Apex, Arizona Archaeology Project
2023 Season (Year 2)

Prepared for the United States Forest Service, Kaibab National Forest
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1. ADMINISTRATIVE SUMMARY

This report details the methods, data, theories, and findings of the 2023 Apex, Arizona Archaeology Project's field school. The field school operated between May 29 and June 23, 2023. The Great Depression-era logging headquarters was established by the Saginaw and Manistee Lumber Company in 1928 and disassembled when the company's lease expired in 1936. The nearly 30-acre site is located in Coconino County, Arizona on the Kaibab National Forest and designated FS Site Number 03070401784 and SHPO number AR-03-07-04-1784. Figure 1 shows the general location of the site boundaries, Loci A through Q, the general track of the historic railroad, and the general topography.

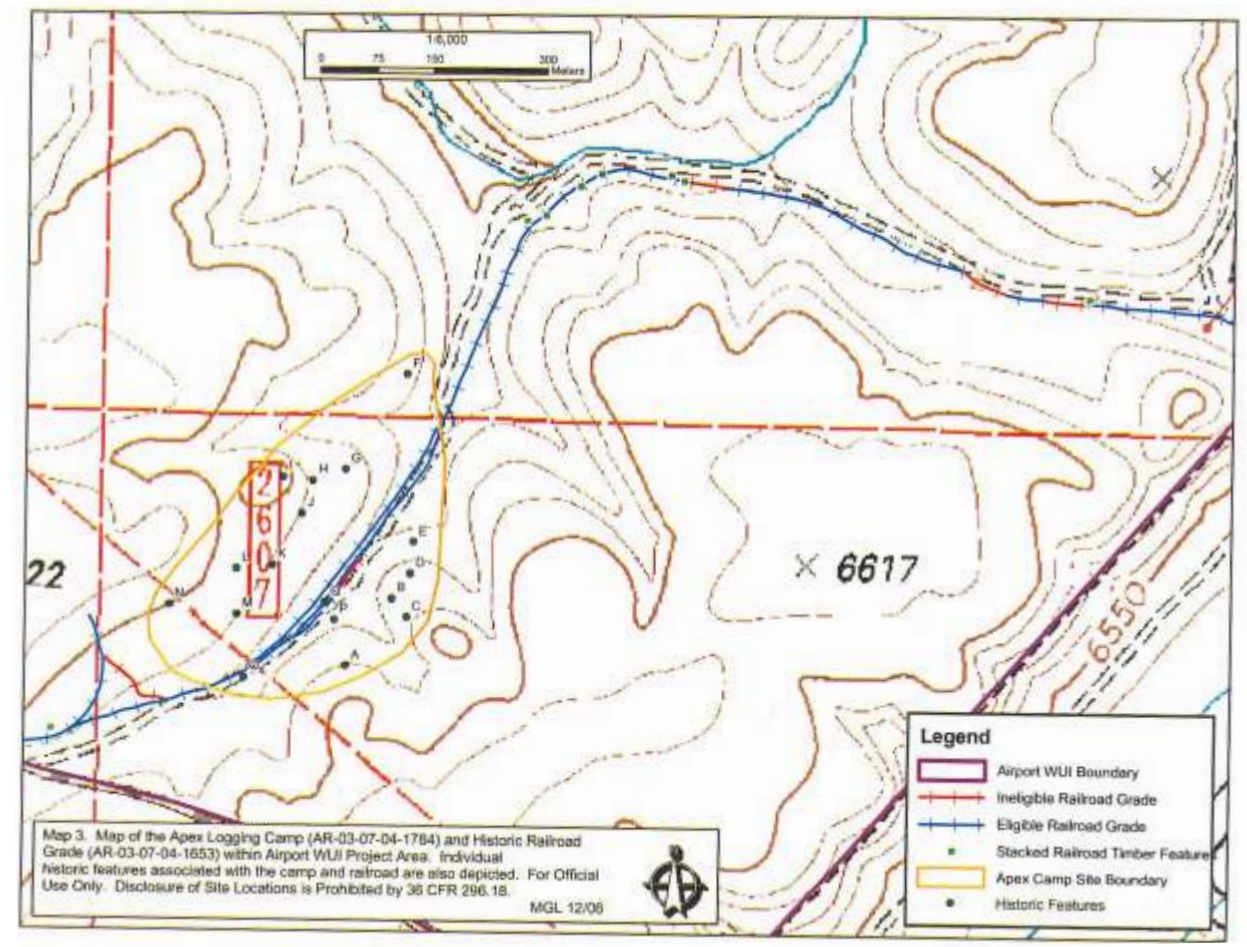

Figure 1: 2006 GPS map of Apex (United States Forest Service 2006:15)

2. PROJECT DESCRIPTION

The Apex, Arizona Archaeology Project is a collaboration between the Northern Arizona University Department of Anthropology and the Kaibab National Forest. Its goals are to record and research Apex, Arizona, a 1928-1936 logging camp located along the Grand Canyon

Railway in northern Arizona. Our research is founded on previous work conducted by the Kaibab National Forest archaeologists, who submitted a Heritage Site Summary Report of Apex in 2006 and a Cultural Resource Record in 2017.

2.1. Personnel

Summer 2023's field work was directed by Dr. Emily Dale, an Associate Teaching Professor at NAU and a historical archaeologist. A Teaching Assistant, Timothy Maddock, a Master's student at NAU whose research detailed the lives of the white, male laborers of Apex and whose thesis forms the basis of many parts of this report, was paid with a grant awarded by Arizona Humanities. Tim supervised student work, led public tours, and assisted with any other necessary duties related to the field school. We had four students participate in our field school: Travis Cumming, Garrett Hoskinson, Alex Mason, Rachel Matheson. We also had three Passport in Time volunteers between June 10 and June 14: Fran Maiuri, Carl Evertsbusch, and Adrienne Dale. This report is derived from their site forms, field notes, photographs, and other documentation. Emily and Tim presented papers on Apex in August 2023 at the Pecos Conference in Flagstaff, Arizona (see Appendix A), in November 2023 at the Grand Canyon History Symposium in Grand Canyon Village, Arizona (see Appendix B), and in January 2024 at the annual Society for Historical Archaeology meetings in Oakland, California.

Madeleine Levesque, an NAU undergraduate anthropology student, was hired through NAU's Interns-to-Scholars program, operated through the Office of Undergraduate Research and Creative Activity. Madeleine scanned, digitized, and transcribed numerous field documents, such as maps, notebooks, tour surveys, and photo logs. She also completed a research projects on the health and hygiene artifacts found during 2022 and 2023. She presented her findings at the April 2024 NAU Undergraduate Research Symposium in Flagstaff, Arizona (see Appendix C).

2.2. Funding

Funding for 2023 field work was provided by numerous organizations. Northern Arizona University funding and student college fees paid for Dr. Emily Dale's summer course salary, transportation, and student supplies. The Kaibab National Forest purchased field supplies for our welcome table, and their Youth and Veteran's Engagement Grant provided funds to pay $2600 student stipends to each of our four field school students. A $5000 grant from Arizona Humanities paid for the teaching assistant/tour guide salary and second editions of our educational brochures.

3. HISTORICAL CONTEXT AND RESEARCH GOALS

The Apex, Arizona Archaeological Project is still building its knowledge of Apex's history, the backgrounds of its residents, and its relationships with other industries in the area. The history of the Grand Canyon Railway and Apex have been extensively explored by Williams' historian Al Richmond (1988, 1990, 2017; Richmond and Pearsall 2004), and Forest Service archaeologist

Pat Stein (1995) wrote a comprehensive account of logging railroad resources in the area. This overview explores what we currently know about Apex and our broad research goals that guide the questions and methods of our field work.

For a more detailed overview of the larger historical contexts of the Great Depression, American ideas of how whiteness, masculinity, and labor intersected, a summary of the historical documents associated with Apex, and an analysis of how the artifacts reveal such trends, please consult Timothy Maddock's 2024 Master's Thesis: Life, Work, and Identity at Apex, Arizona: The Archaeology of a Twentieth-Century Logging Camp and Company Town.

3.1. History of Apex

The following historical context is pulled directly from the Research Design submitted to and approved by the Arizona State Historic Preservation Office in 2020 (Dale and Hangan 2020).

3.1.1. The Grand Canyon Railway

The Grand Canyon Railway, spanning nearly 64 miles from Williams, Arizona to the Grand Canyon, was originally built for industry. Numerous mining claims, notably those at Anita (Collison 2014:172), logging camps, and cattle and sheep ranches that developed across the landscape along the main line and spurs of the railway, bringing supplies in and goods out. Eventually, the railway was incorporated into the growing tourism of the Grand Canyon. Despite the obvious usefulness for such a railway, the construction of the Grand Canyon Railway was an onerous and time-consuming undertaking that took nearly 10 years to complete.

In 1893, William "Buckey" O'Neill, one-time mayor of Prescott and sheriff of Yavapai County, set his sights on the copper prospects in northern Arizona (Griswold 2006:2; Richmond 2017:3). Needing an efficient way to move the ore, O'Neill sought ways to build a north–south railway from the existing Atlantic and Pacific line that ran east–west through Flagstaff and Williams (Richmond 2017:6). After years of fundraising and lobbying, O'Neill finally had the funding and support to incorporate the Santa Fe and Grand Canyon Railroad in 1897. Surveys and grading of potential routes began the next year (Richmond 2017:6). Sadly, O'Neill died that same year before any tracks were laid while serving as a Rough Rider alongside Teddy Roosevelt in the Spanish-American War (Richmond 2017:10).

In 1899, while roadbed construction began (Richmond 2017:9), legislative battles, competition with other railroad companies, and logistical troubles began to plague the Santa Fe and Grand Canyon Railway (Richmond 2017:10–11). Still, by 1900, the company completed construction between Williams and Anita Junction, a prominent section house and mining town about 45 miles to the north once a three-hour stagecoach trip from Williams. Passengers there alighted the train and then boarded stagecoaches to continue the remaining five-and-a-half hour journey to the Grand Canyon (Richmond 2017:12), which was undoubtedly a difficult if not grueling

experience. Unfortunately, with the Grand Canyon so close, the Santa Fe and Grand Canyon Railway Company succumbed to the debts incurred from the cost of the construction and looming costs of completing the railroad. They were absorbed into the Santa Fe Pacific Railroad and their owner, the Atchison, Topeka, and Santa Fe (AT&SF) in 1901 (Richmond 2017:14).

After acquiring the railway, the AT&SF realized that the previous owner had cut several corners as they hurried to complete construction (Richmond 2017:29). The new owners began a series of improvements, including widening the railbed and adding sidings along the line. The AT&SF also turned their attention to completing construction of the last 10 miles to the Grand Canyon. They finished by September 1901, only one month after gaining control of the route (Richmond 2017:30), and the first train arrived at the Grand Canyon on September 17, 1901, marking the first all-train access of the canyon as a tourist destination (Griswold 2006:2; Richmond and Pearsall 2004:6).

Over the next few years, the AT&SF improved and added several new bridges, trestles, section houses, cattle and sheep loadings, water tanks, sidings, wyes, and spurs. They continued to upgrade lines, replace ties and tracks, and provide general maintenance to the railbed and associated facilities. They also partnered with Western Union Telegraph Company and Bell Telephone Company to gain access to telegraph and telephone lines (Richmond 2017:38). Beyond the line's use as a transport for ranchers, miners, and loggers, the Grand Canyon Railway increasingly served as the main mode of travel for tourists to the Grand Canyon.

By the 1920s, a new competitor to the railroad emerged: the car (Richmond 2017:149). The construction of better roads, rather than the older dirt and gravel, and the declining cost of automobiles, meant that an increasing number of Americans visited the Grand Canyon by automobile. In 1927, more visitors arrived at the park by car than by railroad for the first time (Fuchs 1952:310; Richmond 2017:151; Richmond and Pearsall 2004:20). The AT&SF slowly started sending fewer and fewer trains every year, closing station houses, and dismantling spurs. The last train arrived at Grand Canyon Depot in 1968 (Collison 2014:172; Richmond 2017:152) and the tracks and usable ties were removed in 1974 (Collison 2014:172; Richmond 2017:155).

3.1.2. Apex

Logging camps popped up around the American West to supply towns, mines, and railroads, and archaeologists have rigorously examined the lives of lumber workers (e.g., Chung 2015; Dale 2015, 2016, in review; Dixon and Smith 2017). Railroads especially need lumber. Fortunately, the Grand Canyon Railway sat in the middle of one of the largest stands of ponderosa pine in the state of Arizona (Richmond 2017:79). As the heart of this forest, Williams became a center for logging operations in 1893, when the Saginaw Lumber Company purchased the timber rights to what is now much of the Kaibab National Forest. The demand for wood by businesses, ranchers, residents, mines, and the Atlantic and Pacific Railroad led to immediate success. The company

expanded their reach to providing lumber to areas to the south, like Phoenix, that lacked access to timber. The Saginaw Lumber Company also built a mill in Williams. Looking to expand, the Saginaw company partnered with the Manistee Lumber Company in 1899 and established the Saginaw and Manistee Lumber Company of Arizona (Richmond 1988:75, 2017:80). The new company was able to provide nearly five million ties a year for the railroad, timbers for the numerous mines in the Francis District, like those at Anita, and building materials for the construction boom at the Grand Canyon.

By the 1920s, the Saginaw and Manistee Lumber Company had finished their leases south of Williams on the Kaibab National Forest and near Bellemont on the Coconino National Forest (Richmond 2017:81). They needed new places to cut. In 1928, the Forest Service established the Tusayan Ranger District between Williams and the Grand Canyon, and the logging company contracted with the AT&SF to provide timber in exchange for a spur and sidings at Apex. The 1930 Coconino County census recorded 415 men and 18 women in the "lumber and furniture industries" and 382 men and 2 women working for the "steam and street railroads" out of the 4,477 men and 2,575 gainfully employed adults (Lamont and Steuart 1931:20).

Located at milepost 52 of the Grand Canyon Railway, Apex was originally built as a passing track in 1901 (Richmond 1990:52, 53, 2017:36–37). The name Apex likely came from the site's location at the top of the longest and steepest grade of the railroad (Richmond 1988:75). In 1928, the site was expanded by the Saginaw and Manistee Lumber Company as the location of their company operations (Crump 1993:60–61; Richmond 1988:76, 2017:36–37). The Santa Fe constructed a section house, a 31-car siding, an 85-car wye, and a spur to the logging town on behalf of the lumber company. The spur extended 26 miles to the east to the edge of Grand Canyon National Park, but the community of loggers, their families, and related employees lived and worked at the main camp of Apex (Richmond 2017:83). The Saginaw and Manistee also had three of their own engines and their own engineers (Richmond 2017:87–88). The camp's many uses made Apex a regular stop, and the amenities allowed the loggers to work year-round (Richmond 1988:81–82).

Both based out of Michigan, the Saginaw Lumber Company and the Manistee Lumber Company brought with them many of the Swedish and Swedish-American residents who had made the Midwest their home. Over time, Norwegian and Finnish workers joined their ranks, making Apex a largely Scandinavian logging camp (Richmond 1988:80, 2017:86). In addition to the Scandinavian workers, several Mexican workers were also employed at Apex by the Santa Fe. The Saginaw and Manistee Lumber Company did employ Mexican workers, but solely at their mill and box plant. On July 3, 1909, the Williams News reported an accident from June 29, where three Mexican men, belonging to the same section crew, were injured while blasting rocks with dynamite along the grade near Apex (Richmond 2017:42–43). One stick did not explode, so the three men went to investigate when the explosion occurred. The Atchison, Topeka, and Santa

Fe transported the men to Albuquerque, where one of the men died. The newspaper did not record their names.

Richmond notes that there were seven houses on the east side of the rail line and seven more houses and the school on the east (Richmond 1988:78, 84). Two oil tanks, a water tank, sheds, and maintenance buildings served the locomotives. Al Richmond and Don Bufkin conducted on-site interviews with former residents of the town to draw a map of building locations, and Kaibab National Forest archaeologists located remnants of several structures that coincide with Bufkin's map. The locations of several buildings are still unmapped, however. As timber is a non-renewable resource, especially in the timeframe necessary for the Saginaw and Manistee Lumber Company to remain profitable, Apex was built to be movable (Crump 1993:61; Richmond 2017:83). The railroad bed and tracks on the Apex spur were deemed temporary as well (Richmond 2017:86). Little effort was spent making the main line, which was more of a dirt track road where ties sank into the ground, efficient. Housing for single male employees consisted of reused boxcars, which could be placed on flatcars and moved to the next location off the railroad (Richmond 2017:83). Family housing was slightly more permanent, with a kitchen, a living room, and one bedroom. Arvid Anderson, the superintendent, had the largest house which boasted two bedrooms. Still, family housing was portable; they sat on temporary wood or stone foundations and, with their unique "L"- or "T"-shaped design, could come apart in the middle and placed on flatbeds as well. When the workers were in Apex, a commissary car, kitchen and dining car, and the supervisor's car were parked in town (Richmond 1988:78). The Kaibab (Stein 2006:4–5) identified several domestic trash scatters, with glass shards, buckets, shoe soles, tin cans, and ceramic sherds, indicating the past locations of houses. Other features, such as brick piles with machine parts, suggest the sites of logging- or railroad-related maintenance buildings.

Beyond the basic necessities for camp workers, Apex also had some amenities for the town's families. In 1929, Apex School District Number 3 opened its doors to the few children who lived at the camp (Crump 1993:61; Richmond 1988:80, 2017:84). Similarly built out of reused boxcars on a timber foundation, the one-room school operated until 1936. Three women, Margaret Longley, Katherine Sipp, and Rose Wilson, held the position of school teacher over those seven years, overseeing no more than 15 students over eight grades for $130 plus board. Interestingly, despite the racial tensions in Arizona and the United States at that time, Apex's and Anita's schools were unsegregated. The Scandinavian children that made up the majority of the town's youths attended school with both Mexican and Native American students whose parents worked for the railroad. Meanwhile, only fifty miles away, Williams' schools were segregated. The 2006 Kaibab National Forest survey of Apex identified the potential location of the Apex schoolhouse and found scattered wooden planks, metal scraps and tin cans, two limestone rubble piles, and a possible privy (Stein 2006:6).

Apex was also home to a company store, which sold tobacco, canned goods, soap, and other domestic goods (Richmond 1988:78–79, 2017:91). Wages were livable, especially for the Depression, yet, like all company stores, prices were higher. Unfortunately, the store was the closest location to purchase groceries or merchandise. The store was resupplied by truck from the company commissary in Williams, meaning, on special occasions, employees could drive the paved road to Williams or the Grand Canyon to purchase goods. The store's location has not been identified.

The Santa Fe abolished the Apex section on June 1, 1930, retired the wye and interchange track and removed the rails, switches, and ties in 1942, and closed the siding in 1954 (Richmond 2017:37). The Saginaw and Manistee finished their lease in June 1936 (Richmond 1988:87, 2017:93). The school was one of the last buildings to be moved, holding its final classes through spring 1936. Then, the loggers and their families moved on to the next timber lease while the maintenance crews, section crews, and other railway employees stayed behind to dismantle the camp and spur. In 2001, milepost 52 was renamed Imbleau after roadmaster Sam Imbleau who died that year (Richmond 2017:185). Archaeological surveys conducted by the Kaibab National Forest have found few remnants of structures beyond wooden outlines of foundations, bricks, building platforms, and raised rail beds (Stein 2006:4–5), supporting the historical information that the camp and associated spurs were dismantled after the Saginaw and Manistee completed their lease and the Grand Canyon Railway ended service.

3.2. Research Goals

The Apex, Arizona project aims to ask new questions about an unaddressed period of Arizona and Southwest history from a site that is in danger from development and looting. Through our survey and excavation, we will address three main themes that are important for understanding the site itself, but are also important for understanding the larger local, state-wide, and national trends of consumption, identity, and industry along the Grand Canyon Railway, in northern Arizona, and during the American Depression.

3.2.1. Function and Landscape

As the site was designed to disappear and no modern maps record all current features, the general site layout and the relationships between industrial features, domestic features, and the general landscape are unknown. While several individual sites have preliminary maps (Stein 2006), the level of detail between the maps is inconsistent, the scales are different, and several features are completely unmapped or lack GPS points. A major goal of the project is to create maps using GPS equipment, such as a total station or Trimble, to plot building foundations, the railroad bed, trash scatters, and other industrial and domestic features to understand the layout and function of site features.

Research questions within this theme include: Can surveys and limited excavation elucidate site layout and the functions of individual features? What are the relations between buildings and associated features?

3.2.2. 1900s Industry

Apex is associated with both the logging and railroad industries during the post-statehood boom of Arizona's economic development and growth. The logging camp, therefore, can inform on the interplay between extractive and tourist industries during the 1900s. A goal of this project, overlapping with the first goal, is to understand the geographic relations among logging and railroad features. We will also explore the different economic strategies at the distinct sites and the workforces employed by the two companies.

Research questions within this theme include: What was the relation between the AT&SF and the Saginaw and Manistee Lumber Company? Is this revealed through distinct features at Apex? Is there evidence of the AT&SF's largely Hispanic and Native American labor force and the Saginaw and Manistee's Scandinavian employees?

3.2.3 Consumer Behavior

The mass production of consumer goods that began during the 1800s made name brands and luxury goods increasingly available during the 1900s. Apex, while a company town, was also home to families and a schoolhouse. The site, in existence from 1928 to 1936, also straddles the majority of the Great Depression and Prohibition. A final goal of the project is to explore the way social, economic, and gendered identities were expressed through consumerism, consumption, and shifting economic strategies in Arizona and the United States.

Research questions within this theme include: What do the trash scatters reveal about domestic and working life at the camp? In the face of isolation and a company store, do artifacts reveal curtailed agency and choice? How can artifacts inform on life during the Great Depression more generally? Is there evidence of different choices between single men and families, between employees and supervisors, or between domestic contexts and the schoolhouse?

4. FIELDWORK

Fieldwork for the 2023 season took place between May 29 and June 23. While at the site, we conducted survey, mapping, photography, excavation, and artifact analysis at four separate site loci. The weather was mild, with temperatures ranging between the low 50s to the high 80s during the day. We did encounter several windy days, which made mapping difficult as it disrupted the longer tape measures as we attempted to measure distances of several meters. The large number of ferrous cans at the site possibly contributed to struggles in making tape-and-compass maps, as there were times the compass did not want to cooperate. The wind also blew away smaller, lighter items from the excavation unit and screen, such as charcoal, which may

have reduced the count of those artifacts, though not substantially. As the two previous field cameras succumbed to the Tusayan dirt clogging its gears during the 2022 field season, we relied on Emily's personal Nikon Coolpix S220 (circa 2010; the "Blue Camera" in photo logs) for the first two field sessions. Similar to the 2022 cameras, dirt and sand clogged the external lens mechanisms, so photos were also taken with personal cameras. During the final field session, an Olympus TG-6 (the "Red Camera"), purchased with the Forest Service for the project arrived, and, due to its internal gears is waterproof and dustproof. No complications have arisen with this camera. Overall, though, work was smooth, with no meaningful delays or problems.

4.1. Catch and Release

A key component of our research was "catch-and-release" archaeology, meaning that all artifacts were recorded, photographed, and drawn in the field and left there. This includes excavated artifacts which were collected and then placed in the bottom of the unit alongside a 2023 Bessie Coleman quarter with a layer of burlap at the bottom, before the unit was backfilled.

4.2. Survey and Mapping

Each locus we surveyed during the 2023 season was mapped, photographed, and recorded. We used separate feature forms at each Locus, concentration, or feature to record distinct information about the feature. We recorded tape-and-compass map measurements on a tape-and-compass map form, listed artifacts on artifact forms, and kept photograph logs.

Our first step at each Locus was to create a tape-and-compass map. We began every tape-and-compass map by establishing a datum, a point from which the entire locus, if possible, was mapped. Datums, for which we used a wooden stake with pink flagging tape around the top, were typically placed near the center of a Locus in order to more easily capture all the artifacts and features. Datums were left at the site at the end of field work in case we wish to visit the site again and were mapped in by Charlie Webber using a GPS unit. To determine compass degrees, our compasses were declinated to +10°. Smaller loci were mapped onto feature forms, where all other site descriptions were recorded, while larger loci, distances and degrees were mapped onto separate pieces of large metric graph paper. Scale for each locus varied, based on size and level of detail that needed to be captured. In nearly all cases, some parts of the feature were too far away to reasonably map on the same or connected piece of graph paper, and multiple pieces of paper were used, and their distance and direction from the datum were recorded on all map papers. After, or during, mapping, overview photos of the loci were taken as well as photos of key points on the map.

We next began recording artifacts in each locus, concentrations, and features using artifact forms. For smaller features or less common artifacts, we conducted as near a 100% artifact count as possible. In larger features or with incredibly common artifacts, we conducted a 10% artifact count and extrapolated that number out to the whole feature. For example, in a can dump, we

may have conducted a 100% of shoe soles, but a 10% count of hole-in-top cans. During this count, we collected diagnostic artifacts for separate recordation. Dubbed the "cool thing pile", such artifacts included items with writing, decoration, or clear function. Each of these diagnostic items received a separate line on the artifact form and individual pictures. Once recordation of the site was completed, the collected artifacts were returned to as close to their original location and position as possible.

4.3. Excavation

Per the ARPA permit and Research Design, we only opened one unit in the 2023 field season. We identified possible locations of subsurface materials by searching for depressions that may represent the locations of former privies. Based on GPR data collected by Phillip Mink in the 2022 season and our interest in the laborer's bunkhouse, we elected to excavate the depression at Locus E as a 1m x 1m unit in 2023. Per Phillip's instructions on reading the GPR results:

> "the image in the upper left-hand corner is the nearest the surface and as you examine the images from left to right you get to the deepest image in the bottom right-hand corner). The red and yellows are high intensity reflections, which would be caused by something like, rock, metal, or a very hard soil contact. The blues and the greens are lower intensity reflections, so more subtle soil difference" (Phillip Mink, elec. comm., 10 June 2022).

Excavations followed the stratigraphy, where present, and started new, arbitrary sublevels after 10cm of no soil change. All excavated soil was screened using a 1/8" screens, and additional artifacts were recovered from the screen. The soil was collected onto tarps for backfilling. Students completed paperwork for the tops of each level, recording soils, artifacts, features, organic and inorganic materials, and other contents in the unit. They also photographed the tops and bottoms of each level. All artifacts were left in situ until completely exposed, artifact counts were tallied as they were collected, and all artifacts were photographed together at the end of each unit.

In order to close the unit, we placed piece of burlap gardening fabric across the bottom of the unit to delineate the end of our excavations, put a 2023 quarter in a plastic bag on top, and then placed all the removed artifacts in the bottom of the unit, then backfilled it with the excavated soil.

5. LOCUS SUMMARIES

By Timothy Maddock and Emily Dale

The archaeological field school conducted survey, excavation, ground penetrating radar, mapping, photography, artifact analysis, and historical research of several features at the site. In 2006, the USFS recorded Apex and identified 17 features, they designated as Loci A through Q. Our project will be re-recording these features, as well as identifying new ones. In Summer 2023,

we resurveyed Loci C, D, and E, excavated a unit in Locus E, and identified one new locus, designed Locus U.

