragments recovered within the blacksmithing activity area (*specimen 2019.07-0247, specimen 2019.07-0267, 2019.07-0248*).

Activities Assigned to the Indefinite Use Functional Category

A total of 1,451 artifacts were assigned to the Indefinite Use functional category. Of this, the bulk of the assemblage was comprised of **Miscellaneous Containers** including aqua glass bottle fragments, amethyst glass panel bottle fragments, and can fragments (n=1,391). **Miscellaneous Metal** artifacts included cast iron, sheet metal, and plate metal which may have been gathered as a raw material for the blacksmith, along with strapping, tacks, and wire.

Activities Assigned to the Personal Functional Category

A total of 125 artifacts were assigned to the Personal functional category. This included a copper alloy dome button assigned to the **Clothing** group, boot and shoe leather, and 123 artifacts assigned to the **Social Drugs** group. This included olive alcohol bottle glass (n=16), and 70 CBGS

liquor jar fragments. The remainder of the assemblage consists of a fragment of a redware opium pipe bowl and 36 opium can fragments.

Activities Assigned to the Structural Functional Category

A total of 173 artifacts were assigned to the Structural functional category. The assemblage was dominated by the **Hardware** group, including 99 cut nails, eight wire nails, along with wrought nails, tacks, washers, and a nut. The remainder of the assemblage was comprised of Structural **Material**, consisting of wood and charcoal.

Artifacts Assigned to Other Categories

Artifacts assigned to other categories include two obsidian flakes, and three Faunal specimens. The three faunal specimens recovered were identified as mammal but had no other distinguishing characteristics for further identification.

The Remaining Ah Heng I Artifact Assemblage

The remaining Ah Heng I assemblage was comprised of a total of 1,201 items. Of this, 1,053 artifacts were associated with the 17 QTUs and 148 represented the GPS'd surface finds.

Artifacts Assigned to the Activities Functional Category

A total of 40 artifacts were assigned to the Activities functional category. This included a glass gastrolith and horseshoe nail from the **Animal Husbandry** group, bullets and shotgun shells from the **Firearms** group, and an assortment of **Tools** including penstock, a wedge, gold pans, pick handle support, a cape chisel, drill tip, pick parts, and five shovels (Figure 80).



Figure 80. A sample of the tools recovered from the site. From left: a pick fragment (*specimen 2018.10-0945*), bar metal (*specimen 2018.10-0951*), ferrous wedge (*specimen 2018.10-0907*), drill tip (*specimen 2018.10-0947*), and a pick handle support (*specimen 2018.10-0957*).

Artifacts Assigned to the Domestic Functional Category

A total of 124 artifacts were assigned to the Domestic functional category. This included a white improved earthenware soup plate and plate with a Royal Arms mark, and a small mín yáo assemblage consisting of a Winter Green spoon, and a minimum of four medium sized porcelain bowls in Double Happiness, Four Seasons Flowers, Bamboo, and hand painted polychrome motifs assigned to the **Food Preparation and Consumption** group (Figure 81). Nearly 100 artifacts were assigned to the **Food Storage** group, including fragments of CBGS lids, and wide mouthed, shouldered, and spouted jars (Figure 82). The remainder of the assemblage was comprised of nine wok fragments assigned to the **Kitchen** group.



Figure 81. A sample of the mín yáo wares recovered from the site. From left: Double Happiness or Bamboo bowl base (*specimen 2018.10-0753*), Four Seasons Flower bowl fragment (*specimen 2018.10-0714*), Winter Green spoon handle fragment (*specimen 2018.10-0820*), Four Seasons Flowers bowl fragment (*specimen 2018.10-0846*).



Figure 82. A sample of the CBGS food storage containers recovered from the TU 1 excavations. From left: wide mouthed jar rims (*specimen 2018.10-0953* and *specimen 2018.10-0837*), spouted jar rim (*specimen 2018.10-0801*).

Artifacts Assigned to the Indefinite Use Functional Category

A total of 517 artifacts were assigned to the Indefinite Use group. This included more than 300 **Miscellaneous Containers** fragments, including cans, bottles in aqua, amber, olive, and amethyst glass, and containers in aqua, amethyst, and olive glass. Fragments of CBGS vessels (n=49) unable to be identified to form were assigned to the **Miscellaneous Vessel** group, and

Miscellaneous Metals included sheet, plate, and bar metal, tacks, strapping, small fasteners, wire, and a modified can with nail holes. The remainder of the assemblage was comprised of aqua flat glass, slag, and unidentified ferrous metal items.

Artifacts Assigned to the Personal Functional Category

A total of 219 artifacts were assigned to the Personal functional category. Two rivets and a button were assigned to the **Clothing** group, boot leather and rubber fragments, along with hobnails and rivets assigned to the **Footwear** group (Figure 83), and the remainder of the assemblage was comprised of artifacts associated with the **Social Drugs** group. This included olive and aqua glass alcohol bottles, an amber glass bitters bottle, and CBGS liquor jar fragments (Figure 84). Opium paraphernalia included grayware and redware opium pipe bowls, opium lamp glass, and more than 50 opium can fragments (Figure 85). A pull-tab from a tobacco pouch was also recovered.



Figure 83. A sample of the Footwear fragments recovered from the site, including boot leather (*specimen 2018.10- specimen 2018.10-0625, specimen 2018.10-0796, specimen 2018.10-0613*), and hobnails (*specimen 2018.10-0619, specimen 2018.10-847, specimen 2018.10-0634*).

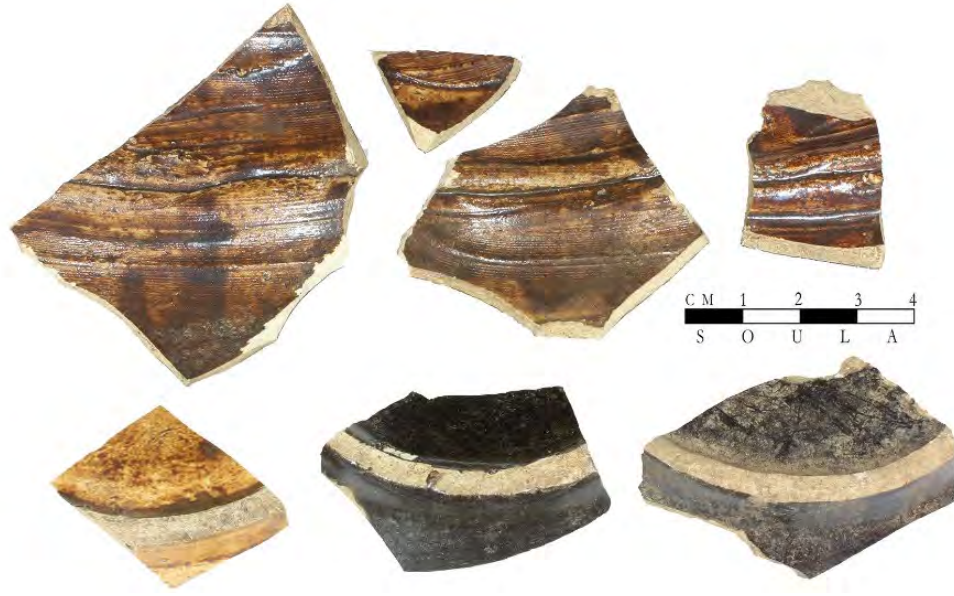


Figure 84. CBGS liquor jar fragments. Top row: body fragments (*specimen 2018.10-818*). Bottom row: base fragments (*specimen 2018.10-0854*, *specimen 2018.10-0804*, *specimen 2018.10-00680*).



Figure 85. A sample of the opium paraphernalia recovered from the site. Top row: opium can fragments (*specimen 2018.10-0958*, *specimen 2018.10-0904*, *specimen 2018.10-0795*). Bottom row: Grayware pipe bowls (*specimen 2018.10-0639*, *specimen 2018.10-0821*) and redware pipe bowls (*specimen 2018.10-0728*, *specimen 2018.10-0798*).

Artifacts Assigned to the Structural Functional Category

A total of 185 artifacts were assigned to the Structural functional category, consisting of a staple, along with cut (n=156) and wire (n=13) nails in the **Hardware** group. Milled wood and pane glass were assigned to the Structural **Material** group.

Artifacts Assigned to Other Categories

Artifacts assigned to other groups include seeds collected as botanical samples, 80 small faunal specimens weighing 86.37 grams, charcoal samples and a small Lithic assemblage consisting of an obsidian biface (Figure 86) and a single obsidian flake.



Figure 86. Obsidian biface fragment (*specimen 2018.10-0730*).

The faunal specimens recovered from outside of the site features were identified as mammal and medium mammal. QTU 3 (nisp=27), QTU 5 (nisp=16), and QTU 8 (nisp=23) contained the highest concentration of faunal materials. However, the fragmented nature of the specimens recovered represents a modest amount of food (Figure 87, Table 7). The presence of the pig within the assemblage indicates the use of domesticated animals for food although the single Artiodactyl tooth and other medium mammal and bird specimens could represent native wild game, as well.



Figure 87. A sample of the faunal material recovered from the site. From top left: medium mammal diaphysis (*specimens 2018.10-0790*), medium mammal fragments (*specimen 2018.10-0750*), unidentified bone (*specimen 2018.10-0806*). Bottom, from left: medium mammal fragments (*specimen 2018.10-0636*), medium mammal diaphysis fragments (*2018.10-0709*).

Table 7. Faunal materials recovered from across Ah Heng I.

Taxon/Element	NISP	Weight (g)
Bird	6	1.00
Medium bird	6	1.00
diaphysis	3	0.40
tibiotarsus	1	0.30
unidentified fragments	1	0.20
vertebra	1	0.10
Mammal	82	101.00
Artiodactyl	1	2.00
tooth	1	2.00
<i>Sus scrofa</i>	5	6.68
mandible/teeth	5	6.86
Medium mammal	58	87.90
diaphysis	12	49.90
epiphysis	1	1.90
metacarpal/tarsal	1	1.30
ribs	4	4.60
unidentified fragments	39	27.90
vertebra	1	2.30
Unidentified mammal	18	4.24
tooth	1	0.20
unidentified	17	4.04
Unidentified faunal	2	0.03
Unidentified faunal	2	0.03
unidentified fragments	2	0.03
Grand Total	90	102.03

Summary of Findings at the Ah Heng I Site 06040300020

SOULA conducted archaeological investigations at the Ah Heng I Site 06040300020 in 2018 and as part of the 2019 OCDP archaeological field school. The 2018 excavations focused on the area where the cabin was located and the testing of the surrounding areas using a grid of QTUs. The metal detection survey done by the PITT project identified a cache of shovels on the eastern part of the site. This discovery, paired with the cabin excavations, prompted a second round of fieldwork in 2019.

The cabin is believed to have been a wooden structure within an area measuring up to 25' by 25'. The roughhewn log with in situ nails further suggests that this resource was the log cabin listed as part of the 1888 sale to the Ah Heng company. The presence of flat glass suggests that the cabin had windows. The artifacts found to the north (downslope), in both QTUs and on the surface, are believed to be associated with the occupation of the cabin. There was no rock cooking feature observed at the site, perhaps as the cabin was already established at the time of the Ah Heng occupation. Additionally, very few faunal specimens (food related bones) were recovered from the site, the majority of which were located within units placed downslope of the cabin. The small assemblage and lack of cooking feature seen at other sites may reflect a different cooking technique was being employed, or the bulk of meal preparation was occurring elsewhere. The artifact assemblage supports an occupation circa 1887 as was documented in the mining claim. However, while newspaper accounts indicate that the Chinese miners abandoned the site a year later, the archaeological assemblage could support a longer occupation. The excavations also revealed that blacksmithing was occurring at the site.

The Ah Heng Company Blacksmith Shop

While commercial or informal blacksmith shops are not commonly found in remote mining sites, blacksmithing was a critical part of mining operations. Tools needed to be sharpened, maintained, and in some cases manufactured, to suit the specific needs of the miner. In towns and cities, the blacksmith would charge a fee to sharpen or repair tools as needed out of their shop, but many remote mining companies would hire a blacksmith or have one of their members serve as the on-site smith making the service readily available in order to keep the operations running smoothly.

While few documents have been found describing Chinese blacksmiths, US Census records note the trade for men living in John Day, as well as Grant, Josephine, and Union Counties in Oregon, and in several counties in Idaho (Johnson 2000:74). A ledger on display at the Grant County Museum lists the purchase of eggs by “Lee You [or Jou] Chinese Blacksmith” from an unknown local store on March 23, 1878. There have been few archaeological excavations of Chinese blacksmithing operations, the most useful for this study has been site 10-CW-159 in Pierce, Idaho that made for the basis of Erika Johnson’s 2000 master’s thesis. Additional sites have been documented in California, Idaho, and Wyoming (Johnson 2000:74). To the best of our knowledge, the Ah Heng I Site 06040300020 represents the first Chinese blacksmith shop to be archaeologically investigated in Oregon.

While the various components associated with metal working might be observed in other contexts, when forge waste, cut bar stock, broken tools, and scrap iron is found together it can be indicative of a blacksmithing operation (Johnson 2000:82). The above, paired with archaeological deposits consistent with exposure to high heat, were observed at the Ah Heng I site.

Tools one would expect to find within a smithy include various hammers, chisels, wedges, files, tongs, and bellows. Some tools were repurposed for use of their tempered steel. Raw materials would include bar iron, round rod and square rod iron. The blacksmith's materials also involved "broken tools and other items that were reused as raw materials... Files and blade tools were often reused as sources of steel" (Johnson 2000:106). Smiths might have to weld items together to repair them or otherwise make the material suitable for their needs. The plate metal salvaged from shovels, broken woks, and other tools may have been melted down into "pig iron" or bar metal.

Many of the tools central to a blacksmith's tool kit would have been taken with the smith when he left for the next job site. Due to the remote location of the mines along the Middle Fork of the John Day River, the smith might opt for more portable or ad hoc tools. A short fragment of a railroad track recovered from one of the Happy Camp sites (Site 06040300328) could have been used as a lightweight improvised anvil (Shelnutt 2016). Likewise, the cobble identified at this site has evidence of battering and has slag melted onto it, which indicates it was located within the metal working operations (*specimen 2019.07-0389*, see Figure 71 above). Anvils can range widely in size, depending on the need, availability, or the blacksmiths preference, but the heavier the weight the less rebound of the hammer (Johnson 2000:89).

Other modified or repurposed items at the site could also have been used by the blacksmith. Cylindrical cans with punched nail holes in the bottom were found across the Middle Fork project areas. These artifacts have been associated for use in mining, food production, and could also have been used by a blacksmith. Described as "a tin can nailed to the end of a branch or stick...[with] twenty-five or more little holes punched through its bottom with a small sharp nail," these homemade sprinkler cans were useful in keeping the fuel surrounding the forge fire wet as a means to control the fire and direct the heat (Alexander G. Weygers 1973 in Stapp and Longenecker 1984:88). In addition, "Any pair of tongs that may have become overheated could be doused to restore them to a normal working temperature. The water was also used occasionally to cool the work pieces that extended outside the fire by dousing them while the rest remained in the fire undisturbed" (Johnson 2000:95).

Pick tips, such as those found in the blacksmith shop area and across the site are a common artifact type, as "steel points needed to be redressed frequently and new points had to be drawn out. If the shape was wrong or if the bit was chipped, it was cut off and the bit was redrawn. Most of the pickaxe tips were cut off with a hot chisel" (Johnson 2000:159). Metal stock was usually cut using a hot chisel, hardy (a hot cutting chisel used with an anvil), or shears. At least one pick tip from the site has evidence of being chisel cut (*specimen 2019.08-0489*, see Figure 75 above). This distinctive cut was:

struck with a hammer until the iron was nearly cut through or a thin portion was left. If the metal was cut completely through, the face of the anvil would break the edge of the chisel. When the chisel came close to the underside of the iron, the iron bar was either turned over and the cut was finished or the part intended to be removed was broken off (Johnson 2000:161).

In addition to the reworking, mending, or manufacturing of tools, some tools were being modified to suit. For example, as the artifact sequence in Figure 78 above shows, shovels were being

modified from spades into squared hoe-type tools. Steeves (1984:127) observed similar shovel modifications at Union Creek, Granite Creek, and in collections held at the La Grande District office of the Wallowa-Whitman National Forest. He argued that the “chopped” shovels with the sides removed and the end flattened were fashioned after changkols, a type of sturdy Chinese hoe (Steeves 1984:127). By trimming the sides, the shovel could be made narrow enough to fit within “the customary 30 centimeter width of a box sluice and still allow for the passage of the main flow of water and fine solids.” Steeves also proposed that the “bent-sided” shovels like the one described above from the Ah Heng I site would have been “effective in moving concentrates of black sand and fine gold” and would have been lighter than the EuroAmerican made flat shovels and less likely to spill (Steeves 1984:128). Steeves (1984:125) also suggests that Chinese miners might have salvaged worn shovels that were abandoned by other miners, so they could be repurposed as modified tools.

Another example is the distinctive pick handle supports that were being used, and potentially made, on site. These robust handle supports would presumably reinforce and prevent slippage of the pickaxe on the handle. The Grant County Historical Museum has multiple examples of these picks in their exhibit on the Chinese miners in the area (Figure 88). These handle supports are clearly hand-forged and have also been observed at the Ah Yee Site (site 06040301333). Conversation with blacksmiths and archaeological colleagues have not produced much information about this specific tool type. However, similar tools have been recovered from the Pierce Chinese Mining Site (10-CW-159) in Idaho, (Figure 89). Two fragments of a pick handle support were identified by Renae Campbell of the Asian American Comparative Collection within the curated site assemblage, after a photographic image with the caption “handmade iron object possibly used to secure pick axe to handle, borrowed from the Clearwater Historical Museum, Orofino, Idaho” was observed in the technical report (Stapp and Longenecker 1984:50). It is not clear in text as to why this museum item is presented in the report, but it presumably was added in reference to the unidentified fragments in the collection. To date, it has not been established whether these are a regional vernacular tool type, or one that was used within the Chinese community, or perhaps even one that was invented by a Chinese blacksmith who may have worked in Oregon and Idaho. However, while the standard miners’ pick was a simple and straightforward tool, attempts to improve upon the design have been documented in commercial and informal settings (Pearson and Bommarito 2002:144). John McKee of southern Oregon was credited with the invention of the “strap-eyed pick” in the mid-19th century (Laura Ahern of the McKee Bridge Society 2022, personal communication). This pick was similar in function, yet distinct from the ones found on our sites (Figure 90). Steeves’ reports on what he describes as “extreme tool abuse” on picks, axeheads, and stone chisels observed on Chinese mining sites, and suggests that it is due to splitting bedrock in an effort to recover gold trapped in natural riffles (1984:133-134). This enhanced recovery of material captured through ground sluicing could have been what prompted the creation of a more robust and durable tool type.

Informal blacksmithing and tool repair or production was likely occurring to some degree at other project sites, however, the Ah Heng blacksmith operation was perhaps more notable due to the duration or scale of the mining at the site, and therefore, the associated need to keep tools in order. Stapp and Longenecker (1984:108) have suggested that a blacksmith shop could indicate that there was a service-oriented aspect to the site, “assuming that every mining camp did not have a blacksmith shop, individuals from other mining operations, either from the same company or from

another mining company” might have taken advantage of the service available in a remote area. Aside from the cache of metal tools on the surface picked up in the metal detection survey, as an activity area, the surface expressions of the Ah Heng I blacksmith shop were subtle and could easily have been missed. Investigations into this site component have allowed us to better understand the variety of skills, resources, and needs within Chinese diaspora sites such as this one and reminds us of the importance of looking beyond the obvious landscape features or domestic site components in order to identify other activity areas that might be associated with these short-term occupations and expand the roles and responsibilities that Chinese men held within them.



Figure 88. Two views of a pick on display at the Grant County Museum with the same handle support as seen at the Ah Heng site.

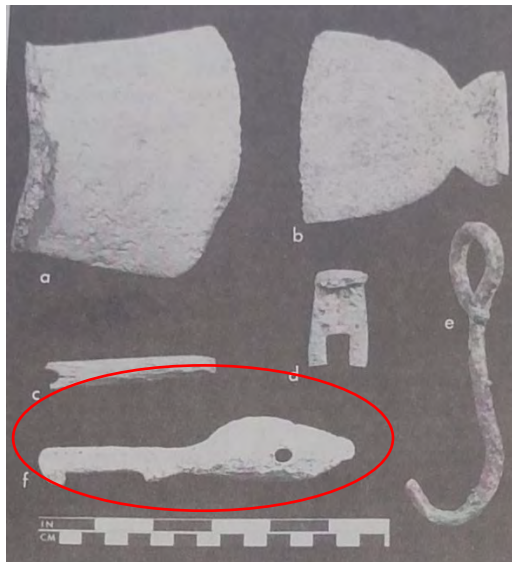


Figure 89. Left: A pick handle support associated with the blacksmith shop at the Pierce Chinese Mining Site (10-CW-159). Image from Stapp and Longenecker (1984:50). Right: The pick handle support fragments from the Pierce, Idaho Site 10-CW-159. Photographs courtesy of Renae Campell of the Asian American Comparative Collection.



Figure 90. Example of John McKee’s “strap-eyed pick.” Photograph courtesy of the McKee Bridge Historical Society.

Ah Heng II (Site 06040300020)

The Ah Heng II Site 06040300020 is located to the north of Ah Heng I, across the drainage of the Middle Fork John Day River, and within the larger mining landscape that surrounds both site components. Beyond the site, the landscape quickly slopes upwards leaving a relatively narrow area of traversable land between the slope and the drainage. The soils within this portion of the site are the same as across the drainage in Ah Heng I 500 meters away, consisting of a thin mantle of mixed volcanic ash over deposits of residuum and colluvium derived from andesitic and basic tuff (NRCS 2022). The vegetation within this area was very dense and home to old growth timber.