As many of the Loci contained multiple structural remains, artifact scatters, and other areas of distinct activity, we often subdivided the areas into smaller units of analysis, often based on common artifact type or distinct functions, and based on visible concentrations of activity. For example, can dumps are locations of intentional and dense artifact disposal where the primary artifact type is historic can, but also contained other artifact types deposited at or around the same time period. Common terminology used was "Wood Scatter", "Artifact Scatter", and "Privy", based on common artifact types or important features.

The photographs in this report are not inclusive of all of the photographs taken over the 2023 field season. All photographs and photo logs have been provided, separately, to the Kaibab National Forest. The included maps do not represent final maps of the site. The Apex, Arizona Archaeology Project is still working with NAU to access appropriate software, such as Adobe Illustrator and ArcMap to complete more professional and cohesive versions. The large size of some maps, especially the maps of Locus E and Locus U, created other challenges in terms of scaling them to fit appropriately in this report.

5.1. Locus C

Locus C, a large can scatter east of Loci D and E, was recorded, but not mapped, by the Forest Service in 2006. Their brief description of the locus and its artifacts reads:

> very large can dump. Lots of HIT cans, fish/meat tins, crown caps, "OLD DUTCH CLEANSER chases dirt" on can lid, some glass, ceramics, some sanitary food cans. 7x20m area, 50 cans/m^2 – about 5000 cans total (United States Forest Service 2006:4).

The 2023 resurvey of Locus C recorded two disposal areas within the locus, which were designated "Can Dump 1" and "Can Dump 2", as ferrous metal cans represent the majority of the assemblage (Figure 2).

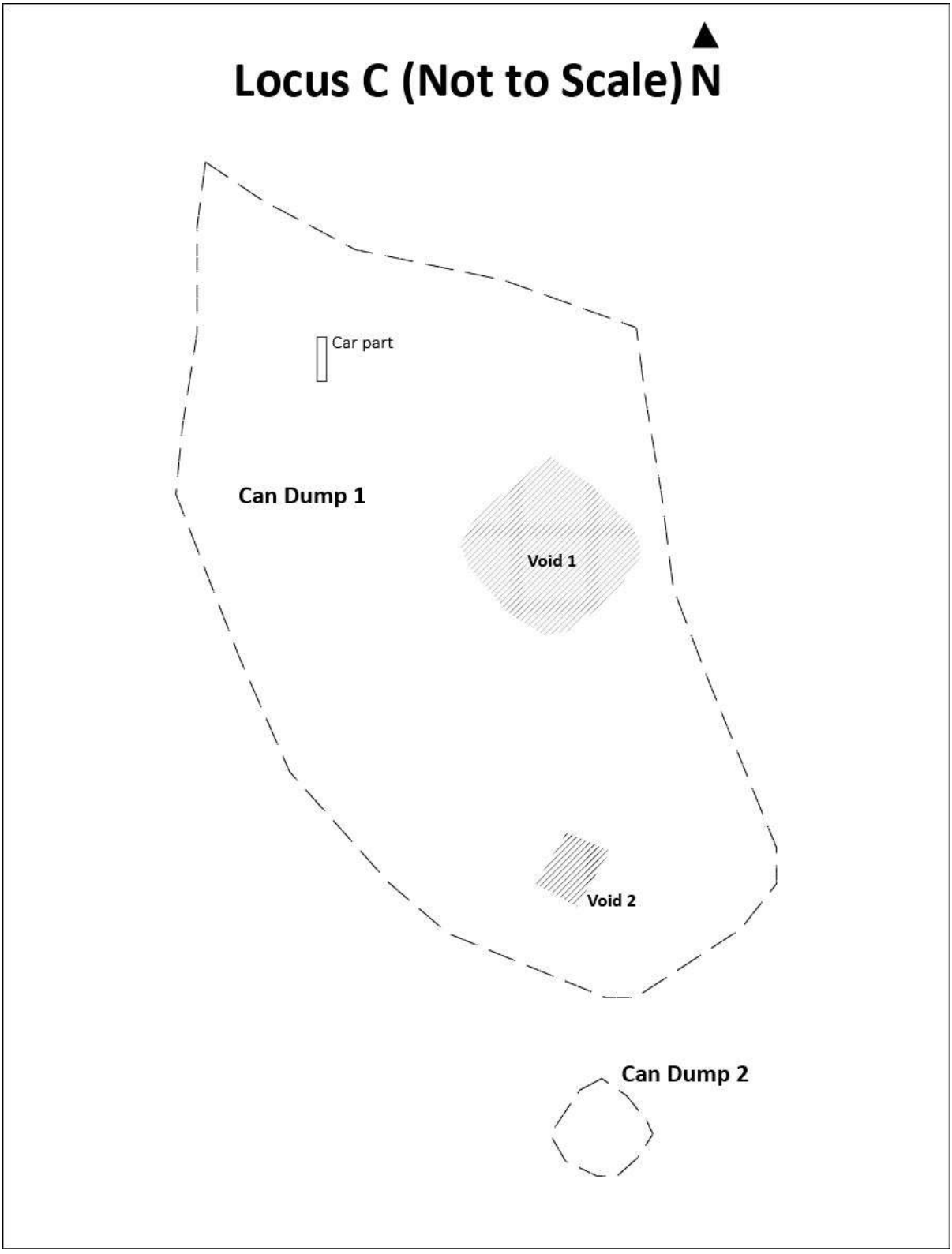

Figure 2: Map of Locus C, not to scale. Digitized by Timothy Maddock.

Can Dump 1 (CD1) comprises the majority of Locus C, occupying a significant portion of the site's northern area (Figure 3). Its assemblage consists of ferrous metal cans (solder dot, sanitary, evaporated milk, sardine tins, Log Cabin Syrup tins) demonstrating various opening methods (rotary can opened, knife-opened, lids fully removed) and modifications (punctations). Notably, meat tins are relatively sparse. Colorless glass jar fragments, undecorated ceramics, wire, crown caps, shoe leather, and milled lumber fragments are also present. Within CD1 are two large "voids", or sparse areas without cans that contain smaller artifacts such as glass or crown caps. The assemblage of CD1 is more concentrated at its southern boundary, with additional artifacts likely obscured beneath pine duff and vegetation.

Figure 3: Locus C, Can Dump 1, looking southeast. Photo by Travis Cumming.

Can Dump 2 (CD2) is a substantially smaller artifact concentration lying approximately 5 meters south of CD1 (Figure 4). A very small number of artifacts (glass, ferrous metal fragments) indicate the space between the two concentrations. CD2's assemblage is characterized by ferrous metal artifacts (cans, cast iron stove fragments, indeterminate fragments) and glass fragments (colorless and green). No diagnostic artifacts were observed.

Figure 4: Locus C, Can Dump 2, looking south, Photo by Travis Cumming.

Locus C contains 10,084 total recorded artifacts, with an assemblage characterized by mostly ferrous metal food containers. Artifacts assigned the "Food/Drink storage" category (such as sanitary and solder dot cans as well as mason jar containers) constituted 11% of the overall cultural assemblage (Figure 5). Cultural materials assigned the "Apparel" category represented the second-highest density within the overall assemblage at 3%, constituted by shoe leather and button fragments.

The provided data suggest that Locus C primarily functioned as a refuse disposal area, as the only artifact definitively considered to be architectural was a broken ferrous metal window frame. The artifacts within the locus are likely associated with activities within Loci E and D based on the overwhelming amount of food storage materials present.

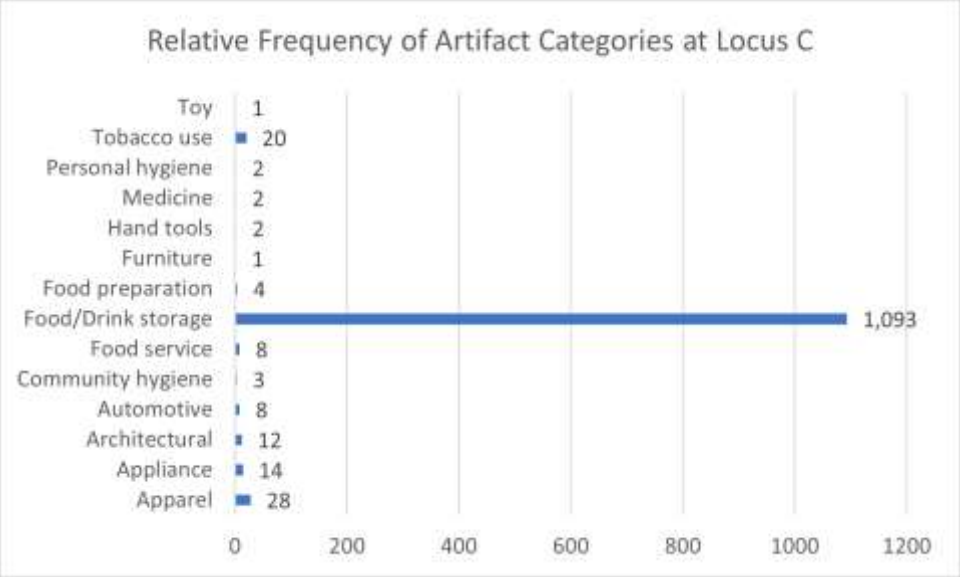

Figure 5: Relative frequency of artifact categories at Locus C. Graph and analysis by Timothy Maddock.

5.2. Locus D

Locus D, the possible location of married laborer housing, is southeast of Locus E and west of Locus C. Described briefly by the Forest Service as "smaller area – lots of milled lumber – structural remains? Some cans, glass, ceramics" (United States Forest Service 2006:4), the map has slightly more details (Figure 6).

Our recordation of Locus D in 2023 identified four discrete activity areas: Wood Scatter 1, Wood Scatter 2, Artifact Scatter 1, and Artifact Scatter 2 (Figure 7).

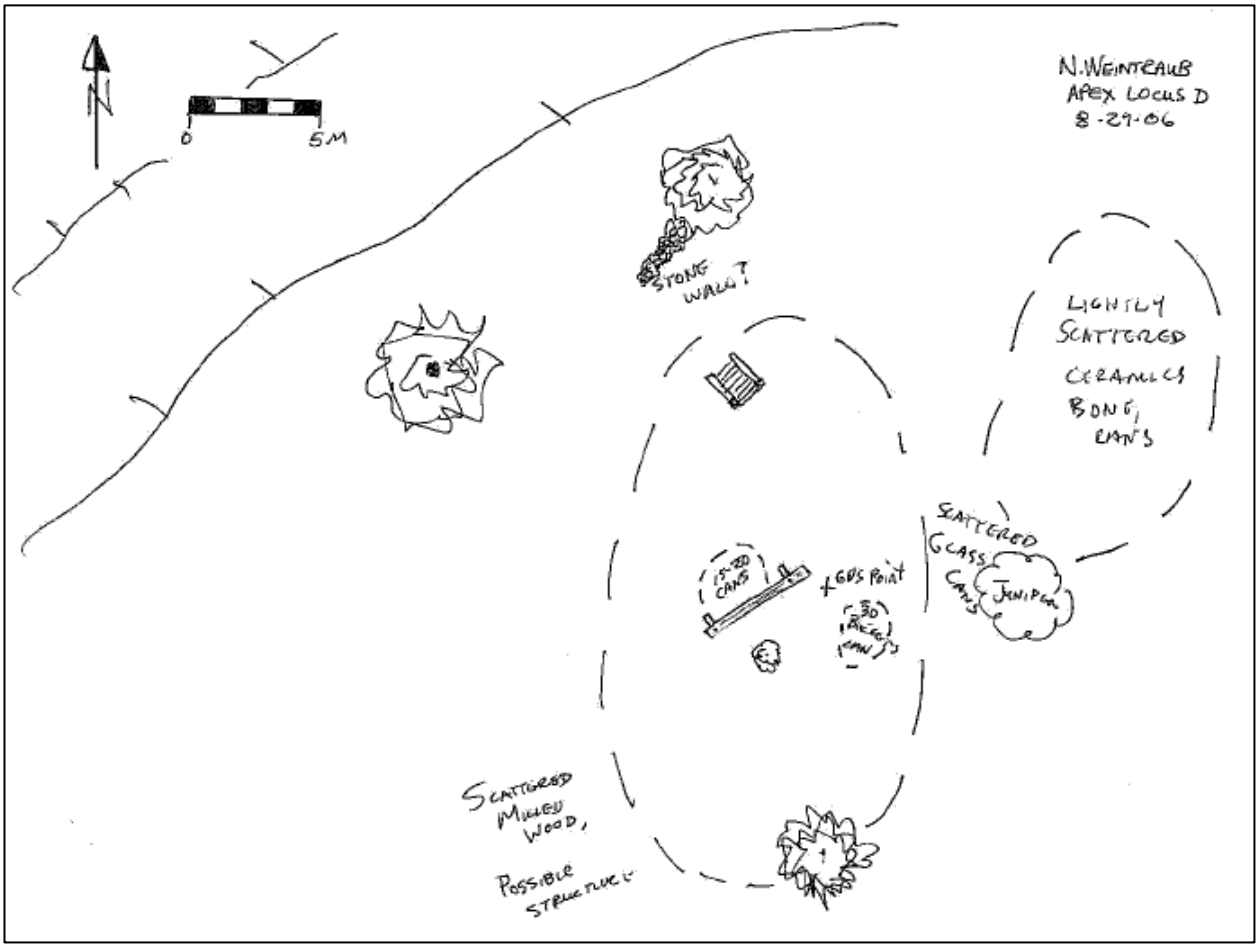

Figure 6: 2006 map of Locus D by Neil Weintraub (United States Forest Service 2006:8).

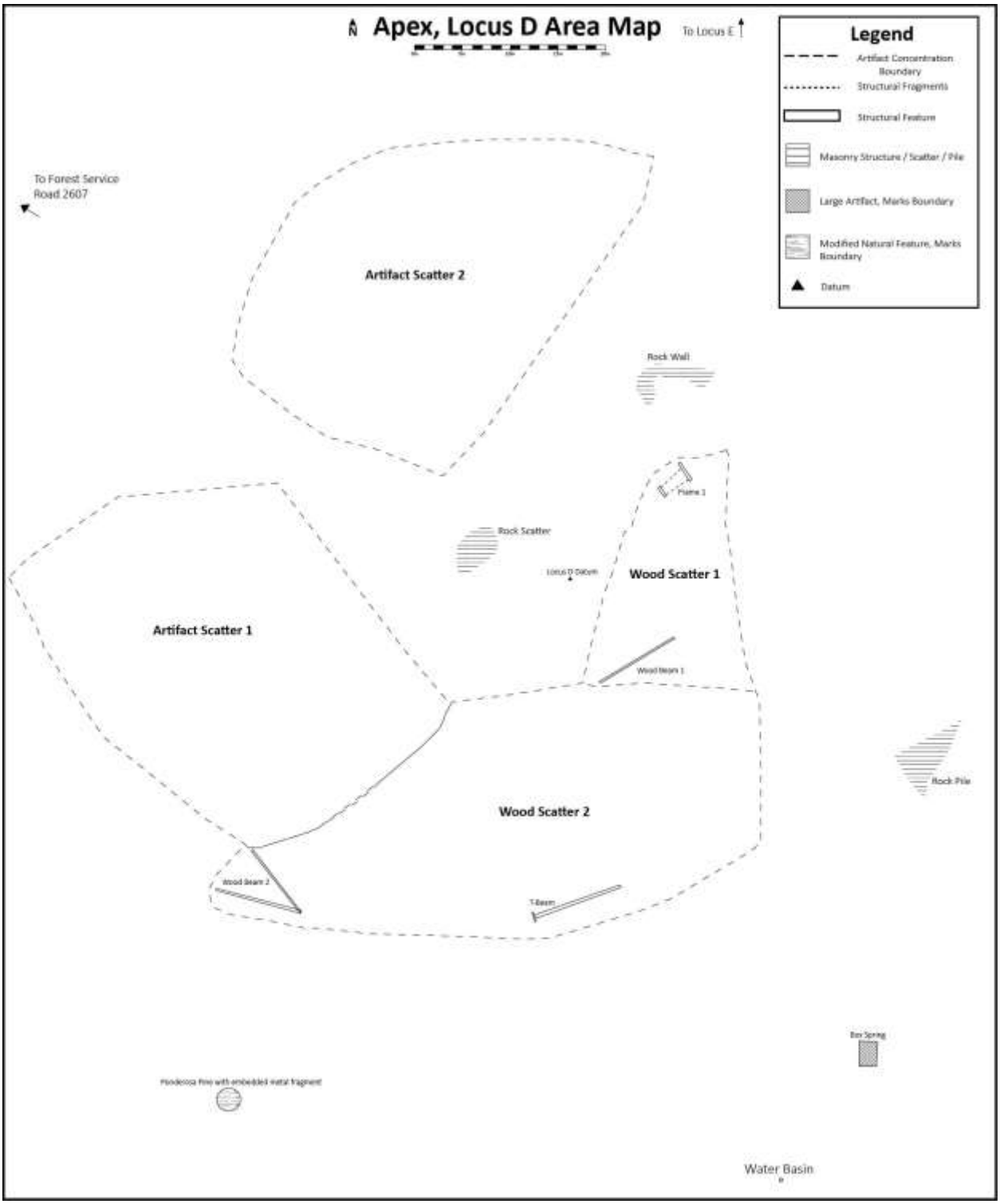

Figure 7: Map of Locus D, to scale. Digitized by Tim Maddock.

Wood Scatter 1 (WS1) consists of numerous lumber fragments, intact beams, and Frame 1, likely part of a window or door frame, all of which are believed to originate from building foundations (Figure 8). The scatter is located near the eastern boundary of the locus, toward the center. In addition to the lumber fragments, the assemblage consists of ferrous metal cans (predominantly meat, tobacco, and fish tins), porcelain, stoneware, and white earthenware ceramic fragments, and colorless (flat and vessel), amber, cobalt and green glass fragments.

Figure 8: Locus D, Wood Scatter 2, looking north. Photo by Tim Maddock.

Compared to WS1, Wood Scatter 2 (WS2) had a comparably lower density of large, intact wood beams (Figure 9). The scatter is located south and downslope of WS1 and abuts the eastern boundary of AS2. Among the few present beams and lumber splinters and fragments are ferrous metal cans, fragments, and Copenhagen tins, colorless (flat and vessel), aqua, green, amber, carnival, and milk glass fragments, rubber tire fragments, a kettle, a scatter of porcelain sherds, a spark plug core of indeterminate brand, and a prehistoric chert flake.

Figure 9: Locus D, Wood Scatter 2, looking south. Photo by Emily Dale.

Artifact Scatter 1 (AS1) was determined to be distinct from WS1 or WS2 due to its density of domestic artifacts and lack of evidence for robust structural remains (Figure 10). It is located on the western edge of the locus and shares its southern border with WS2's northwestern edge. Its assemblage consists of small milled lumber fragments, porcelain sherds, colorless (flat and vessel), amber, and amethyst glass fragments, ferrous metal artifacts (including a toy horse), cleaning products, and spice lids), shoe leather, and a flashlight head.

Figure 10: Locus D, Artifact Scatter 1, looking east. Photo by Alex Mason.

Finally, Artifact Scatter 2 (AS2) is a small, diffuse artifact scatter (Figure 11). It is situated on a western slope facing the railroad and Forest Service Road 2607; thus it is possible that its artifacts were originally located upslope near the datum. AS2 is distinguished from WS1 and WS2 due to its lack of milled lumber, beams, or planks, and was determined to be discrete from AS1 due to distance and lower artifact density. The assemblage consists of ferrous metal cans, kitchenwares, and fragments, multiple glass finishes (medicine and beverage bottles), porcelain sherds, and non-ferrous metal fragments. One ferrous metal toy ram is also present.

Figure 11: Locus D, Artifact Scatter 2, looking west. Photo by Rachel Matheson.

Overall, Locus D contained 1,716 total recorded artifacts, with an assemblage characterized by domestic products such as food storage and service vessels, cleaning supplies, clothing, and children's toys. Also present are automotive fragments, hand tools, and structural remains. The most common artifact categories were food/drink storage (44%), architectural elements (36%) (Figure 12). The provided data suggest that Locus D functioned as at least one, possibly multiple, housing units where children played or lived. The slight increase in the density of artifacts associated with automotive contexts also suggests that the area may have offered parking for personal or company vehicles.

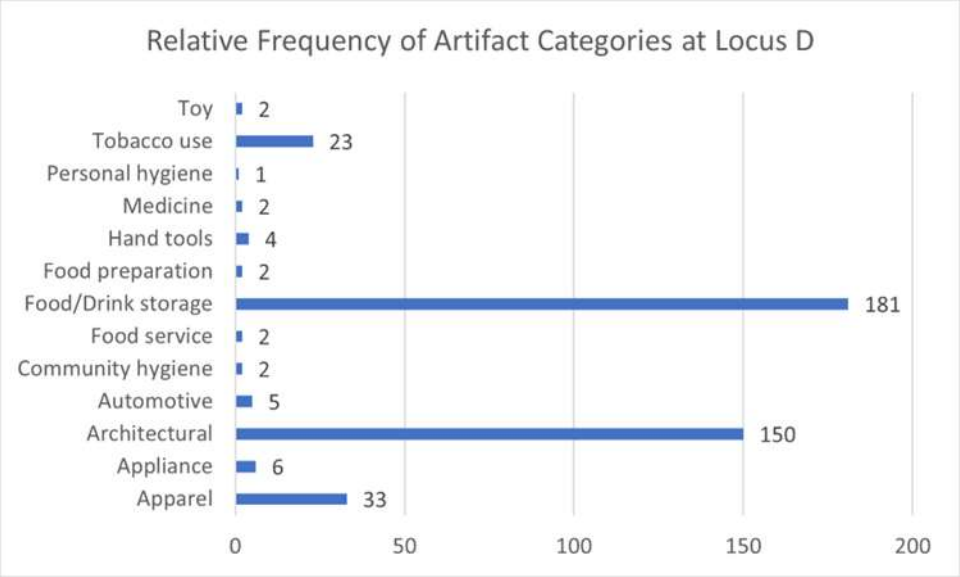

Figure 12: Relative frequency of artifact categories at Locus D. Graph and analysis by Tim Maddock.

5.3. Locus E

Locus E, at the northern edge of the site on the east side of the rail line and road and the likely location of the laborer bunkhouse, was recorded and preliminarily mapped by the KNF in 2006 (Figure 13). Their report describes Locus E as:

> large, 1m wide limestone cobble wall & milled lumber—structure remains? Some pits (privies?) and domestic trash. Milk glass, amethyst glass, stoneware, window glass, machinery parts, bricks, "Calumet 5 lbs. absolutely pure". Ends at drainage" (United States Forest Service 2006:4)

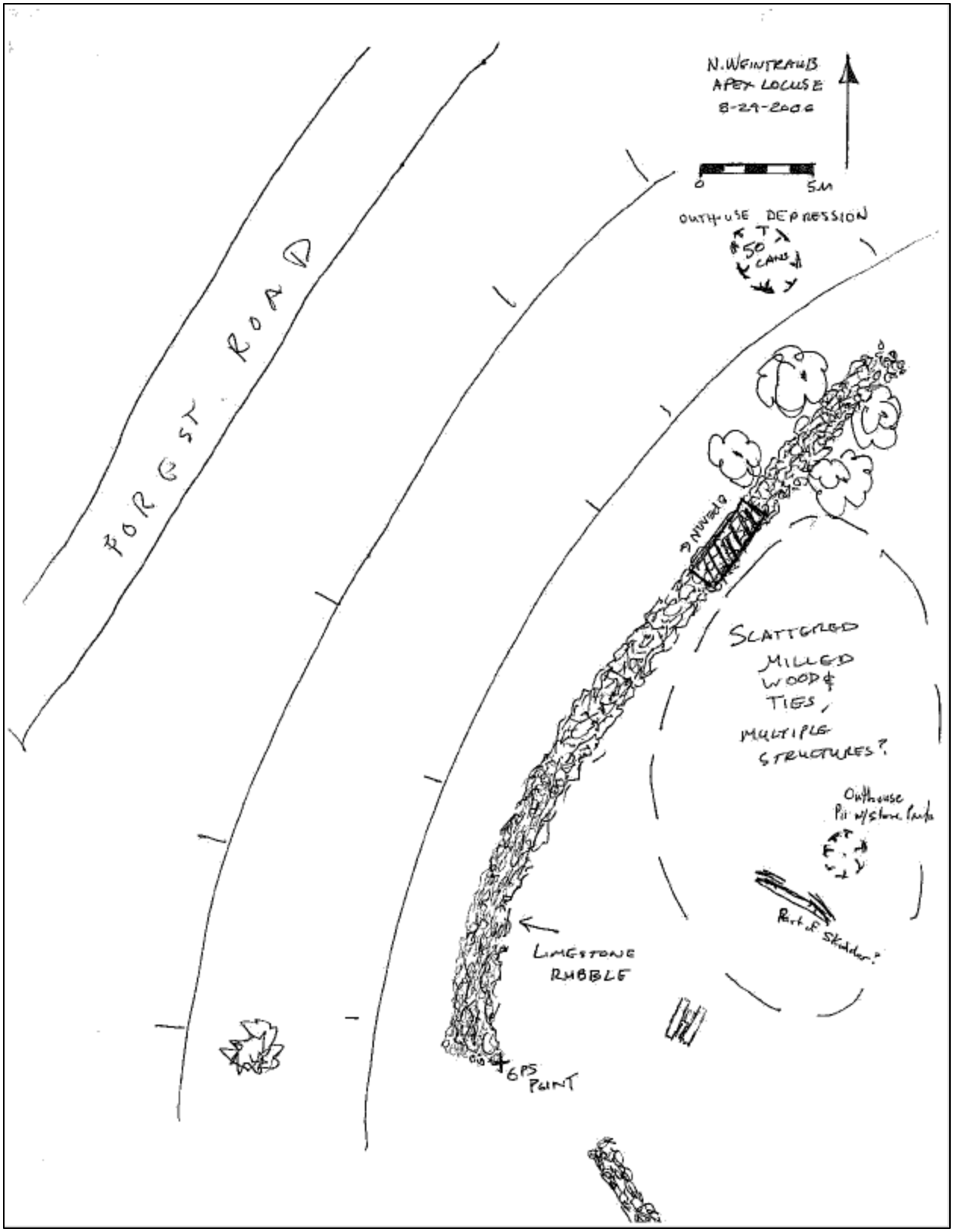

Figure 13: 2006 map of Locus E by Neil Weintraub (United States Forest Service 2006:9).

Locus E Overview

Our 2023 recordation of Locus E delineated six discrete concentrations: the Privy, Wood Scatter 1, Wood Scatter 2, Artifact Scatter 1, Artifact Scatter 2, and the rock walls on the north, south, and west boundaries of the Locus (Figure 14). As the privy excavations warrant a full description, we will discuss them separately in the next section.