SOULA conducted archaeological testing at the Ah Heng II Site in 2019 as part of the OCDP archaeological field school. As with Ah Heng I, the companion PIT project conducted a metal detection survey and cleared the site in preparation for our work, which focused on an area surrounding a rock feature and surface artifact scatter along Big Creek (Figure 91). Archaeological investigations included the excavation of 21 QTUs and a 5 m by 4 m surface scrape grid placed over the rock feature (Figure 92). QTU 16, QTU 17, and QTU 18 were excavated within the rock feature grid.



Figure 91. View northeast across Ah Heng II. The rock feature is noted, and the surface scrape is marked by stakes.

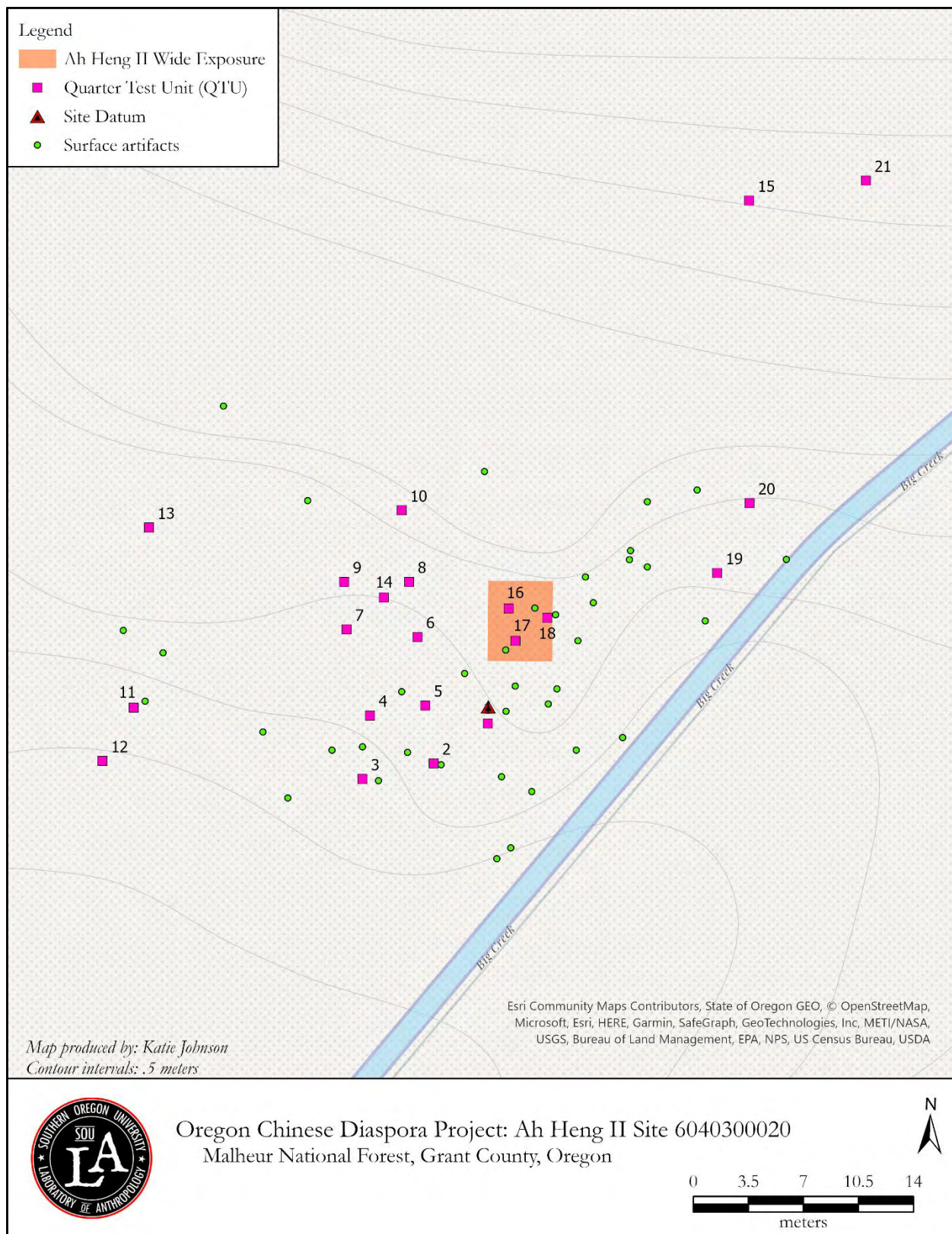


Figure 92. Ah Heng II Site 06040300020 map with excavation units and surface artifacts noted.

The surface scrape placed over the rock feature was oriented to magnetic north and comprised of a 5 m by 4 m grid broken up into 1 m by 1 m units (Figure 93 and Figure 94). All units were scraped to mineral soil, and the removed material was organized and screened by grid unit. The surface material largely consisted of forest duff overlaid on a moderately compact grayish brown silt. With the exception of a few surface artifacts, the duff layer was largely sterile of cultural materials. The scrape exposed additional rocks associated with the feature and allowed for it to be photographed and mapped in detail. An elevation datum was driven into the trunk of the pine tree on the eastern edge of the feature grid. Once the surface was exposed, three QTUs were excavated within the grid (QTU 16, QTU 17, and QTU 18). QTU 16 placed near what was suspected to be the feature hearth (Figure 95), QTU 17 was placed to the south near a rotten log potentially associated with a structure at this location, and QTU 18 was placed on the east side of the rock feature. In all units, excavation revealed a thin cultural layer just below the surface. No obvious hearth deposits were encountered, but the feature was clearly cultural and is believed to represent a similar domestic cooking feature as seen at the Happy Camp and Ah Yee sites. A total of 46 artifacts were recovered from the scrape and associated units, the bulk of which consisted of cans, and medicine, alcohol, and other assorted bottle glass.



Figure 93. View east of the rock pile feature with the grid in place and the scrape in progress. A can modified for use as a lantern can be seen in the foreground.

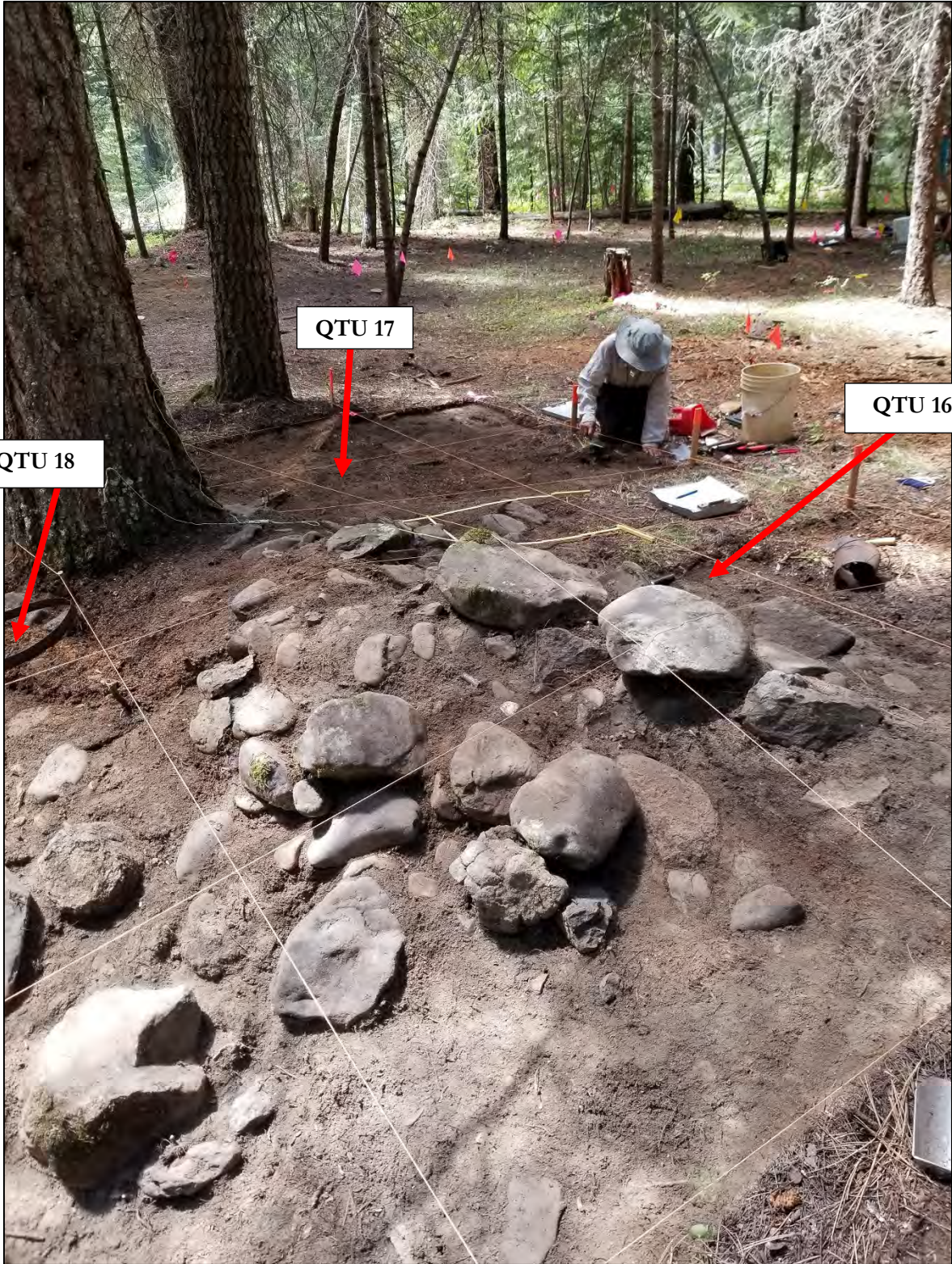


Figure 94. View southwest across the rock feature with the scrape largely completed and flags marking metal detection hits visible in the background. The QTU locations are noted.



Figure 95. View north of QTU 16 at 40 cm below surface (left) and QTU 17 at 40 cm below surface (right).

The remainder of the QTU excavations were placed on a roughly 20-m grid in the forested area surrounding the rock feature. The main portion of the grid was placed to the west of the rock feature and focused on the high probability areas identified in the metal detection surveys. A complete list of soils observed within the QTUs can be found in Table 8 below, but in general the soils were comprised of a medium brown silty loam overlaid by a thick layer of forest duff (Figure and Figure 96 and Figure 97). A total of 140 artifacts were recovered from the QTUs not associated with the feature scrape, most of which were recovered from the first two levels (Table 9).



Figure 96. View north of QTU 9 at 50 cm below surface and QTU 12 at 50 cm below the surface.



Figure 97. Overview of the Ah Heng II QTU excavations in progress. The thick forest duff overlaying all of the units can be seen on the surface.

Table 8. Description of soils observed within the Ah Heng II Units.

Unit	Depth	Soil Description	Notes
QTU 1	0-50	Duff transitioning to a brown (10YR 4/3) sandy loam, with roots and a few large rocks.	Located in an area with no metal detector hits
QTU 2	0-50	Duff transitioning to brown (10YR 4/3) silty loam with a few sub-angular gravels and rounded cobbles.	
QTU 3	0-50	Brown (10YR 4/3) silty loam with a small number of rounded cobbles.	
QTU 4	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with very little angular content.	
QTU 5	0-60	Duff transitioning to brown (10YR 4/3) silty loam, increasingly compacted with the clay content increasing with depth.	
QTU 6	0-60	Duff transitioning to brown (10YR 4/3) silty loam, with lots of roots and mottled clay beginning at 30 cm.	
QTU 7	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with a few large cobbles.	
QTU 8	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with a small number of rounded cobbles. The unit was bisected by a tree root.	
QTU 9	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and few rocks.	
QTU 10	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and few rocks.	
QTU 11	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roughly 5% rounded gravels.	
QTU 12	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and few rocks.	
QTU 13	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and few rocks.	
QTU 14	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and few rocks.	
QTU 15	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and some subrounded gravels and pebbles.	
QTU 16	0-40	Duff transitioning to an ashy and charcoal-rich matrix associated with the feature. The unit slopes down to the southwest. The sediment transitions to a compacted dark brown silty loam, then to a grey brown compacted silt with few gravels.	In grid: 6n 1e Quad D. Top of the unit is at 57cm below datum, bottom at 97 cm.
QTU 17	0-40	Duff transitioning to brown (10YR 5/3) silty loam with increasing compaction with depth.	In grid: 4n 1e Quad D.
QTU 18	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and a few rocks.	In grid: 5.5n 4e Quad B.
QTU 19	0-50	Duff transitioning to a brown (10YR 4/3) silty loam with roots and few rocks.	
QTU 20	0-50	Duff transitioning to a dark brown (10YR 3/3) silty loam with roots and few rocks. The matrix has an increasing sand content after 20 cm.	
QTU 21	0-40	Duff transitioning to brown (10YR 4/3) silty loam with roots and roughly 10% gravels. Unit terminated due to two large cobbles in the base of the unit.	

The Ah Heng II Artifact Assemblage

A total of 224 artifacts were recovered from the Ah Heng II Site 06040300020 investigations. Of this, 58 were associated with GPS surface finds, and 43 were recovered from the rock feature Wide Exposure. The artifact assemblage was consistent with the 1880s era occupation of the site by the Ah Heng Company.

Table 9. Vertical distribution of artifacts in Ah Heng II units.

Unit	0-10	10-20	20-30	30-40	40-50	Notes
QTU 1	5	2	6	0	0	
QTU 2						
P	0	0	1	0	0	
H	6	2	4	0	0	
QTU 3	1	0	0	0	0	
QTU 4	8	5	0	1	0	
QTU 5	5	2	0	1	0	
QTU 6						
P	0	0	0	1	0	
H	2	0	0	0	0	
QTU 7	5	3	0	0	0	
QTU 8						
P	0	1	0	0	0	
H	2	0	0	0	0	
QTU 9						
P	0	1	0	0	0	
H	6	0	0	0	0	
QTU 10	1	0	0	0	0	
QTU 11	0	0	0	0	0	
QTU 12	0	0	0	0	0	
QTU 13						
P	1	0	0	0	0	
H	0	1	0	0	0	
QTU 14	1	6	2	0	0	
QTU 15	0	0	0	0	0	
QTU 16	10	27	2	0	0	
QTU 17	2	0	0	0	0	
<i>Total</i>	55	50	15	3	0	
<i>Negative units</i>						

Unless otherwise noted, all counts represent historic-era items.

Artifacts Assigned to the Activities Functional Category

A total of 10 artifacts were assigned to the Activities functional category. This included an aqua glass gastrolith assigned to the **Animal Husbandry** group, four bullet casings assigned to the **Firearms** group, and five **Tools** (Figure 98 and Figure 99). The tools included a pulley, gun pipe cleaner, two handmade planer/ peelers, and a pick tip.



Figure 98. Threaded gun cleaning rod (*Specimen 2019.07-0034*), two bullet casings (*Specimen 2019.07-0032*, *Specimen 2019.07-0035*).



Figure 99. A sample of the Ah Heng II tools. Left: handmade log peeler/planers (*Specimen 2019.07-0037*, *Specimen 2019.07-0036*). Right: pick tip (*Specimen 2019.07-0040*).

Artifacts Assigned to the Domestic Functional Category

A total of 26 items were assigned to the Domestic functional category. This included 13 items placed in the **Food Preparation and Consumption** group, including a pressed glass lid with a beaded rim, a minimum of two white improved earthenware cups, a metal spoon, and two small fragments of white improved earthenware tableware (Figure 100). Five cast iron wok fragments were assigned to the **Kitchen** group. These items had the same parallel incised lines around the rim that have been observed in woks found at the Ah Hee Site (Wegars 1995) and those on display at the Kam Wah Chung State Heritage Site in John Day. Five artifacts were assigned to the **Food Storage** group, including a Ball canning jar with a base embossed "10/PAT. 90979/ BALL/ 5115," a tea can, coffee can, and unglazed CBGS lid. **Furnishing** items consisted on what appeared to be an umbrella rib, and **Heating and Lighting** artifacts included cast iron stove fragments, and a can modified into a candle lantern (Figure 101).



Figure 100. From left: and white improved earthenware cup (*specimen 2019.07-0085* and *specimen 2019.07-0086*), lid to a pressed glass bowl with a beaded rim (*specimen 2019.07-0023*).



Figure 101. Large can modified to serve as a lantern with a punched candle holder and improvised handle (*specimen 2019.07-0153*).

Artifacts Assigned to the Indefinite Use Functional Category

A total of 79 artifacts were assigned to the Indefinite Use functional category. This included 69 **Miscellaneous Container** fragments, comprised of 21 bottle fragments in amber, colorless, and green glass, 47 cans and can fragments (Figure 102), and amethyst container glass. Eight **Miscellaneous Metal** items were recovered, including a barrel hoop, hook, bar metal, and lead slag.



Figure 102. A sample of the cans recovered from the Ah Heng II Site. From left: a can with a bayonet style can opener cut (*specimen 2019.07-0031*) and a hole and cap can (*specimen 2019.07-0012*).

Artifacts Assigned to the Personal Functional Category

A total of 19 artifacts were assigned to the Personal functional category. This included a suspender clasp assigned to the **Clothing** group, leather boot fragments assigned to the **Footwear** group, and colorless glass medicine bottles with a prescription finish assigned to **Grooming and Health** (Figure 103). The remainder of the assemblage was assigned to the **Social Drugs** group, including fragments of an opium can, a tag from Star plug tobacco (Figure 104), and 11 alcohol bottle fragments in olive and amber glass. The Star Tobacco brand sold plug tobacco sweetened with molasses and was manufactured by Liggett and Myers Tobacco Company of St. Louis, Missouri. The company incorporated in 1873 and by 1885 was the leader in sales of plug tobacco (National Museum of American History 2022).



Figure 103. Colorless glass medicine bottle with a prescription finish (*specimen 2019.07-0141*),

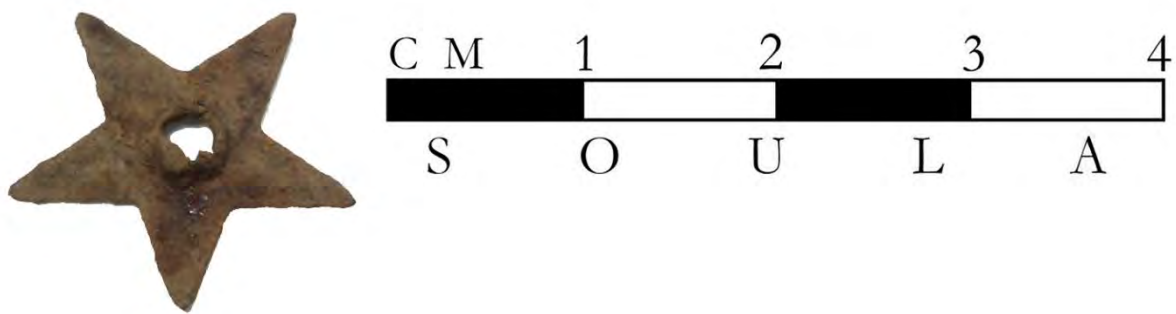


Figure 104. Ferrous star from plug tobacco (*specimen 2019.07-0151*).

Artifacts Assigned to the Structural Functional Category

A total of 69 artifacts were assigned to the Structural functional category. The bulk of this was **Hardware**, including cut (n=40) and wire (n=21) nails, and **Material** such as chinking, a pipe coupling, and wood (Figure 105).



Figure 105. A sample of the structural materials recovered from the site, including a wire nail (*specimen 2019.07-0130*), cut nails (*specimens 2019.07-0127, 2019.07-0126, 2019.07-0129, 2019.07-0128*), and chinking (*specimen 2019.07-0149*).

Artifacts Assigned to Other Categories

The remaining artifacts in the assemblage include one Faunal specimen, consisting of a calcined medium mammal bone fragment, 11 charcoal samples, an unidentified ferrous item and seven Lithic artifacts. This included six obsidian flakes and the distal portion of a bifacially worked obsidian tool (Figure 106).



Figure 106. Obsidian flakes recovered from Ah Heng II (*specimen 2019.07-0090, 2019.07-0095, 2019.07-0084, 2019.07-0097, 2019.07-0096*), and the distal portion of a bifacially worked tool (*specimen 2019.07-0060*).

Summary of Findings at the Ah Heng II Site 06040300020

SOULA conducted archaeological testing at the Ah Heng II Site 06040300020 in 2019 as part of the OCDP archaeological field school. The site had been recently discovered by MNF archaeologists and, due to its remote location, appeared to have escaped the looting that had occurred at other site components within the larger project area. The site consisted of a rock feature and surrounding artifact scatter on a flat terrace next to a perennial creek. Fieldwork consisted of a 5 m by 4 m surface scrape over the rock feature and the excavation of 21 QTUs.

The rock feature was determined to be cultural and constructed in a similar manner to those observed at other sites within the MNF. Structural remains suggest a building was present at the site, and perhaps the lack of a visible footprint indicates that it was canvas or expediently constructed. The artifact assemblage is consistent with an 1880s occupation. It contains fewer domestic items than Ah Heng I, perhaps suggesting it was occupied by a smaller group, for a shorter period of time, or perhaps for a specific task. The single fragment of calcined bone found at the site is notable given the presence of the rock cooking feature. The presence of two modified log peelers could indicate that this was a camp for cutting or milling wood needed elsewhere on the mining operation. The camp is also located near the intake for a lateral ditch out of Big Creek and a large earthen dam, so it is possible the occupants were responsible for maintenance and the control of water through those important features within the larger mining complex.