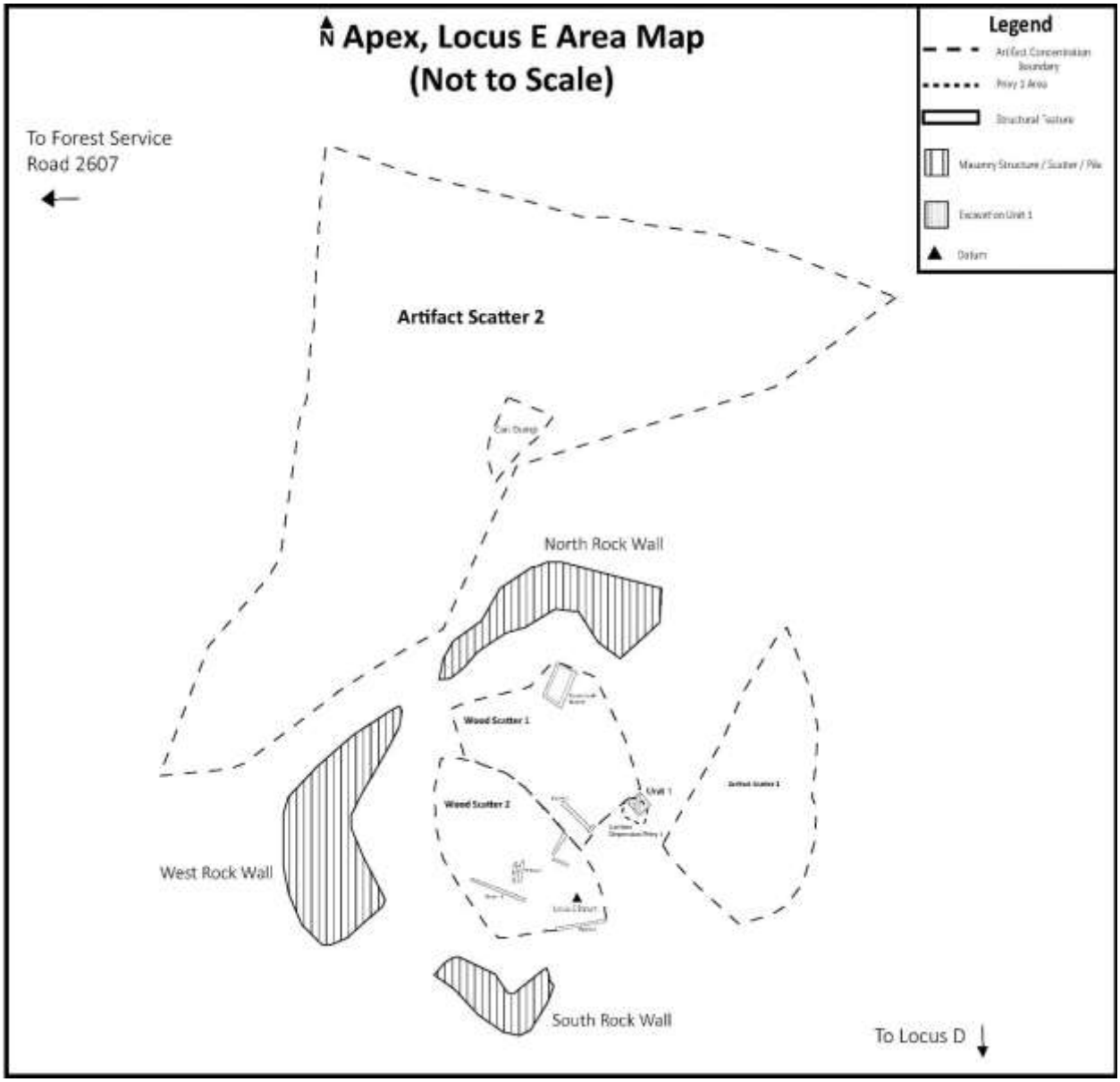

Figure 14: Not-to-scale map of Locus E. Digitized by Tim Maddock.

Wood Scatter 1 (WS1) consists of a general lumber scatter with potential origins from the laborer bunkhouse and is located in the northwestern corner of Locus E (Figure 15). It lies approximately four meters south of the northern rock wall (see below) and directly abuts WS2 to the south. WS1 and WS2 were determined to be separate scatters due to their concentrations and

spatial distribution. WS1 contains the remains of a door or window frame and wall panel with embedded nails and bolts, while the artifact assemblage of WS1 is characterized by cans, stovetop fragments, colorless (vessel and flat), green, amber, and milk glass fragments, stove pipe fragments, wire nails, porcelain, and ceramics. Notable artifacts include one Towle's Wigwam brand maple syrup tin.

Figure 15: Locus E, Wood Scatter 1, looking east. Photo by Travis Cumming.

Wood Scatter 2 (WS2) consists of a lumber scatter with six I-beams and one H-beam as well as a comparatively lower density of artifacts (Figure 16). It directly abuts WS1 to the north, but was determined to be a discrete area due to its density of lumber artifacts compared to WS2. In addition to wood beams and planks, its assemblage is composed of wire nails, 50-millimeter bolts, ceramics, cans, aqua, colorless (vessel and flat), carnival, green, and milk glass. Notable artifacts consist of hand-painted porcelain ceramics and a large H-Beam (Figure 5.14).

Figure 16: Locus E, Wood Scatter 2, looking west. Note the "H" beam on the right side. Photo by Rachel Matheson.

Artifact Scatter 1 (AS1), a dense artifact concentration situated approximately five meters east of Privy 1, fans out northeastward and downslope to terminate at the boundary of Locus E (Figure 17). It was differentiated from the neighboring Wood Scatter 1 (see below) based on its cultural assemblage, which encompasses more domestic artifacts than construction materials. AS1 contains various ferrous and non-ferrous metal artifacts (cans, tobacco tins, buckets, etc.), enamelware, stove fragments, ceramics, colorless (flat and vessel), cobalt, amber, aqua, green, and carnival glass, and leather shoe fragments. Notable artifacts include one ferrous metal doorknob, a Uruguayan *Frigorífico Nacional* meat tin, a Budweiser malt extract can, an Arizona license plate, medicine bottles, the face of a porcelain figurine, and an Eveready brand flashlight end cap.

Figure 17: Locus E, Artifact Scatter 1, looking north. Photo by Tim Maddock.

Artifact Scatter 2 (AS2) is separated from AS1 by Wood Scatters 1 and 2 and encompasses a larger area while being more diffuse in nature (Figure 18). AS2 contains various ferrous and non-ferrous metal artifacts (cans, tobacco tins, meat tins, etc.), stove fragments, ceramics, and a colorless glass bottle base (Table 5.3). Notable artifacts include a “COTY” brand cosmetics lid, a possible watch part face, and a Log Cabin brand syrup tin.

Figure 18: Locus E, Artifact Scatter 2, looking east. Photo by Rachel Matheson.

Three Kaibab limestone cobble piles (the Rock Walls) enclose Privy 1, WS1, and WS2, which are the bulk of activity areas within Locus E. These limestone cobble piles were likely created when laborers cleared rocks to construct building foundations and used the recovered cobbles to construct walls. The walls are situated to the south (Figure 19), west (Figure 20), and north (Figure 21) and share similar, low density artifact assemblages. There was no evidence of an eastern wall within the locus. Association of artifacts were determined based on their proximity to the walls: any cultural material within one meter of a wall was documented as part of the feature. The collapsed and eroded nature of the walls precludes an original course estimation, although it is also possible the walls were never formally constructed. Although the walls were mapped, no measurements are available at time of writing. Each rock wall was documented separately.

Figure 19: Locus E, South Wall, looking south. Photo by Alex Mason.

Figure 20: Locus E, West Wall, looking east. Photo by Alex Mason.

Figure 21: Locus E, West Wall, looking north. Photo by Alex Mason.

Locus E Privy and Unit 1

A depression near the center of Locus E was designated as a possible privy by the Kaibab National Forest in 2006 and we kept this designation for the 2023 field season. Excavations of this feature failed to confirm its use as a privy, but we retained the name to avoid confusion in paperwork. The "Privy" consists of a roughly circular 53m^2 area bordered by low sagebrush to the east and south (distinguishing it from Artifact Scatter 1 and Wood Scatter 1, respectively), two distinct concentrations of ferrous nails to the north, and a collapsed, burned telegraph pole that lies along the western edge of the privy (Figure 22). Metal represents the dominant material type observed among artifacts associated with Privy 1, including hundreds of ferrous metal nails, cans, fragments, stove pipe pieces, and a non-ferrous ferrule. Also present are an even distribution of numerous colorless window and vessel glass fragments, several hundred amber and amethyst glass fragments, white earthenware ceramics, decorated porcelain sherds, leather shoe fragments, high-fire brick fragments, and other cultural artifacts.

Figure 22: Locus E, Privy, looking north. Note the burned utilities pole in the rear. Photo by Alex Mason.

In 2022, Phillip Mink, a remote sensing specialist with the University of Kentucky, volunteered his services for the summer and performed ground penetrating radar of this large depression at Locus E with the assistance of Ian Villamil and Madeleine Gulbransen. Based on promising results of underground disturbance (Figure 23), we elected this feature for excavation in the 2023 field season.

Bruce Phillips, an archaeobotanist and geoarchaeologist who runs BGP Consulting, Inc, volunteered his services. He assisted in the collection of soil samples from Privy 1, with the goal of discovering botanical remains that could point to fresh fruits and vegetables in Apex residents' diets that supplemented or complemented the largely canned food diet represented in the archaeological record. His report is included in Appendix D.

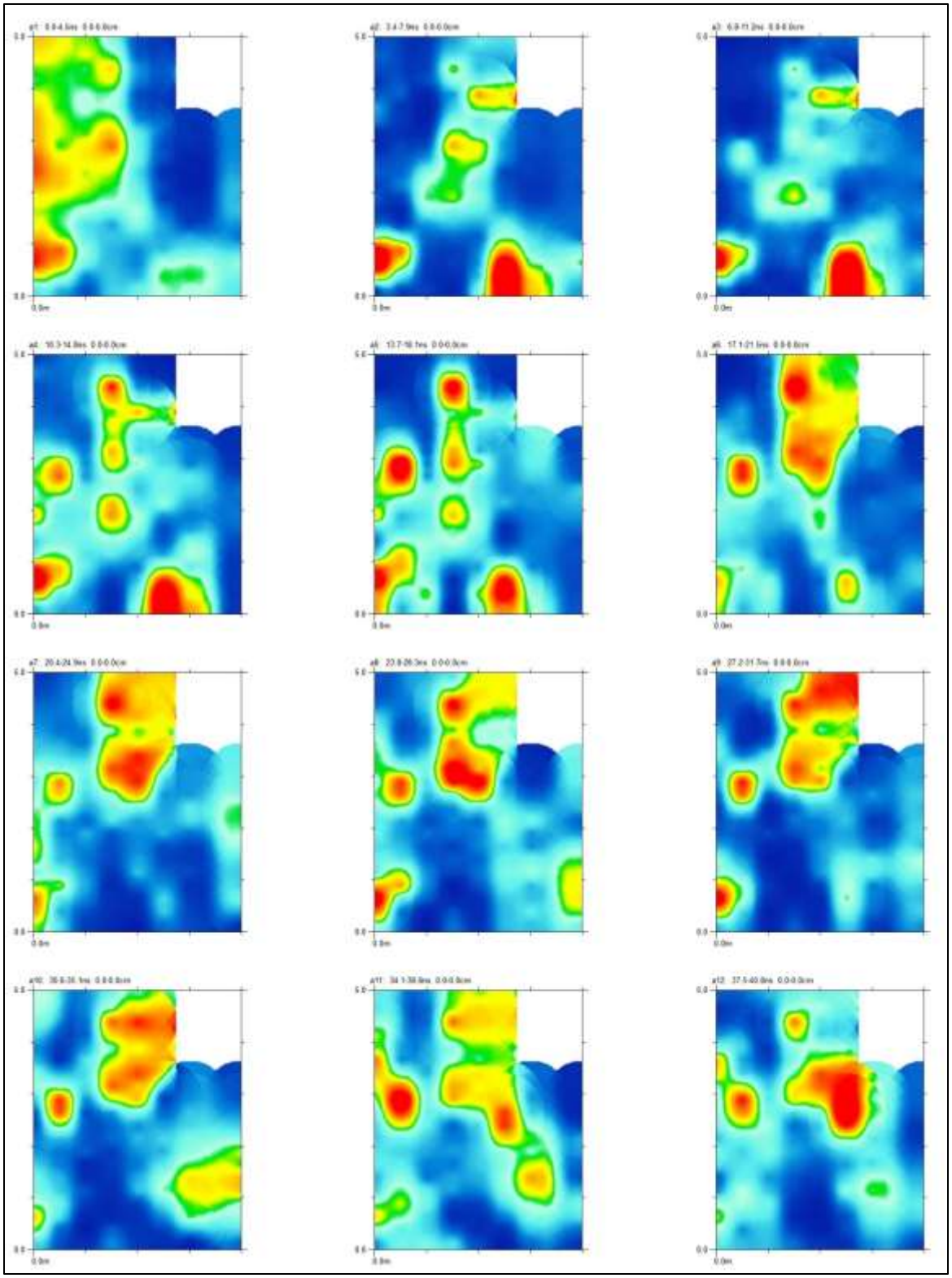

Figure 23: GPR readout of Locus E Privy depression. The blank space in the upper right corner is a tree growing on the edge of the depression. Map by Phillip Mink.

The 1m x 1m excavation unit was oriented so as to bisect the depression, with the goal of obtaining a good cross-section of the potential privy. A burnt telegraph pole lay directly next to the depression, and was documented and photographed before removal to facilitate excavation. Table 1 contains an overview of the levels, depths, Munsell values, and artifact counts for the excavation.

Table 1: Overview of Munsell values and artifact counts in Locus E, Privy 1, Unit 1. Table by Timothy Maddock.

Stratum	Level	Munsell Value and soil texture	Depths (cmbd)	No. of Artifacts
1	Surface	No visible soil	1.5 - 5.5	63
1	1	10YR 3/2: Very Dark Grayish Brown fine sand	5.5 - 15	127
2	1	7.5YR 3/2: Dark Brown fine sand	15 - 17	480
2	2	7.5YR 3/3: Dark Brown fine sandy loam; 7.5YR 4/3: Brown fine sandy loam in southeast part of unit	17 - 25	357
2	3	7.5YR 3/2: Dark Brown fine sandy loam; 7.5YR 4/3: Brown fine sandy loam in southeast part of unit	25 - 34	260
Feature 1, Stratum 2	1 - 3	5YR 3/2: Dark Reddish Brown clay loam	11 – 35.5	14
2	4	5YR 3/3: Dark Reddish Brown clay loam	35 - 42	25
3	1	7.5YR 6/1: Gray coarse sandy loam heavily influenced by limestone gravels	35 - 45.5	6
3	2	10YR 3/2: Very Dark Grayish Brown sandy loam	45.5 - 55.5	8
Total				**1,341**

Little soil was visible on the surface (Figure 24 and Figure 25), and several large-to-medium Kaibab sandstone cobbles, sage brush, and fountain grass debris needed to be removed by hand prior to breaking ground. Due to the nature of the depression, depths at the surface ranged from

1.5cmbd to 18.5cmbd. A total of 63 artifacts were found on the surface, including milled wood, crushed ferrous metal cans, window glass, colorless and amber bottle glass, ferrous wire nails, ferrous and non-ferrous caps, faunal fragments, and a concentration of charcoal in the northwest corner, likely associated with the burned utility pole that was removed prior to excavation.

Figure 24: Locus E, Privy 1, Unit 1, Surface, plan view. Photo by Alex Mason.

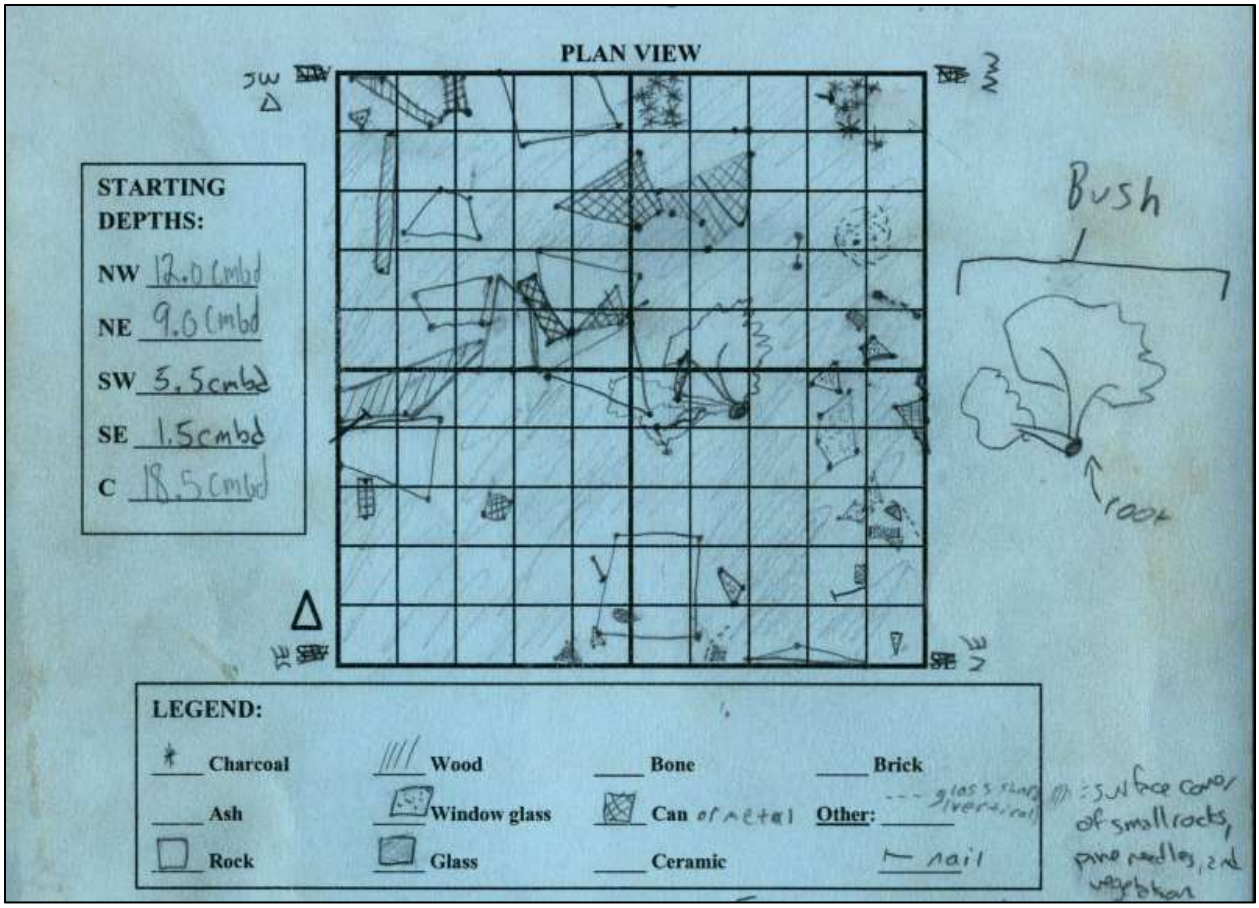

Figure 25: Plan view sketch of Privy 1, Unit 1 surface. Sketch by Garrett Hoskinson, Alex Mason, and Emily Dale.

Stratum 1, Level 1 consisted of the layer of natural lithic and floral material that was removed to better expose the soil layer (Figure 26 and 27). We determined this to be the beginning of a stratum based on the improved visibility and abundance of soil. A total of 127 artifacts, including window glass, colorless amethyst, and amber vessel glass, ferrous metal fragments, calcined and burned faunal fragments, milled wood, mortar, charcoal, two buttons, and a fragment of an Old Dutch Cleanser can lid. Stratum 1, Level 1 terminated atop a color change in the soil, which, again, due to the nature of the depression resulted in various depths across the unit, ranging between 5.5cmd in the highest corner (SE) to 15cmdb in the center.

Figure 26: Locus E, Privy 1, Unit 1, Stratum 1, Level 1, plan view. Photo by Emily Dale.

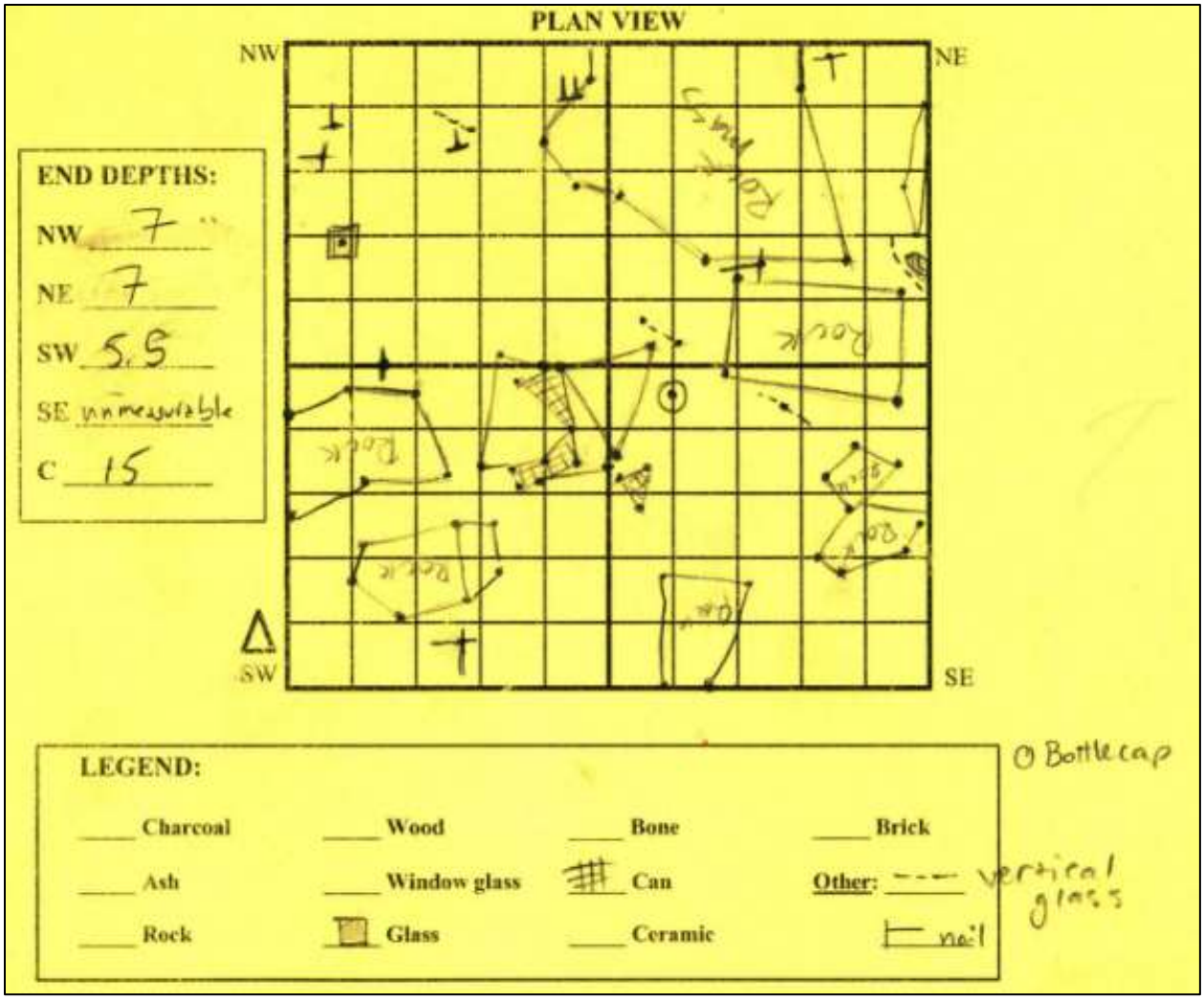

Figure 27: Plan view sketch of Privy 1, Unit 1, Stratum 1, Level 1. Sketch by Rachel Matheson and Travis Cumming.

Stratum 2, Level 1 (7.5YR 3/2: Dark Brown) maintained a high gravel and cobble density in addition to manifesting notably darker, carbon-rich soils (Figure 28 and Figure 29). The remaining natural lithics were left in-situ due to their large size and the likelihood of their removal jeopardizing the vertical integrity of the excavation. Due to the stratum change, we used this opportunity to level out the unit, with the assumption that any privy soil would also be level. Ending depths, therefore, extended from 15 to 17 cmbd, with excavation often impeded by the presence of the large cobbles. In total, 480 artifacts were identified within this level: ferrous metal crown caps, crushed unidentified metal and cans, nails and staples, colorless, flat, amber, green cobalt glass fragments (some melted) faunal, charcoal, mortar, tar paper, natural wood fragments, porcelain sherds, a button, and a ferrule.

Figure 28: Locus E, Privy 1, Unit 1, Stratum 2, Level 1, plan view. Photo by Emily Dale.

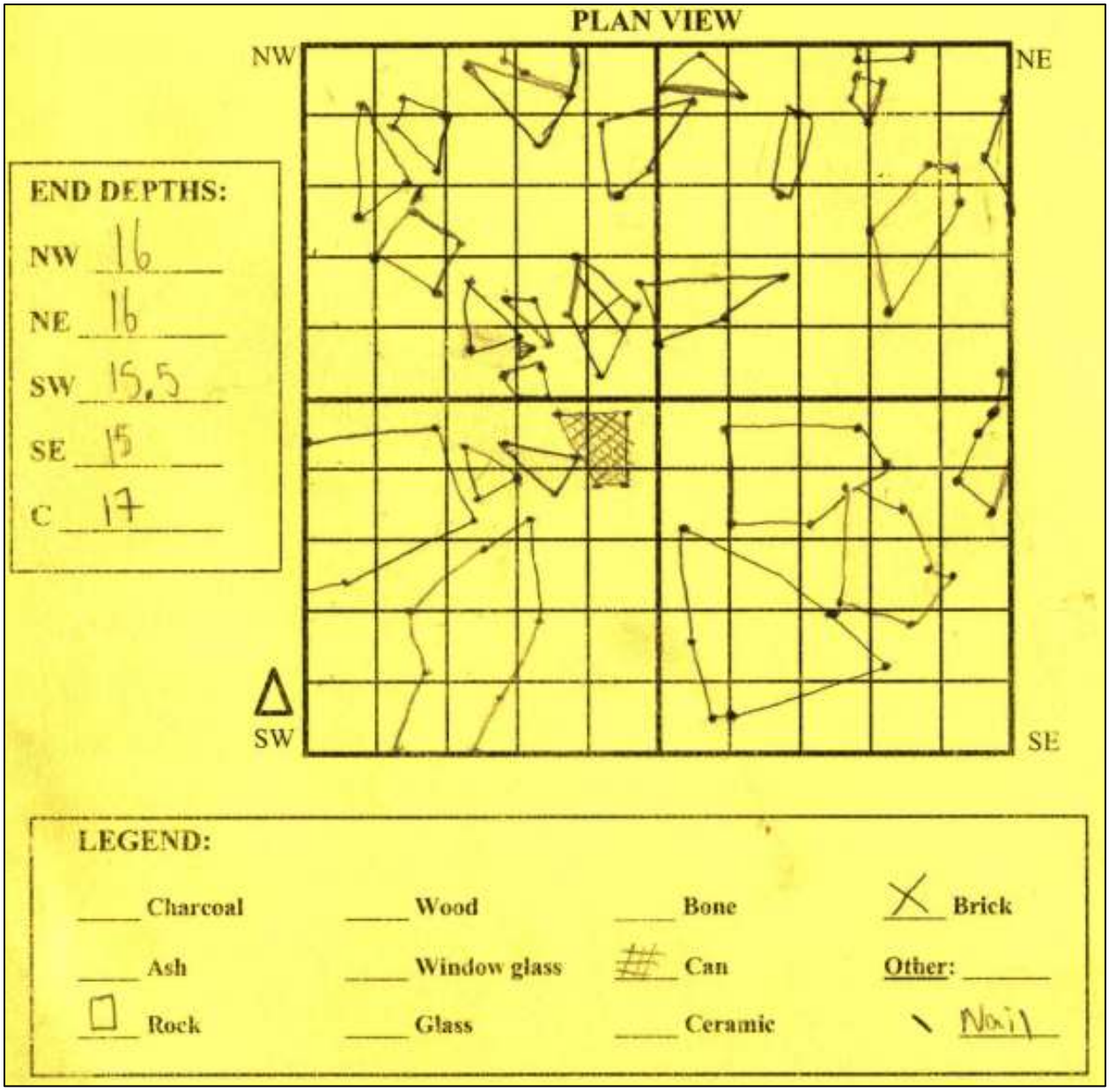

Figure 29: Plan view sketch of Privy 1, Unit 1, Stratum 2, Level 1. Sketch by Alex Mason, Rachel Matheson, and Emily Dale.

Excavation continued into Stratum 2, Level 2 (7.5YR 3/3: Dark Brown), where lighter soil began to manifest in the southeast corner (7.5YR 4/3: Brown) of the unit (Figure 30 and Figure 31). Excavations, therefore, were ceased where this new soil began to appear, while the rest of the unit went down another 10cm. The main soil in the remainder of the level also appeared to become coarser in texture with depth. We noted an abundance of small charcoal fragments in the northern portion of the unit, which may have been due to the presence of a rodent burrow. The density of large lithic cobbles continued into this level. Depths extended from 22 to 25 cmbd. In total, 357 artifacts were identified, consisting of colorless window glass, colorless, green, cobalt,

amethyst, and amber glass vessel fragments, ferrous metal cans, various nails, and miscellaneous fragments, non-ferrous eyelets, foil seal fragments and unidentified artifacts, tar paper intermixed with charcoal, and one bakelite button. No diagnostic artifacts were identified.

Figure 30: Locus E, Privy 1, Unit 1, Stratum 2, Level 2, plan view. Photo by Rachel Matheson.

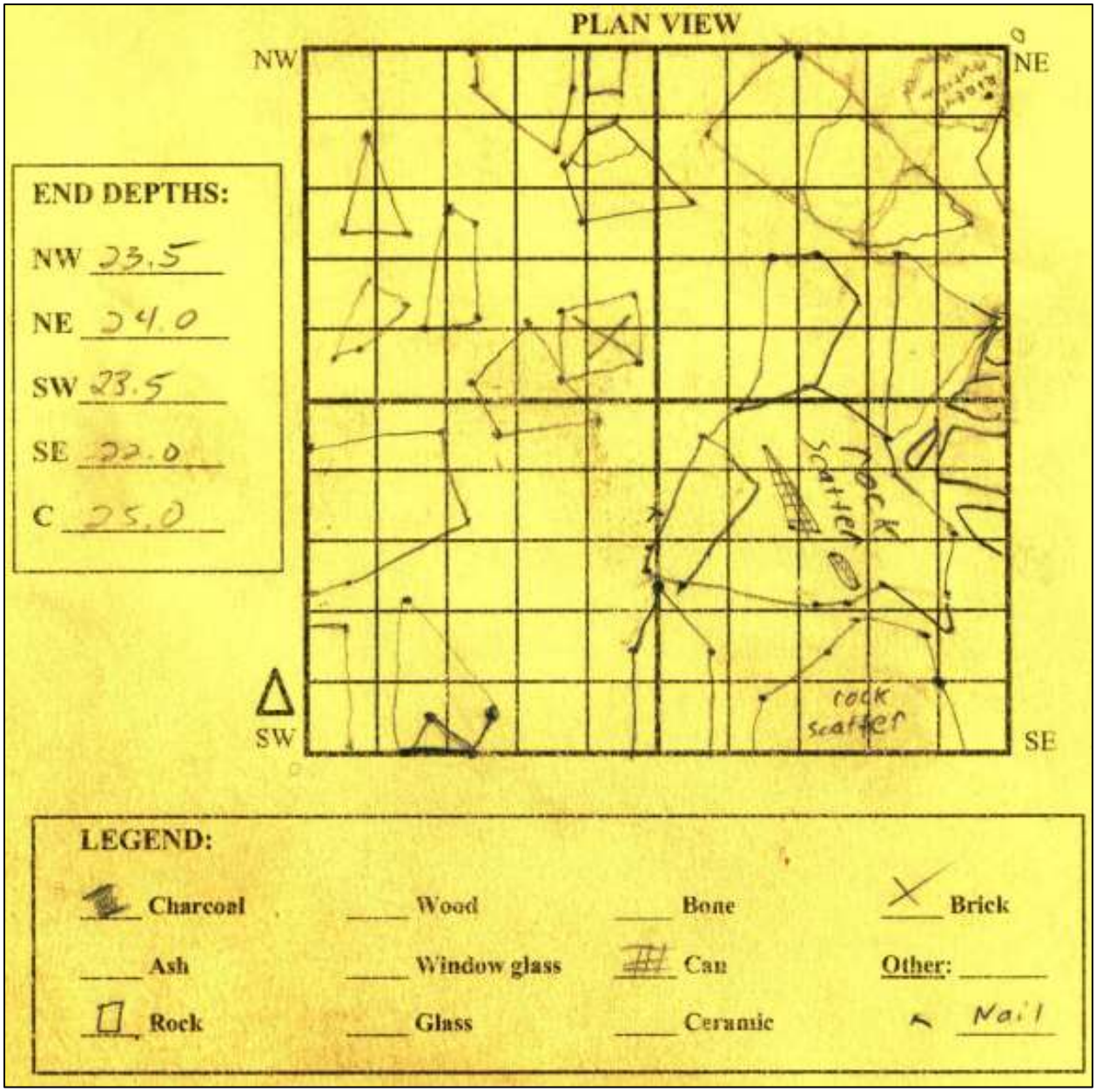

Figure 31: Plan view sketch of Privy 1, Unit 1, Stratum 2, Level 2. Sketch by Garrett Hoskinson, Travis Cumming, Carl Evertsbusch, and Emily Dale.

Stratum 2, Level 3 (7.5YR 4/3: Brown in the southeast portion of the unit, 7.5YR 3/2: Dark Brown in remaining soil area) saw an increase in root and natural lithic density at the top of the level and along the sidewalls of the unit (Figure 32 and Figure 33). Soil moisture and compactness increased in the eastern portion of the unit, and soil color appeared lighter. Level depths extended from 25 to 34cmbd. In total, 260 artifacts were identified within this level, such as various ferrous metal fragments and lids, cut faunal remains, window and colorless, milk, amber, green, and cobalt vessel fragments, nails, porcelain and white earthenware sherds, vinyl

record fragments, leather fragments, linoleum fragments, charcoal, and wood fragments. Notable artifacts include one non-ferrous squeeze tube container rolled up from both its ends and labeled “INFLAMMABLE” around the neck, one suspenders buckle, one possible electrical plug, one Bakelite button, one spring hinge clip, one linchpin with a safety pin running through the end hole, one non-ferrous threaded pipe with a cotter pin hole and attached melted lead, and one intact tin mug. At this point in the excavation, a large rock embedded in the western side wall, believed to extend well into the sidewall, was designated as Feature 1 and is associated with Levels 1 through 3 of Stratum 2.

Figure 32: Locus E, Privy 1, Unit 1, Stratum 2, Level 3, plan view. The darker soil in the center is due to overnight rains seeping into the unit, not a soil change. Photo by Emily Dale.

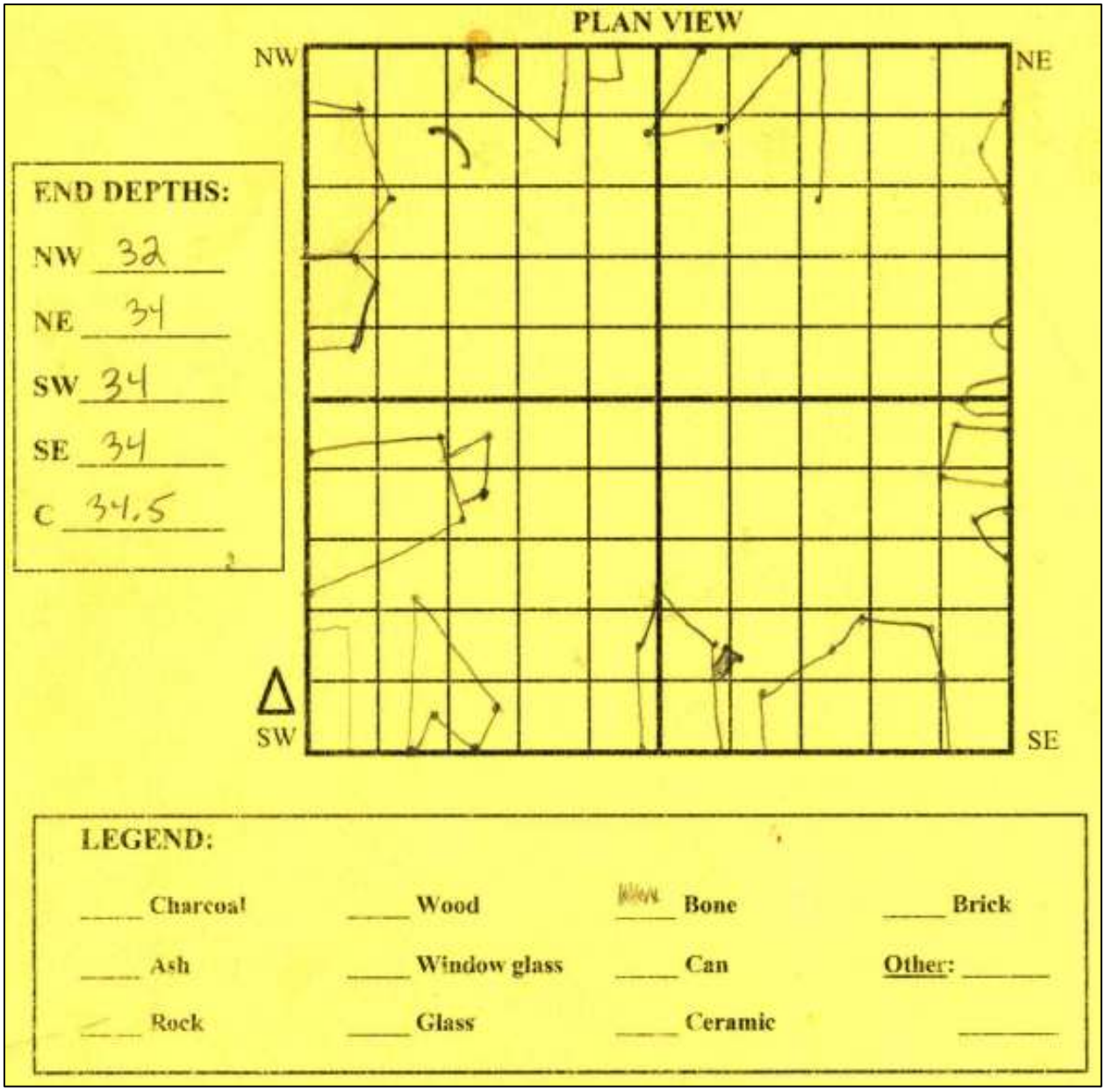

Figure 33: Plan view sketch of Privy 1, Unit 1, Stratum 2, Level 3. Sketch by Adrienne Dale, Alex Mason and Emily Dale.

Feature 1 (5YR 3/2: Dark Reddish Brown clay loam) consisted of a large rock with underlying soil that we were hesitant to remove due to its suspected role in the structural integrity of the western sidewall (Figure 34). The feature lies within levels 1 through 3 of Stratum 2, encompassing between 11 and 35.5 cmbd. The rock was pedestaled and eventually removed in the process of excavation Stratum 2, Level 4. Artifacts associated with the feature potentially originate from non-provenienced areas, most likely Levels 2 and 3. Bruce Phillips collected a soil sample from the northeast corner of the unit following excavation of the feature (see

Appendix D). In total, 14 artifacts (colorless and amber glass, bone, wood fragments, nails, ferrous wire, a possible electrical element, a pocket watch, and a spark plug) were identified.

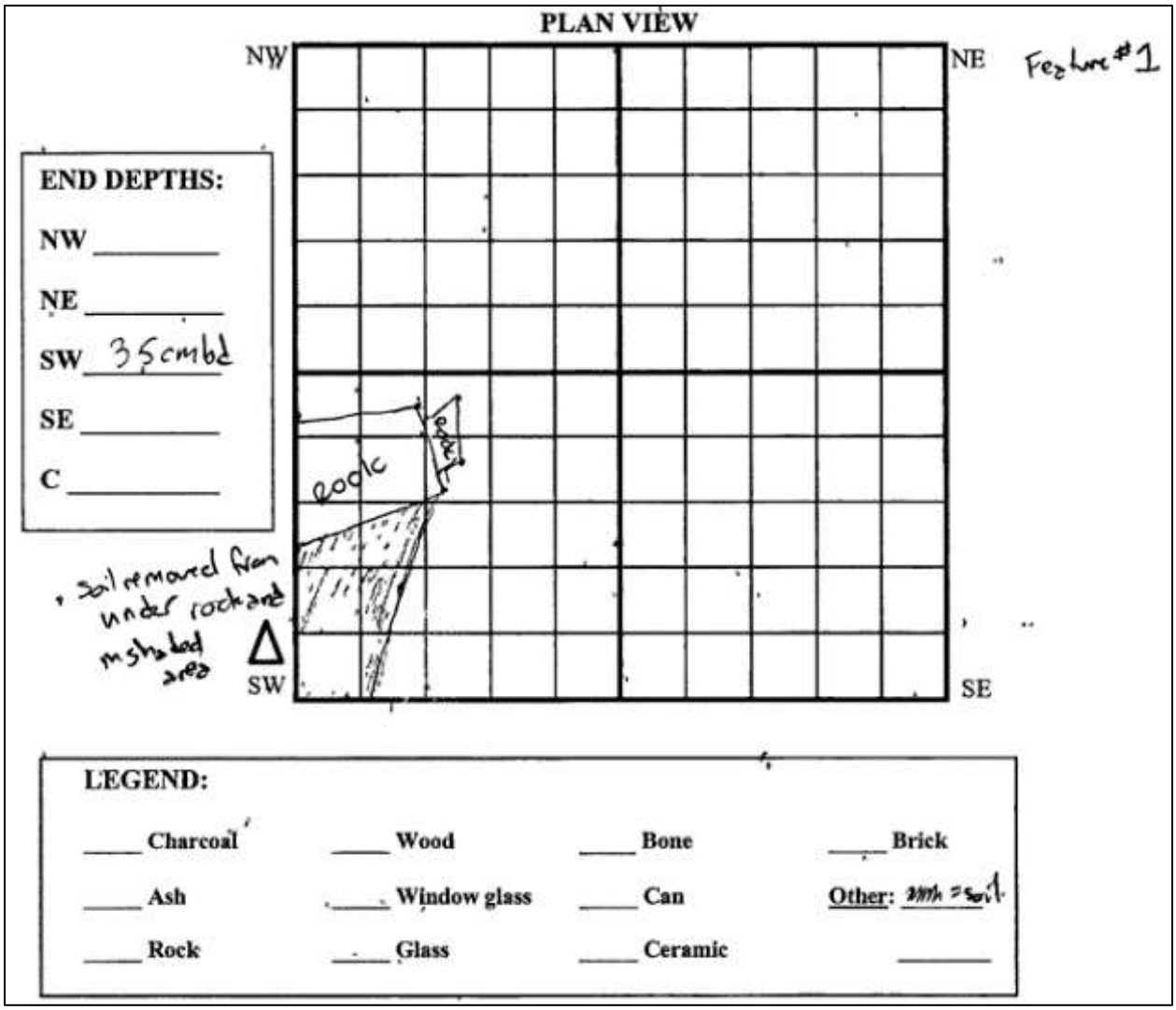

Figure 34: Locus E, Privy 1, Unit 1, Feature 1 plan view. Sketch by Adrienne Dale, Rachel Matheson, and Bruce Phillips.

Stratum 2, Level 4 (5YR 3/3: Dark Reddish Brown clay loam) saw a precipitous drop in artifact density while the presence of small natural lithic deposits was consistent with previous levels (Figure 35 and Figure 36). Level depths extended from 35 to 42 cmbd, reaching decomposing Kaibab limestone deposits between 30 and 37 centimeters deep. This constitutes the final level of Stratum 2, as it terminated atop significantly redder soils and a breaching layer of limestone bedrock. The presence of two large, thick roots running east-west across the lower segments of the unit, coupled with large cobbles and rocky soil, slowed excavation considerably. In total, 25 artifacts (colorless glass, white improved earthenware sherds, nails, charcoal, and an eggshell fragment) were identified and one soil sample was collected within this level.

Figure 35: Locus E, Privy 1, Unit 1, Stratum 2, Level 4, plan view. Photo by Travis Cumming.

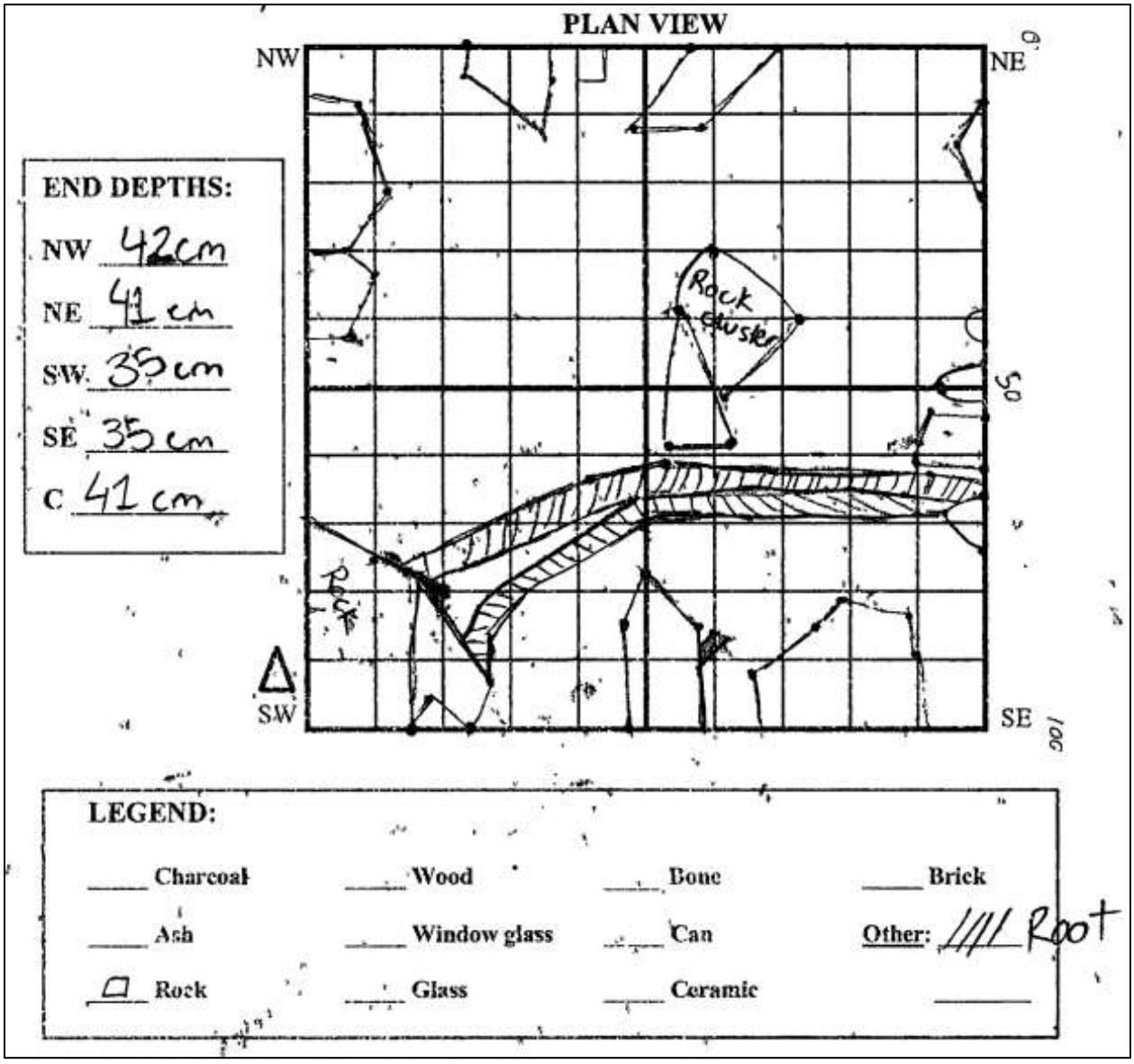

Figure 36: Plan view sketch of Privy 1, Unit 1, Stratum 2, Level 4. Sketch by Rachel Matheson, Emily Dale, and Adrienne Dale.

As the decomposing bedrock first encountered in Stratum 2, Level 4 was discovered across the unit, we determined this constituted a soil change—Stratum 3. Stratum 3, Level 1 saw the continued trend of decreasing artifact density (Figure 37 and Figure 38). Level depths extended from 35 to 45.5 cmbd, with several areas terminating atop impenetrable bedrock. In total, six artifacts (cobalt glass, colorless bottle base, wire nails, milled wood, and a door plate) were identified within this level. The large root was left in-situ, but smaller roots were clipped for ease of excavation.

Figure 37: Locus E, Privy 1, Unit 1, Stratum 3, Level 1, plan view. Photo by Tim Maddock.

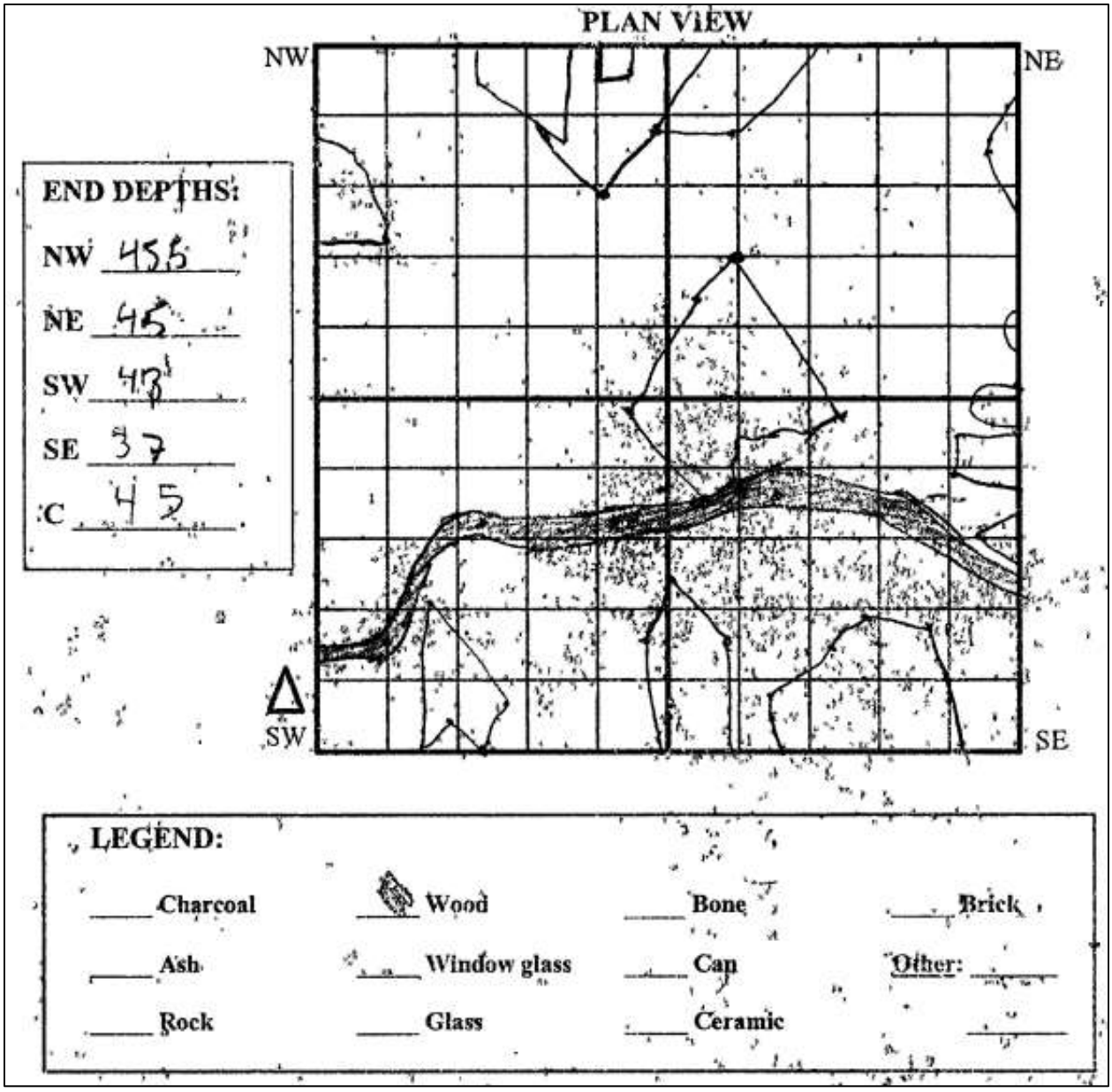

Figure 38: Plan view sketch of Privy 1, Unit 1, Stratum 3, Level 1. Sketch by Tim Maddock, Travis Cumming, and Garrett Hoskinson.

Excavation of Stratum 3, Level 2 yielded a low artifact density and terminated atop limestone bedrock (Figure 39 and 40). It represents the terminal level of excavation for Unit 1, with final depths reaching 55.5 cmbd at the deepest point. Some areas within the limestone were soft enough to penetrate to reach soil lying underneath in earlier levels, but by this point soil deposition was nonexistent. Eight total artifacts were identified, including colorless and amber glass shards, charcoal, wire nails, roofing tacks, and an amber whiskey bottle fragment.