Ah Yee Mining Complex

The Ah Yee Mining District consists of 10 mining claims and associated minerals located east of Vincent Creek that were sold to the Ah Yee & Company in 1869 for \$300 by Stephen Graham. Graham had a ranch nearby and mined the area prior to the Ah Yee & Company's arrival. The company worked the claims for a little over a year and then sold them to the James Taylor Mining Company in September 1870 for \$42.50. Less than a week later Graham sold the remainder of his land to Thomas Davis. The location of the claims sold to the Ah Yee & Company were documented in reference to the Graham Ranch (Site 06040301328) and the rivers and creeks in the area. The 1870 Census lists 38 Chinese miners working in the Olive Creek Precinct, which includes the current project area, one of whom was listed under the name Ah Ye.

Archaeological deposits, extensive mining features, and primary documents, such as mining claims and newspapers, show that this area was mined regularly following this sale, however, most of this cannot be specifically associated with the Ah Yee & Company activities. The larger site complex (06040301834) includes a variety of features that may be associated with the Ah Yee mining complex, along with loci and features that show no clear association, such as the much later rail lines that were constructed through the area (06040301327). While targeted investigations have looked into site components using LiDAR and ground truthing, to date there has been no comprehensive research or archaeological work done on Site 06040301834 as a whole.

Other recorded sites that could be associated with the 10 claims sold to the Ah Yee & Company include a large placer mining complex (06040301206). While this site contains multiple temporal and technological components, it has a strong association to the late 19th century Chinese miners. Cabin remains with rock features have also been documented (06040301333) within the larger site complex that, based on the location, datable artifacts, and the material culture present, have been directly linked with Chinese miners, likely the Ah Yee & Company (See description below).

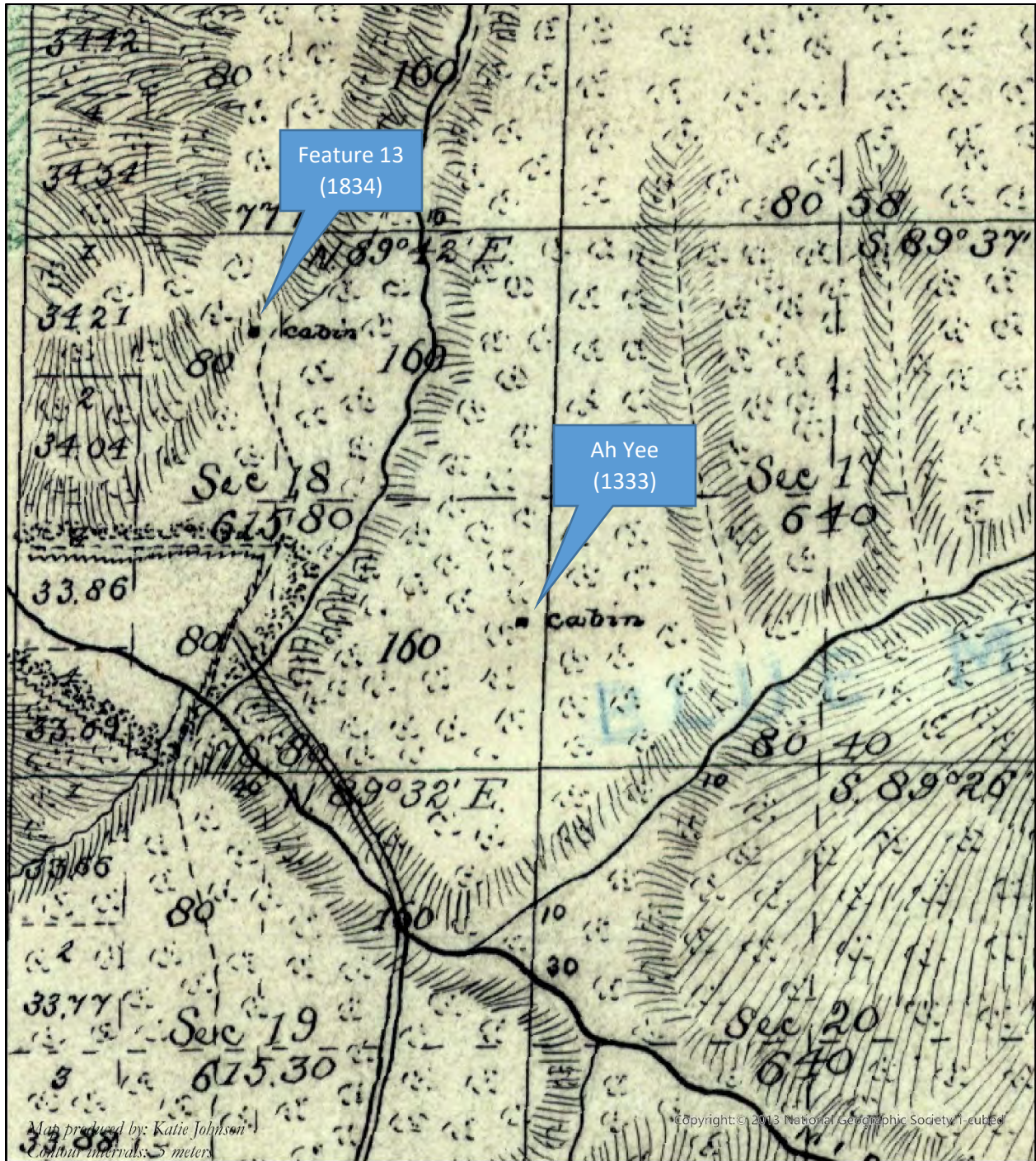
Within the larger site complex, two other habitation sites have been recorded that may be associated with the Ah Yee Mining Complex. These site loci include possible structural remains (recorded as Feature 14) and mining features (recorded as Feature 13) within Site 06040301834. These sites are to the west of the Graham Ranch. Documentation from the 1869 transfer of the mines to the Ah Yee & Company note that the claims and mining features were located to the east of this, suggesting that if Chinese miners were present, they were not associated with the Ah Yee Company. In addition to these sites within the larger complex, 21 features have been recorded that include mining and potential habitation features such as structures and hearths. Two of these sites were archeologically tested during the 2021 PIT project under the direction of Katee Withee and Tatiana Watkins. Feature 13 consists of a possible habitation site with structural remains and possible tent flats, as well as a rock pile believed to be a hearth feature (Skinner 2016). Although material culture suggestive of a Chinese occupation was observed at the site (CBGS and a fragment of glass identified as an opium lamp base), there is no clear association to the Ah Yee & Company mining in the area (Tatiana Watkins 2022, personal communication). The second site is documented as Feature 14. This site is also a potential habitation site with two possible structures, and dates to circa 1880s-1890s (Skinner 2016). As with Feature 13, no clear association to the Ah Yee & Company mining in the area could be established, and the period of occupation matches with documented EuroAmerican mining in that area (Tatiana Watkins 2022, personal communication).

Ah Yee Site 06040301333

The Ah Yee Site is located a few miles away from the Happy Camp mining complex as the crow flies and is associated with another large placer mining complex (Site 06040301834). The Ah Yee Site was initially recorded in 1993 as part of the Vincent/Vinegar Planning Area and was documented as “Cabin 4.” Updates to the archaeological record appear as part of the 2017 Galena addendum report, which provides detailed descriptions of significant features consisting of foundation remnants, structural remains, and depressions, as well as a brief overview of observed artifacts. The site lies within the larger confines of site 06040301834, a multicomponent site consisting of extensive mining complexes and features including camps, refuse scatters, and temporary railroad spurs.

The Ah Yee Site is believed to be associated with the 10 claims sold to the Ah Yee & Company in 1869 by Stephen Graham. The 1881 General Land Office Map depicts a cabin within the general location of the recorded archaeological site and may be the cabin that is referenced in the transaction (Figure 107):

Ten mining claims, more or less situated on four gulches also one ditch and twenty sluice boxes and three picks, one shovel, and also one cabin...sluice fork together with everything belonging to said claim and ditch, the said claim and ditch is situated between Vinson [sic] and Big Crick [now Vinegar Creek] about one mile from the ranch of Middle Fork (Grant 1869:264).



Oregon Chinese Diaspora Project: Ah Yee Site 06040301333
Malheur National Forest, Grant County, Oregon

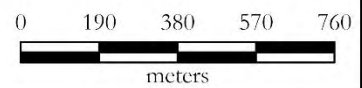


Figure 107. 1881 General Land Office map depicting a cabin in the vicinity of the Ah Yee Site 06040301333. Most of the components associated with Site 06040301834 can be seen to the west.

The site is situated at the head of two placer cuts and associated ditch network. The 1869 mine claim sales agreement makes this site the earliest Chinese mining site documented on the Malheur National Forest (to date). When first recorded in the early 1990s, there were still some sill logs from a cabin structure present, but these are now entirely deteriorated. The site is currently expressed through a light scatter of surface artifacts, two rock features and a linear rock alignment. One feature (described below as the Northern Rock Pile) measures roughly 3 m by 4 m and is similar in shape to the rock hearth encountered at the Happy Camp Site 06040300322, with the hearth opening oriented to the south. A linear dry stacked rock wall or foundation that is up to two courses high in places, runs from this feature to the east for roughly 7 m. A second smaller rock feature (described below as the Southern Rock Pile) measures roughly 2.5 m by 3.5 m and is located 9.5 m to the south. It has a mature pine growing within in it, that tree core data has dated to 1919. The hearth on this feature is oriented to the north towards the other cooking feature.

The site lies on an elevated plateau above an eastern/northeastern facing slope between two smaller drainages which flow into the Middle Fork John Day River a short distance to the west. Stands of second growth timber surround the site and the vegetation is consistent with the Grand fir vegetation zone of the Blue Mountain province. The soils for this site area are listed as a Bennettcreek-Fivebeaver complex (map unit 4173AO). This soil type is associated within mountain slopes and plateaus with a 0 to 15 percent slope (NRCS 2022). A typical soil profile consists of 0-1 inches of decomposing plant material, 1-4 inches of ashy silt loam, 4-11 inches of an ashy silt loam B horizon, and 11-31 inches of gravely silt loam followed by bedrock (NRCS 2022).

SOULA conducted investigations at the Ah Yee Site 06040301333 in 2018 and again in 2021. Our 2018 excavations were done in conjunction with the companion PIT project, which assisted in clearing the site and establishing site loci using a metal detection survey (Figure 108). The initial investigations established that the core of the site was situated on the terrace surrounding the two rock piles. The second season allowed us to better characterize the layout of the cabin in relation to the rock features. During our 2021 work at the site, the companion PIT project was focused on two other resources within the larger Ah Yee complex (Watkins 2021).



Figure 108. View south of the project area with the metal detection flags marking the core of the site in the foreground. The Southern Rock Pile is located at the tree in the center of the photograph where archaeologists are clustered.

SOULA's 2018 fieldwork was conducted between July 19-21 and consisted of the excavation of 13 QTUs (QTU 1- QTU 13) and one 1 m by 1 m TU (TU 1). A 22 m by 16 m grid was established at the site, and a grid of QTUs was placed at 5 m intervals within it (Figure 109). As with the other sites, surface artifacts and metal detection finds were documented and GPS'd, and diagnostic artifacts were collected. At the time of the original fieldwork the excavations seemed adequate to test the site. However, once artifacts were analyzed in the lab, it became clear that the site was distinct from the other ones in this project area both in terms of age and artifact assemblage. Therefore, it was determined that a follow up visit was warranted.

SOULA's 2021 work at the site was conducted between July 4-July 10 and focused on the visible features at the site that are believed to be associated with a cabin (Figure 110). A 4 m by 10 m Wide Exposure was excavated in the vicinity of the Northern Rock Pile and foundation wall using 2 m by 2 m units (Units A through I). The units were excavated in two shallow scrapes: with the first removing the duff layer and surface vegetation (<5cm) and the second taking the unit down another 5-10 cm to a mottled and slightly compacted layer believed to represent the historical ground surface. In order to sample the deeper layers, a 50 cm by 50 cm QTU was excavated in Block C (QTU C1), a 1 m by 1 m unit was excavated in Block G (TU G1), and a 50 cm by 1 m unit was excavated in Block I (TU I1). Investigations into the Southern Rock Pile (Area L) consisted of a 3.4 m by 2.5 m surface scrape with a QTU (QTU 18) placed in the exposed hearth area. A mound with potential foundation stones located to the east of the Southern Rock Pile was designated Area K and excavated by means of a 2 m by 2 m surface scrape. The final area, Area J, consisted of a 50 cm wide by 5.5 m long surface scrape connecting Area K with the Wide Exposure targeting the Northern Rock Pile. In addition, two QTUs were used to target the above features (QTU 17 and QTU 18), and four QTUs (QTUs 14, 15, 16 and 19) were excavated to the east of the site grid where surface artifacts had been observed on the slope.

In general, the material culture associated with the historic occupation of the site was on or just below the surface. Soils observed across the site consisted of a brown ashy loam (10YR 5/3 - 10YR 4/3) (Table 10). Due to the discrete deposits encountered at the site, the various excavation components will be discussed individually below.

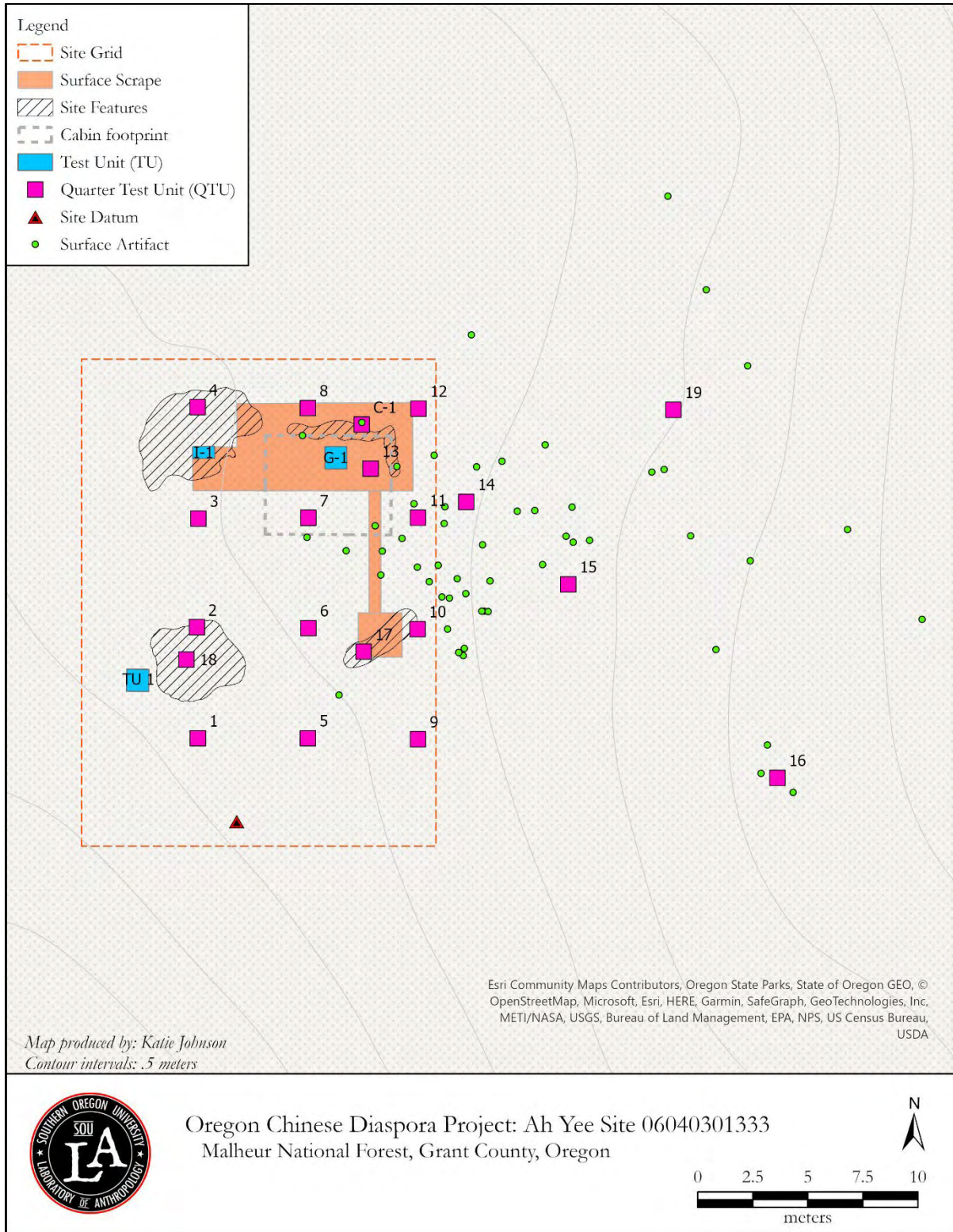


Figure 109. Site map with surface features and excavation units noted. Original illustration by Eric Gleason.

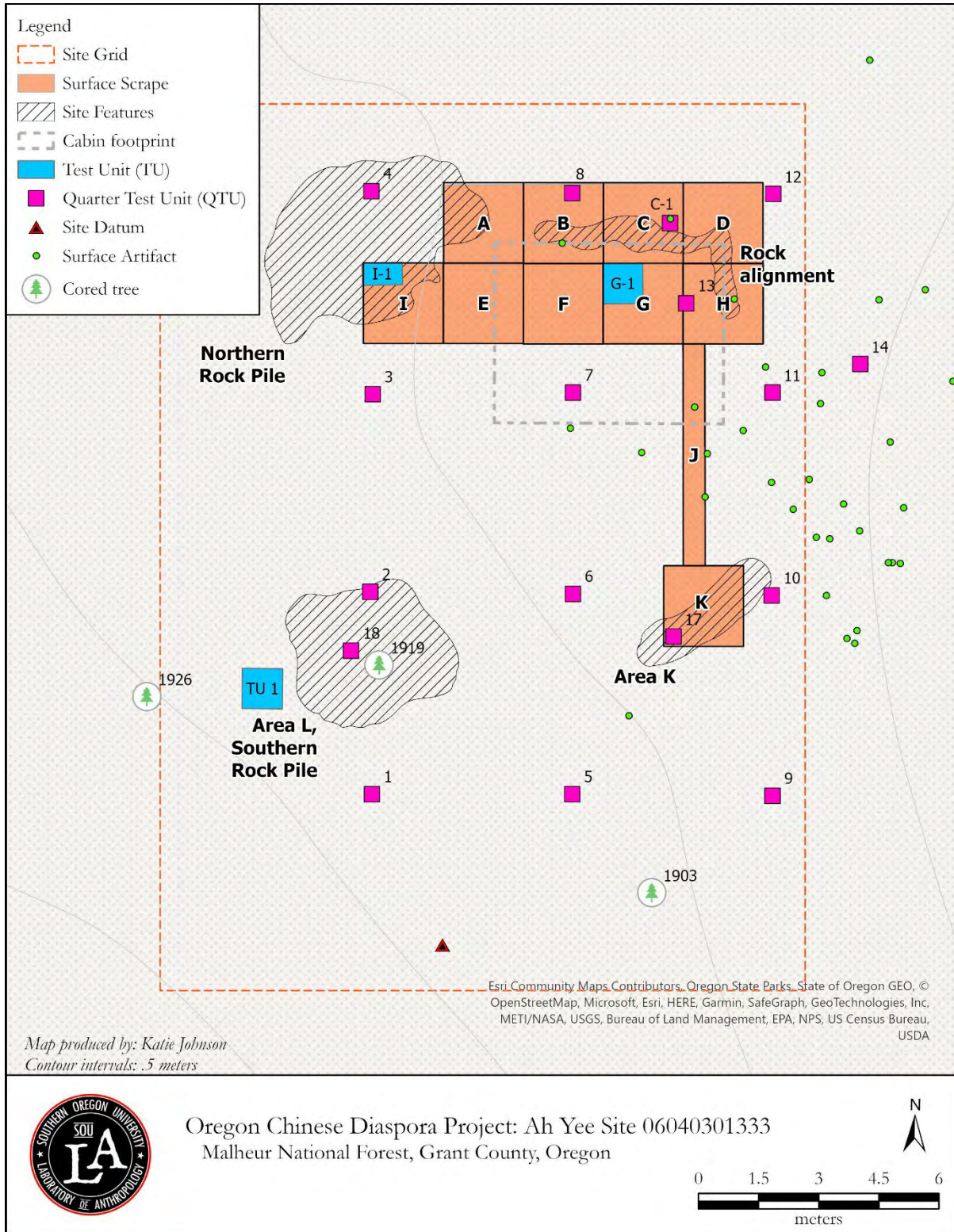


Figure 110. Close-up of the Ah Yee Site map with unit and additional features noted. Tree core data provided by Tatiana Watkins. Original illustration by Eric Gleason.

TU 1

TU 1 was excavated in 2018 and was placed directly east of the Southern Rock Pile (described below as Area L) at grid 14s/2e. The hope was that the unit would be within the building or activity area associated with the rock feature. Soils within the unit consisted of a brown silty loam (10YR 5/3) with roots and a small number of gravels present (Figure 111). A total of 12 artifacts were recovered from the unit, the bulk of which were found in Level 3 (10-20 cm below surface). No artifacts were recovered from below this level, and the unit was terminated at 50 cm below datum. No evidence was found to suggest that a structure was present at this location.



Figure 111. View north of TU 1 at 30 cm below datum.