Figure 39: Locus E, Privy 1, Unit 1, Stratum 3, Level 2, plan view. Photo by Tim Maddock.

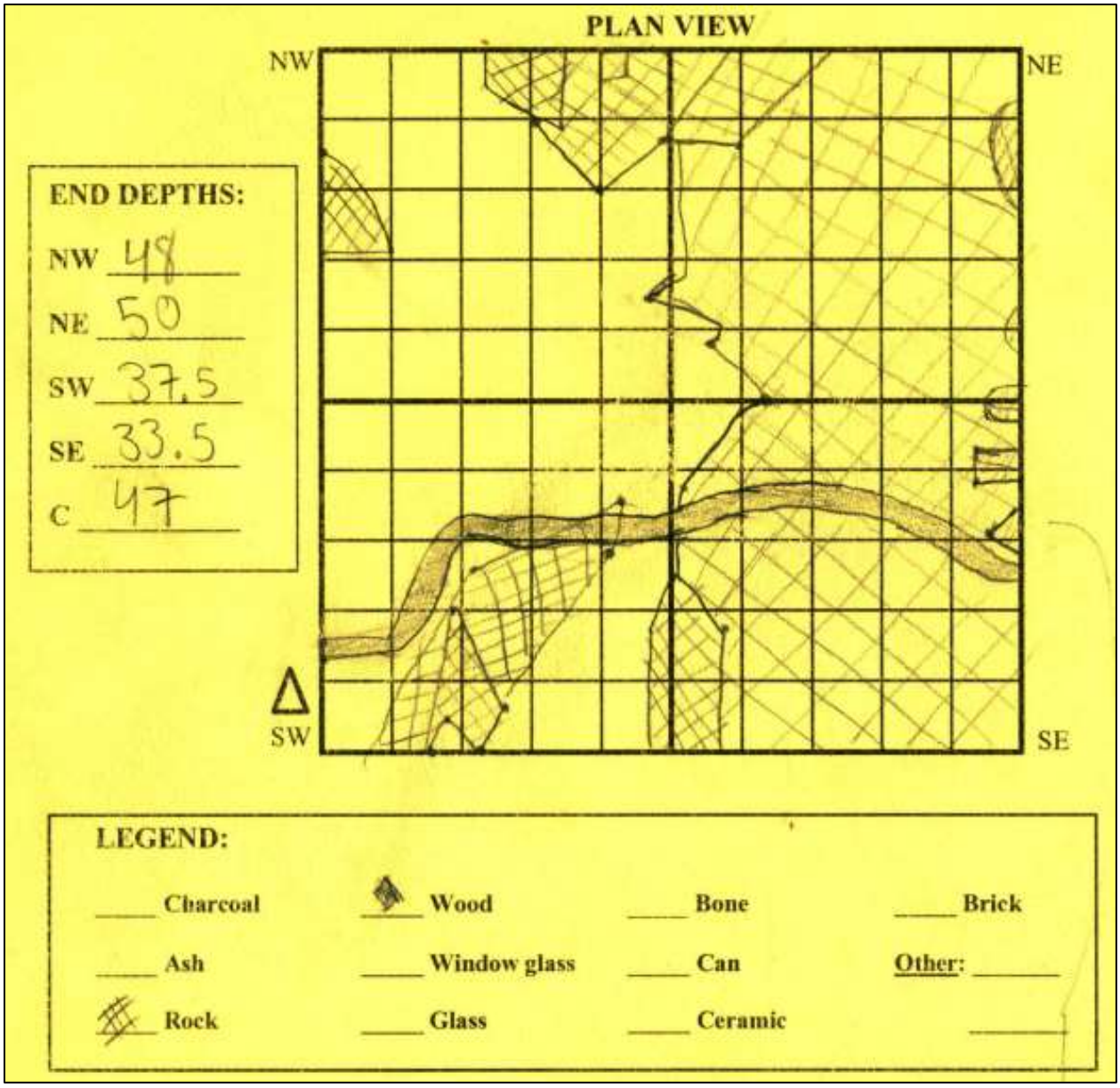

Figure 40: Plan view sketch of Privy 1, Unit 1, Stratum 3, Level 2. Sketch by Alex Mason, Rachel Matheson, and Tim Maddock.

At the end of excavations, we mapped each of the four side wall profiles to highlight stratum changes, still-present artifacts, and the natural rocks and roots that impacted the unit (Figure 41, Figure 42, Figure 43, and Figure 44). Then, in line with our catch-and-release methods, we placed all recovered artifacts in the bottom of the unit, along with a piece of burlap fabric and a 2024 Bessie Coleman quarter to mark our presence (Figure 45).

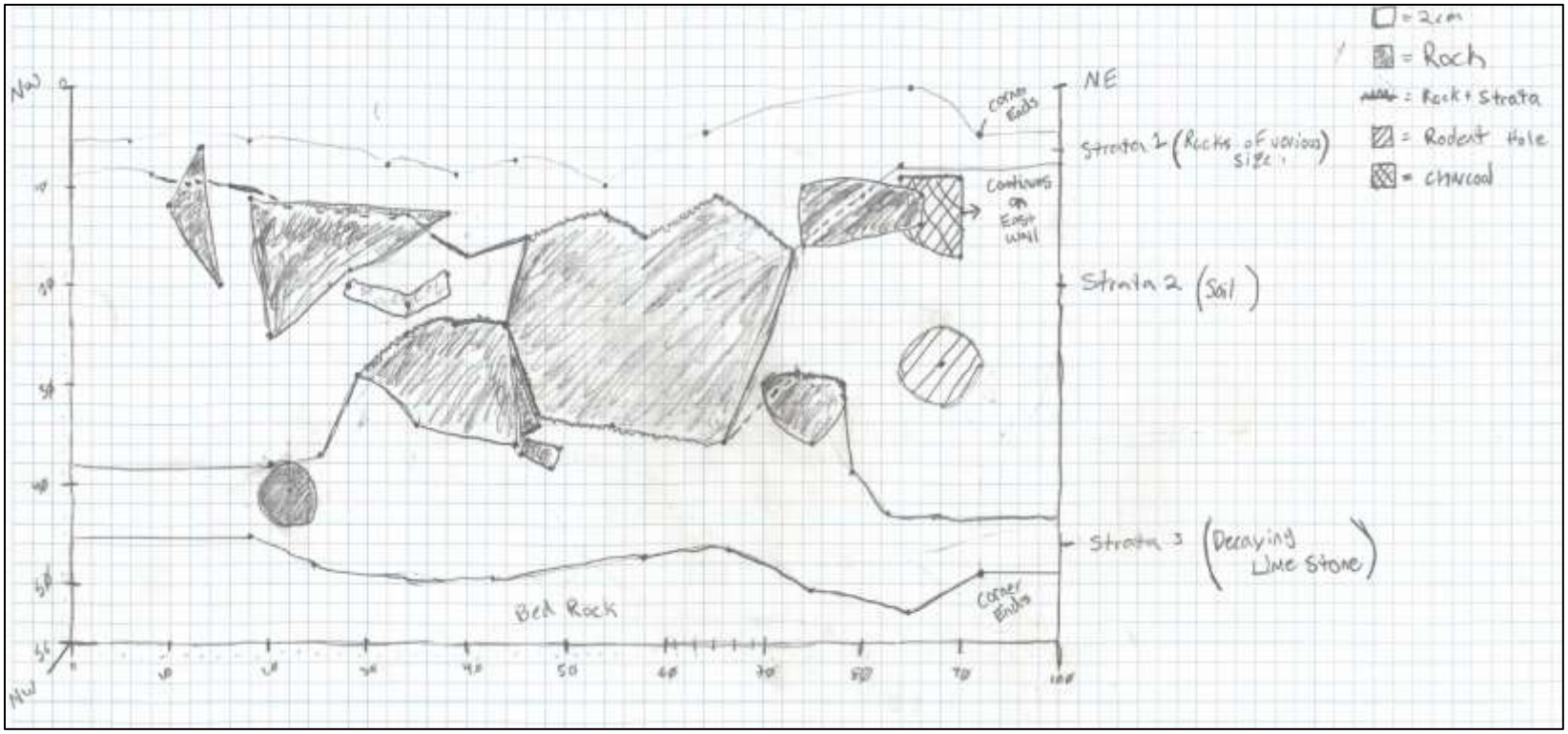

Figure 41: Profile sketch of Privy 1, Unit 1, North Wall. Sketch by Travis Cumming and Alex Mason.

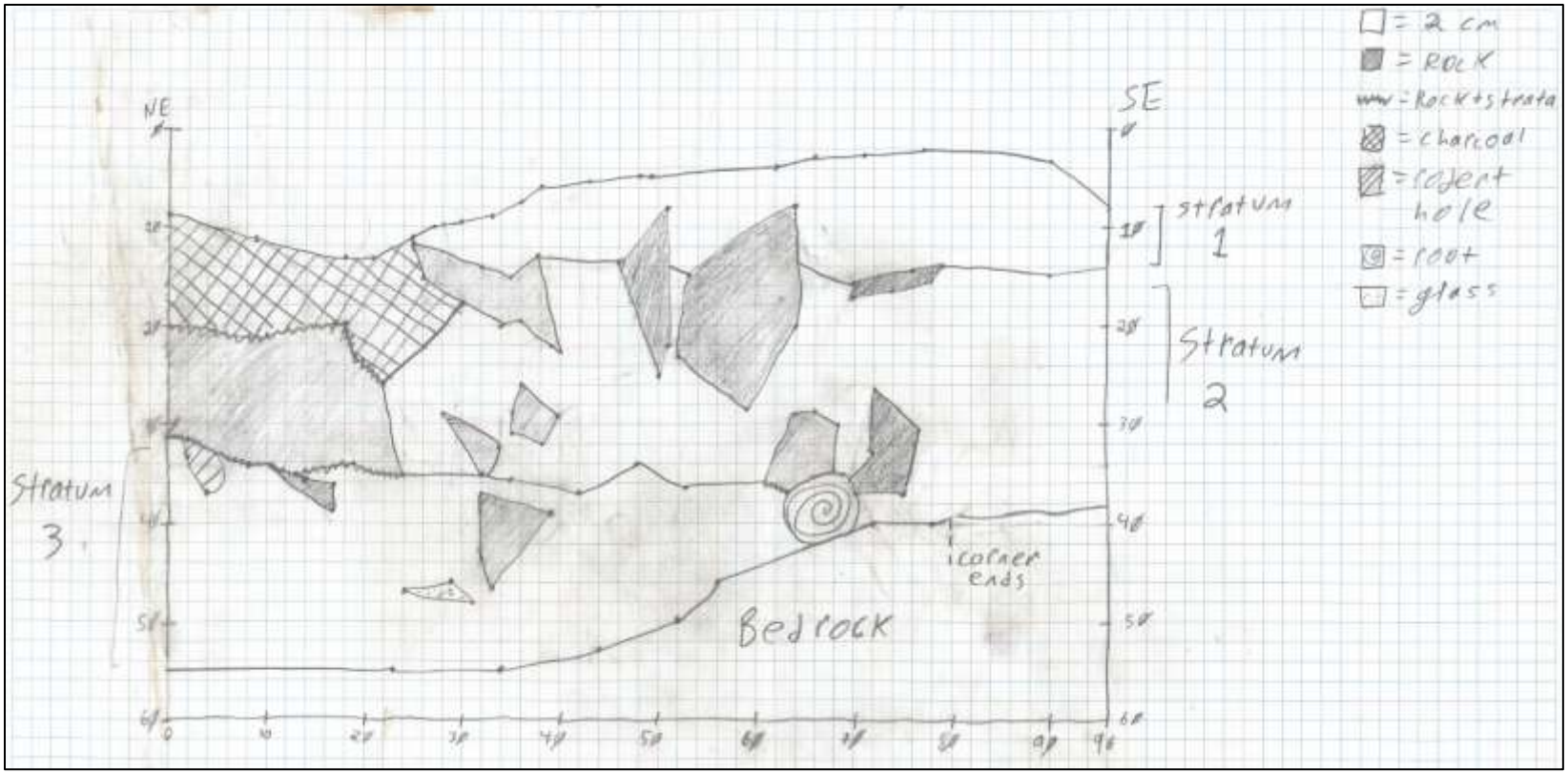

Figure 42: Profile sketch of Privy 1, Unit 1, East Wall. Sketch by Garrett Hoskinson and Rachel Matheson.

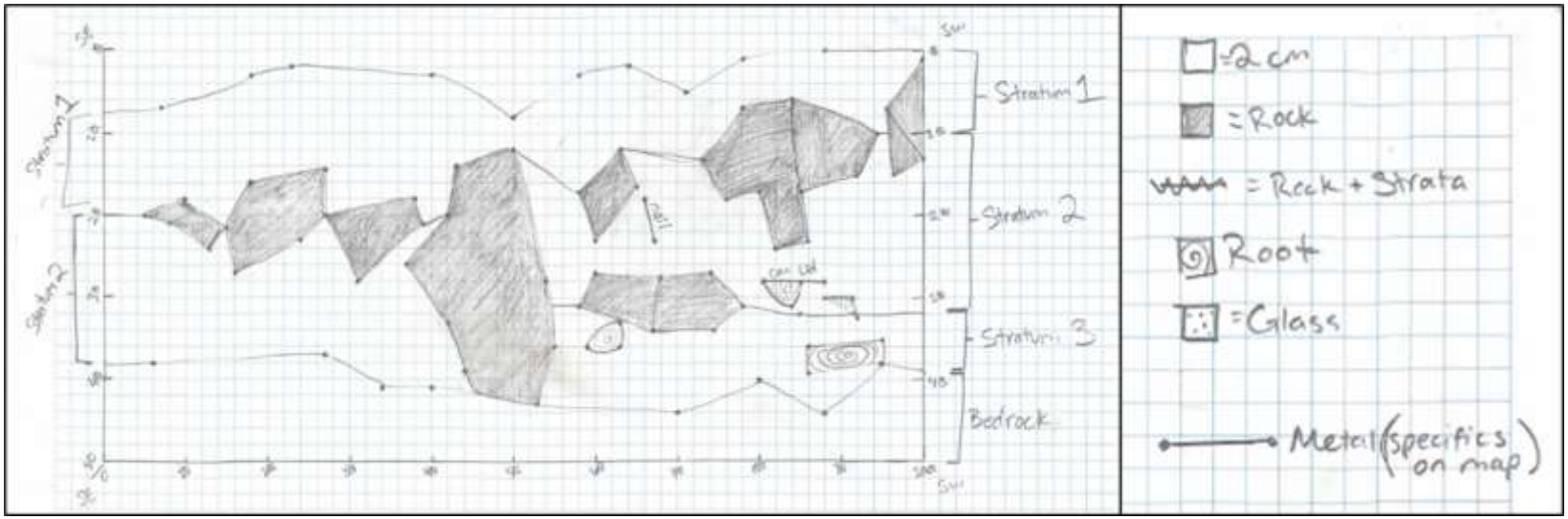

Figure 43: Profile sketch of Privy 1, Unit 1, South Wall. Sketch by Garrett Hoskinson and Rachel Matheson.

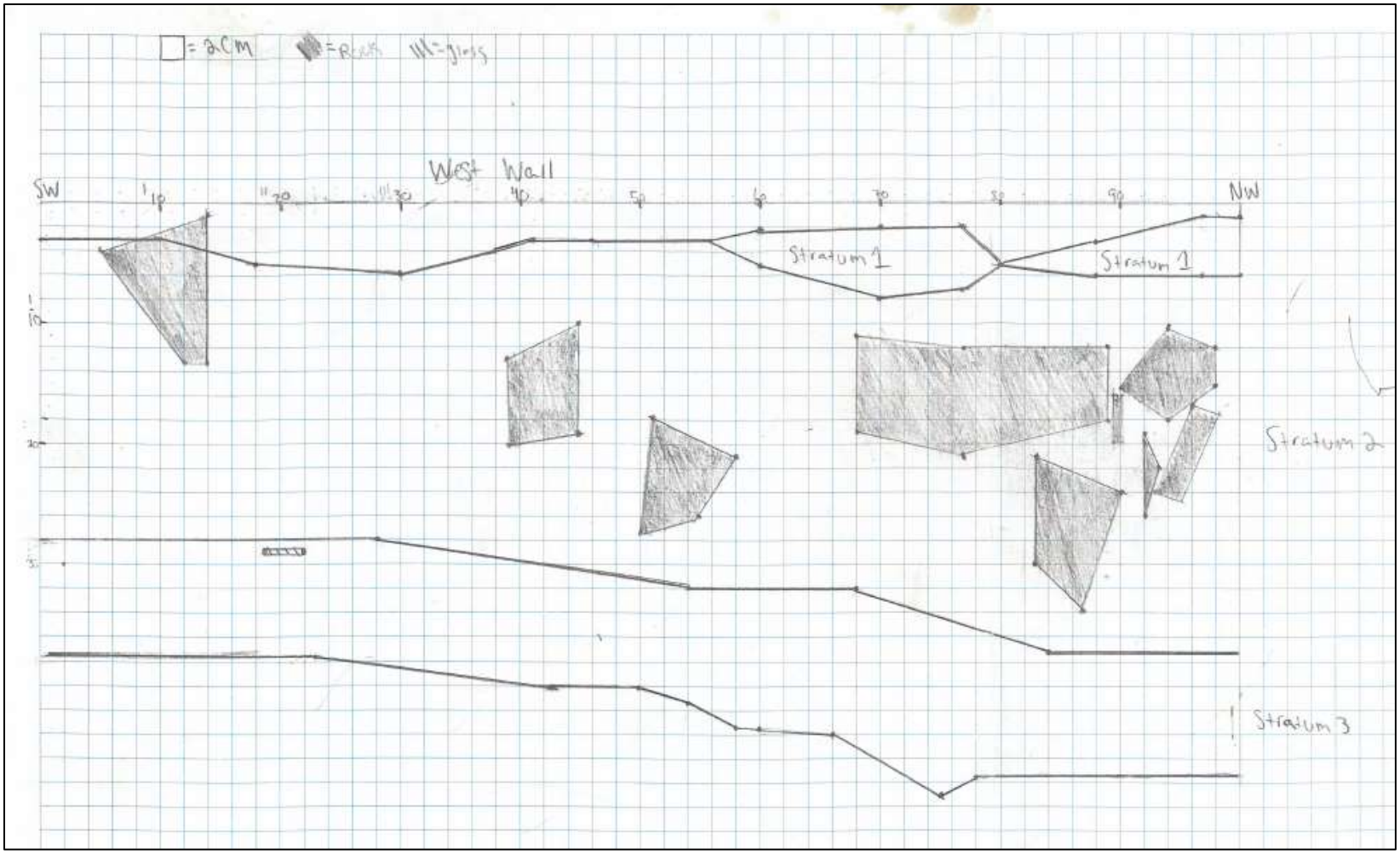

Figure 44: Profile sketch of Privy 1, Unit 1, West Wall. Sketch by Travis Cumming and Alex Mason.

Figure 45: Locus E, Privy 1, Unit 1 artifacts removed during excavation placed in the bottom of the unit for reburial. Note the 2024 quarter in the preservation bag. Photo by Timothy Maddock.

Locus E Summary

Overall, Locus E contains 4,296 artifacts (including those recovered from the excavated Privy 1, Unit 1). Of the surface activity areas, WS1 contained the highest artifact density, followed closely by the Privy 1 area (Table 2). Percentages are rounded to the nearest whole number.

Table 2: Locus E activity areas and relative artifact quantities and categories. Table and analysis by Timothy Maddock.

Activity Area	Artifact Quantity	Percentage of Surface Assemblage	Most Frequent Artifact Functional Category
Privy 1, Unit 1	1,341	31%	Architectural
Privy 1	814	19%	Architectural
AS1	577	13%	Food/Drink storage
AS2	203	5%	Food/Drink storage
WS1	896	21%	Architectural
WS2	251	6%	Architectural
North Wall	38	1%	Food/Drink storage
South Wall	33	1%	Food/Drink storage
West Wall	141	3%	Food/Drink storage
Total	**4,294**	**100%**	**Food storage**

5.4. Locus U

Locus U is a newly designated locus in 2023, used as a catch-all for the various artifact scatters, isolates, and features to the east and north of Loci C, D, and E. The archaeological material culture in this area seemingly relates to the activities of the residential areas, such as the Privy at Locus U with a stone-lined path directed towards Locus E, but the concentrations were dispersed from one another with no clear main area of activity. As we deemed it to be out of line with previous recordation practice at Apex to designated each individual concentration as its own locus, due to their small size or limited function, we grouped them together.

Eight concentrations of activity were described across the Locus U area: the Privy, Can Dump 1, Can Dump 2, Can Dump 3, Artifact Scatter 1, Glass Scatter 1, Isolates between the Privy, Artifact Scatter 2, and Can Dump 2, and Isolates between the Locus U Privy and Locus E. As Locus U is a large and sprawling area, time constraints have not allowed us to digitize the tape-and-compass map produced in the field.

Unlike the Locus E privy, the Locus U privy is clearly a former outhouse (Figure 46). A large depression measuring 71 centimeters deep, and 2 meters east-west by 2.25 meters north-south, is surrounded by a waste rock pile of decomposed Kaibab limestone originally exhumed during privy construction and architectural elements like milled lumber and sheet metal. A sparse artifact scatter includes a Chloride of Lime can lid, colorless and carnival glass, ferrous and non-ferrous metal artifacts, ceramics, and a single lithic. A cobble-lined pathway extends from the eastern edge of the privy toward Locus E to the west (Figure 47).

Figure 46: Locus U, Privy 1, looking southwest/plan. Photo by Tim Maddock.

Figure 47: Locus U, Privy 1, stone-lined path leading towards Locus E, looking west. Photo by Tim Maddock.

Can Dump 1 (CD1) represents an artifact concentration consisting almost exclusively of ferrous metal sanitary and hole-in-top cans, including another Chloride of Lime lid (Figure 48). The bed spring delineating the southeastern boundary of Locus D lies approximately 10 meters to the north. Most cans appear to have been opened via rotary can opener, though some were also knife-opened. In addition to ferrous metal cans, the artifact assemblage is also characterized by a leather shoe sole, flat glass, and miscellaneous ferrous fragments.

Figure 48: Locus U, Can Dump 1, looking north. Photo by Rachel Matheson.

Can Dump 2 (CD2) consists of ferrous metal cans of various sizes, including Budweiser malt extract cans, tobacco tins, and a Hershey's brand cocoa powder lid (Figure 49). The scatter tails downslope and abuts the western boundary of Locus E. The artifact assemblage seems to consist mostly of foodstuffs, however very little text is legible on most of the cans. The remaining cultural materials include amber and colorless flat and vessel glass fragments, white earthenware ceramic fragments, and a shoe leather fragment.

Figure 49: Locus U, Can Dump 2, looking north. Photo by Travis Cumming.

Can Dump 3 (CD3) predominantly consists of ferrous metal hole-in-top cans (standard and evaporated milk types), approximately half of which appear to have been opened via rotary can opener. Sanitary, hole-in-cap, and large hole-in-top cans are also present in smaller amounts (Figure 50). CD3 is bisected by a felled tree (presumed to have fallen during Apex's occupation as no artifacts lie crushed underneath), and the additional artifacts within the concentration are likely obscured by pine needles and other surface organic matter. The can dump lies at the base of a slope at the east end of the site, marking the general southeastern boundary of Apex as a whole. Notable artifacts identified within CD3 include a marshmallow can, two cans embossed with "B", and two with an unidentified flag logo. Additional cultural materials in the assemblage include leather shoe sole fragments and colorless glass vessel shards.

Figure 50: Locus U, Can Dump 3, looking south. Photo by Travis Cumming.

The surface of Artifact Scatter 1 (AS1) is obscured by organic material and pine duff, likely precluding a full count of artifacts associated with the scatter, but most artifacts appear to lie west of an intact non-ferrous wash tub (Figure 51). The assemblage predominantly consists of ferrous metal cans and crown caps, many of which are in a large pile at the east end of the scatter (Figure 52), as well as milled lumber and glass fragments. Of note are carbon battery rods, a stove, furniture springs, Sinclair Manufacturing Company can fragments, and a likely aqua canning jar base.

Figure 51: Locus U, Artifact Scatter 1, looking northwest. Note the washtub and stove at either end of the scatter. Photo by Alex Mason.

Figure 52: Locus U, Artifact Scatter 1, crown cap concentration, plan view. Also note the mason jar base in the top center. Photo by Alex Mason.

Glass Scatter 1, located at the northwest end of Locus U (Figure 53), contains over 1000 shards of glass in a generally small area, mostly from bottles and jars, and mostly colorless and aqua fragments (Figure 54). At least nine bases were identified, but given the number of shards present, it is highly likely that more than 5 bottles are represented. Few maker's marks were identifiable. Shoe sholes and white improved earthenware were also present. As we were unaware as to the volume of glass in the scatter until we began to collect shards for recordation, the overview photo contains far more readily visible shards than when we first located the area.

Figure 53: Locus U, Glass Scatter 1, looking east. Photo by Alex Mason.

Figure 54: Locus U, Glass Scatter 1, collected and sorted glass shards, plan view. Photo by Alex Mason.

Additional isolated finds were found throughout the general boundaries of Locus U, including cans, ceramics, tire fragments, alcohol bottle and mason jar shards, an enamelware bowl, and a cosmetics case.

In summary, Locus U contains 562 total artifacts, with an assemblage characterized by mostly ferrous metal and glass food containers (Figure 55). Also present are batteries, glass, and ceramic fragments. Only 91 artifacts were intact or diagnostic enough to receive artifact category designations. Artifacts assigned the “Food/Drink storage” category (such as crown caps, fruit tins, marshmallow cans, and meat tins) constituted 12% of the overall cultural assemblage. If Locus U does represent a privy area, the surrounding assemblage of discarded metal and glass food and drink containers indicates the area may also have functioned as a trash disposal area, similar in nature to Locus C but distinct in its dispersal.

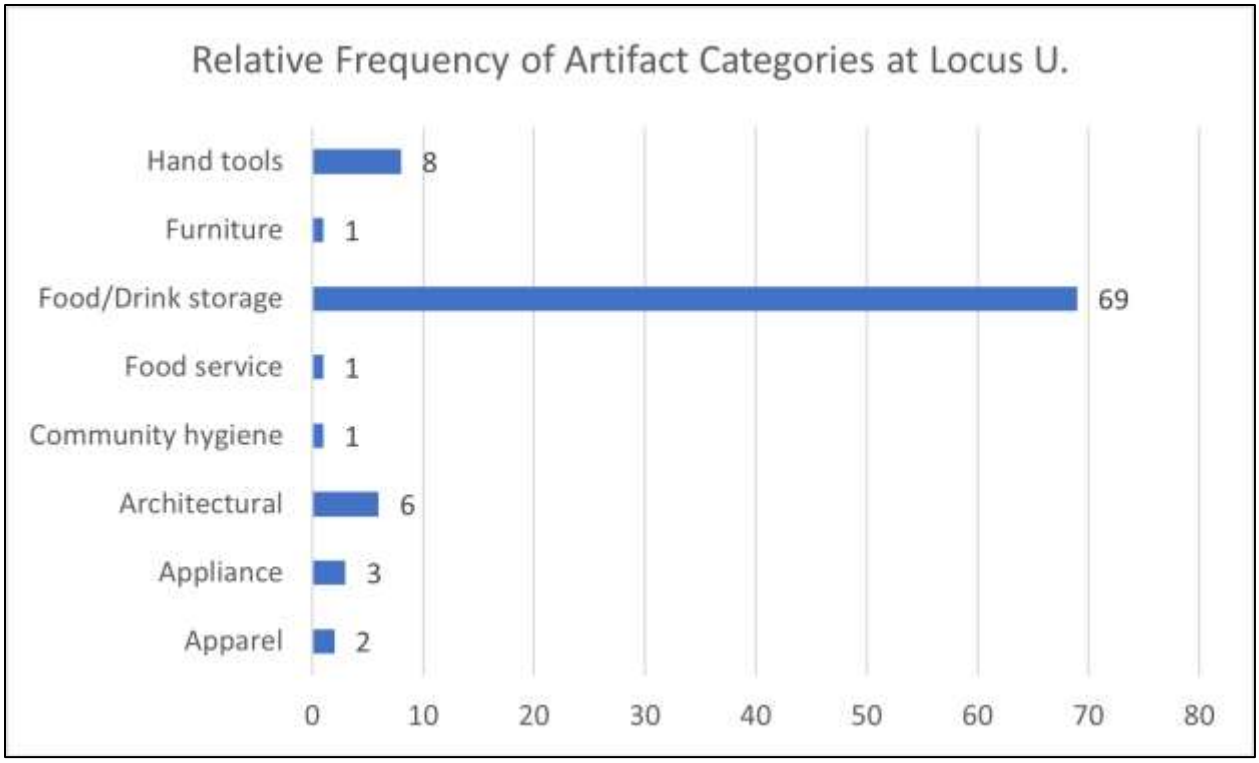

Figure 55: Relative frequency of artifact categories at Locus U. Graph and analysis by Tim Maddock.

5.5. Loci Overview

In total, the 2023 field season of the Apex Archaeology Project identified 15,317 surface artifacts in four different loci, and 1,341 total subsurface artifacts recovered during excavation of Locus E, Privy 1, Unit 1 (Figure 56). Of categorizable artifacts, cultural materials designated as "Food/Drink storage" constituted 9% of the total assemblage, with "Architectural" and "Apparel" representing 8% and 0.6%, respectively (Figure 57). Explorations of specific artifacts and artifact categories is in the next section.

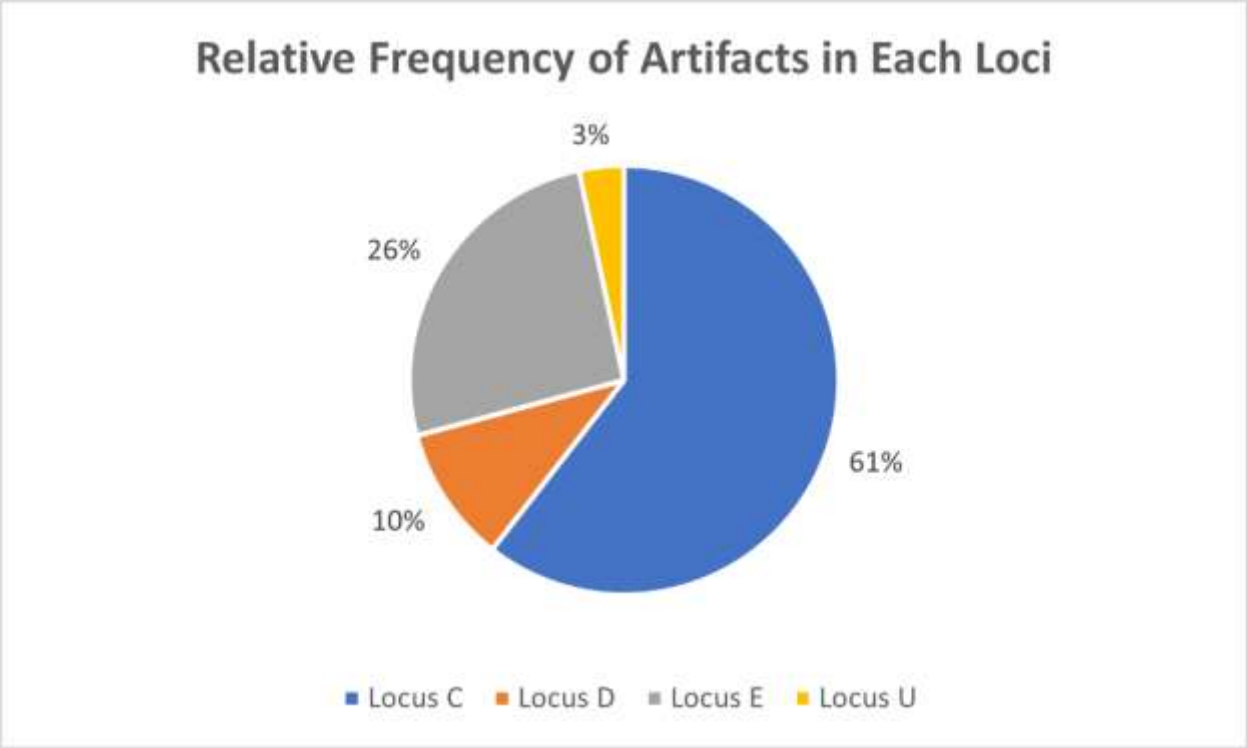

Figure 56: Relative frequency of artifacts in each loci. Graph and analysis by Tim Maddock.

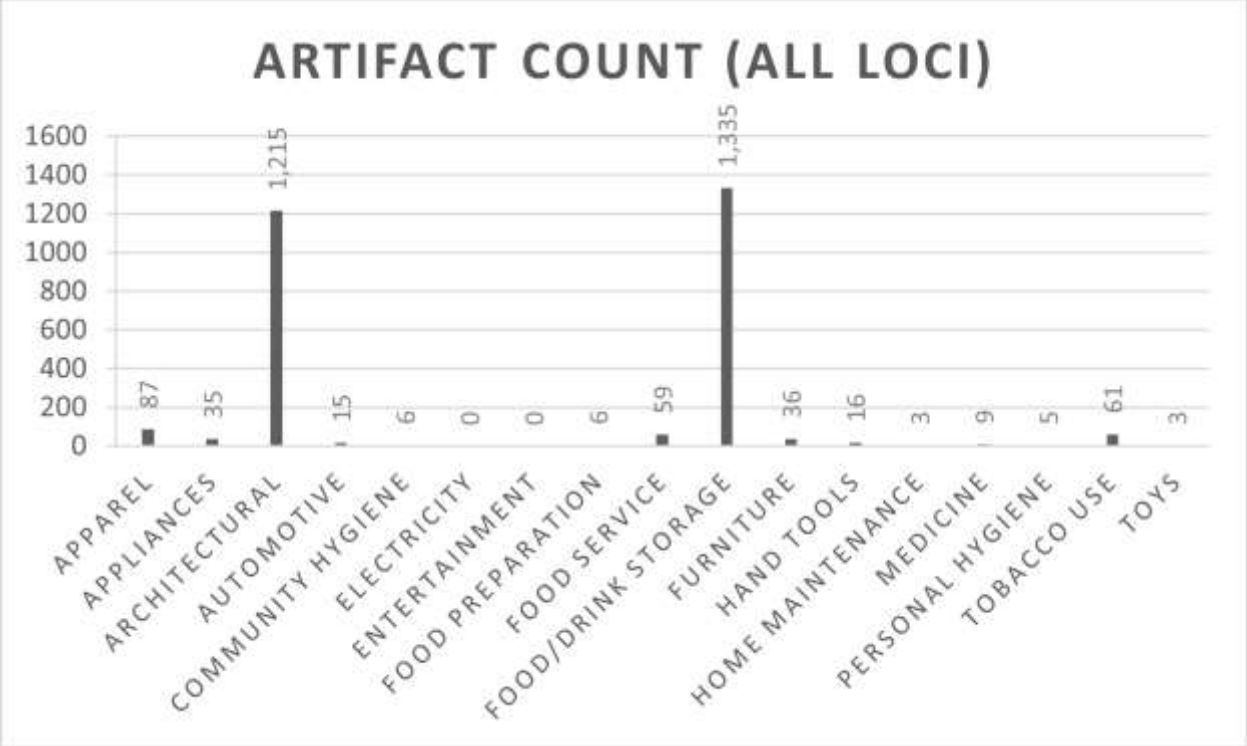

Figure 57: Frequency of Artifact Categories across all loci. Graph and analysis by Tim Maddock.

6. ARTIFACT ANALYSIS

As Apex was a company town, the presence of a company store meant that many of the artifacts were found across the site regardless of function or the residents' position within the company, such as Log Cabin Syrup, Calumet Baking Powder, and Prince Albert tobacco. As a result, instead of discussing them individually in the Locus descriptions, I will address the more common brands and items in this separate section. Other artifacts appear to be more localized, such as the numerous Copenhagen cans at Locus D, and these patterns merit discussion and will also be addressed below.

The final catalog is too large to put directly in this report, so it has been provided to the Kaibab National Forest separately. The catalog is available in both Access and Excel formats, with artifacts sorted by general type (Buttons, Bottles, Cans, Ceramics, Faunal, Non-Diagnostics, and Other Diagnostics) and then by Locus.

6.1. Food and Drink

Many of the same brands of food and drink recorded in the 2022 season were also found during the 2023 archaeological investigations, including Calumet Baking Powder, Hershey's Cocoa, Monarch Peanut Butter, Budweiser Malt Syrup, Orange Crush Soda, and Tree Tea and Lipton Tea. Other brands were also present as well, indicating both that the laborer's made and consumed food at their bunkhouse and that food consumption patterns at the bunkhouse may have varied slightly than those at the kitchen or management housing.

6.1.2. Foods

Calumet Baking Powder cans were ubiquitous across the site, again suggesting the cooking and baking of food at both Locus D and E residences (Figure 58). Five one-pound Calumet cans were found at Loci D and E and one 10 pound can came from Locus C. The numerous formats of the logo likely indicate different years, but no comprehensive guide to the writing on Calumet cans has been found. Several of these can lids were modified, with holes punched in the, and in one case, a rectangle cut into the lid top and folded back, and two small holes punched into the sides with wire twisted through. The purpose of such modifications is unclear, but obviously intentional.

Calumet was not the only baking powder brand found in 2023. KC Baking Powder cans labelled "SAME PRICE / BAKING / 25oz / KC 25¢ / POWDER / FOR OVER 40 YEARS" (1930-1932; Rock 1989:71-74) and "TRUE HEIGHT CAN / BAKING / KC / POWDER / GUARANTEED" (1925-1950) were found at both Locus C and Locus D (Figure 58).

Both Calumet and KC baking powder recipes were alum based (Civitello 2017:123). While the two companies had previously been allied against cream of tartar-based powders, like Royal Baking Powder, in 1913, KC and Calumet began an advertising war against each other that called in scientific experts to bolster their own formula. KC questioned the use of egg whites in

baking powder, a commonly-known ingredient in Calumet, and even supported legislation that would ban the ingredient's use. By 1935, 61% of the baking powder market was controlled by just three companies, Clabber Girl (23%), KC (19%), and Calumet (19%) controlled 61% (Civitello 2017:162). Royal Baking Powder came sixth, with a 7% share.

Figure 58: Baking Powder artifacts. Top Left: 1lb Calumet Baking Powder lid, photo by Rachel Matheson; Bottom Left: 10lb Calumet Baking Powder lid, Locus C, photo by Garrett Hoskinson; Right: KC Baking Powder, Locus C, photo by Travis Cumming.

Sardine cans were not nearly as prevalent as in 2022, and none from Norway were identified. Four "NORTHERN CALIFORNIA" oval tins, likely for fish, were found in Locus E and Locus C. Myriad meat tins were found across Locus C, D, E, and U, pointing to the consumption of canned meat. Interestingly, two meat tins of Uruguay were found, one each at Locus D and Locus E. Embossed in Spanish "URUGUAY / FRIGORIFICO / O / NACIONAL / INSPECCIONADO Y APROBADO" ("Uruguay / Frigoríficos / National / Inspected and Approved"), the cans reveal the success of Uruguay's attempt to enter the frozen beef market starting in 1928 (Figure 59). The nation founded numerous state-owned Frigoríficos, or refrigerated packing-houses, to compete with the private, often foreign-owned companies operating in Uruguay (Stuart 1953).

Other cans with intact embossing or labels reveal other foods consumed at Apex. Angelus Marshmallows (Locus U) was owned by the same company as Cracker Jack and produced a marshmallow cookbook in the 1910s (Caddy 2024) (Figure 59). A "[GAIL] BORDEN CONDE[NSED]" can (Locus C) likely contained Eagle Brand condensed milk, while a "[BORD]EN COMPANY / […] EAGLE BRAND" certainly did (Locus E). Cans labelled "SECONDS" (Locus C) and "SECONDS WITHOUT ADDED SUGAR" (Locus U) (Figure 59). The California Canned Fruit Standardization Act, which was passed in 1925, amended in 1929, and went into effect on January 1, 1930 regulated the canning and labelling of fruit cans (California Department of Agriculture 1926:147-148; 1927:605-608, 1959:658; Deering 1173-1174). The law made an 8 ounce can standard and required cans containing fruit below the standard grade to be labelled "Seconds" or "Seconds without added sugar" in a permanent manner. These cans, then, likely came from California and contained apricots, pears, peaches, or black, white & Royal Anne Cherries, which were designated "standard" or "below standard" by the state based on their size, number in can, and quality. A colorless bottle is molded to resemble a wooden barrel with a bunghole and raised dots that serve as rivets. The base is broken off and missing most of the maker's mark, but based on a Google Image search of similar bottles from the 1920s and 1930s, it is most likely a pickle jar (Figure 59).

Figure 59: Food Containers. Left: Uruguayan meat tin, Locus D, photo by Tim Maddock; Center top: Angelus Marshmallow tin, Locus U, photo by Tim Maddock; Center bottom: "SECONDS' fruit can, Locus U, photo by Tim Maddock; Right: Pickle jar, Locus D, photo by Emily Dale.

Several types of condiments found across the area indicate that the food the residents at Loci D and E ate was not plain. Two Best Foods mayonnaise jars were found at Locus D (Figure 60). The former jar is labelled with Design Patent 80918, which was filed for a unique bottle shape on January 27, 1930 by Walter Teague of the Turner Glass Company and approved on April 8, 1930 (Teague 1930). The Illinois Pacific Coast Company logo on the base dates the bottle to between

1931 and 1932 (Lockhart, et al. 2023a). The latter mayonnaise jar base is simply labelled as "BEST / FOOD[S] / REGISTERE[D]", which post-dates 1923 (Burton, Farrell, and Bergstresser 2003:252). A colorless base from Locus C marked "GLEN ROSA / […] TS" is likely from Glenrosa Products of Los Angeles, who, per a 1935 State of California's Department of Agriculture publication was a canning company who made jam, jelly, preserves, and fruit juices (Carey 1936:87) (Figure 60).

A intact fourteen-paneled bottle with a small-mouth external thread finish was made by the Capstan Glass Company, who produced numerous food bottles between 1931 and 1938 (Whitten 2004) (Figure 60). The base also reads "CAL CONS CO" for the California Conserving Company who specialized in pickles and tomatoes between 1860 and 1946 (Bowdidge 2018). The bottle looks similar to ketchup bottles of the 1920s and 1930s, and reddish-brown clumps of residue were still present in the bottle. The contents were collected for possible future chemical analysis. A bottle base (Locus C) with a patent date of February 23, 1915 is likely a French's Mustard bottle, who, per numerous online bottle sale listings, held a patent for this date.

Several syrup cans were found across the site, including at least four Log Cabin syrup cans. One round lid from Locus E reads "[…] LOG CABIN / TOWLE'S / WIGWAM / SYRUP" (Figure 60). Owned by the same company as regular Log Cabin Syrup (Rock 1989:123), no other information about this specific brand could be found outside of eBay and Pinterest listings. One lid at Locus U, Can Dump 1 reads "TO-POUR-SYRUP / PUNCH / TWO / HOLES". Another can labelled "A / Schilling / Product" likely contained some sort of spices or seasonings (Lockhart 2023b; Volkmann 1959) (Figure 60). A Lea and Perrins stopper and an aqua glass bottle base fragment from John Duncan and Sons, the company who made Lea & Perrins Worcester Sauce, both from Locus C also points to strategies of adding flavor to food.

Figure 60: Condiments. Top left: Schilling seasoning can lid, Locus D, photo by Alex Mason; Bottom left: Best Foods mayonnaise jar base, Locus D, photo by Emily Dale; Center: California Conserving Company ketchup bottle, Locus D, photo by Timothy Maddock; Top right: Towle's Wigwam Syrup lid, taken from inside, Locus E, photo by Emily Dale; Bottom right: Glen Rosa Products bottle base, Locus C, photo by Garrett Hoskinson.

Faunal remains were scarce; only 86 fragments were recovered, and all but one of those came from the Locus E unit excavations. The remaining bone was also found at the Locus E Privy. The majority of bone fragments were small, and burned or calcined, and were unidentifiable as to element, taxon, or class. Dr. Chrissina Burke, a zooarchaeologist in the NAU Department of Anthropology visited the site and analyzed the remains we had found to that point. Identifiable elements included two rodent bones (a cervical vertebrae and sub-adult tibia), one cottontail rabbit lumbar vertebrae, a second unclassed cervical vertebrae, and an unclassed likely cranial bone. Most pertinent for our analysis were three four ribs, likely from domesticated cows. Two of these displayed cutting on the ends, likely from a metal tool. This indicates that fresh or frozen meat was available and outside of the kitchen.

6.1.1. Alcohol

The large amounts of alcohol-related cans and bottles that date to the entirety of the camp's occupation demonstrate that not even Prohibition could keep Apex from beer and liquor. Evidence for alcohol consumption was present at every Locus surveyed for 2023. As in 2022, the most common alcohol artifact related to the Prohibition era (1920-1933) were malt extract cans. While advertised to make baked goods, such as bread, cakes, and cookies, they were easily used

to brew beer at home (Klein 2019; The Mob Museum 2021). One Budweiser advertisement displayed a winking baker, as though he knew the true intentions of the purchaser (see Klein 2019). At least five "HOP FLAVORED / BUDWEISER / MALT EXTRACT SYRUP" cans were found at Loci D, E, and U (Figure 61). Three of those were recovered from Locus U, Can Dump 2. The writing on all the cans was the same, assuming intact cans, with “HOP / FLAVORED / BUDWEISER / BARLEY MALT / SYRUP” on one end and “ANHEUSER-BUSCH / ST. LOUIS, MO / BUDWEISER / BARLEY / MALT SYRUP” on the other. In all cases, the one with Anheuser-Busch on it was the opened end, and in the case of the one missing the lid, it would have been the same side.

Following Prohibition’s end in 1933, the residents of Apex transitioned to a wide variety of once-again legal alcohol, as evidenced by numerous bottles and cans with specific brand names, portions of the Federal Law warning (Lindsey 2022; Whitten 2004), Distiller’s (D) or Rectifier’s (R) numbers on bottle bases, or general shape or color. The presence of four cone-top beer cans by the South Wall of Locus E indicates beer was still popular, though no other beer cans were found (Figure 61). One amber wine bottle base, found at Locus E, represents the first and only evidence for wine consumption at Apex to date (Figure 61). A large Owen’s scar runs through the round base and the maker’s mark, making it difficult to read the company name, but it appears to be something like “OAT BROS” or UAI, or some combination of Us, Os, Is, and Ts. No internet searches of combinations of these letters revealed a clear answer despite the location of Los Angeles, California. The AB logo is similarly a mystery, as it does not look like the American Bottle Company’s A.B. logo.

Figure 61: Left: Budweiser Malt Syrup Extract cans, Locus U, photo by Tim Maddock; Center: Cone top beer cans at the Locus E South Wall, photo by Alex Mason; Right: Wine bottle base, Locus E, photo by Emily Dale.

Whiskey/bourbon was the most common of known alcohol bottle contents, with at least five known bottles at Loci D and E. An Old Quaker whiskey bottle fragment was found at Locus D (Figure 62). Hiram Walker was a popular brand, as three likely bottles from this distiller were found in 2023, all of which were produced by Owens-Illinois in California. At Locus D, four shards of an amber Owens-Illinois bottle have the signature swirls and lines and shield logo of a

Hiram Walker bottle. The maker's mark points to the San Francisco plant, based on the permit number 90 (Whitten 2004). Another Owens-Illinois base came from San Francisco, likely in 1936 (Figure 62). The Distiller Number is 23, which was used by Hiram Walker for their Deluxe and Mountain Ridge Bourbon (Anonymous n.d.). One colorless Owens-Illinois bottle dates to 1935 based on the year code of 5, was given Distiller number 230, which was used by Hiram Walker's G&W 5 Star whiskey or Schenley's Golden Wedding whiskey (Anonymous n.d.). The permit number of 55 was granted to Owens-Illinois' Huntington, California plant, further connecting Apex with this part of California as revealed by 2022's numerous artifacts. Finally, an Owens-Illinois base from Locus D also points to a whiskey bottle (Figure 62). Embossed as Design Patent 87834, the ornamental bottle was patented by Edwin W. Fuerst on behalf of the Owens-Illinois Glass company in 1932 and would have had two looped handles on the neck and a decorative pattern of lines and points on the side (Fuerst 1932). The base also reveals the "90" permit code for the San Francisco Plant, a likely year of 1935, and a Rectifier number of 286. While this code is not on any post-Prohibition code list I could find, rectifier numbers were given specifically to people who "doctored" whiskey by adding additional ingredients (Lockhart 2010:56).

Other bottles point to the consumption less identifiable spirits. One colorless 1934 Owens-Illinois bottle (Locus D) from Vernon, California (plant code 88) has Distiller number 525, which does not appear on any known lists. Eight sherds of a colorless bottle from Locus U mend to form most of the body of an Art Deco style bottle with blank panels on the front and back, vertical lines running up along the panel and sides, horizontal lines on the top and bottom, and diagonal lines on the corners (Figure 62). A shield logo near the heel has not been identified. While no diagnostic elements explicitly reveal this bottle as containing alcohol, it's shape, size, and decorations are highly suggestive of an alcohol bottle.

Figure 62: Liquor bottles. Top left: Old Quaker whiskey, Locus D, photo by Emily Dale; Top center: Unidentified likely liquor bottle, Locus U, photo by Emily Dale; Bottom left: Hiram Walker base, note the D-23 Distiller number, Locus E, photo by Travis Cumming; Bottom center and Right: Unidentified whiskey bottle, note the R286 Rectifier number and 1932 Design Patent number 87,834, Locus D, photo by Emily Dale.

6.1.2. Non-Alcoholic Beverages

Evidence for non-alcoholic beverage consumption beyond was also discovered during the 2023 field season. Two Hershey's Cocoa can lids (Loci E and U), five Walter Baker & Co Breakfast Cocoa tins (Locus C), a Tree Tea can lid (Locus C) and a Lipton's Tea lid (Locus C), and three Maxwell House Coffee lids (Loci C, D, E) (Figure 63) were found across the site. The Lipton can dates between 1932 and 1944 based on the embossed "LIPTON / TEA/ PLANTER /CEYLON" (Mills 2015:347-357) (Figure 63).

The broken colorless, green, and aqua bottle glass found at the site indicate that Apex's residents consumed numerous types of beverages. The high number of crown caps, however, suggests that any intact bottles that were discarded have long been collected by looters, so the exact composition of their beverage choices remains unknown. Soda bottles, though, were common among the identifiable sherds. A broken green American Bottle Co soda bottle (Locus D) with a crown finish and "29-S" underlined on the base dates to 1929 and was produced in Streator, Illinois (Lockhart et al. 2021:365-366).

Identified soda brands at worker housing include Orange Crush, Coca-Cola, and Delaware Punch. At least two Orange Crush bottles were represented in the 2023 collection, one at Locus E and one from Locus C, based on body fragments (Figure 63). Their bottling location is unknown, but a separate base from Locus C had a variant of the Obear-Nestor Glass Company logo that was commonly used on beer and Orange Crush bottles (Whitten 2004). As it was an amber base, however, it is more likely a beer bottle than a soda one. Similarly, one "[FL]AGST[AFF] / BRO[OKS]" colorless bottle base was recovered from Locus E. This base may be part of the Orange Crush bottle, as both came from Wood Scatter 1. A hobble-skirt Coca-Cola bottle fragment, dating post-1916 was also found at Locus C (The Coca-Cola Company 2024) (Figure 63). Finally, two body fragments of at least one aqua Delaware Punch bottle, identified by the "DELAWA[RE] / [PUN]CH" logo on one shard, and "[PATENTE]D MARCH 4 1924" on the other. Invented in San Antonio, Texas in 1913, Delaware Punch was a non-carbonated grape soda named after the Delaware grape, first grown in Delaware County, Ohio that became popular throughout the Southwest and capitalized on the Prohibition-era demand for non-alcoholic beverages (Hartung 2021).

Figure 63: Beverage Containers. Top left: Coca-Cola bottle, Locus C, photo by Travis Cumming; Top right: Orange Crush bottle, Locus C, photo by Garrett Hoskinson; Bottom left: Lipton Tea lid, Locus C, photo by Travis Cumming; Bottom right: Maxwell House Coffee lid, Locus D, photo by Rachel Matheson.

6.1.3. Food Preparation and Service

As in 2022, evidence of canning was common at Loci C, D, E, and U. At least two Boyd's Genuine Porcelain Lined Caps (Loci C and D), three canning jar lids from Kerr (Locus C), glass fragments from two Ball jar (Loci C and U), and five likely Ball mason jar bases with mold numbers (Loci C and E). Two Kerr lids have a patent date of August 31, 1915 (Figure 64), one of

which also bears the “SAND SPRINGS OKLA” location (Figure 64), dating it between 1915 and 1925 (Lockhart, et al. 2016a:140). Seven fragments of a Ball jar with a waffle grid pattern on the bottle and a mold number of 7 lacks the underline under the company name, dating it between 1923 and 1933 (Kristi 2018) (Figure 64). Rather than the typical cylindrical shape, the Hopkins Square shape body displays a grid pattern with a flat panel on one side, likely for a label. The majority of canning jar caps, lids, and jars came from Locus C, suggesting a more concentrated activity, one perhaps more connected to the closer Locus D, believed to be married laborer housing. The Glass Scatter at Locus U, for example, contains over 1500 sherds of glass, but only three appear to be related to canning.