Wide Exposure: TU A - TU I

A 4 m by 10 m Wide Exposure surface scrape grid was established over the northern portion of the site in order to better understand the visible surface features (Figure 112). The grid was built off of the larger site grid and divided up into nine 2 m by 2 m units (TU A through TU I), which covered the Northern Rock Pile and the linear rock alignment believed to represent a foundation or wall (Figure 113 and Figure 114). Each unit was excavated in a series of shallow scrapes (Figure 115 and Figure 116). All of the material was screened and bagged by unit, and surface artifacts were mapped in situ. The first scrape removed the duff and vegetation and exposed the rocks and mineral

soils (< 5 cm). The second scrape removed roughly 5 cm of loose brown ashy silt (10YR 5/3) to expose what is believed to be the historic occupation layer, a slightly compacted and mottled soil with charcoal flecking.

The L-shaped rock alignment is believed to represent the northeastern corner of the cabin, and is comprised of one to two courses of dry stacked rocks. Portions of the wall have collapsed, particularly along the northern edge where rocks appear to have fallen outwards. In some cases it is unclear whether these rocks are displaced, or perhaps reflect a more robust footing or portion of the structure. In order to help characterize the layout of the cabin and its relationship to the material culture assemblage, units that contained portions of the rock alignment sediments from “inside” the feature were kept separate from those “outside” of the feature in order to subdivide the assemblage and allow for a more fine-tuned analysis.



Figure 112. View east across the Wide Exposure area with the Northern Rock Pile in the foreground. The tent is being erected over the screening area for all of the units.



Figure 113. The Northern Rock Pile prior to vegetation removal. View north, with the hearth area in the foreground.



Figure 114. View east of the Wide Exposure with duff removal in progress. The Northern Rock Pile can be seen in the foreground.



Figure 115. View south across the Wide Exposure with excavation in TU F (center) and TU G (left) in progress. The Northern Rock Pile is visible on the right.

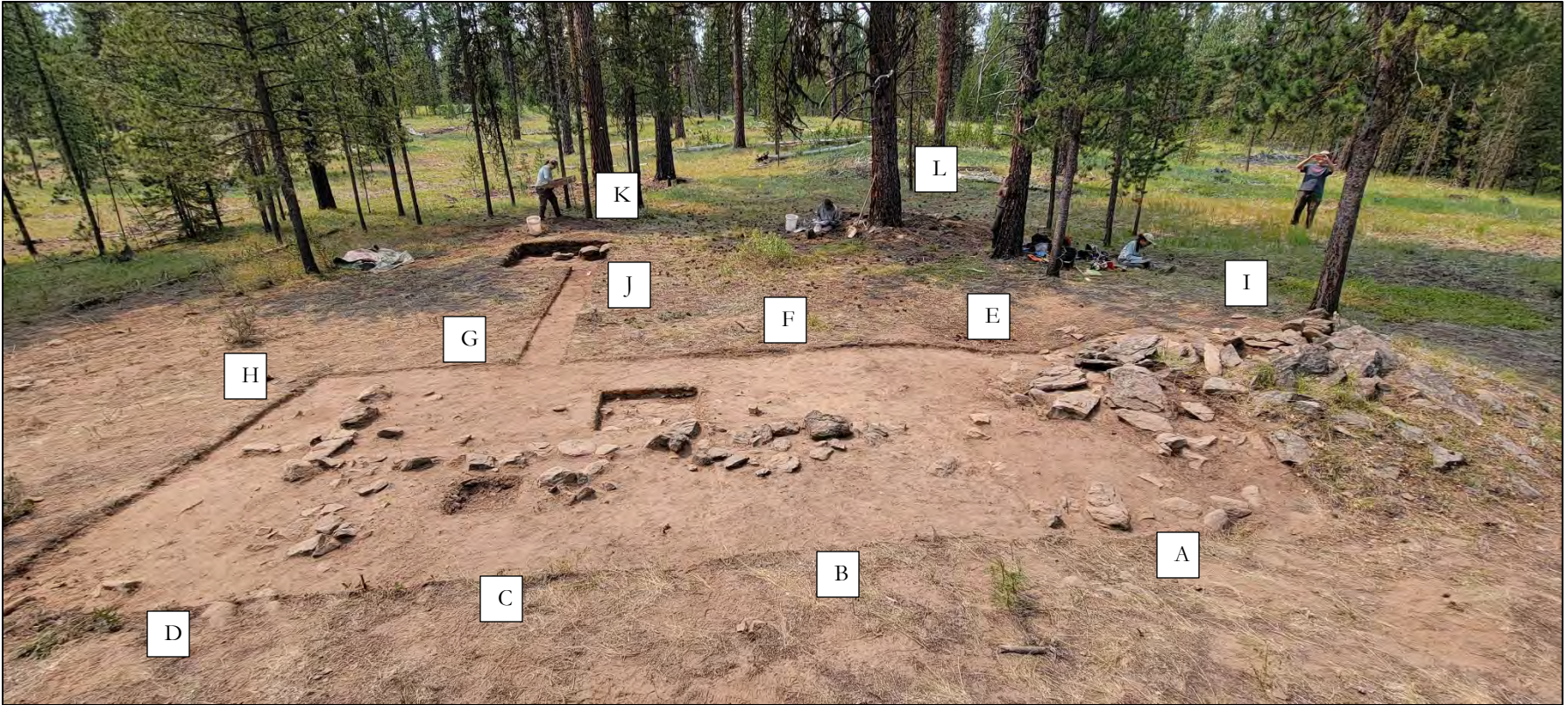


Figure 116. View south across the site with excavation areas noted.

While the bulk of the grid was mapped and remained at this level (roughly 10 cm below surface), deeper soils were investigated in three areas (Figure 117). A 50 cm by 50 cm QTU (QTU C1) was excavated in TU C and was placed in the center of an area where the rock formed two “buttresses” that either reflected an intentional component of the linear rock feature, or was where a portion of it had collapsed. The unit was largely sterile and very shallow due to the presence of crumbly bedrock, with just five small calcined faunal fragments recovered.



Figure 117. Aerial view of the Wide Exposure units with the rock pile and the linear rock alignment visible. Based on the surface expression and archaeological findings, we believe the corner of the rock foundation seen here represents the northeastern portion of the original cabin. QTU C1 was placed on the northern side of the wall, believed to be outside the building, TU G1 was placed inside the building within an area of high artifact counts, and TU I1 was placed within the hearth area of the foundation. Drone footage provided by Cliff Danger.

A 1 m by 1 m TU (TU G1) was excavated in the northwest corner of TU G, prompted by the high number of artifacts recovered from this unit (Figure 118). A total of 444 artifacts were recovered from the larger 2 m by 2 m TU G scrapes, and 319 artifacts were recovered from TU G1. Of this, there were 281 faunal artifacts, more than 90% of which were small calcined bone fragments. Following the wider surface scrape, TU G1 was excavated an additional 10 cm through the historical occupation layer. The excavation revealed that the mottled soils associated with the historical occupation included brown ashy silt (10YR 5/3) with pockets of compact dark yellowish-brown silt, and light gray (10YR 7/2) loose silty ash, and were underlaid by brown (10YR 5/3) silty ash. The bulk of the artifacts were recovered from the mottled soils of the occupation layer. The unit was terminated at the transition to the shallow bedrock observed elsewhere at the site.



Figure 118. View north of TU G1 at 10 cm below the unit surface (roughly 20 cm below the original ground surface).

The final unit, TU I1, was a 1 m by 50 cm unit excavated within TU I, which encompassed the southern portion of the Northern Rock Pile (Figure 119). TU I1 was placed in the northwest corner of the larger unit, positioned to include the stacked rocks at the west side of the feature as well as part of the shallow basin making up the hearth. The unit was strategically placed to capture part of the western rock wall, as well as part of the shallow basin marking the hearth area (and potentially reflects past looting at the site). The in situ rocks were left within the unit, leaving the actual area of excavation closer to 70 cm by 50 cm. Unlike the other units in the vicinity, this unit was excavated using arbitrary 10 cm levels, and had a datum on the top of the feature. The unit was excavated to 80 cm below datum, which was roughly 45-55 cm below the original surrounding ground surface. Two large, flat rocks were encountered roughly 50 cm below datum and are believed to be the base of a firebox (Figure 120).

Soils within TU I1 included a brown (10YR 5/3) ashy silt mottled with dark grayish brown (10YR 4/3) charcoal stained sediments. The upper few centimeters had patches of reddish oxidization. A loose, pale brown (7.5YR 6/3) ashy matrix was encountered in Level 2, along with an increase in angular gravels (15-20%). While the surface layers appear to be churned up, the ashy matrix appears to be fully intact by Level 3. Between 75 to 80 cm below datum the matrix changes to a compact dark brown (7.5YR 3/2) silt with an increase in rocks. This appears to be the underlying culturally sterile horizon, at which point the unit was terminated (Figure 121).

A total of 766 artifacts were recovered from TU I1, 70% of which were recovered from the first two layers. As with the other units in the Wide Exposure, the artifact assemblage was dominated by faunal materials (74%) in part due to the high number of small calcined bone fragments (n=559). This was followed by Structural materials, which included 95 cut nails, mortar fragments, and chinking.



Figure 119. Aerial view of TU I1 within TU I and the rock feature hearth area (as observed by the lack of stacked rocks). Drone footage provided by Cliff Danger.



Figure 120. Close up of TU I1 at 80 cm below datum (roughly 45-55 cm below the ground surface). The flat rock believed to be part of the firebox can be seen on the right of the unit, and the dark gray brown silt visible on the bottom of the unit is believed to be beneath the cultural layers.

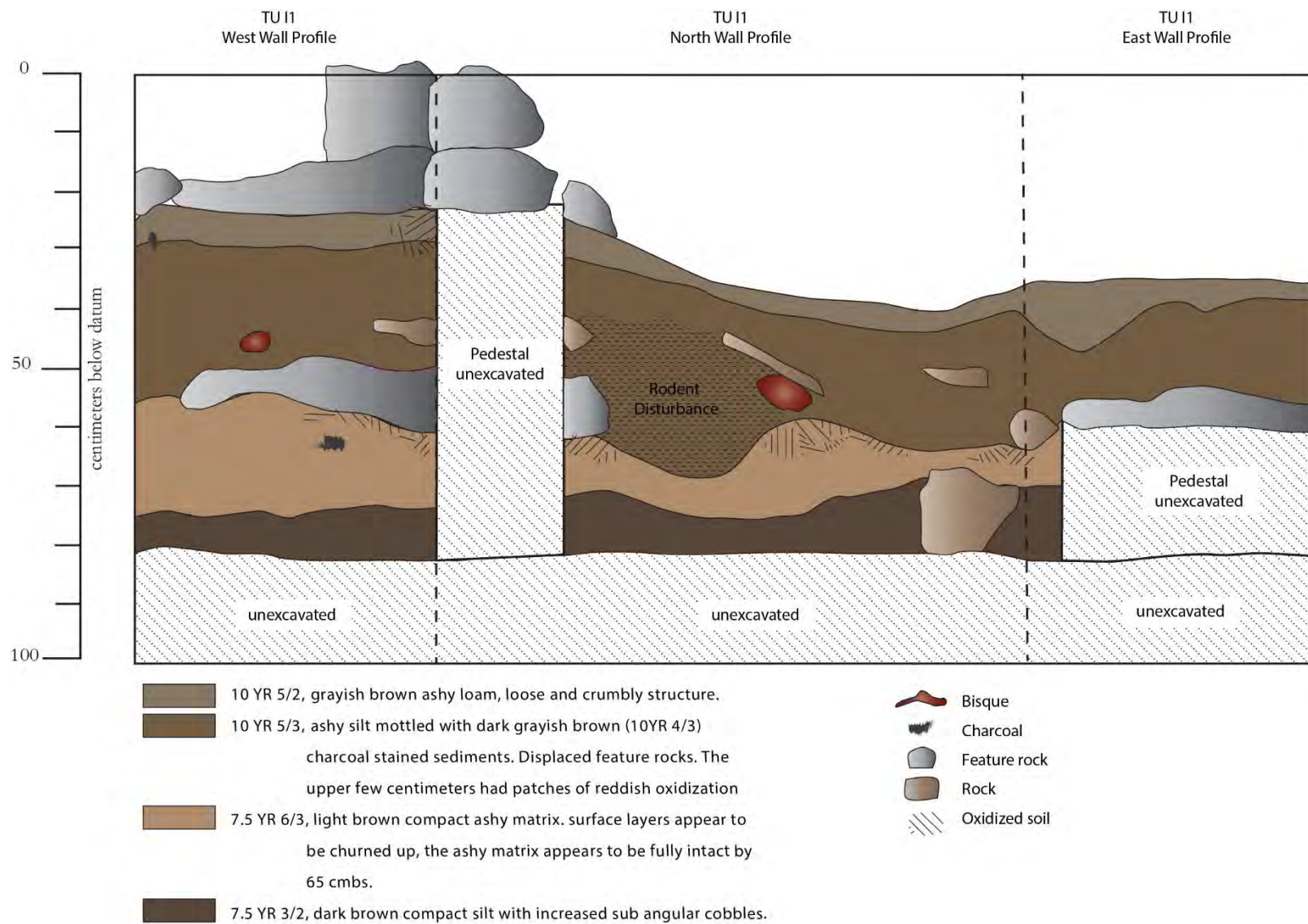


Figure 121. Profile view of the west, north, and east walls of TU I1.

Area K: QTU 17 and TU K

QTU 17 was placed arbitrarily on a mound located to the east of the Southern Rock Pile Feature (Area L). When it was confirmed that this feature contained cultural materials, the excavation was expanded into a 2 m by 2 m surface scrape (designated TU K) described in the field as the “Southern Foundation Scrape” (sw corner at 13.5s/ 12.75e). This unit bisects the mounded soil feature and encompasses the area to the north where stones are visible on the surface. These stones looked like they could have been associated with a foundation or structure. A closer look at the site form from the 1990s work indicates that additional rocks were present in this location and were aligned with the rock features to the north. However, the current excavation suggested that this rock wall feature was not associated with the main domestic structure but could be the remains of an outbuilding or activity area. TU K was excavated stratigraphically, in a manner similar to the other scrapes on the site. The soils in the unit consisted of a duff/ vegetation layer followed by dark greyish brown soil (10YR 4/2) that quickly transitioned to a brown semi-compacted silty loam (10YR 4/3) with ~5% small gravels. The dense artifacts present in the unit are consistent with a midden, and may reflect the informal deposition of food and other waste at this location. This may be associated with the former structure or feature in the vicinity that was identified by the mound and stones. The midden deposit was underlaid by a compacted dark yellowish-brown silt (10YR 4/4).

In an effort to characterize the feature and determine whether the rocks represented a wall or foundation, the excavation was divided into “inside” and “outside” of the feature based on the location of the mound and slight soil differences across the unit; the artifacts were bagged accordingly (Figure 122 and Figure 123). Slight differences in the soils led to portions of the sediment being excavated by strata. However, upon completion of the unit it seemed that soil variations were more due to the undulating landscape rather than any distinct feature deposits. Excavation revealed that the stones did not extend beyond a single course, and the mounded soils followed the contour of the ground rather than representing the deep or stratified deposit originally believed to be present. The unit was excavated to a maximum depth of 55 cmbd along the south wall where the soils had been mounded up and as shallow as 10 cmbd in the northwest corner. A total of 2,011 artifacts were recovered from this area, which included surface finds and materials from the combined QTU 17 and TU K excavations. Of this, 66% were recovered from “inside” the feature which spanned the northern $\frac{3}{4}$ of the unit. Of these, Faunal material made up 47% of the assemblage, followed by Structural materials (23%), the bulk of which consisted of cut nails. The assemblage recovered from “outside” the feature (n=657) is a little misleading, as 237 sheet metal fragments (representing 84g) likely reflects a much smaller number of actual items. With these items removed, nearly half of the remaining assemblage is comprised of faunal materials.

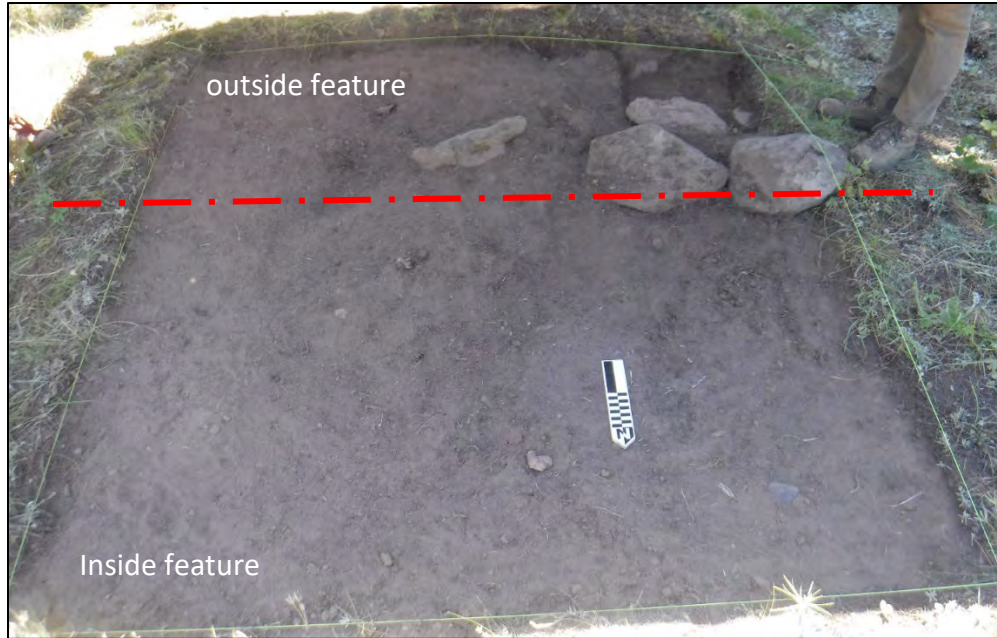


Figure 122. View south of TU K after the duff removal with the surface rocks and QTU 17 visible in the top right (southwest corner of the unit). The red line denotes the general location where the unit was divided by inside and outside of the feature.

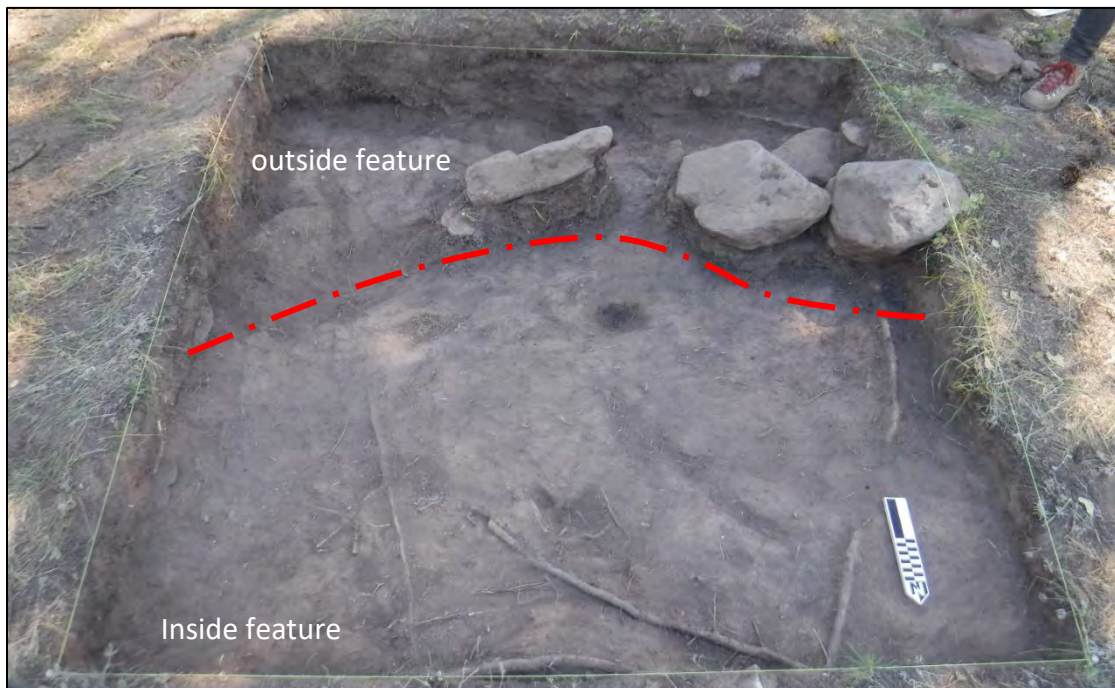


Figure 123. View of TU K at the base of the excavations below the cultural layer in Stratum 5. From this view you can see that the stones do not extend beyond a single course at the edge of the mounded soils. The red line denotes the sloped edge of the feature which continues into this sterile Stratum. The unit was excavated to a maximum depth of 55 cmbd along the south wall where the soils had been mounded up and as shallow as 10 cmbd in the northwest corner.

Area L: QTU 18 and TU L

QTU 18 and TU L were used to target the Southern Rock Pile that appears to be a smaller version of the one to the north. There is a mature Ponderosa pine tree growing within the feature that dates to 1919 based upon coring conducted by MNF personnel in 2021. TU L consisted of a 3.4 m by 2.5 m grid placed over the rock feature. Duff and vegetation were removed within this grid in order to expose the rock and mineral soil (Figure 124 and Figure 125). Once the feature was exposed, there was a clear void within the stacked rocks that was consistent with a hearth area. This indicated that the feature was oriented to the north (towards the other Northern Rock Pile). QTU 18 was placed within the hearth in order to better characterize the nature of the feature (Figure 126). Soils observed within the unit included a dark grayish brown silt (10YR 4/2) that became increasingly compact with depth. The unit was excavated down 50 cm, and charcoal was observed throughout. A modest 48 artifacts were recovered from the feature scrape and QTU excavation, more than half of which were cut nails (n=25). The remainder of the assemblage consisted of wood and charcoal samples, bisque or clay chinking, 10 fragments of non-diagnostic sheet metal, and a small piece of freshwater mussel and calcined bone.