Figure 64: Canning paraphernalia. Left: Ball jar, dating between 1923 and 1933, Locus U, photo by Emily Dale; Top right: Kerry Mason jar lid, Locus C, photo by Travis Cumming; Bottom right: Kerr canning jar base, Locus C, photo by Garrett Hoskinson.

All types of ceramic wares are present across the site, including White Improved Earthenwares, stonewares, and porcelains. Many fragments are decorated with hand-painted and transfer-printed floral patterns (Figure 65) or gilding around the rims (Figure 65), and represent several types of vessels, including plates, cups, and bowls. Eight sherds of a hand-painted porcelain with white glaze and swirling blue lines was found across Locus E. The fragments were too small to

determine if the represent one shattered vessel or multiple broken vessels. A hand-painted chinoiserie fragment from Locus E depicts an Asian-style house with trees and flowers (Figure 65).

Maker's Marks were rare on the ceramics, but those that were identified came from a wide variety of locations. A vessel marked "[MANUFACTU]RE IMPERIALE ET ROYA[LE]" originated in Belgium while another was "MADE IN JAPAN", both from Locus C. A fragment from Locus E (Red 116) is decorated with hand-painted strawberries and green leaves and is stamped "[GOLD]D MEDAL / [star] / [ST. L]OUIS / [OWEN MINER]VA". The Owen China Company was founded by Edward J. Owen in Minerva, Ohio and celebrated their 1904 St. Louis World's Fair gold medal in their logo until their Great Depression-caused closure in 1932 (Rinker 2024). Also at Locus E, an "ENOCH 1784 / WO[OD & SONS] / WO[ODS] / W[ARE]" fragment with hand-painted yellow flower petals and black bands likely came from a plate and dates to post-1917 (Birks n.d.).

Numerous pieces of blue enamelware with white spots, known as mottled ware or granite ware (Gretton 2012), came in a variety of forms, such as a bowls (Loci D and U), plates (Loci D and E), two kettles (Locus D), a pitcher (Locus E), and coffee mug (Locus U). The ubiquity of these matching metal-wares perhaps indicates that the company store sold them. Despite the wide array of evidence pointing to meals consumed at Locus D and E only one utensil handle was found at Locus C.

The sites also contain other elements of food preparation and service. Three metal trays, one each at Loci D, E, and U, point at possible strategies to serve food in a bunkhouse. There were also two stoneware crocks, eight sherds of one at Locus E, Artifact Scatter 1 and 12 sherds of one in Locus C. Twenty-one marigold carnival glass shards recorded at Loci D, E, and U had similar floral patterns, suggesting at least a matching set of cups with a pitcher, called "water sets" in the industry (Thistlewood and Thistlewood 2024a) (Figure 65). The pitcher, evidenced from a shard with a pour spout and tall round body fragments, has a textured exterior reminiscent of a tree trunk with concave circles on the sides and radiating lines on the base. The smaller cups have a molded tree or leaf pattern. The design looks similar to some Jeanette Glass Marigold "Tree Bark" pattern pitchers available for free starting in 1926 with a subscription to "The Farmer's Wife" magazine for farm women or for $8.25 (Thistlewood and Thistlewood 2024b), but the cups are different.

Figure 65: Food Service Artifacts. Top left: Gilded and molded white improved earthenware sherds, Locus C, photo by Garrett Hoskinson; Top center: Carnival glass fragments, note the pitcher spout in the bottom left corner, Locus E, photo by Travis Cumming; Top right: Utensil handle, Locus C, photo by Garrett Hoskinson; Bottom left: Hand-painted floral-patterned white-improved earthenware sherds, Locus U, photo by Emily Dale; Bottom right: Chinoiserie-style porcelain, Locus E, photo by Travis Cumming.

6.2. Personal

Many of the items found during the 2023 field work at Apex reveal the personal lives of its laborers and inhabitants.

6.2.1. Music

Four small pieces of black vinyl records recovered from the Locus E unit represent the only evidence of music found at Loci C, D, E, and U. As numerous types of musical entertainment (record fragments, harmonica parts, and radio parts) were found at Locus A and J in 2022, it is possible that the bunkhouse and married laborer's housing were not viewed as gathering spaces in the same way as the kitchen or management housing was.

6.2.2. Clothing

Shoe fragments were far less common than in 2022, but still represented the most common clothing-related artifact found at Apex in 2023. Over 30 shoe fragments, including soles, leather, and shoe tacks, were found at Locus D, the large can dump at Locus C held over 25 fragments, mostly soles, and 16 shoe parts were found at Locus E. Locus U had only 4 shoe parts, scattered across the entire area, but photographs of the Locus U Glass Scatter show at least 15 more that were not recorded in the field notes. Shoes of note include a small, white/purple likely child's and a possible shoe aglet, both from Locus E (Figure 66).

Eighteen buttons were recorded in 2023 present at the site, but, possibly due to their small size, myriad more were missed. This seems most likely as six of the buttons came from the privy excavation unit. No buttons were found in surveys of Loci D or U. Many were plain, two- or four-hole sew-through buttons, but made of a wide range of materials, including Prosser, metal, shell (Figure 66), and Bakelite. Still, numerous shank buttons were more decorative. A green Bakelite button with radiating lines originating from a raised square in the center (Locus E) (Figure 66), a second green Bakelite button with an indented triquetra (Locus E) (Figure 66), and a non-ferrous metal button with a radiating star and dot design on the face (Locus E) indicate that the laborer's wore more than plain work clothes while at camp.

Figure 66: Apparel artifacts. Top Left: Bakelite button, Locus E, photo by Emily Dale; Top Right: Bakelite shank button, Locus E, photo by Rachel Matheson; Bottom: Shell buttons, Locus C, photo by Garrett Hoskinson; Right: Child's shoe sole, Locus D, photo by Emily Dale.

A "LIFT / THE DOT" fastener from Locus C was advertised as a quick and convenient way to add a fastener to carriages, bags, gun holsters, boats, cars, and aircrafts (Anonymous 2020).

Other clothing fragments include suspenders/overalls buckle (Loci D and E). A modified shoe eyelet from inside the Locus E privy Unit had a small piece of thin wire looped through the hole and twisted three times to secure it.

A pocket watch, recovered from the Locus E Privy Unit had no diagnostic or identifying characteristics (Figure 67). A small non-ferrous disc with two round holes near the top and one crescent-shaped hole near the middle might be part of a pocket watch dial (Figure 67). Possible Chinese (or other Asian-character based language) characters are near the top center, but are too faint and eroded to translate. Finally, a small, toothed gear, possibly from a watch or clock, was recorded in Locus E.

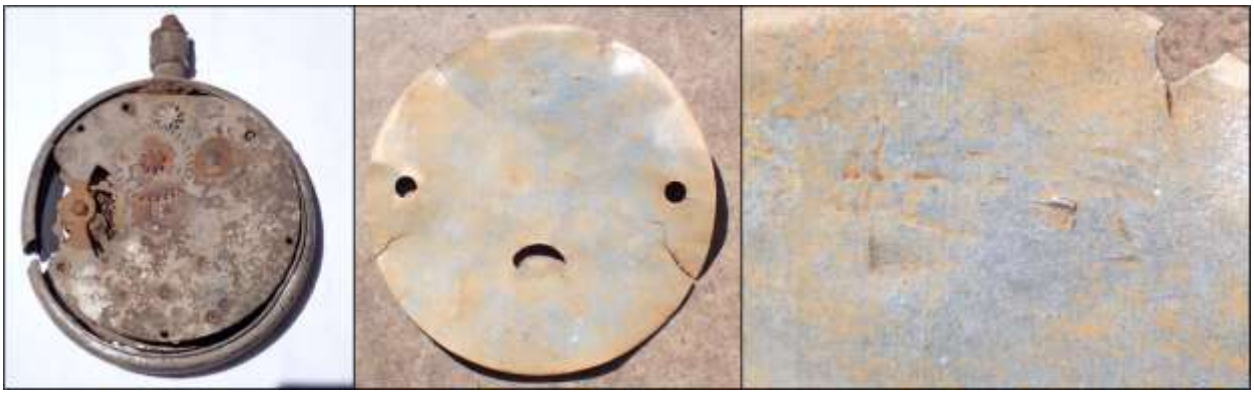

Figure 67: Left: Pocket watch, Locus E, photo by Rachel Matheson. Center and Right: Possible watch face with close-up of Asian characters, Locus E, photos by Emily Dale

6.2.3. Health and Hygiene

By Emily Dale and Madeleine Levesque

Numerous artifacts associated with the personal health and hygiene of Apex's residents were found across the site, such as comb fragments (Locus C). Mentholatum milk glass jars and ferrous lids were found at Loci C and E. The ointment, named after its two main ingredients of menthol and petrolatum, was advertised as a salve for a variety of ailments, including coughs, muscle aches, the common cold, cuts, bruises, burns, congestion, hay fever, and for use as an aftershave (Buffalo Rising 2017). A colorless medicine bottle fragment has tick marks on the side with a measurement of "20" (Locus D) and an Illinois Glass Company "LYRIC" bottle dates between 1915 and 1929 and was used nearly universally in medicine bottles, though the other numbers and letters in the maker's mark have not yet been decoded (Lockhart, et al. 2016b:368, 379-381).

A clear common problem for the laborers was constipation, as at least four separate brands of laxatives were recorded at Loci C and E (Figure 68). A bottle base at Locus C from Petrolagar Laboratories likely held their mineral-oil based laxative. Petrolagar was advertised "for the promotion of proper fecal consistency and the restoration of normal bowel habit time (National Museum of American History n.d.a). The company even produced several medical films and educational materials (Medicine on Screen 2018), including a 1932 booklet entitled "Habit Time of Bowel Movement" (Petrolagar Laboratories 1932). Citrate of Magnesia, another laxative bottle fragment found at Locus C, was used for constipation and upset stomachs (Lindsey 2024). At Locus E, a Charles H. Fletcher's Castoria laxative bottle might indicate the presence of children or a laborer with a more sensitive stomach, as the product was touted as "the kind the baby cries for" and specifically marketed towards mothers for their children (Lockhart, et al. 2014; Wilson 2013). Finally, a Pepsin Syrup Company bottle fragment was found at Locus E. Dr. Caldwell's Pepsin Syrup was a popular laxative brand between 1885 and 1934.

Advertisements commonly included children, women, and popular athletes, suggesting a wide audience (Griffin 2012).

Figure 68: Laxatives. Top Left: Pepsin Syrup bottle shard, Locus E, photo by Alex Mason; Top Right: Citrate of Magnesia bottle shard, Locus C, photo by Garrett Hoskinson; Left: Charles H. Fletcher's Castoria bottle shards, Locus E, photos by Emily Dale; Bottom Right: Petrolager Laboratories bottle base, Locus C, photo by Rachel Matheson.

Gastroenterology grew as a field during the 1930s and 1940s, and with this came increased public interest, and marketing towards the public, in the digestive system's inner workings. A major theme in gastroenterology included 'curing' various afflictions via purgation with a focus on constipation; constipation was seen as a uniquely 'American' disease that reflected sedentism, laziness, and an over-processed, over-indulgent diet and lifestyle (Whorton 1993). Purgation using laxatives emerged as a health fad to cleanse the bowels of excess or slow-moving bowel. Advertising posited that constipation and built-up fecal matter would poison the bloodstream, lead to body odor, and indicated poor health. Based on the different brands and formulas

represented at Apex, it appears that the camp's residents bought into these ideas. Since there were several brands and formulas of laxatives found on site, it is likely that people had their 'laxative of choice' that was not being provided by the company store.

Cold Cream jars and lids were also found across the 2023 Loci. An unbranded, ferrous "COLD CREAM" lid (Locus E), 2 Pond's milk glass jars (Loci C and E) and a Pond's jar lid (Locus D) (Figure 69), and a milk glass Jaciel jar (Locus D) (Figure 69) points to concerns over dry skin, and possibly the presence of women, to whom cold creams were largely advertised. Jaciel was sold exclusively at J.C. Penney between 1927 and 1934 (Compactstory 2013), so would not have been available at the company store. The nearest J.C. Penney's to Apex were Flagstaff's (Adams-Ockrassa 2020), which opened in 1917 and Jerome's which opened in 1918 (Farley 2023). Records indicate that many of Apex's lumberjacks sought work elsewhere during winter storms when timbering was impossible, and that the mines in Verde Valley was a common alternative.

Cosmetics at the site are further proof of women's presence. A Coty-brand compact lid (Locus E) was made by the French/Parisian perfume company, who expanded into the United States in 1912, branched into other cosmetics around 1915, and exploded after World War I (Coty 2024) (Figure 69). Besides perfume, Coty manufactured face powder, toilet soap, bath salts, hair and hand lotions, rouge, lipstick, vanishing cream, and shaving soap for both men and women. Per similar examples on-line, this was a rouge or face powder compact that would have held a mirror inside the lid and come with a powder puff; there are far more ornate examples, so this may have been a cheaper product. A 1928 Coty catalog lists a face powder in "Round Decorated Boxes" at $1 to $1.50 each (Coty 1928). A second make-up compact (Locus U) has a pattern of wavy concentric circles on the interior and exterior.

Figure 69: Left: Jaciel jar, Locus D, photo by Emily Dale; Center: Coty compact, Locus E, photo by Rachel Matheson; Right: Pond's jar lid, Locus D, photo by Rachel Matheson.

For more information on the 1920s-1930s American health and hygiene trends represented in Apex's 2022 and 2023 archaeological collections, see Appendix C, for Madeleine Levesque's 2024 research project.

6.2.4. Tools

While not a site of labor, the evidence of hand tools at Locus C, D, E, and U indicates that the workers brought their own tools to Apex with them or were expected to maintain their residence. Eight fragments of small coping, fret, pull, or hacksaw blades were found across Loci C, E, and Locus D, a pair of combination pliers with textured handles for grip was found at the large Locus C can dump (Figure 70), and two bastard files (Loci D and E) demonstrate the generic tools used at these parts of the site. Two pencil ferrules were found at Locus E, pointing to personal writing and literacy among the laborers outside of work hours.

Figure 70: Tools. Top Left: Pliers, Locus C, photo by Travis Cumming; Bottom Left: Alfred Blaich Inc Arrow Brand handle, Locus C, photo by Garrett Hoskinson; Top Right: Eveready flashlight end cap, Locus E, photo by Tim Maddock; Bottom Right: Justrite lantern, Locus C, photo by Garrett Hoskinson.

A flat file from Locus D, Wood Scatter 1 reads "[…] Simonds / U.S.A.". Founded in 1836 and still operating today, the Simonds company specialized in making files, saws, and machine knives (Welch 2004). A metallic object from Locus C appears to be the handle for a pocketknife (Figure 70). Reading "[ARR]OW / BRAND / [… B]LAICH INC. SAN FRANCISCO" with a logo of an arrow inside an oval, the Adolph Blaich, Inc company of San Francisco, California specialized in fishing, hunting, and camping equipment. On-line auction house searches reveal the company was founded in 1880 and operated at least through 1946. A 1929 catalog specifically sold "Arrow Brand" items (Adolph Blaich Inc. 1929) (Figure 71).

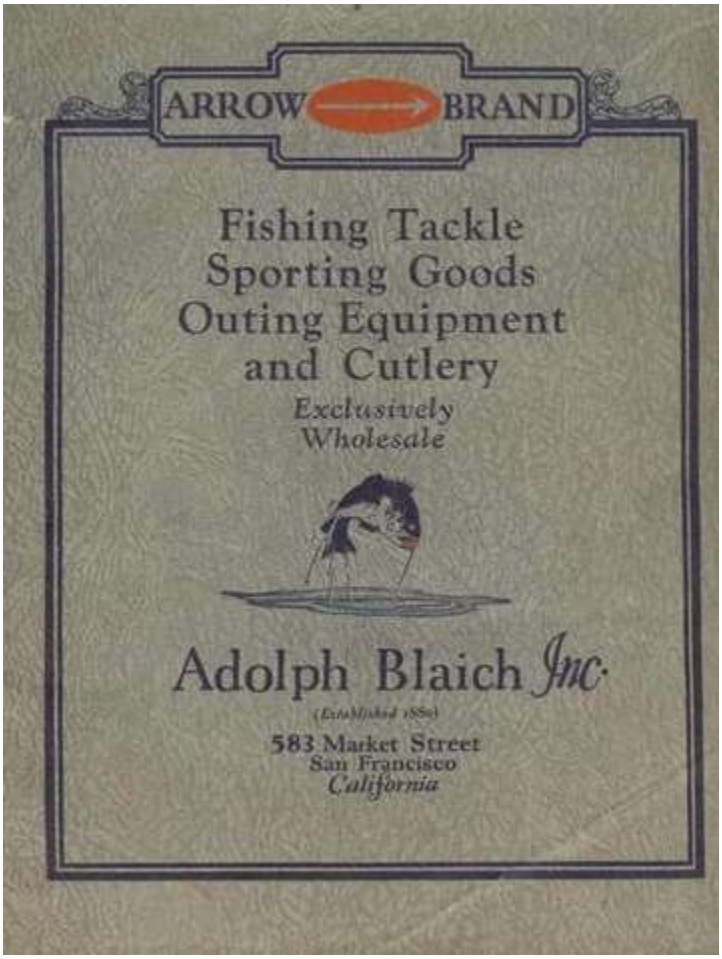

Figure 71: 1929 Adolph Blaich Inc. Arrow Brand catalog.

Several tools reveal ways the worker's operated in darker conditions. A nickel-plated lantern part from Justrite (Locus C) bears a patent date of June 5, 1917, possibly from Patent 1,228,772 for an acetylene gas lantern (Hansen 1912) (Figure 70). The company also produced carbide lamps, miner's lamps, headlights, and safety devices such as waste containers and fire extinguishers (National Museum of American History n.d.b). An "EVEREADY / FLASHLIGHT' screw-on end cap was found at Locus E (Figure 70). Produced between 1910 and 1959 (Energizer 2024;

Scheider 2024), our end cap lacks the ring introduced in 1926 for easy hanging.

Finally, while Locus F was not surveyed in 2023, a nearly intact flashlight found in the vicinity was collected for analysis in case it was looted before it could be recorded (Red 410, 432). Missing only the switch plate, batteries, reflector, and glass, the end cap reads “EVERYREADY DAYLO” while the body reads "EVEREADY / CASE NO 2632 / 3 UNIT CELLS NO 950 / LAMP NO 1193 / MADE IN U.S.A”. In 1917, the Eveready Battery Company trademarked the term Daylo, with the hopes if making it the commonly used term for flashlights. When this effort failed, they discontinued the strategy in 1921 (Schneider 2024). Per a 1919 Daylo catalog (Eveready 1919) found on ebay (now no longer available), Style 2632 was a “tubular style” Standard Daylo that sold for $2.25 (Figure 72). As the timeframe for this artifact lies at least 7 years before Apex was founded, a resident of the camp must have brought the flashlight with them.

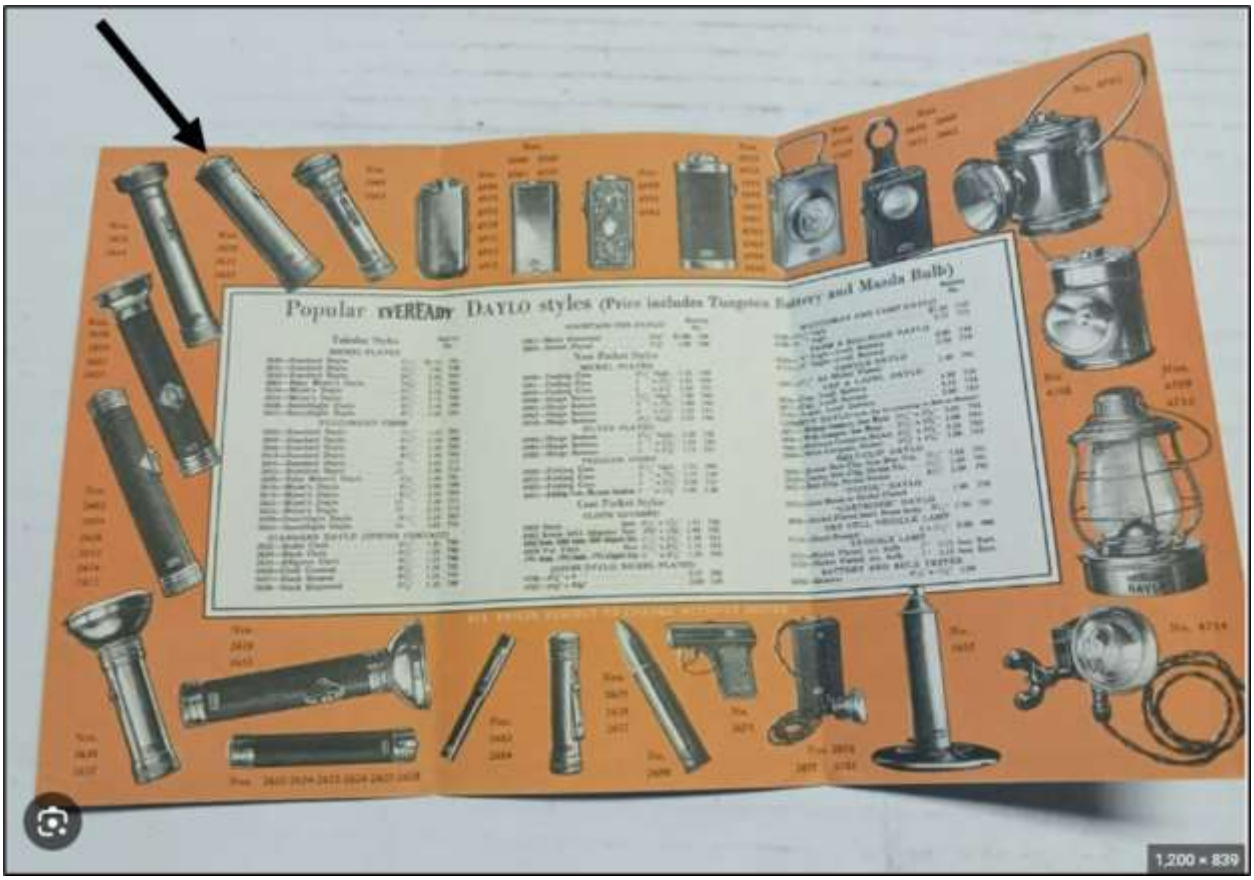

Figure 72: 1919 Daylo catalog (Eveready 1919). Arrow points to Model 2632.

6.3. Other

This section discusses a variety of other artifact types that do not fit into the aforementioned categories, including Toys, Tobacco, Domestic Items, and Transportation.

6.3.1. Toys

Compared to 2022, toys at the sites recorded in 2023 were far more sparse, suggesting children weren't as commonly present at laborer housing.

The distribution of toys and other child-related artifacts support interpretations of Locus D as family laborer housing, as the majority of toys the very few recovered during the 2023 field season were found at this location. At Locus D, four toys were recorded (Figure 73). A ferrous rectangle with a stamped pattern reminiscent of roof tiles may have once belonged to a toy house, while a flat, half-stadium shaped ferrous metal resembles the back end of a covered wagon. A set of flat, ferrous horses, connected by a metal strap across their chest and tabs along their bodies, had holes in their feet, suggesting wheels or some other attachment. We believe these may have been used to pull a cart or perhaps as a rocking horse for a doll. Finally, a flat ram, goat, or sheep, is similar in size and design to the toy horse, perhaps indicating a matching set.

Figure 73: Toys. Top Left: Possible toy wheel, Locus C, photo by Travis Cumming; Bottom left: possible toy roof, Locus D, photo by Alex Mason; Center: Toy horse, Locus D, photo by Emily Dale; Top Right: Possible toy wagon fragment, Locus D, photo by Alex Mason; Bottom Left: Possible toy shovel, Locus E, photo by Emily Dale.

Loci C and E also had a few possible toys, indicating the presence of children, perhaps due to the proximity to Locus D. A tiny shovel head was found at Locus E (Figure 73), while at Locus C, a molded, unglazed porcelain sherd with a slight pink/red tint may be part of a doll face, and a possible toy wheel has 8 molded spokes and raised dots around the edge.

6.3.2. Tobacco

Nearly 50 Copenhagen flat oval cans were recorded across Loci C, D, and E, and likely more at the site were missed, especially in the dense can dumps and under tree litter (Figure 74). Interestingly, none were found at Locus U. The cans were embossed with both the earlier "COPENHAGEN / SNUFF" (1906-1935) logo and later "COPENHAGEN SATISFIES" slogan (1935-1990) (Rock 2015a), indicating a popularity across the timeline of Apex's occupation. While myriad upright pocket tobacco cans were found across these Loci, including one Prince Albert can (Figure 74), and one with a built-in match strike plate, possibly from the Velvet brand, but with a concave side (Rock 2015b) (Figure 74), they were outnumbered by the chewing tobacco cans. As no chewing tobacco cans were recorded in 2022, there may have been a preference for management for cigarettes and a laborer preference for chewing tobacco, possibly to free up their hands as they worked. Perhaps, though, in the work-free zone of their residences, Apex's laborers enjoyed a hand-held cigarette. We also found a Train Master "Real Mild Cigar" square can lid. The painted label was still somewhat visible and revealed a price of 5¢. Numerous holes were poked from the inside to the outside of the lid. Another can from Locus D was embossed "No 178 / 50 / 1st DIST PA". This is a likely another cigar tin, as the First District of Pennsylvania was famous for their cigarettes and cigars (Hyman 2010). No evidence of who owned Factory 178 could be found, but 50 likely refers to the number of cigars originally in the tin.

Figure 74: Left: Prince Albert can, after cleaning, Locus D, photo by Alex Mason; Top Right: Tobacco can with built-in strike plate, Locus E, photo by Rachel Matheson; Bottom Right: Copenhagen tin lids, Locus D, photo by Emily Dale.

No other smoking paraphernalia, such as pipes, were found, indicating that cigarettes and chewing tobacco were the preferred form of tobacco consumption.

6.3.3 Domestic

"Domestic" items is used here broadly to discuss the variety of artifacts that reveal strategies for maintaining and decorating households. This includes cleaning items, decorative artifacts, and household appliances and furniture.

Figure 75: Cleaning artifacts. Top Left: The Sinclair Manufacturing Company lid, Locus U, photo by Alex Mason. Top Right: Possible Sinclair Manufacturing Company can end, Locus U, photo by Alex Mason. Bottom Left: Chloride of Lime can lid, Locus U, photo by Rachel Matheson. Bottom Right: Lighthouse Cleanser lid, Locus D, photo by Emily Dale.

Two "CHLORIDE / OF /LIME" cans from the Locus U privy and the nearby Locus U, Can Dump 1 were potentially used to disinfect the privy (Figure 65). The chemical germicide was

first used in early 1900s Chicago stockyards to treat the water (Tata & Howard 2024). Albert Hooker's 1913 *Chloride of Lime in Sanitation* suggests in his section on a "Sanitary Privy" that chloride of lime could be used to "bring about in water sanitation, sewage disposal, fly extermination, garbage and refuse control, etc…, a degree of sanitary safety undreamt of only a few years ago" (64). As chloride of lime reduced bacteria, the smell was also lessened.