Figure 124. View west of the Southern Rock Pile and TU L scrape in progress.



Figure 125. View north of the Southern Rock Pile after excavation was completed. Note, the other rock pile can be seen to the north in the top left of the photograph.



Figure 126. Three views of Q TU 18 within the TU L exposure. Top: view southeast of the unit within the Southern Rock Pile with the large Ponderosa Pine visible. The tree has impacted the feature by shifting some of the rocks outward (west) as it has grown. Bottom left: plan view of Q TU 18 at 50 cm below the surface. The intact portions of the feature (on the west where the tree has not shifted the rocks) create a clear right angle that marks the back corner of a firebox. Bottom right: the south wall profile within Q TU 18 at 50 cm, with stacked rocks creating a wall at the back of the hearth feature.

Area J

Area J excavations consisted of a linear trench measuring 5.5 m long and 50 cm wide that connected TU K with TU G of the Wide Exposure (Figure 127). The trench was divided up into five 50 cm by 1 m units (J1-J5) and one 50 cm by 50 cm unit (J6). Each unit was scraped down to roughly 5-6 cm below the surface in an effort to expose the historical occupation layer defined as a mottled and semi-compact surface with charcoal and wood flecking throughout. The midden associated with Area K was observed extending into the southernmost units of the J Trench: J5 and

J6 (Figure 128). This was observed as a darker soil with a distinctive root mat that created an abrupt transition between the midden and the surrounding soils. In addition, two large rocks were located near the southwest corner of J2, which are believed to represent the southern wall of the cabin. A total of 388 artifacts were recovered from the J trench units, with 161 from the midden in J5 and J6 (41%), and 102 artifacts (26%) from J1 and J2, which are potentially within the feature.

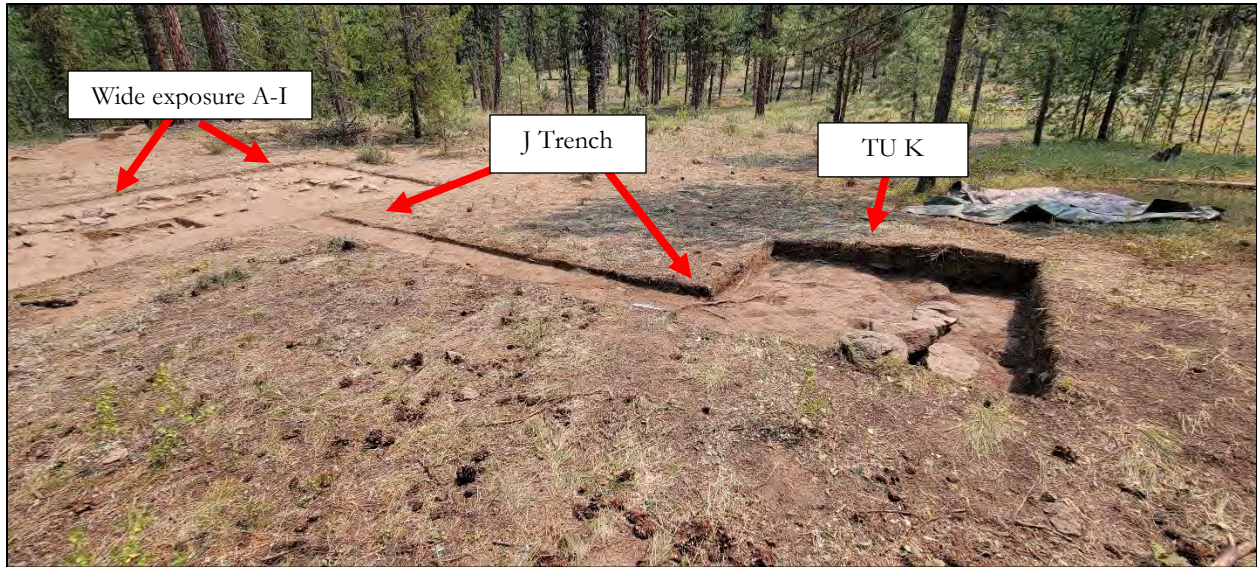


Figure 127. View northeast across Area K, Area J, and a portion of the Wide Exposure.



Figure 128. View east of the J trench, with J5 excavated and J6 (on the right) with the duff removed. The slightly darker soil associated with the midden in TU K can be seen in the trench.

QTUs

A total of 19 QTUs were excavated across the site. The bulk of these were located within the main site grid, and several are within the features described above. While most of the QTUs were excavated in 2018, additional units were added in 2021 to test the area on the slope to the east of the cabin feature. These units (QTU 14, QTU 15, QTU 16, and QTU 19) indicated that the sheet midden on the slope was eroding from the main site area and not indicative of any subsurface deposits. A description of the QTUs is presented in Table 10 below.

Table 10. Description of soils within the Ah Yee Site 06040301333 QTUs.

Unit	Depth	Soil	Comments
QTU 1	0-35 cmbs	Brown silty loam with roots, hit layer of large rocks leading to termination.	
QTU 2	0-50 cmbs	Brown silty loam with roots, gravels and cobbles increased with depth.	
QTU 3	0-42 cmbs	Medium-brown silty soil mottled with charcoal, terminated at bedrock.	
QTU 4	N/A	Not excavated	In rock feature
QTU 5	0-40 cmbs	Brown silty loam with ~30% angular content. Mottled clay and charcoal with depth, terminated at bedrock.	
QTU 6	0-42cm	Brown sandy loam with roots and a few gravels. Terminated at bedrock.	
QTU 7	0-70 cmbs	Brown silty loam transitioning to a burned layer. A compacted mottled soil that may be natural was encountered between 40-70 cmbs.	
QTU 8	0-35 cmbs	Brown silty loam with roots and medium to large cobbles. Terminated at bedrock.	In TU B
QTU 9	0-40 cmbs	Medium yellowish-brown silty loam (10YR 4/4) with lots of roots, transitioning to a darker compact silty clay (10YR 3/4). Terminated at cobbly clay subsoil.	
QTU 10	0-50 cmbs	Brown silty loam with ~10% angular content.	Just east of TU K
QTU 11	0-40 cmbs	Fine, brown silty loam with ~15% gravels. Terminated at bedrock.	
QTU 12	0-35 cmbs	Brown silty loam with few gravels. Terminated at bedrock.	Adjacent to TU D
QTU 13	0-30 cmbs	Brown silty loam with lots of rootlets. Terminated at bedrock.	In TU H
QTU 14	0-30 cmbs	Brown silt with small gravels, increasing compaction and rock content with depth.	
QTU 15	0-40 cmbs	Brown ashly silt with small gravels, increasing compaction and cobbles with depth. A red clay subsoil encountered at 40 cm.	
QTU 16	0-30 cmbs	Medium brown loamy clay transitioning to dark reddish brown subsoil at 30 cm.	
QTU 17	0-40 cmbs	Unit absorbed into the TU K excavation.	In TU K
QTU 18	0-50 cmbs	Dark grayish brown silt (10YR 4/2) that became increasingly compact with depth.	In TU L
QTU 19	0-20 cmbs	Brown silty loam, transitioning to the reddish brown clay subsoil by 20 cm.	

Ah Yee Site 06040301333 Artifact Assemblage

A total of 5,667 artifacts were recovered from the two seasons at the Ah Yee Site (Table 11 and Table 12). Of these, 384 artifacts were recovered from the 2018 excavations, and 5,283 were recovered from the 2021 excavations. The assemblage includes 224 GPS'd surface finds collected over the two years, and the remainder of the items were collected from within the excavation units. No precontact artifacts were found at the site. While the site includes both a cabin and associated midden, the artifact recovered from both contexts are is presented together below. That said, it is worth noting that roughly 40% of the assemblage was recovered from the midden deposits observed in Area K, which includes TU K, QTU 10 and QTU 17, and TU J5 and TU J6.

Table 11. Vertical distributions of artifacts within the 2018 and 2021 Ah Yee units using 10 cm arbitrary levels.

Unit	0-10	10-20	20-30	30-40	40-50	Notes
TU 1	0	1	11	0	0	
QTU 1	0	0	0	0	0	
QTU 2	1	11	0	0	0	Adjacent to TU D surface scrape.
QTU 3	11	23	1	0	0	
QTU 4	0	0	0	0	0	
QTU 5	0	3	1	0	0	
QTU 6	6	14	0	0	0	
QTU 7	10	13	12	5	3	
QTU 8	11	7	1	0	0	In TU B surface scrape.
QTU 9	21	1	1	0	0	
QTU 10	21	6	0	0	0	
QTU 11	0	27	5	0	0	
QTU 12	0	0	0	0	0	
QTU 13	18	20	2	0	0	In TU H surface scrape.
QTU 14	42	9	0	/	/	
QTU 15	1	0	0	0	/	
QTU 16	1	0	0	/	/	Metal detection hit
QTU 17	13	/	/	/	/	Unit is within the Southern Foundation Scrape (TU K)
QTU 18	17	3	9	15	4	South Rock Pile (TU L)
QTU 19	0	0	/	/	/	
TU I1	281	258	175	36	23	1 m by 50 cm unit in the Northern Rock Pile feature scrape (TU I), but excavated using 10cm intervals
Totals	454	396	219	56	30	
	Negative units					
	2021 Units					

Table 12. Vertical distribution of units within the 2021 Ah Yee surface scrape units using 5 cm stratigraphic levels.

Unit	0-5	5-10	10-15	15-20	Notes
TU A	49	20	/	/	
TU B	23	62	/	/	QTU 8 in unit
TU C	27	125	/	/	
QTU C1	/	/	5	/	
TU D	92	89	/	/	
TU E	20	92	/	/	
TU F	40	230	/	/	
TU G	103	353	/	/	
TU G1	/	/	268	0	
TU H	66	149	/	/	QTU 13 in unit.
TU I	81	53	/	/	
TU J1	70	/	/	/	
TU J2	36	/	/	/	
TU J3	40	/	/	/	
TU J4	86	/	/	/	
TU J5	78	/	/	/	
TU J6	85	/	/	/	
TU K	105	631	1,174	77	
Totals	1,001	1,804	1,447	77	

Artifacts Assigned to the Activities Functional Category

A total of 80 artifacts were assigned to the Activities functional category. This included four horseshoes assigned to the **Animal Husbandry** group (Figure 129). Artifacts assigned to the **Firearms** group include gun parts including a double trigger rifle (Figure 130), ramrod guides (Figure 131), 22 percussion caps, a musket ball, three bullets (Figure 132), a powder can (Figure 133) and a lead powder flask stopper.

A total of 44 items assigned to the **Mining** and **Tool** group, including modified cans and grizzly fragments (Figure 134), as well as portions of 5-piece gold pans, shovels (Figure 135), an ax, pick fragments (Figure 136), a wedge, switch blade (Figure 137), as well as a key and padlock part (Figure 138).



Figure 129. Horseshoe nails recovered from the 2021 excavations (*specimen 2021.11-0999, specimen 2021.11-0929*).



Figure 130. Double trigger rifle set recovered in QTU 10 (*specimen 2018.10-1172*).



Figure 131. Ramrod guide from a muzzle loading black powder rifle or smoothbore musket with the entry thimble attached (top: *specimen 2021.11-769*), ramrod guide (*specimen 2021.11-0509*).

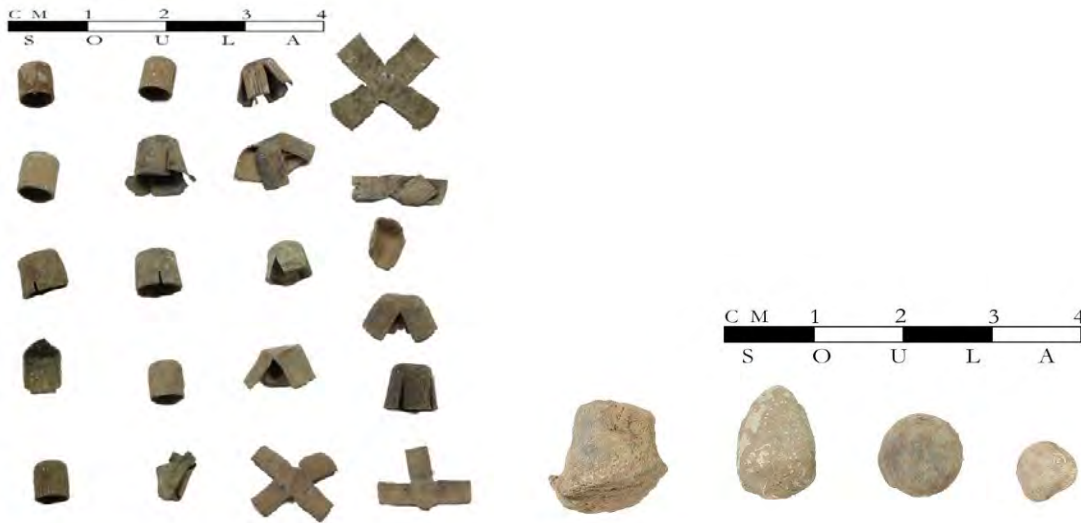


Figure 132. The ammunition related artifacts recovered from the 2021 Ah Yee excavations. Left: fired and unfired percussion caps (*specimens 2021.11-1179, 2021.11-0744, 2021.11-0717, 2021.11-0693, 2021.11-0944, 2021.11-0808, 2021.11-0773, 2021.11-0584, 2021.11-0583, 2021.11-0865, 2021.11-1045, 2021.11-0911, 2021.11-0931*). Right, fired lead bullet (*specimen 2021.11-0889*), lead bullet (*specimen 2021.11-0694*), lead musket ball (*specimen 2021.11-1201*), fired lead bullet (*specimen 2021.11-0958*).



Figure 133. Left: gunpowder can (*specimen 2021.11-0546*), Right: two views of a lead powder flask stopper (*specimen 2021.11-0695*).

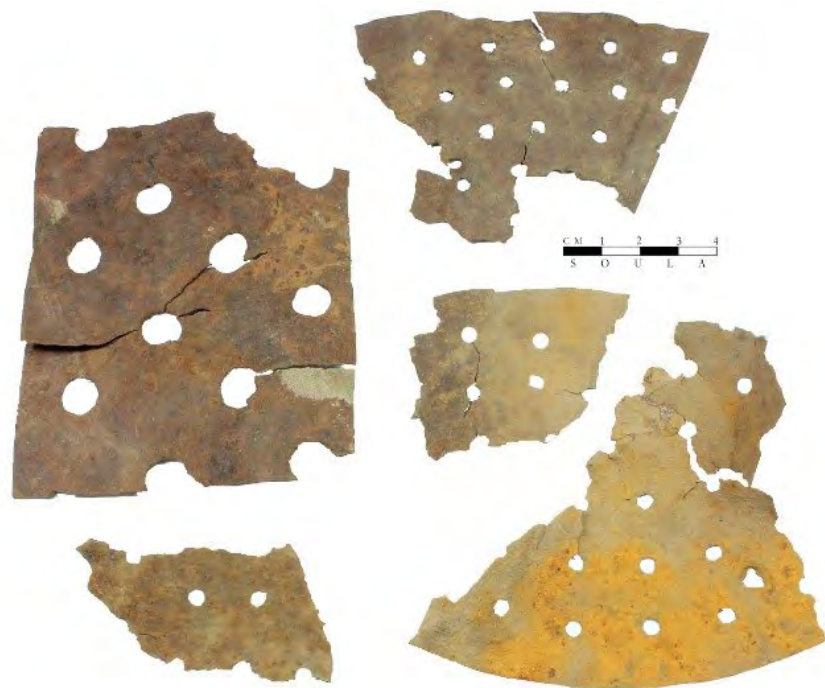


Figure 134. Fragments of a mining grizzly made from repurposed cans (*specimen 2021.11-0547*, *specimen 2021.11-0545*, *specimen 2021.11-0961*, *specimen 2021.11-0947*).



Figure 135. From left: Shovel fragments (*specimen 2021.11-1135*, *specimen 2021.11-1166*, *specimen 2021.11-0556*), axe head (*specimen 2021.11-1083*).



Figure 136. From left: Pickaxe handle supports (*specimen 2021.11-0730*, *specimen 2021.11-0558*, *specimen 2021.11-1203*), a pick tip (*specimen 2021.11-1187*), and a wedge (*specimen 2021.11-1132*).



Figure 137. Ferrous blade from a small knife (*specimen 2021.11-0745*).



Figure 138. Key and key plate (*specimen 2021.11-0774, specimen 2021.11-0743*).

Artifacts Assigned to the Domestic Functional Category

A total of 178 artifacts were assigned to the Domestic Functional Category. Of this, seven oil and food can fragments (Figure 139 and Figure 140) and 39 fragments of an aqua glass cathedral style condiment bottle were assigned to the **Food** group, 36 CBGS fragments from a globular jar, shouldered jar, spouted jar, and utilitarian vessels were assigned to the **Food Storage** group (Figure 141). A utensil handle (Figure 142) and 86 white improved earthenware fragments were assigned to the **Food Preparation and Consumption** group, representing a gothic paneled white cup (n=11), saucers (n=10), and tableware unable to be assigned a specific vessel form (n=67). Gothic paneled wares have flat or slightly concave panels, and are a pattern commonly associated with the mid-19th century (MAC Lab 2002).



Figure 139. Oil can handle (*specimen 2018.10-1166*), rectangular oil can fragment (*specimen 2018.10-1160*).



Figure 140. A sample of the cans recovered from the 2021 Ah Yee excavations. Left image: 3” tall can with a soldered seam (*specimen 2021.11-1232*), fragment of a rectangular can (*specimen 2021.11-0555*). Right image, from top: 4” tall can with a soldered seam (*specimen 2021.11-0731*), crimped seam can (*specimen 2021.11-0527*).



Figure 141. A sample of the CBGS food storage vessel fragments recovered from the site. Top row: fragments of a spouted jar (*specimen 2021.11-0549*, *specimen 2021.11-0553*). Second row, from left: shouldered jar fragment (*specimen 2021.11-0989*), body fragments (*specimen 2021.11-0551*). Bottom rows: body (*specimen 2021.11-1130*) and base (*specimen 2021.11-1127*) fragments from a utilitarian vessel.



Figure 142. Left: ferrous metal utensil handle (*specimen 2021.11-1108*). Right: Gothic paneled white improved earthenware cup base (*specimen 2018.10-1188*).

Artifacts Assigned to the Indefinite Use Functional Category

A total of 1,618 artifacts were assigned to the Indefinite Use functional category. **Miscellaneous Containers** (n=302) included a lid, as well as bottles in amber, amethyst, aqua, cobalt, colorless, and olive glass, can fragments, and containers in aqua, amethyst, and colorless glass (Figure 143). Although cobalt glass is more commonly associated with medicines such as Bromo

Selzer in the late 19th and early 20th century, it can also be used for soda and mineral water or ink bottles from the 1840s well into the 20th century (Lindsay 2020). **Miscellaneous Ceramics** included CBGS and white improved earthenware fragments that could not be identified to form or function. **Miscellaneous Metal** (n=530) items included strapping, a pan, sheet metal, wire, cast iron, small tacks and brad nails, along with nearly 30 cans modified for an unknown function. Other items included two chert manuports (Figure 144), slag, and fragments of what appeared to be bisque or chinking, but may be a natural material in the soil.

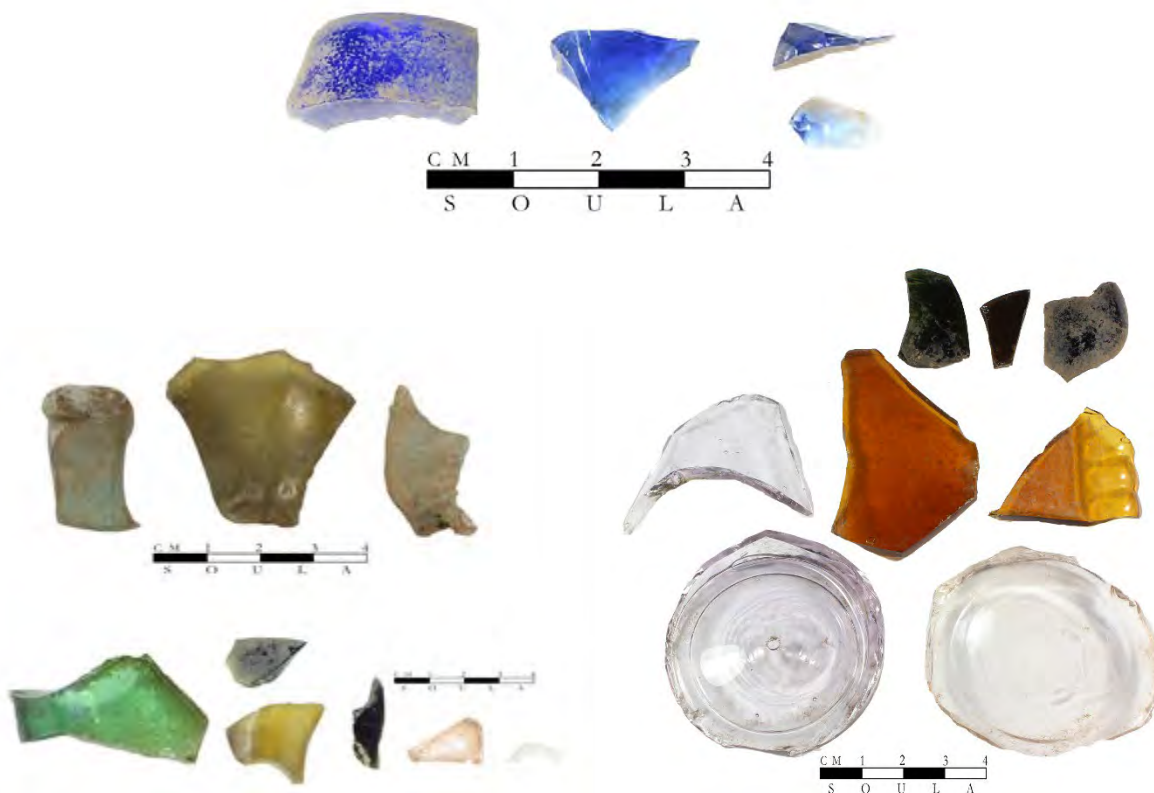


Figure 143. A sample of the glass recovered from the site. Top: cobalt glass bottle fragments (*specimen 2021.11-0921, 2021.11-0512, 2021.11-0948*). Bottom left: olive bottle glass (*specimen 2018.10-1191*), amethyst bottle glass (*specimen 2018.10-1146*), amber panel bottle (*specimen 2018.10-1170*), amber panel bottle with ribbed sides (*specimen 2018.10-1178*), amethyst glass bottle with a post-mold base (*specimen 2018.10-1138*), and an amethyst glass bottle base (*specimen 2018.10-1175*).



Figure 144. Potential chert manuports recovered from the site (*specimens 2021.11-0640, specimen 2021.11-0816*).

Artifacts Assigned to the Personal Functional Category

A total of 452 items were assigned to the Personal functional category. This included eight buckles (Figure 145) and 29 buttons assigned to the **Clothing** group (Figure 146 and Figure 147). Buttons included a mix of loop shank and ball type buttons commonly used in Chinese clothing, as well as 4-hole sew through in ferrous metal, hard rubber, shell, and Prosser porcelain. Three tack style buttons for jeans or work clothes were also recovered. Although these items lacked embossing or makers marks, these types of riveted buttons became more common in 1873, after Levi Strauss and Jacob Davis patented the use of rivets to reinforce workpants, thereby inventing the “jeans” (Levi Strauss & Co. 2022).

Eyelets, hobnails, and over 300 fragments of leather and rubber boots (representing a minimum of one or two shoes) were assigned to the **Footwear** group (Figure 148). Several aqua glass medicine bottle fragments were placed in the **Grooming and Health** group, including Dr. Guysott's Sarsaparilla bottle dating circa 1850s, and a whiteware pot lid with black transferprint label (Figure 149). Small ceramic containers with transferprinted lids became common in the early 19th century for the distribution of toiletry items such as pomade, toothpaste, ointments and other medicines (Hoexter and Ring 2002). Black transferprinted lids were introduced around 1860 (Hoexter and Ring 2002). The double ring and black lettering were used for several products, including toothpowder and bear grease, so the specific contents of the vessel has not been identified. Metal, cardboard, and other materials replaced the use of ceramic pots in the early 20th century. A brass pillar plate for a pocket watch was assigned to the **Accoutrement** group, and a total of 58 artifacts were assigned to the **Social Drugs** group including seven opium can fragments, a fragment of a ball clay tobacco pipe and copper-alloy pipe cover (Figure 150), and 48 alcohol bottle fragments comprised of CBGS, and amber, olive and dark olive glass.



Figure 145. Buckle and buckle fragments recovered from the 2021 excavations. Top row, from left: *specimen* 2021.11-1012, 2021.11-1196, 2021.11-0572. Bottom row, from left: *specimens* 2021.11-0797, 2021.11-0709, 2021.11-1212, 2021.11-0668.



Figure 146. Buttons from the 2018 excavations. From left: A copper alloy dome button (*specimen 2018.10-1185*), ferrous four-hole sew through button (*specimen 2018.10-1168*), and a four-hole sew through Prosser porcelain button fragment (*specimen 2018.10-1103*).



Figure 147. Buttons from the 2021 Ah Yee excavations. Left image, from top left: Ferrous metal buttons for jeans or work clothes (*specimens 2021.11-0875, specimen 2021.11-0864, specimen 2021.11-1220*), 4-hole sew through shell button fragment (*specimen 2021.11-0571*), 4-hole sew through Prosser porcelain buttons (*specimen 2021.11-1193, specimen 2021.11-1046*). Middle row, from left: hard rubber button with embossed design (*specimen 2021.11-0870*), 4-hole sew through ferrous buttons (*specimen 2021.11-0965, specimen 2021.11-1099*), 4-hole sew through Prosser porcelain buttons (*specimen 2021.11-1053, specimen 2021.11-0962, specimen 2021.11-0523, specimen 2021.11-1219*). Bottom row, from left: 4-hole sew through ferrous buttons (*specimen 2021.11-0586, specimen 2021.11-1099, specimen 2021.11-0812*), 4-hole sew through Prosser porcelain buttons (*specimen 2021.11-1024, specimen 2021.11-1098, specimen 2021.11-1194*). Right image: two alloy ball-style loop shank buttons (*specimen 2021.11-0741, specimen 2021.11-0990*).



Figure 148. A sample of the footwear fragments recovered from the 2021 Ah Yee excavations. From top left: leather boot fragments (*specimen 2021.11-1211*, *specimen 2021.11-0763*), fragments of the sole with nails attached (*specimen 2021.11-1147*, *specimen 2021.11-1124*), and hobnails (*specimen 2021.11-1198*).



Figure 149. Left: Black transferprinted rim fragment to a whiteware toiletries or cosmetics pot (*specimen 2021.11-0614*). The double ring and black lettering were used for several products, including toothpowder and bear grease, so the specific contents of the vessel has not been identified. Right: Pocket watch pillar plate (*specimen 2021.11-1036*).



Figure 150. Two views of a brass tobacco pipe cover (*specimen 2021.11-0639*).

Artifacts Assigned to the Structural Functional Category

A total of 989 items were assigned to the Structural functional category. The assemblage was primarily comprised of cut nails assigned to the **Hardware** group (n=950), two wrought nails, tacks, and a key plate, with the remainder of the assemblage consisting of two fragments of chinking, mortar, and charred wood assigned to the **Materials** group (Figure 151 and Figure 152).



Figure 151. A sample of the structural materials recovered from the 2021 Ah Yee excavations. Left image, from top: a sample of cut nails (*specimen 2021.11-0651*, *specimen 2021.11-0653*, *specimen 2021.11-0630*, *specimen 2021.11-0804*, *specimen 2021.11-0662*, *specimen 2021.11-0700*, *specimen 2021.11-0701*). Bottom left: wrought nails (*specimen 2021.11-0828*, *specimen 2021.11-0985*), brad nail (*specimen 2021.11-0706*), and tacks (*specimen 2021.11-0705*, *specimen 2021.11-0665*). Right: wood and charcoal fragments (*specimen 2021.11-0793*, *specimen 2021.11-0767*, *specimen 2021.11-1112*, *specimen 2021.11-1051*, *specimen 2021.11-0749*).

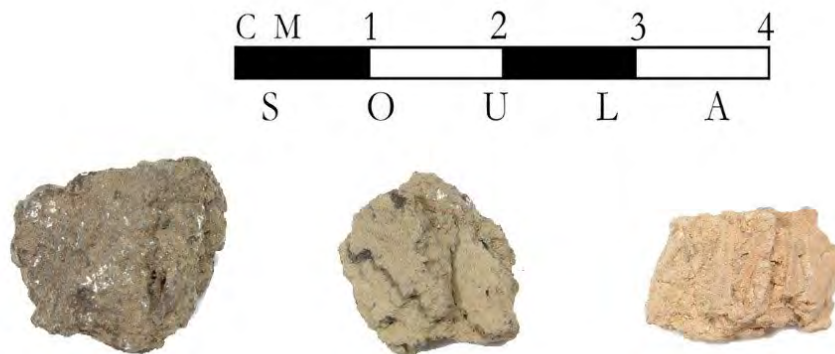


Figure 152. Chinking recovered from TU I1 in the rock feature hearth (*specimen 2021.11-0874*, *specimen 2021.11-0884*).

Artifacts Assigned to Other Categories

Other items in the assemblage included 37 charcoal samples and 2,985 faunal fragments. A total of 2,985 faunal specimens, or food related animal bones, weighing 1,535.02 grams were recovered during the field excavations at the Ah Yee Site. The bones were identified to the lowest taxonomic group using SOULA's in-house comparative collection, along with a number of reference manuals and online resources (see Beisaw 2013; Adams and Crabtree 2012; Smart 2009; Olsen 1990, 1968; Wheeler and Jones 1989; Cannon 1987). Each specimen was also identified to element, where possible, and any diagnostic markings associated with butchering or preparation were recorded along with whether the specimens had been burned or were calcined.

The faunal materials were recovered primarily from within the Wide Exposure (TUs A-I) and Area K, with 64% of the faunal materials being recovered from the Wide Exposure and 28% from the Area K (Figure 153). A smaller percentage (4%) of the faunal material was recovered from within Trench J which ran between the two areas and within QTUs (4%) which were excavated on a 10 meter grid across the site area in 2018. A single QTU was also placed within a rock feature (QTU 18) which contained 6 individual fragments of faunal material. Within the Wide Exposure, the highest percentage of faunal material was recovered from within TU I and TU G. Both of these units consisted of a shallow 2 x 2 meter scrape. TU I had an additional 50 cm by 1 m unit placed within the northwest corner of the unit (TUI.1) within a hearth feature, and TU G had a 1 m by 1 m unit placed in the northwest quad (TU G.1). Table 13 shows the distribution of faunal materials recovered from within the Wide Exposure. TU I.1 was located outside of the cabin, and TU G.1 was within the footprint of the cabin. Other units within the footprint, TU F, TU H and TU D also had robust faunal assemblages. The Area K excavation is outside of the cabin, and appears to be associated with a midden. This area had the highest percentage of faunal materials recovered from the site.

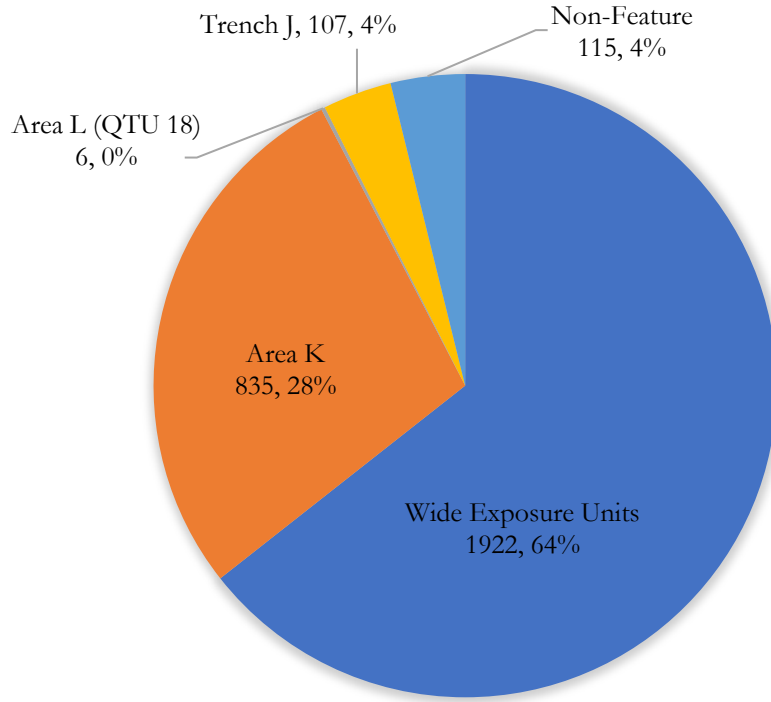


Figure 153. Distribution of faunal materials by component at the Ah Yee Site.

Table 13. Distribution of faunal materials recovered from within the Wide Exposure, the units with the highest densities have been highlighted in blue.

Wide Exposure (A-I)	NISP
QTU C.1	5
TU A	52
TU B	51
TU C	94
TU D	147
TU E	48
TU F	160
TU G	297
TU G.1	281
TU H	133
TU I	87
TU I.1	567
Total	1922

Of the 2,985 faunal specimens recovered, 2,873 (96%) were categorized as mammal, making up the largest percentage of the assemblage (Table 14). Within this category, 11 were identified as Artiodactyl, which could include a variety of native or domesticated sheep/goats or deer. The specimens identified to this group consisted of teeth, phalanx, and mandible fragments. These likely represent a single animal. For instance, the four mandible/maxilla fragments recovered are consistent with a single animal rather than four individuals (Figure 154). An additional six specimens were categorized as *Odocoileus* sp. and compare well with mule deer that are native to the region. A total of eight specimens were also identified as domesticated pig (*Sus scrofa*) while the remaining specimens were simply placed within a size class of small, medium, and large (Figure 155 and Figure 156). As with the Artiodactyl specimens, the pig and deer likely represent single animals given the lack in duplicated elements within the assemblage.



Figure 154. Artiodactyl maxilla and mandible fragments recovered from the site, likely representing a single animal. Top: maxilla (*specimen 2021.11-1161*). Middle: left mandible (*specimen 2021.11-1087*). Bottom: right mandibles (*specimen 2021.11-1107*, *specimen 2021.11-1169*).



Figure 155. Medium mammal bones recovered from the site. From left: a distal medium mammal humerus (*specimen 2021.11-0536*) and distal medium mammal metapodial (*specimen 2021.11-1229*), both specimens compare well with mule deer and have distinct fractures consistent with the chopping of the bones for preparation.



Figure 156. Sample of pig and artiodactyl remains recovered from the site, the top row represents teeth (*specimen 2021.11-1168*, *specimen 2021.11-1056*, *specimen 2021.11-1058*, *specimen 2021.11-1170*, *specimen 2021.11-1190*, *specimen 2021.11-1139*) and the bottom consists of phalanges (*specimen 2021.11-1157*, *specimen 2021.11-1167*, *specimen 2021.11-0863*, *specimen 2021.11-1166*, *specimen 2021.11-1123*).

The small percentage of large mammal specimens recovered from the site is consistent with Chinese diaspora sites across with the west coast, which generally are dominated by medium sized mammals, predominately pig. Given the quantity of large mammal bones that have been sawn or machine cut, these specimens likely represent cow (*Bos taurus*) rather than a native species of large mammal such as elk (Figure 157). The presence of the saw cut large mammal specimens provides an interesting contrast to the overall lack of distinguishable butchering marks on the medium mammal specimens. A total of 14 of the 24 large mammal specimens had evidence of butchering compared to only 11 of the medium mammal specimens. Historical evidence suggests that pigs were often purchased live by Chinese migrants and processed on site by drying and salting large portions of the animal for later use. This type of processing would leave fewer distinct butchering marks, suggesting that the saw cut bones reflect the purchase of pre-processed meat from a butcher or store. Cantonese cuisine often includes the use of meat chopped into smaller pieces that would be able to be quickly stir fried over a concentrated fire. Many of the faunal specimens recovered from the site likely reflect secondary processing for stir frying or bone marrow processing for bone broths (Johnson 2017).



Figure 157. Left: Sample of cut bone recovered from the site. From left: large mammal scapula (*specimen 2021.11-1153*), and larger mammal diaphysis (*specimen 2021.11-1231*). Right: A sample of unidentified faunal materials recovered from the site (Top row: *specimen 2018.10-1194*. Bottom row, from left: *specimen 2018.10-1104*, *specimen 2018.10-1145*, *specimen 2018.10-1144*, *specimen 2018.10-1197*).

A total of 31 specimens were identified as bird (Figure 158). Of these, a single specimen was categorized to the family Galliforme, which include species such as chicken, pheasant, and turkey. The specimen is likely chicken or pheasant based on its size. Of the 31 specimens identified as bird, 16 were grouped into a medium bird category as they were too fragmented to identify further and consisted primarily of diaphysis fragments and phalanx. Other sites within this region had evidence of domesticated chicken being raised on site, which could be the case here as well, although no eggshell or gastroliths were recovered.



Figure 158. Sample of bird bone recovered from the site. From left: distal tibiotarsus (*specimen 2021.11-1165*), calcined diaphysis (*specimen 2021.11-0535*), proximal coracoid (*specimen 2021.11-1146*), phalanx (*specimen 2021.11-0856*, *specimen 2021.11-0751*, *specimen 2021.11-0618*).

A total of 58 fragments of shellfish were also identified at the site (Figure 159). The fragments are relatively small and lacked identifiable elements such as the hinge. However, they appear to be the species of freshwater mussel native to the John Day River drainage. Three potential species of freshwater mussel have been documented within the John Day River drainage, including western pearlshell (*Margaritifera falcata*), western ridged mussel (*Gonidea angulata*), and river mussel (*Anodonta* spp.) (Howard et al. 2005). In many drainages of this region the western pearlshell and western ridged mussel have been eradicated, but river mussels are still present in many of the drainages. Harvesting of freshwater mussel has been documented at archaeological sites dating to as far back as 10,000 years by the Indigenous peoples of the Columbia River (Howard et al. 2005). The use of freshwater mussel by the Indigenous populations decreased following EuroAmerican settlement and likely coincided with the alteration of stream and river channels during this period, which disturbed the delicate ecosystem that the freshwater mussel depended on, resulting in a decline in the population (Howard et al. 2005). Documentation of the mussel being utilized by the non-Indigenous populations of the region has not been found, however, the presence of the shell within the archaeological deposits indicates it was being collected by the inhabitants of the site. The mussel could have been collected for food as well as decoration.



Figure 159. left: Image of live freshwater mussel in the John Day River (Image courtesy of the U.S. Fish and Wildlife Service <https://www.fws.gov/media/179776>). Right: Sample of freshwater mussel shell recovered from the site (*specimen 2021.11-1162*, *specimen 2021.11-1052*, *specimen 2021.11-0951*, *specimen 2021.11-1178*, *specimen 2021.11-0650*).

Table 14. Faunal material recovered from the Ah Yee Site by taxon and element.

Taxon/Element	NISP	Weight (g)
Mammal	2873	1499.31
Artiodactyl (sheep/goat, deer)	11	72.30
Mandible	4	58.80
Phalanx	3	12.20
Teeth	2	0.50
Tooth	2	0.80
<i>Odocoileus</i> sp. (deer)	6	85.60
Mandible	4	40.60
Metapodial	1	36.00
Tibia	1	9.00
<i>Sus scrofa</i> (pig)	8	84.70
Carpal/tarsal	1	2.40
Mandible	1	73.00
Phalanx	3	6.10
Tooth	3	3.20
Large mammal	24	444.10
Atlas	1	18.50
Diaphysis	7	94.50
Femur	1	48.00
Rib	7	72.70
Scapula	1	112.40
Vertebra	7	98.00
Medium mammal	484	600.41
Carpal/tarsal	1	6.10
Cranial	2	6.00
Diaphysis	11	50.60
Epiphysis	3	5.80
Femur	2	25.90
Humerus	1	35.00

Taxon/Element	NISP	Weight (g)
Medium mammal continued		
Patella	1	3.20
Pelvic	2	12.00
Phalanx	1	1.00
Radius	2	6.50
Rib	25	28.20
Sacrum	1	1.00
Scapula	4	19.70
Tibia	1	11.40
Vertebra	12	39.20
Unidentified	415	348.81
Small mammal	2	1.20
Pelvic	1	1.00
Rib	1	0.20
Unidentified mammal	2338	211.00
Cranial	1	0.30
Unidentified	2337	210.70
Bird	31	4.28
Galliformes (chickens and pheasants)	1	0.90
Tibiotarsus	1	0.90
Medium bird	16	2.07
Carpometacarpus	1	0.30
Coracoid	1	0.20
Diaphysis	6	1.20
Phalanx	5	0.15
Vertebra	1	0.10
Unidentified	2	0.12
Unidentified bird	14	1.31
Unidentified	14	1.31
Shellfish	58	26.84
Cf. Freshwater Mussel	58	26.84
Shell	58	26.84
Unidentified faunal	23	4.59
Unidentified faunal	23	4.59
Unidentified	23	4.59
Grand Total	2985	1535.02

Summary of Findings at the Ah Yee Site 06040301333

SOULA conducted archaeological investigations at the Ah Yee Site 06040301333 in 2018 and in 2021. The 2018 season included the excavation of a single 1 m by 1 m (TU 1) and 13 QTUs placed on a 5 m grid across the core of the site. The findings, paired with the visible surface features, prompted SOULA's return to the site for the 2021 season. This round of fieldwork focused on wide surface exposures targeting the rockpiles, linear rock alignments, and other surface features, as well as the excavation of six additional QTUs. A total of 5,667 artifacts were recovered from the two seasons, more than 50% of which were faunal remains.

Through the use of wide exposures, we were able get a better sense of the site and how the features within it were constructed and used. The cabin is believed to have been located to the east of the Northern Rock Pile, with the linear rock alignment marking the northern and eastern portion of its 20 m by 14 m footprint (Figure 160). The southern wall is believed to be indicated by the foundation stones present in TU J2, and both the Northern and Southern Rock Piles are believed to represent cooking features built outside of the structure. If grouped by area, only 24% of the assemblage was recovered from inside the potential cabin footprint. Much of the material came from the stones and mounded earth in Area K, which is believed to be a midden or refuse disposal area, perhaps associated with an outbuilding or activity area.

The artifact assemblage is largely consistent with the 1869-1870 occupation by the Ah Yee and Company with a few outliers. For example, the jean/workpants style buttons found in association with the hearth feature have a terminus post quem of 1873. Additional research, paired with investigations in the larger area, might help reveal whether the temporal markers reflect a longer Chinese occupation that was documented on paper, multiple occupations of Chinese miners, or the subsequent occupation or use of the site by EuroAmerican miners.

The food related animal bones recovered from the Ah Yee Site are consistent with Chinese diaspora sites across the West. These assemblages are often dominated by medium mammal (likely pig) and generally have a lower percentage of the distinct saw cut butchering marks typical of European style meat production. A total of 58% of the large mammal (likely cow) had been saw cut, while represented by only a smaller number of specimens (nisp=24), this is a much larger percentage than the medium mammal which includes the pig, deer, and sheep/goat specimens. While chopping of the bones can be difficult to distinguish due to how the specimens fracture, many of the specimens appear to have been chopped as a butchering method. This is consistent with Chinese cooking methods indicating that the assemblage was likely associated with the Ah Yee Company occupation of the site rather than an earlier occupation.

Historical documentation indicates that early in the re-settlement of this region, hog drives were conducted to bring pigs up from southern Oregon to Canyon City. Additional evidence from the southern Oregon region indicates that whole, live pigs were being purchased in large quantities and then processed in a traditional method of smoking and drying the meat for preservation. The method of preparation would result in few if any saw cut bones.



Figure 160. Drone image of the site area during the 2021 excavations prior to TU J be excavated. TU J is outlined in yellow and the approximate cabin footprint is noted in red. Drone image courtesy of Cliff Danger.

Summary and Conclusions

SOULA was hired by MNF to conduct archaeological investigations at five sites within three Chinese mining complexes along the Middle Fork of the John Day River. The work was done in preparation for fuels reduction and prescribed burning. The archaeological sites described in this report were chosen due to their vulnerability to current and future forest management projects and natural wildfire. The Middle Fork of the John Day River was extensively mined in the 19th and 20th century, and mining continues to this day on a more modest scale. Chinese diaspora archaeological sites have been recorded across these and other public lands over the past several decades. The goal of this project was to provide a more nuanced study into the role and contributions of Chinese American men within this industry and to highlight the extensive presence of Chinese heritage within Oregon's public lands. A small number of lithic artifacts associated with the precontact occupation of the area were recovered from three of the five sites. While small in number, and all within mixed historic deposits, these artifacts nonetheless reflect the widespread Indigenous use of the area prior to the discovery of gold and the subsequent arrival of Chinese miners.

The archaeological fieldwork presented in this report was conducted over three field seasons under the direction of Chelsea Rose and Don Hann and focused on resources within the Happy Camp mining complex, the Ah Heng mining complex, and the Ah Yee mining complex. Each of the projects were accompanied by a companion PIT project run by MNF staff (see Watkins 2021; Withee 2019; Hann and Rose 2018). While Chinese mining has been recognized as one of the “most intensively studied aspects of Chinese life in America from an archaeological perspective” (Ross 2018:63), much of this rich data is hyper-localized and buried within gray literature with little to no synthesis or analysis. Scholars and resource managers have investigated “mining towns, the industrial landscape, the layout, vernacular architecture and refuse deposits of mining camps, and market gardens serving mining communities” across the West (Ross 2018:63), yet little of this information has made its way into the historiography or public knowledge of these places. By operating under the umbrella of the larger OCDP, this endeavor has been done in a way that has incorporated transparency, community engagement, and interpretation directly into the course of the project. These efforts are a direct extension of the great work that has been happening on the MNF for several years towards this end, including updating insensitive site names, using LiDAR to record and interpret extensive mining landscapes, facilitating public engagement and access to remote resources, and targeted historical research to look for the presence of Chinese miners where previous scholars have assumed their absence. As a result, the residents and visitors to Grant County have had access to sustained outreach efforts that have highlighted the once thriving Chinese community in the region, its contributions to the early economy, and the structural racism and oppression that directly contributed to its decline and erasure.

By investigating resources that span time and space, this project allows for a multi-sited analysis of Chinese American miners in eastern Oregon. It is our hope that the information presented in this technical report will continue to be analyzed, expanded, and made accessible for scholars, students, and community stakeholders. Future projects will hopefully lead to further comparisons between our data and other mining areas in Oregon, as well as Idaho, Nevada, California, and beyond, and the continued exploration between the experience and access of those living in rural work camps and urban communities. While targeted discussion will be presented below by theme, the project has raised a few general observations and questions. Namely, who was working at these sites, and for how long?

While comprehensive population data can be tricky to obtain outside of Census records—which are in and of themselves problematic—the issue is compounded for the small clusters of individuals living and working in remote areas not always captured by census takers. Documentary data has provided critical information allowing us to link the Ah Heng and Ah Yee companies to our project areas, but little else is known about their occupations. The Ah Yee company sold their interests a little over a year after the lease, and newspaper accounts suggest that the Ah Heng company was similarly short-lived. This leaves us to wonder whether the sites represent a single, short-term occupation, consecutive occupations, or a sustained occupation that is not reflected in the documentary records. Mining records were notoriously imperfect, especially when it came to Chinese miners. Grant County, like other mining areas had laws and mining regulations that restricted and/or prohibited participation by Chinese American miners. However, they were “ignored when convenient and enforced when hostility arose” (Chung 2011:49). The desire to sell “depleted or unprofitable claims” led to many transactions, some of which resulted in the outright sale to Chinese migrants, others which may have led to silent partners holding the title for a fee or percentage of the earnings (Chung 2011:49). This strategy was dynamic and afforded flexibility in response to the shifting sociopolitical climate the men were working within. However, for our purposes, this not only leads to confusion and an undercount of Chinese miners, it also highlights the inconsistency and instability that plagued their lives in 19th century Oregon. Additional research into the men who sold their claims to the Ah Heng and Ah Yee mining companies could provide fruitful and perhaps reveal whether these were straight forward transactions, or if the men were working collaboratively in some form or another.

Operating within a framework of uncertainty would have influenced decisions and strategies made by the Chinese American residents of Grant County. This background context is often overlooked or underexplored when analyzing archaeological sites, which can skew the interpretations of the material culture and how it can reflect the choices, opportunities, and investments of those who made, used, or imported goods to the site. While “city folk” like Lung On and Ing Hay of the Kam Wah Chung and Company in John Day were building social capital as a buffer to protect them from targeted discrimination and the arbitrary enforcement of restrictive laws, men working in remote areas likely hedged their bets in other ways. Interconnected networks of mining operations in places like the Middle Fork of the John Day River could have provided safety, economic opportunity, and community for the miners, structured in a way to meet their needs on their own terms. Many of these strategies would have operated outside of the view of the larger White community, and are therefore invisible in the documentary record.

As per usual, the completion of this project has left us with more questions than answers. But they are better questions, and paths for answering them are clearer than ever before. That said, the findings have provided critical insight into several areas. While our stated goal was to provide the MNF resource managers information about several archaeological sites within the forest, through this collaborative project our combined efforts have not only provided data on the vertical and horizontal expression of these cultural resources, they have introduced us to these early Oregonians in a more intimate way. One that helps to humanize these men by showing the way they tricked out their wardrobe to be more effective in the muddy mines, the way they tailored the built environment of second-hand claims to serve their preferred living and cooking methods, and the ways in which they employed skill and creativity in repurposing mundane items such as spent cans into vegetable graters, specialized blacksmithing or mining equipment, and patches to keep their cabins warm.

Residential Structures and Domestic Life

By design, a cabin/ domestic area occupied by Chinese American miners was targeted and excavated at each of the five sites. While there are many similarities across the sites, they are by no means uniform. The heterogeneity of features and material expression of these occupations underscores the varied experiences of Chinese migrants in the West through the ways in which they created homes under a variety of circumstances and available resources. In addition, this project reinforces the need to look at mining complexes on a landscape scale. These enterprises were large and complex, and understanding how work, shelter, and social interaction was occurring across these sites will help aid in the interpretation of past and future work within them.

As described in detail above, three of the five sites we investigated had distinctive rock cooking features that have come to be associated with Chinese diaspora occupations (Happy Camp Site 0604030322, Ah Heng II, and Ah Yee). However, the features we encountered functioned differently at each site. Rocks, a material plentiful where placer mining was occurring, were often stacked to create a hearth, shield, or firebox for cooking and possibly heating. The effort that went into these features varied, and they can be found both incorporated into a domestic structure, adjacent to it, or in a communal cooking area (Withee 2021; Wegars 1995). The domestic structures themselves were often expediently constructed, and could be found made out of canvas, lumber or a combination of the two (Withee 2021:375). Most mining camps were seasonal or short-term occupations, and as such, these temporary shelters were made of “inexpensive, free and available materials” such as “brush and limbs as well as repurposed flattened metal cans that were used as roofing materials or as patches to cover gaps and protect residents from the elements” (Withee 2021:375). Archaeological evidence has suggested that rock features can be part of the structure itself, provide load bearing surfaces to anchor the roof and walls, or help to anchor tent walls (Withee 2021:375).

These buildings ranged in size and could serve a small group or reflect “bunkhouse-style structures that housed up to twenty-four men who ate communally in a mess hall, with a separate kitchen used by company cooks” (Withee 2021:370). The location of the buildings would have been strategic, with environmental factors, proximity to the work site, and convenience factoring in. Archaeologists on the MNF have observed that Chinese habitation sites are often “located near activity centers important to placer mining, such as near where water was being controlled or manipulated to serve the hydraulic system” (Withee 2021:381).

The large and well-preserved rock feature at the Happy Camp Site 0604030322 was oriented into a dugout cabin. The modest size of the cabin (estimated at 16' by 14') suggests that it was occupied by a small group of men, and the artifact scatter surrounding the cabin suggests that other buildings may have been present. Fragments of a cast iron stove were observed at the site, suggesting that the rock feature was dedicated to cooking and might not have been used for heating. This is supported by the structure of these rock features, built in a way to maximize and concentrate the heat from a small fire—which was well suited to stir-frying meals in a cast iron wok and would not have generated enough heat to warm the rocks enough to radiate into the cabin. The amount of ash and heat-altered materials within the firebox at this site and others, further supports the assertion that they were used to house small, short duration fires that consumed a modest amount of fuel.

Semi-subterranean cabins have been clearly associated with Chinese miners on other sites, including Placerville and Shoshone Wells in Nevada (Hardesty 2003:370,375), at Chelan Falls, Washington (Evenson 2016), Weeksville, Yogo Town, and Upper Cave Gulch Camp in Montana (Merritt 2010), and Lockwood Creek, California (Marmor 1998) and in Warren, Idaho (Reed 1989). While the Happy Camp Site 0604030322 is the only definitive dugout structure within our project area, others have been found within the larger Happy Camp mining complex (Site 06040300328). The cabin at the Ah Heng I site was built within a bermed area and could have been constructed as, or modified into, a dugout-type structure.

The rock feature at the Ah Heng II Site (0604030020) was not associated with any visible structural footprint, however, dozens of nails suggest that one was present in the vicinity. The overall ephemeral nature of the site could suggest that it was occupied for a short period of time, perhaps to accommodate a specific task such as wood cutting or milling or maintaining the ditch and dam that served the mine, and residents may have sheltered in a canvas tent versus a wooden structure.

The Ah Yee Site 0604031333 presents another variation on a theme: this time with two distinct rock features, each of which are located outside of the cabin itself. This would suggest that these features served as a communal cooking area, and that the cooks or a portion of the miners lived in the roughly 20' by 14' cabin adjacent to the northern rock pile. The presence of a communal kitchen has been proposed by Wegars (1995) for resources within the Ah Hee site (35GR16), and at the Warren, Idaho site due to an association with a fireplace, and "a large concentration of animal bone, food containers, and utensils" (Elliott 1994: Section 8 page 3).

While a large structure measuring up to 35' by 26' was documented at Happy Camp Site 06040302388 as observed by the parallel depressions that are believed to mark the rough outline of the cabin, there was no rock feature observed at the site. In addition to Happy Camp Site 0604030322, which is just .38 miles/600 meters from 06040302388, other domestic sites within the larger Happy Camp mining complex contained rock cooking features, perhaps suggesting that communal meals were prepared at specific locations within the larger complex. The assemblage also appears to date to a later time period, which could indicate that the residents either did not chose to cook meals on a rock stove, or it was not worth constructing a cooking feature due to the limited duration of the stay.

The cabin site at Ah Heng I (Site 060403020020) did not have an associated rock cooking feature either. It is possible that a different cooking method was being employed, that they were using the set up used for the blacksmith shop to make food, or that the majority of meals were prepared and enjoyed offsite. The modest faunal assemblage we recovered from Ah Heng I indicates that meals were being consumed on site, and the presence of two gastroliths suggests that chickens were either being raised or butchered on site. Due to the size of the Ah Heng mining complex, it is possible that a central mess hall or communal kitchen was used. This resource may have been destroyed by later mining, or has yet to be identified. Ah Heng I is just .32 miles/500 meters from Ah Heng II, however, the lack of a faunal assemblage at that site does not indicate that large meals were being prepared there.

Archaeological evidence recovered from the rock features across the sites suggested that the stoves were constructed to maximize efficiency and minimize the size of the fire. While wood was plentiful, the small fire would allow easily gathered small fuels such as pinecones and sticks to be

used. A small and easy to control fire would also be attractive during the hot, dry summer months when wildfire could have been a concern. Compared to EuroAmerican-style hearths, very few artifacts and little ash was observed in any of the features. This not only suggests that these features were not kept burning for sustained periods of time as one would expect if they were used for heating, but also that they were routinely swept clean. In addition, burned clay and chinking was recovered from all of the features, suggesting that gaps were infilled with locally available materials in order to further refine the control of airflow, which would aid in the success of the small fire. The presence of buttons found in the rock features at the Ah Yee and Happy Camp sites suggest that the rocks warmed from cooking may have been used to dry clothing. A detail which allows us to witness a very mundane, yet necessary aspect of daily life in these mining camps.

Dinner in the Camps

The Chinese miners working claims along the Middle Fork John Day River would have factored a variety of considerations into their meal preparation. In addition to the size and duration of the various occupations, each cook would have needed to overcome barriers to market access, both in the distance to the nearest towns, the availability of preferred goods, and in some cases, the willingness of shop owners to serve them. Some miners would have brought materials along with them as they moved from site to site, thus not all of the material present will accurately reflect the market availability in the region in which it was disposed of (Lee 2020). The distinct ceramic assemblage at the Happy Camp Site 06040302388 has been interpreted to reflect, at least in part, a temporal distinction from the other sites, but it could also be the result of a population coming from a region where the stores had different inventory. In general, the circumscribed access to goods often resulted in a system referred to as “localization” where the migrant community may adopt or incorporate aspects of the host communities’ practices as a means to gain access to needed resources such as food, clothing, and other materials (Kennedy 2016). This can be seen in modifications to clothing and tools within our project area, and in the consumption of native species that would have been resources available in or near the camps. Freshwater mussels and mule deer were observed in the Ah Yee assemblage, and artiodactyls that could represent a native species goat/sheep, such as pronghorn antelope or bighorn sheep, were observed in Happy Camp Site 0604030322, Ah Heng I, and the Ah Yee sites. Procurement of wild game could also be reflected by the presence of weapons and ammunition at the Ah Yee site and Ah Heng sites.

In relation to food practices visible within the sites investigated, the Happy Camp site 06040300332 and Ah Yee Site 06040301333 had the most robust faunal assemblages. Of note, is the near complete absence of food related bone at Ah Heng II, given the presence of the rock cooking feature (only a single fragment of calcined bone was recovered). The Ah Yee Site was the only site that contained large mammal, 58% of which was saw cut and is believed to represent beef. The large mammal specimens were predominantly from the lower levels of the Area K midden, and could reflect the brief EuroAmerican occupation that predated the Chinese American use of the site. The absence of large mammal from the other project sites is consistent with Chinese diaspora assemblages seen across the West, where, when accessible, pork and other medium sized mammals, including native deer and sheep/goat, are preferred.

While local ranchers raised beef and sheep, historical accounts of hog drives from southern Oregon indicate that the demand for pork was great enough to prompt ranchers to drive their herds across the state:

OVER THE MOUNTAINS--Mr. John Sisemore, of Sams Valley, started last week with a drove of about 300 hogs for Canyon City, John Day country. He went over the Cascade Mountains by the Rogue River and John Day Wagon Road. When last heard from, at Diamond Peak, he was getting along well. From that point he took his pack animals via Fort Klamath (*Oregon Sentinel, Jacksonville, June 22, 1867*).

According to Sue Fawn Chung, by 1880 the census for John Day included a “hog dealer” with others “scattered elsewhere in other nearby towns” (2011:66). She also states that “pigs were easy to raise and often kept in willow fences near the cabin or house” and that chickens were more difficult to raise and reserved for “festive dishes” (Chung 2011:66). In 1888 a newspaper account complained of 75 free range hogs being raised by Chinese American men in Long Creek (*Grant County News* 8 March 1888:3), and reminiscences of Canyon City resident Phil Metschan include the description of a small herd of hogs raised by “Spanish Rosie” and a young Chinese American woman named Lon in the late 19th century (*Oregon Inn-Side News* September-October 1945).

Only a small amount of bird remains were recovered from the Happy Camp (06040300322) and Ah Yee sites, suggesting that poultry was not a major part of the diet for the inhabitants. Conversely, the presence of eggshell at the Happy Camp Site (06040300322) and gastroliths at Ah Heng I could indicate chickens or other fowl were being raised in some camps for meat and egg production. In general, the modest assemblage could reflect the above assertion that chickens were more difficult to raise, and therefore poultry was not as central to the diet of rural camps as it was to more urban communities.

Pork, along with mule deer, and sheep/goat was recovered from the Happy Camp Site 06040300322 and the Ah Yee site, many of fragments appear to be chopped vs sawn. This is consistent with Cantonese cuisine where whole animals are often preserved, through smoking and drying, and secondary processing occurs during meal preparation. While the assemblages do not appear to indicate that large scale butchering was occurring at any of the sites, the Ah Yee assemblage contains the remains of what could reflect a single deer and pig that were butchered on site (either fresh or in a preserved form).

In addition to the faunal specimens identified by species, highly fragmented calcined bone was recovered from nearly all of the sites: Happy Camp Site 06040300322 (n=380), Happy Camp Site 0604032388 (n=2), the Ah Yee Site (n=2,270), and Ah Heng II Site (n=1). The fragmented nature and high quantity of calcined specimens within Chinese migrant assemblages has been attributed, by some, as evidence of starvation (Ellis et al. 2011). This argument uses the bone modification at the Donner Party Site and the political climate of the period, which often left the Chinese migrant population ostracized and segregated, as evidence that they were subject to starvation. However, this fails to consider Cantonese food practices and preferences that are visible across a wide range of Chinese migrant assemblages, including the secondary processing of bones for marrow extraction and broth (see Johnson 2017; Kennedy 2016). Soups remain central to Chinese cuisine, and sites such as the Jacksonville Chinese Quarter and the John Day Chinatown in Oregon, and the Market Street Chinatown of California, all have robust faunal assemblages that include calcined specimens with evidence of secondary processing. This suggests that calcined bone is more likely a reflection of food preparation than starvation or scarcity. The lack of calcined bone (or faunal material in general) at the Ah Heng I site could further be a reflection of the activities occurring there: as blacksmiths were known to have used “Small dried bones” for fuel, as they “burned very intensely” (Johnson 2000:148).

In addition to faunal materials, food arrived in the camps in cans, glass, and CBGS containers. While cooking oil and condiments can sometimes be recognized by their distinctive packaging, many of the other pickled, preserved, or dried foods purchased via these vessels can be hard to identify. Store ledgers can reflect consumer behavior and access, including highlighting range of items available for sale in Chinese merchandise stores, as well as which EuroAmerican merchants sold imported goods or served Chinese customers. Jocelyn Lee's work with ledgers in John Day suggested that "Chinese goods were purchased in Kam Wah Chung, whereas traditionally EuroAmerican goods including clothing, footwear, and American treats like fudge and coffee were purchased at the EuroAmerican stores" (Lee 2020:89).

Specialized Skills, Creativity, and Adaptive Reuse

While archaeologists have mainly focused on the movement of tangible goods across time and space, some scholars have noted that the real power of the vast networks connecting Chinese diaspora communities was not their ability to transport stuff, but ideas (Fang 2021; Yu 2020). This vernacular and technical knowledge shaped the ways in which individuals modified the world around them, ranging from how they arranged their homes and kitchens, to construction techniques, to the manufacture or modification of desired tools.

We have seen above the ways that second-hand placer claims were renovated to accommodate Cantonese cooking techniques. Furthermore, experimentations done as part of the 2021 PIT project have demonstrated that with just a few small holes added to the bottom, empty food cans could be repurposed to grow mung bean sprouts if desired. Previous excavations in the Happy Camp mining complex have also shown that rammed earth technology common in southern China was used to construct earthen dams (Rose and Johnson 2018), and a myriad of modified or repurposed items from across all of the sites have shown the ways in which Chinese miners were recycling materials into something new. This practice was occurring informally at all of the sites, where easily modified sheet metal from food and opium containers was being flattened, cut, or reshaped, and more formally at Ah Heng I where a skilled blacksmith was at work.

The Chinese blacksmith shop in Warren, Idaho was determined to not represent a "place of manufacture, but rather used to make necessary repairs to company equipment" based on the presence of maker's marks on the modified tools (Elliott 1994: section 8 page 3). Evidence recovered from the Ah Heng I smith indicates that he was recycling, repurposing, and melting down scrap metal and forging new tools. Mass produced shovels, some of which may reflect worn shovels discarded by other miners (Steeves 1984:125), were being recycled into a specialized tool not available for purchase locally. At the same time, what appears to be a hyper-local pick with distinctive hand-forged supports was also recovered. This indicates that the miners working along the Middle Fork of the John Day River bought tools when available, scavenged for abandoned tools that could have new life, and manufactured new tools to suit. While research on the pick handle supports found on the Ah Heng I and Ah Yee sites and the Pierce, Idaho site is ongoing, it is possible that this specialized tool was designed to accommodate the practice of ground sluicing employed by many Chinese miners, which was hard on traditional tools.

Management Recommendations and Future Research Potential

The project described in this report indicates that significant archaeological resources associated with Chinese mining activities along the Middle Fork of the John Day River are present on lands managed by the MNF. Our work has highlighted the benefits of targeted multi-sited

investigations, and has provided important data as well as some recommendations for future research. While comparing and contrasting sites across three mining complexes has led to some great information, it is clear that a comprehensive look at one single complex as a whole would be productive. This could help reveal whether small camps were served by a single communal kitchen, and could also help by individuating the domestic spaces of men engaged in different parts of the mining process. In addition, in-depth comparisons between contemporary Chinese American and EuroAmerican miners working in the same area could help address questions regarding access to materials, real or perceived threats to property or personal safety, and the degree to which miners interacted on a community level.

In addition, this project has emphasized the importance of rock cooking features and the rich data they can provide. While our study has focused on those made or used by Chinese American miners, they are just one of many types of rock cooking features that can be found on remote work camps. EuroAmerican fireplace hearths and Greek and Italian bread ovens have also been recorded on sites across Oregon. In order to best protect and preserve these resources and the data they can provide about these early residents on public lands, we recommend that trees growing within or directly adjacent to rock features be cut in order to protect their structural integrity. For example, the 1919 Ponderosa pine tree growing in the Southern Rock Pile (Area L) at the Ah Yee Site has displaced stones that form the eastern side of the firebox. In time, the roots may obscure the construction of the feature and thereby limit its data potential.

Due to the scale of multi-sited analysis such as this one, there are several additional research avenues that are worth consideration. Some of the data presented above is being utilized in larger thematic studies that are occurring as part of the Oregon Chinese Diaspora Project. For example, artifacts recovered from this project are being used to explore the use and availability of weapons and ammunition on Chinese diaspora sites, and whether the presence of antiquated weaponry reflects individual preference, access, or thriftiness on behalf of the residents. In addition, faunal materials are being used as part of larger DNA and isotopic analyses that will help illustrate the movement of food and goods across the state and beyond. Future research could also include an examination of leisure activities and socializing in the camps. While alcohol, tobacco, and opium artifacts were recovered from across the project areas, it is notable that not a single gaming artifact was found.

While the sites associated with the Happy Camp, Ah Heng, and Ah Yee complexes provided rich detail, there are several more mining areas within this portion of the forest that would be worthwhile of study. This could include investigations into the Susanville / Elk Creek mining area, as well as others that have been preliminarily identified or informally recorded on the forest. In addition to further archaeological investigations, public interpretation of these resources would help to highlight the diverse history of Oregon's public lands. This could include roadside signage, or more collaborative interpretive efforts at a centralized location such as Bates State Park.

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Appendix A
The Analysis of Botanical and Flotation Samples from Site 06040300322

The Analysis of Botanical and Flotation Samples from Site 06040300322
(Happy Camp 2), Malheur National Forest, Oregon

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Introduction

Site 06040300322 (Happy Camp 2) was a late 19th century Chinese mining camp in the Malheur National Forest. It is located in the Blue Mountains of eastern Oregon, within the *Abies grandis* (grand fir) vegetation zone. The forest is dominated by *Abies grandis*, *Pinus ponderosa* (ponderosa pine), *Pinus contorta* (lodgepole pine), *Larix occidentalis* (western larch), and *Pseudotsuga mensiesii* (Douglas fir), but includes a variety of other conifers, shrubs, and herbs (Franklin and Dyrness 1988:195).

Excavations conducted as part of the Passport in Time Project (PIT) included a dry stacked hearth feature. The hearth contained faunal remains, Chinese tableware, and other artefacts which indicates that it was used as a disposal area. Five soil samples from the hearth and two wood samples from within and adjacent to the hearth were sent to the University of Massachusetts, Boston for archaeobotanical analysis (Table 1). The aims of the analysis were to identify any preserved plant remains and to look for evidence of the diet of the Chinese miners.

Methods

Soil samples were manually floated following the decanting procedure to recover macrobotanical remains. Samples were poured into a 10 gallon bucket containing water and agitated. Agitation helps separate the botanical remains from the dirt. The lighter materials, such as carbonized plant remains, floated to the surface where they were decanted into chiffon netting (0.02 mm) and hung to dry (light fraction). Sediment remaining in the bucket was poured into a sieve with a 1.0 mm mesh opening. The remaining sediment (heavy fraction) was washed and dried. All botanical material was removed from the heavy fraction and added to the corresponding light fractions for

further processing. Other artefacts in the heavy fractions included burnt and unburnt bone, eggshell, ceramics, metal, glass, and a button.

The light fraction was sifted through a series of nested sieves (2.00, 1.00, and 0.50 mm), yielding four size fractions in preparation for sorting. The light fraction is divided for ease of sorting material by size, given the shallow depth of field of the incident light binocular microscope (10-60x). This also allows for the selective removal of distinct materials from each fraction. In this analysis, wood, charcoal, amorphous material, bark, stems, leaves and unknown plant parts were removed only from the >2.00 mm fraction. Whole carbonized seeds and fruits were collected from all fractions as were all seed fragments larger than 0.50 mm fraction. The <0.50 mm fraction was scanned for seeds, but none were present.

The plant remains were identified using comparative plant and seed collections at the University of Massachusetts Boston, floras, and seed identification manuals (Hickman 1993; Martin and Barkley 1961). Seeds are rarely identified to the species level because seeds within the same genus are often morphologically very similar and carbonization often distorts seeds, obscuring diagnostic characteristics. Some seeds could not be identified to genus and, based on morphology, were placed in families. Most of the seeds and fruits were counted, but possible nutshell, cone scale fragments, and some other plant parts were weighed because variations in fragmentation can make weight a more representative measure of abundance. Remains were recorded as carbonized (C) even if they were only partially carbonized in order to indicate exposure to fire. When only one fragment of a seed or fruit type was recovered, it was considered a whole if more than half of the seed was present.

Wood charcoal specimens were fractured to give a clean transverse section and then examined under an incident light binocular microscope at 60x. Usually a grab of 20 pieces of wood charcoal from the >2.00 mm fraction was selected for identification, but two samples had fewer fragments large enough to identify. This subsample size was deemed appropriate given the diversity of taxa present. Identifications were made using comparative modern wood specimens and wood identification manuals (Hoadley 1990; Panshin and De Zeeuw 1980).

Plant material generally decomposes in a relatively short period of time after deposition. Therefore, uncarbonized plant remains, which usually represent contamination by modern vegetation, are noted but not removed. All of the samples contained some rootlets, with larger quantities in the Level 1 and Level 3 samples. The Level 1 sample also contained a number of uncarbonized seeds and other plant parts. In addition, most of the samples contained insect parts, indicating some bioturbation. Consequently, other than wood, only carbonized material was considered potentially of cultural origin in this analysis.

Results

The 5 flotation samples totaled 5.8 liters of soil. The samples contained a small range of seeds, charcoal, and other plant parts. No cultivated plants were recovered. Table 2 presents the absolute counts and weights (grams) of the recovered remains. Density values (counts/liter or grams/liter) of the remains were calculated to allow for comparisons among the samples and with studies from other sites (Table 3). Because three of the samples were smaller than one liter, the density values are higher than the absolute count and may inflate the value of rare items. Table 4 presents the wood

charcoal absolute counts and weights for identified fragments larger than 2 mm. Except for the nutshell and unknown plant parts, remains were whole (or considered whole) unless followed by the designation “frag.” Any uncertain identification is indicated “cf” (compares favorably). The following discussion draws on Franklin and Dyrness (1988), the Oregon Flora Project and the Flora of North America for information on habitat, range, and seed characteristics unless noted otherwise.

Seeds

Only one seed type, *Vaccinium* sp. comes from a fruit that has known use as a food. The Oregon Flora Project records a few species in the Malheur National Forest. *Vaccinium membranaceum* (mountain huckleberry or big huckleberry) is a common understory shrub on the *Abies grandis* zone. Its fruits are extensively collected when the fruits ripen in mid to late summer. Native groups ate the huckleberries fresh or cooked and dried as a stored winter food (Native Plants PNW 2018). The *Vaccinium scoparium* (grouse whortleberry or grouseberry) specimen from the Oregon Flora Project was recorded as growing in moist openings in the *Abies grandis* zone. Grouseberry is a common understory shrub of the *Abies lasiocarpa* zone which can grow at the upper limits of *Abies grandis* zone. The grouseberry fruits are smaller, but also were eaten by native Americans including the Klamath (Moerman 2003). Both species have small seeds (1 mm) close to the size of the recovered seed (0.9 mm).

Most of the other seed types from the hearth assemblage are common components of the herbaceous understory of coniferous forests. Several species of *Carex* (sedge) are recorded in the Malheur forest and *Carex geyeri* (Geyer's sedge) is common in the *Abies grandis* zone (Chadwick 2002).

Some of the other types are listed as frequent understory plants in the Ponderosa pine zone. Specimens of *Collinsia parviflora* (blue-eyed Mary or littleflower collinsia) were collected in open coniferous woodland of the Malheur National Forest. Two small seeds look like *Potentilla* sp. (cinquefoil). A few varieties of *Potentilla gracilis* grow in the Malheur Forest area including some that were collected in conifer woodlands.

The Oregon Flora Project records only four species of Amaranthaceae (amaranth family) growing in the Malheur National Forest: *Atriplex rosea* (red orache) and three species of *Chenopodium*. The Amaranthaceae seeds measure 0.6-0.8 mm in diameter. This places them in the lower range of the native *Chenopodium capitatum* var *parvicapitum* (mountain strawberry blite) which grows in mixed conifer forests and produces seeds in the summer to fall. Carbonization could have reduced the seed diameter. The Centrospermae seeds lack seed coats, but their embryos wrap around the endosperm similar to Amaranthaceae seeds, but also other families that could be growing in the area. This includes the Portulacaceae with *Montia linearis* (narrow-leafed montia) a potential candidate that grows in a variety of habitats including the Ponderosa pine zone. However, the seed diameter of *Montia linearis* (1.2-2.6 mm) is somewhat larger than the remains in the hearth assemblage and other diagnostic features are missing from these seeds.

Other plants identified only to family could come from a large range of species. Many types of Asteraceae (sunflower family), Brassicaceae (mustard family), and Fabaceae (legume family) grow in the Malheur National Forest. The possible Fabaceae seed from this assemblage is eroded, but is too small to be the arctic lupine (*Lupinus latifolius*) which commonly grows in the *Abies grandis* vegetation zone.

One seed in the assemblage has remnants of a reticulate seed coat similar to the Solanaceae (nightshade family), but there are no records in the Oregon Flora Project of Solanaceae plants in the Malheur forest. Two types of Poaceae (grass family) seeds were recovered in the samples. One is very large and most closely resembles *Lolium* sp. (ryegrass) an introduced plant that often grows in grasslands and disturbed locations, such as the interior valley grasslands of Oregon. But *Lolium* sp. is not recorded growing in the Malheur forest. The other type is a very small grass seed that could be from one of many species growing in the forest.

The assemblage contained several seeds that could not be identified to family because they were eroded or fragments, but were labeled as unknown in the hopes that future samples from the area will provide additional specimens that will allow for identification. This included small fragments of a thick seed coat or thin nutshell. Seeds that were too distorted or fragmented for any taxonomic classification were placed in the Unidentifiable Seeds category.

Plant parts

A variety of conifer plant parts were recovered from the flotation samples. The most abundant remains were fragments of conifer seed cone scales. One cone scale was large and identified as *Pinus* sp. (pine). The others were small and may be from *Pinus contorta*, which tends to have smaller cones, from immature cones or the tips of cones from pine species with larger cones, or from another conifer. The possible conifer nutshell is small and very thin, similar in size to a small seed from *Pinus contorta* or *Pinus monticola* (western white pine). Neither of these seeds are recorded as foods. Our comparative collection does not include these types so we could not confirm the

identification. Other conifer parts include leaves, fragments of the male/pollen cone and a possible conifer bud.

Other plants parts in the samples were bark, buds, unknown plant parts, wood, and charcoal. Botanical material that lacked any diagnostic characteristics and could not be positively identified to a known taxon was placed in the Amorphous category.

Amorphous material typically possesses minimal vessel structure and lacks a distinctive shape

Charcoal and wood

As a non-expert, it was very difficult to identify the wood and charcoal from this site because the samples were degraded by decay, termites, roots, and splitting.

Nonetheless, all examined fragments were clearly from conifers. More specific identifications were complicated because the abundance of roots holes obscured the presence and size of resin canals, major characteristics that distinguish wood taxa. Roots frequently grow through resin canals, but also grow through wood without resin canals.

Most of the charcoal recovered from the flotation samples appeared to be *Pinus* sp., with large resin canals. Other fragments more closely resembled *Pseudotsuga menziesii* with small resin canals. Other fragments could only be identified as conifer with and without resin canals. All of these probably came from trees growing in the vicinity of the site. Five fragments looked like *Sequoia sempervirens* (redwood), a taxon that is not recorded growing in the interior of Oregon. Both *Sequoia sempervirens* and *Abies grandis* do not have resin canals and have distinct growth rings. These fragments seem to be redwood because the transition from the earlywood to latewood is abrupt

rather than gradual as for grand fir. However, the fragments are small and I was not able to examine the minute anatomy that could confirm the identification.

Two samples of wood were submitted for identification. One, weighing 18.81 g, came from the northwest pocket of the feature during cleanup. It most closely resembles *Abies grandis*, with a gradual transition from the earlywood to the latewood. The other sample, weighing 29.91g, came from a cabin timber adjacent to the feature. The fragments had many root holes and splits, but assuming none of the root holes were small resin ducts, the gradual transition from the earlywood to the latewood again point to *Abies grandis*. Of the flotation samples, only the sample from Level 1 had notable amounts of wood. Several of the larger fragments were examined. Again decay and root holes were prevalent, but all were conifer wood and many seemed to be *Pinus* sp.

Discussion and Conclusion

The plant remains from the rock hearth at Site 06040300322 (Happy Camp 2) primarily reflect the vegetation of the coniferous forest in the site environs. This area of Malheur National Forest is dominated by grand fir, pines, Douglas fir, and other conifers. These are represented mainly as wood and charcoal in the samples, although the Level 1 sample contained many cone fragments. The understory contains a variety of shrubs and herbaceous plants. These understory types occurred primarily in the Level 2 (83-90 cmbd) sample. The only food plant was *Vaccinium* sp., which would have provided berries in the summer.

Only two of the samples contained significant quantities of plant remains. The Level 1 sample had a high density of wood and conifer cone fragments, a low charcoal density, and a few artefacts. The cones could have been used as tinder for a fire, or

could be the remnants of a natural fire that was mixed in with other debris that filled the rock feature. The Level 2 (83-90 cmbd) sample stands out for its high seed, bark, and charcoal density and its low wood density. It also contained large and small burnt bones, lots of metal fragments, and some eggshell. This assemblage could be the remains of a forest fire with the natural seed rain from the forest understory, tree bark, and fallen branches. Or it could be that the miners gathered an assortment of dry vegetation from the forest floor to burn in the hearth.

The other samples show some variation in the use of the hearth feature. The Level 2 (80-90 cmbd) sample contained few plant remains other than the unknown thick seed coat or thin nutshell. However, it had a large amount of burnt and very fragmented bone and eggshell. This burning may be related to waste disposal. Level 3 contained one very large pine charcoal fragment and almost no other remains. Level 4 contained a moderate amount of charcoal, but a greater variety of types including the possible redwood. If the latter identification is correct, it would seem that the miners brought some item made of redwood from the coast and burned it when it was no longer of use. They also discarded some bone and eggshell in the hearth at this time.

In sum, the botanical remains in this assemblage mainly represent the plants growing around the mining camp. The hearth may have been used for food preparation, but no remains from daily meals were preserved. The *Vaccinium* seed indicates that huckleberries were available to the miners, but as a single seed in association with many other wild understory plant seeds, it probably does not directly reflect food refuse. The hearth contents are the remains of in situ burning, waste disposal, and possibly natural forest fires.

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Table 1. Provenience Information for the Soil Samples from Malheur National Forest Site 06040300322, Test Unit 2 Feature A.

Level	Depth (cmbd)	Provenience	Vol (l)	EB # ¹
1	70-80		2.6	5553
2	80-90		1.0	5554
2	83-90	west feature, south wall	0.8	5555
3	90-100	southwest corner	0.6	5556
4	100-110	west side	0.8	5557

¹The EB number is the laboratory accession number.

Table 2. Plant Material Absolute Counts and Weights (g) for the Flotation Samples from Malheur National Forest Site 06040300322, Test Unit 2 Feature A.

Level	1		2		2		3		4	
Depth (cmbd)	70-80		80-90		83-90		90-100		100-110	
EB Number	5553		5554		5555		5556		5557	
Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Seeds										
Amaranthaceae C					7					
Asteraceae C	1									
Brassicaceae cf. C			3							
<i>Carex</i> cf. sp. C	1									
Centrospermae C			1		3					
<i>Collinsia</i> sp. C	1				7					
Fabaceae cf. C					1					
<i>Lolium</i> sp. cf. C					2					
Poaceae small C					3					
<i>Potentilla</i> sp. cf. C					2					
Solanaceae cf. C					1					
<i>Vaccinium</i> sp. C					1					
Unknown seeds C					5					
Unknown Type 2 C									1	
Unidentifiable seed frag. C	6				13		4		1	
Unidentified seed coat/thin nutshell C			20	0.006	1					
Seed total	9		24		46		4		2	
Plant parts										
Amorphous C		3.77				0.73				0.01
Bark C		0.07		0.25		14.73		0.02		0.05
Bud C					1		1			
Bud conifer cf. C	1									
Charcoal		4.11		0.45		5.68		0.69		2.03
Conifer small cone scale frag. C	17	0.058							1.00	0.002
Conifer male/pollen cone frag. C	1				1					
<i>Pinus</i> sp. cone scale frag. C	1	0.006								
Conifer leaf (needle) frag. C	2		5		6		10		2	
Conifer nutshell cf. C					2	0.002				
Unknown plant part C					2		4		1	
Wood		55.29		0.02		0.22		0.02		0.01

Table 3. Plant Material Densities (counts/liter or grams/liter) for the Flotation Samples from Malheur National Forest Site 06040300322, Test Unit 2 Feature A.

Level	1		2		2		3		4	
Depth (cmbd)	70-80		80-90		83-90		90-100		100-110	
EB Number	5553		5554		5555		5556		5557	
Taxon or plant part	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Seeds										
Amaranthaceae C					8.8					
Asteraceae C	0.4									
Brassicaceae cf. C			3							
<i>Carex</i> cf. sp. C	0.4									
Centrospermae C			1		3.8					
<i>Collinsia</i> sp. C	0.4				8.8					
Fabaceae cf. C					1.3					
<i>Lolium</i> sp. cf. C					2.5					
Poaceae small C					3.8					
<i>Potentilla</i> sp. cf. C					2.5					
Solanaceae cf. C					1.3					
<i>Vaccinium</i> sp. C					1.3					
Unknown seeds C					6.3					
Unknown Type 2 C									1.3	
Unidentifiable seed frag. C	2.3				16.3		6.7		1.3	
Unidentified seed coat/thin nutshell C			20	0.006	1.3					
Total seed density	3.5		20		57.5		6.7		2.5	
Plant parts										
Amorphous C		1.450				0.913				0.013
Bark C		0.027		0.250		18.413		0.033		0.063
Bud C					1.3		1.7			
Bud conifer cf. C	0.4									
Charcoal		1.581		0.450		7.100		1.150		2.538
Conifer small cone scale frag. C	6.5	0.0223							1.3	0.0025
Conifer male/pollen cone frag. C	0.4				1.3					
<i>Pinus</i> sp. cone scale frag. C	0.4	0.0023								
Conifer leaf (needle) frag. C	0.8		5		7.5		16.7		2.5	
Conifer nutshell cf. C					2.5	0.0025				
Unknown plant part C					2.5		6.7		1.3	
Wood		21.265		0.020		0.275		0.033		0.013

Table 4. Wood Charcoal Absolute Counts and Weights (g) for the Analyzed Soil Samples from Malheur National Forest Site 06040300322, Test Unit 2 Feature A.

Level	1		2		2		3		4	
Depth (cmbd)	70-80		80-90		83-90		90-100		100-110	
EB Number	5553		5554		5555		5556		5557	
TYPE	CT	WT	CT	WT	CT	WT	CT	WT	CT	WT
Conifer	4	0.09	9	0.21	7	0.34			10	0.59
Conifer without resin canals	3	0.13	1	0.02					2	0.10
<i>Pinus</i> sp.	11	0.69			11	0.81	2	0.67		
<i>Pinus</i> sp. cf.									1	0.10
<i>Pseudotsuga menziesii</i> cf.	2	0.13			2	0.18			2	0.43
<i>Sequoia sempervirens</i> cf.									5	0.25
Total identified	20	1.04	10	0.23	20	1.33	2	0.67	20	1.47
Total charcoal		4.11		0.45		5.68		0.69		2.03