Two hole-in-cap can lids reading "THE SINCLAIR MFG. CO. / TOLEDO" (Locus U) were produced by the Sinclair Manufacturing Company (Figure 75). While little information was discovered about this company on-line, a 1961 advertisement for National Bank of Toledo in the Toledo Blade reveals it was a chemical company who produced household bleaches and detergents (The National Bank of Toledo 1961) (Figure 76). Another two can lids from Locus U, carries a patent date of "OCT 20, 191—" (Figure 75). A US patent search reveals that Patent 1,114,546 was granted to Harry M. Sinclair of Toledo, Ohio in 1914 for a "receptable […] for evaporative or absorbent elements, or materials which are chemically active or unstable" (Sinclair 1914). The National Bank of Toledo ad specifically mentions that "H.M. Sinclair developed a package that would prevent explosions in cans used to contain the household sanitary powders of 50 years ago". It is highly possible then, that these can ends also belong to Sinclair cans.

Because H. M. Sinclair developed a package that would prevent explosions in cans used to contain the household sanitary powders of 50 years ago, the Sinclair Manufacturing Company come into being.

Today the firm, still operated by the Sinclair family, is one of the prime producers of household bleaches and detergents. Such well-known brand names as "Sprite," "Coral," "Synrae" and "White Monday" (shown above) are produced in a large ultra-modern plant at 6120 Detroit Avenue. As a matter of record, "Sprite" was among the first light duty detergents ever to be placed on the market.

Sinclair distributes its products throughout the United States and in some sections of Canada thus expanding Toledo's reputation for high quality products.

The National Bank of Toledo is proud of its association with the Sinclair Manufacturing Company and salutes this progressive Northwestern Ohio industry.

Figure 76: 1961 Sinclair Manufacturing Company advertisement (National Bank of Toledo 1961).

Five Old Dutch Cleanser cans and lids demonstrate its popularity at Locus C (3), D (1), and E (1). Locus D also contained one Lighthouse Cleanser lid (Figure 75). Produced by Armour and Company, a 1918 catalog described the product as "a combination of natural cleansing agents refined and powdered (Figure 77). Recommended for scouring, polishing and purifying bath tubs, marble, metal fixtures, kitchen utensils, etc…" and it reassured the consumer that it "does

not lather. Its function is to remove dirt by friction, not by dissolution" (Armour and Company 1918). The company had a larger line of "Lighthouse products" that also included washing powder and laundry soaps, and based on its 5 or 10 cent price and the other products advertised as a "grade below Lighthouse" was one of their higher quality products. The can originally "sported a lighthouse on its label, whose 'arms' held a metal scrub bucket emblazoned with the phrase 'Show Me Dirt', while the lighthouse's beam illuminated where that dirt might be hiding" (Dolin 2016:243.)

Figure 77: 1918 Armour and Company catalog description and packaging of Lighthouse Cleanser (Armour and Company 1918).

Artifacts also presented a few ways the laborers and their families made the bunkhouse a home. Two pieces of a porcelain cherub face and a stoneware cat's paw and ear glazed in pink, blue, green, and purple from the Locus E demonstrate the use of figurines to decorate (Figure 78). A carnival glass candlestick holder from Locus D provided light in a more fashionable manner (Figure 78). The burner of a White Flame Light Company oil lamp from Locus E reveals other strategies for bringing light indoors (Figure 78). Based out of Grand Rapids, Michigan, the lamp was likely produced between 1906 and 1929 (Iowa State University 2024).

At Locus E, a “BANKER” stove had a floral design around the top and bottom of wave-line vines and sprouting leaves around the top and bottom, and two stove legs at Locus D were intricately molded (Figure 78). Furniture springs from bed mattresses or couches were found at Locus C, E, and U, demonstrating a commitment to comfort at the bunkhouse.

Figure 78: Home Décor. Top left: Decorative stove leg, Locus, D, photo by Alex Mason; Top center: Carnival glass candlestick, Locus D, photo by Emily Dale; Top right: Porcelain cherub figurine, Locus E, photo by Emily Dale; Bottom left: Cat ear figurine shard, Locus E, photo by Emily Dale; Bottom right: White Flame Light Company oil lamp burner, Locus C, photo by Travis Cumming.

Finally, two “jack-o-cantern”s were found during the 2023 field season (Figure 79). These ferrous cans with faces cut into them might indicate a Halloween tradition. Both faces consist of the two squarish eyes, a triangular nose, and 6 or 7 vertical slits forming an arced mouth. The Locus C jack-o-cantern is carved into the can front while the Locus G jack-o-cantern (not discovered during 2022 survey of the site) has its face in the bottom. As Halloween is a

thoroughly American holiday, its celebration indicates that many of Apex's immigrant workers were adopting American traditions or at least encouraging their children to.

Figure 79: Jack-o-Canterns recorded at Locus C (left) and Locus G (right). Photos by Emily Dale.

6.3.4. Transportation

Several pieces of evidence point to the presence and use of several cars across Loci C, D, E, and U. xx license plates, nearly all of which were intentionally folded or broken in half for unclear reasons, were found. Information about dates and counties was taken from Wikipedia (2024) and ShopLicensePlates (Hammer 2024). Two halves of an Arizona plate from Locus C with County Code 11 dates to 1925, 1926, or 1927 based on the vertical positioning of the date along the right side (Figure 80). In each of these years, 11 was the county code for Coconino County. A 1933 plate that was both broken in half and then folded came from Locus D (Figure 80). A third plate from Locus E was broken at the front end. This plate also dates to 1925, 1926, and 1927 based on the placement of "ARIZONA" along the bottom and a lack of date along the left. The county code is cut in half, but is either a 1 (Maricopa) or 11 (Coconino), which seems more likely due to a partial character to the right of the 1.

Nine tire fragments from Loci C, D, and U point to the presence of cars at the loci themselves (Figure 80), as does part of a cast iron car frame with a handle and turning knob from Locus C. Two spark plug cores, one from Locus D and one from the Locus E excavations, had porcelain

bodies with a non-ferrous shaft (Figure 80). The one at Locus D may have been painted red and resembles those produced for Model Ts or by the Champion brand.

Figure 80: Left: Spark plug, Locus D, photo by Emily Dale; Center top: 1920s Arizona license plate, Locus C, photo by Rachel Matheson; Center bottom: Tire fragments, Locus U, photo by Emily Dale; Right: 1933 Arizona license plate, Locus D, photo by Rachel Matheson.

6.4. General Conclusions

The 2023 field season provided confirmation of some of our 2022 conclusions. Common brands display likely reliance on the company store for key staples like Calumet Baking Powder, Maxwell House Coffee, Copenhagen chewing tobacco, Old Dutch Cleanser, and perhaps even Budweiser Malt Syrup Extract. But more unique goods, like Jaciel cold cream, the myriad laxative brands, and a Daylo flashlight, reveal more personal preferences for goods obtained elsewhere. Artifacts reveal connections between Apex and the larger global consumer market, including the larger Los-Angeles area, Belgium, and Japan.

We also continued to see the impact of women and children on the labor camp. Canning jars and toys indicate that families spanned both sides of the railroad tracks and that not just management brought wives and children to Apex.

The artifacts and features from 2023, however, also highlight new aspects of Apex's community. The discrepancy in tobacco products between the bunkhouse and management housing point to different strategies of nicotine consumption, possibly based around occupational necessities. And the numerous decorative objects, from floral-patterned plates, to carnival glass pitchers, to

ceramic figurines, reveal that even as boarders in temporary work housing, Apex's lumberjacks sought to make their bunkhouse feel homey.

7. PUBLIC TOURS

Throughout the May to June field season, we conducted 10 tours, resulting in nearly 70 visitors to the site (Figure 80). Funding from the Arizona Humanities paid for Timothy Maddock to serve as tour guide and for a second edition of educational brochures we handed out to all visitors (Appendix E), as we ran out of our initial printing at the end of the 2023 field season. Tours were organized through the Kaibab National Forest, Grand Canyon Historical Society, Arizona Site Stewards, Sedona Questers, Flagstaff Girl Scout troop, and several private groups. We also provided an October 2023 tour through the Flagstaff Festival of Science.

Figure 81: Tim Maddock (left) and Alex Mason (second from the left) lead a tour for Flagstaff National Monuments employees, Locus G. Photo by Charles Webber.

At the end of each tour, site visitors were given a short, voluntary, and anonymous survey to fill out about their experiences at the site. A 2023 NAU IRB application determined that the tours and surveys did not qualify as human subject research. The findings of those surveys were

written as a report for the Arizona Humanities and presented at the 2023 Grand Canyon History Symposium (see Appendix B).

8. CONCLUSIONS AND FUTURE DIRECTIONS

The 2023 field season was an overall success. We trained several students in historical archaeology and public archaeology methods and engaged with over 70 members of the public. We also demonstrated the depth of information and data present at the site.

8.1. Publications

The lead-up to and results from the 2023 field season have already been published in a variety of venues. The following table lists the numerous paper and poster conference presentations, invited talks, newspaper coverage, and journal articles emerging from our 2023 field season so far:

Name	Title	Date	Venue	Mode
Timothy Maddock	Life, Work, and Identity at Apex Arizona: The Archaeology of a Twentieth-Century Logging Camp and Company Town	May 2024	Northern Arizona University	Master's Thesis
Madeleine Levesque	Notions of Health and Hygiene in the Depression-Era United States: Apex, Arizona	April 2024	NAU Undergraduate Research Symposium	Poster Presentation
Emily Dale and Timothy Maddock	Public Archaeology at Apex, Arizona, 2023 Grant Report	February 2024	Arizona Humanities	Grant Report
Emily Dale and Timothy Maddock	Apex, Arizona and the Myth of the Company Town in the American West	January 2024	Society for Historical Archaeology	Paper Presentation
Timothy Maddock	Fitted For Work in this Locality:" Whiteness and Labor at Apex, Arizona	January 2024	Society for Historical Archaeology	Paper Presentation
White, Sean, Emily Dale, Ashley Mlazgar, Charlie Webber,	Historical Archaeology in Arizona, 2nd edition	January 2024	--	Educational Brochure

and Timothy Maddock				
White, Sean, Emily Dale, Ashley Mlazgar, and Timothy Maddock	Archaeology on the Grand Canyon Railway, 2nd edition	January 2024	--	Educational Brochure
Emily Dale and Timothy Maddock	Local Science Spotlight: Archeology at The Apex, Arizona Logging Camp	September 2023	Flagstaff Festival of Science Insights Blog	Online Blog Post
Emily Dale and Timothy Maddock	Two Years of Public Archaeology at Apex, Arizona: Life and Work in a Depression-Era Company Town	August 2023	Pecos Conference	Poster Presentation
Emily Dale and Timothy Maddock	"To Learn About History of the Area": Two Years of Public Archaeology at Apex	November 2023	Grand Canyon History Symposium	Paper Presentation

8.2. Future Directions

The 2023 field season largely focused on the laborer's side of town. While the 2022 data does give us some management information for comparison, we hope to continue to expand our view of Apex residents by investigating other management housing and the more industrial aspects of town. Our current plan for 2024 is to investigate Loci K and L, two management/family housing areas, with the potential for an actual privy excavation.

The 2024 field season will also host several public tours, with the support of a second Arizona Humanities grant. Finally, we will be running a Passport in Time project again in the 2024 season, which will further strengthen our commitment to public engagement at the site.

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APPENDIX A: EMILY DALE AND TIMOTHY MADDOCK 2024 PECOS CONFERENCE POSTER

Two Years of Public Archaeology at Apex, Arizona: Life and Work in a Depression-Era Company Town

Timothy S. Maddock and Emily Dale

NORTHERN ARIZONA UNIVERSITY
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ABSTRACT: From 1928 to 1936, the logging camp and company town of Apex, Arizona housed loggers and administrators whose labor was integral to the economic development of Northern Arizona and the construction of the Grand Canyon Railway and Grand Canyon Village. Since 2020, Northern Arizona University and the Kaibab National Forest have partnered to survey, excavate, and document the remains of the camp in order to answer questions about life during Prohibition and the Great Depression in the region. In addition to fieldwork, an exciting aspect of this partnership is the emphasis on public site tours and visitor education during the 2022 and 2023 NAU field schools. This poster will present the objectives, discoveries, visitor experiences, and future trajectories of the ongoing archaeological investigations at Apex, Arizona.

PROJECT OVERVIEW

The Apex, Arizona Archaeological Project aims to understand life and labor as expressed through the material remains of the 20th-century logging camp and company town. Since 2020, NAU has conducted pedestrian surveys and archaeological excavations (Figure 1) to better understand the relationships between management and their employees, access to goods (including what the community's company store would have stocked), how rural Northern Arizona communities were impacted by the Great Depression, the role of women and children at the logging camp, the differences between single male laborers' lives and those who lived with their families, and many more lines of inquiry. This research is accomplished alongside tours for the general public, which inform and expand public knowledge about historical archaeology in the Southwest.

Apex was established in 1928 as the camp headquarters for the Saginaw and Manistee Lumber Company, a major employer in the Williams area that secured a timber lease with the Kaibab National Forest. Apex served as a central camp, although at least 30 others dotted the landscape of the Kaibab as the loggers cut their timber lease to its exhaustion by 1936. Despite its occupation during the Great Depression and the waning years of Prohibition, archaeological and archival evidence indicate that employees were well-fed, received adequate housing, had access to a wide variety of goods, and consumed alcohol in great quantities on both the management and employee sides of the camp.

The 2023 Field School focused primarily on the various loci, or activity areas, associated with laborer housing. Students, staff, and Passport in Time volunteers investigated Locus E (single-laborer housing), Locus D (likely family housing), Locus C (trash dump, likely associated with Locus D), and a privy and several trash scatters (Locus U). This provided comparative data for the 2022 field school which focused on the schoolhouse, kitchen, and management housing.

Figure 1: Alex Mason and Travis Cumming map the excavation unit sidewalls.

PUBLIC OUTREACH

A large part of the Apex, Arizona Archaeology Project is public engagement and community outreach. Thanks to grants from the Arizona Humanities, in 2022 and 2023 we hosted a series of public tours of our archaeological fieldwork. In 2022, nearly 100 people toured this site, while the 2023 field season saw over 80 guests visit Apex.

In 2023, we also incorporated a Passport in Time project through the Kaibab National Forest. Three volunteers worked with us for a week, assisting in excavation, mapping, and artifact recordation (Figure 2).

Our outreach campaigns educate members of the public on the importance of Arizona's more recent heritage and proper etiquette at archaeological sites. Visitors are encouraged to take photographs, attend future events, and given educational brochures. Moreover, as our students participate in tours, the next generation of archaeologists learns the importance of public engagement.

Figure 2: 2023 Field School students, Passport in Time Volunteers, and staff

Front row: Rachel Matheson, Tim Maddock, Fran Maier, Emily Dale, Adrienne Dale, and Charlie Webber

Back row: Alex Mason, Garrett Hoekstra, Carl Eversbusch, and Travis Cumming

PRELIMINARY CONCLUSIONS

The 2023 Field School at Apex revealed new information regarding the lives of the men, women, and children who once called the logging camp home. Everyday objects and modified cans (Figure 3) demonstrate the mundane aspects of life and strategies to preserve money during the Great Depression. Previous investigations on the management side of Apex indicated an abundance of high-quality goods, makeup and hygiene products associated with women, and children's toys, artifacts also found at the laborer housing (Figure 4). To our surprise, artifacts on the laborer's side of the site also suggested that workers owned fancy, personal items such as decorated porcelains, figurines (Figure 5), carnival glass, and ornamental candlesticks. This suggests that goods purchased by or provided for the laborers were not strictly utilitarian and may have been more equal to the management assemblage than previously believed.

Figure 3: The Apex "Jack-o'-cantern", Locus C

Figure 4: Porcelain cherub face, Locus B

Figure 5: Metal horse team, Locus D. The holes in the feet suggest they once pulled a cart or were part of a rocking horse. A similar metal goat was also found at Locus D.

Figure 6: "BLENDFORD / BARLEY / MALT SYRUP" can, Locus E

FUTURE DIRECTIONS

We are running one final tour this year, on October 1 for the Flagstaff Festival of Science. Our findings from the 2022 and 2023 season will be presented at the 2023 Grand Canyon History Symposium, and both the Society for Historical Archaeology conference and the Arizona History Convention in 2024.

The Apex, Arizona Archaeology Project has three more years of permitted field work. Future years' priorities include recording management housing and surveying the railroad grade beyond the camp headquarters. Other projects will be undertaken with graduate student interest.

The project demonstrates the ability of Southwest archaeology to shed a light on the region's more recent history, connect communities to their past, and provide new opportunities for public engagement and collaborative projects.

FAMILY LIFE

The exact layout of the laborer's side of Apex was unknown. Historian Al Richmond indicated the presence of a laborer's bunkhouse to house the single men, but the extent of family housing is unclear. The 2023 Field School discovered that Locus D, just uphill from Locus E, likely represents either family housing for laborers or the residences of the Atchison, Topeka and Santa Fe railway engineers that also called Apex home. Locus D exhibited evidence of toys (Figure 5), canning, and make-up and hygiene products, which supports these theories. However, these same artifacts are also present at Locus E, which was thought to house only the single men. Does E therefore represent a post-occupation, catch-all trash area, or a different building altogether? Future research will continue to address this and other questions.

ACKNOWLEDGEMENTS:

- Garrett Hoekstra, Alex Mason, Rachel Matheson, and Travis Cumming for their outstanding work as field school students.
- Adrienne Dale, Carl Eversbusch, and Fran Maier for their dedication as our Passport in Time Volunteers.
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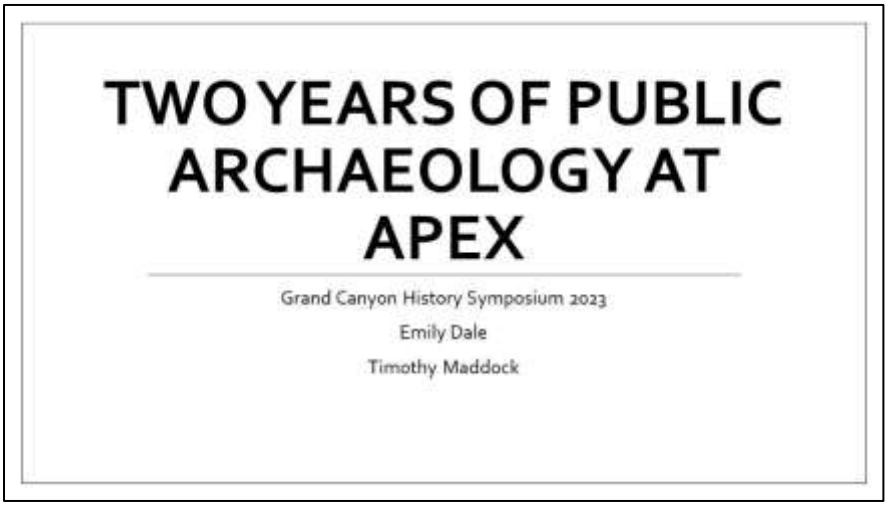
- Bruce Ellingson & Richmond for their knowledge of Apex and time.
- Grand Canyon Historical Society, Kaibab National Forest, Flagstaff National Monument, Arizona Site Stewards, Questers, and Con Social Trees and for engineering issues. Carl would likely have made something by a grant from the Arizona Humanities.

CONSUMPTION AND THE COMPANY STORE

Common brands, such as Copenhagen and Prince Albert tobacco, Calumet baking soda, and enamelwares, found across the site in both 2022 and 2023 reveal the company store stocked consistent products. Canned foods included fruits, meats, and fish, from as far away as Northern California, Norway, and Uruguay. Orange Crush, bottled in Flagstaff, Delaware Punch, and Coca-Cola bottle fragments point to the variety of sodas enjoyed by the laborers. The presence of canning jars, especially at Locus C, also indicates the availability of fresh foods. The commonality at both management and laborer spaces of Buckeeser malt extract cans, used to produce beer during Prohibition (Figure 6), indicates widespread, company-permitted consumption of alcohol even when illegal. Whiskey and other liquor bottles reveal the continuation of alcohol consumption after Prohibition ended. The presence of numerous types and brands of laxatives suggest a common health problem among the workers living at the Locus E bunkhouse. Finally, there is a high concentration of carnival glass throughout the site, suggesting it was either available through the company store or acquired through events in Williams.

APPENDIX B: EMILY DALE AND TIMOTHY MADDOCK'S 2024 GRAND CANYON HISTORY SYMPOSIUM PRESENTATION

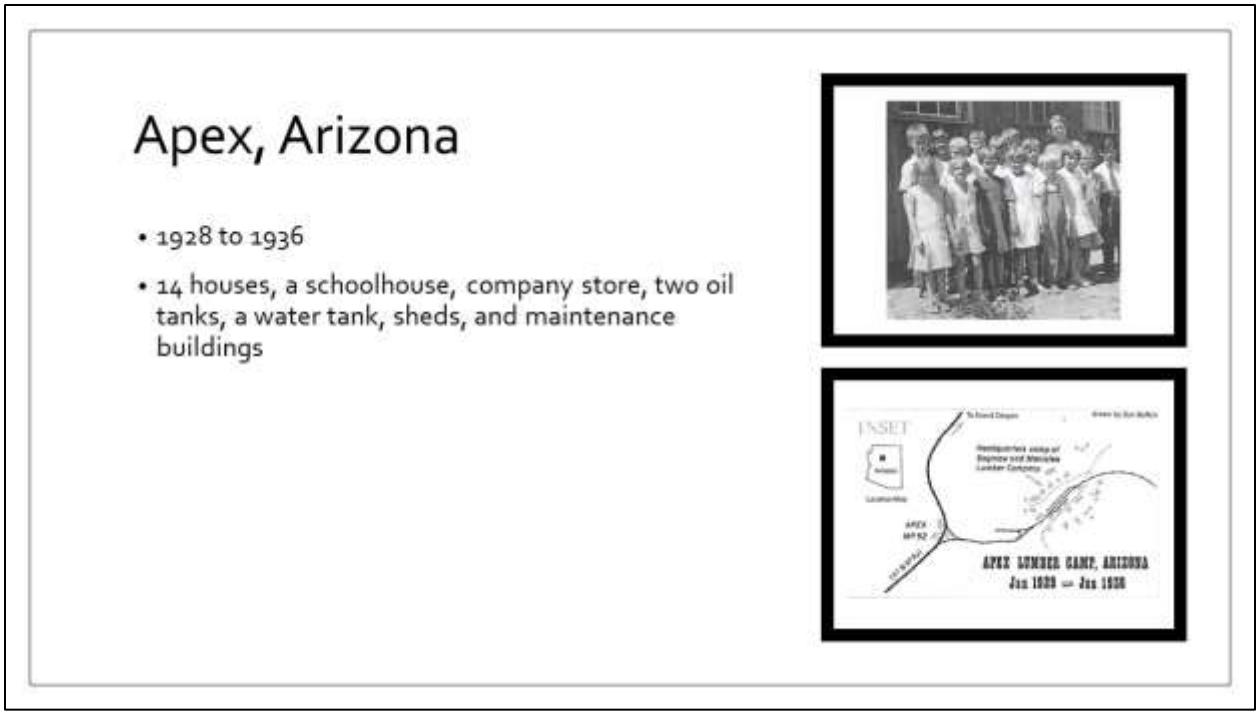


We would like to start this paper with our acknowledgements. As this is a public archaeology project, our supporters, collaborators, and participants of the past two years are the most important component of what we do. First, we must thank the Margaret, Charlie, Rochelle, Kelsey, and Nash and everyone else at the Kaibab National Forest, our partner in this project, without whom this project would not exist. Second, we would like to thank Arizona Humanities. Their grant funding over the past two years has funded our tour guides, educational brochures, equipment, and port-a-potties. The research grant we were awarded from Grand Canyon Historical Society similarly paid for field equipment and funded the salary of two undergraduate

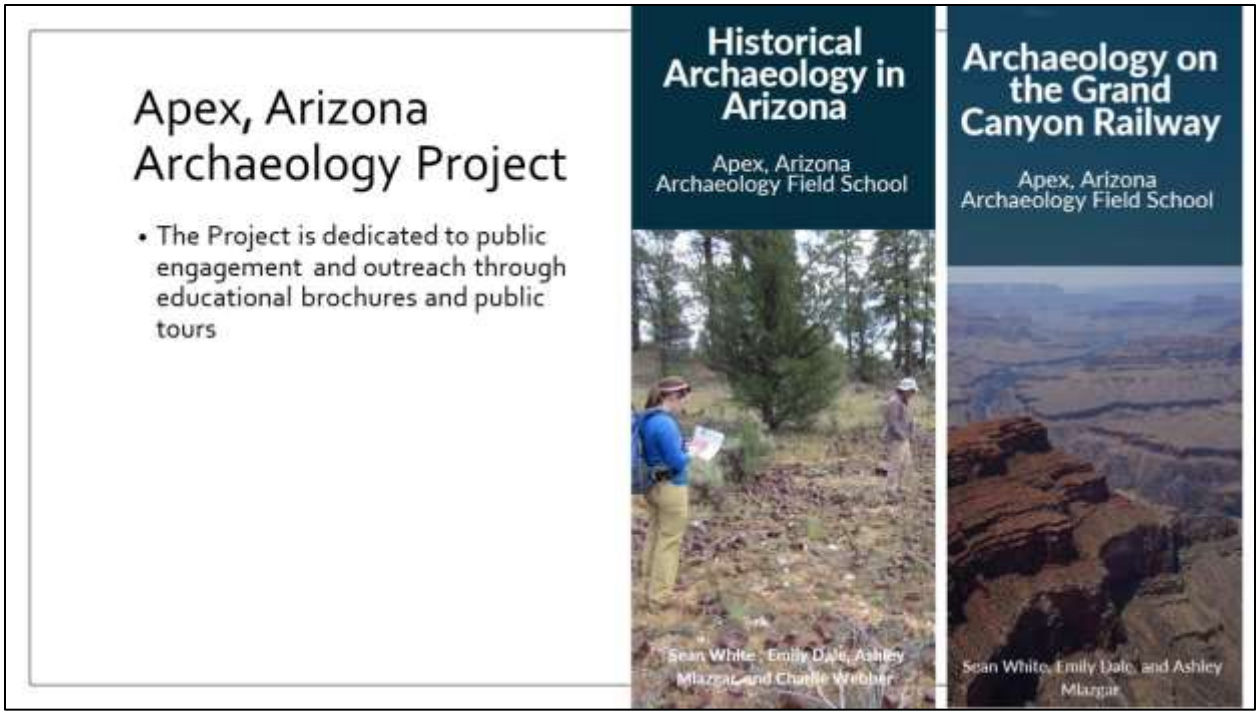
student workers, one of whom presented his research at the Society for Historical Archaeology conference in Lisbon, Portugal in January 2023.

We must also acknowledge the numerous participants in the field school: our field school students, Nathan, Andrew, Ian, Eva, Logan, Madeleine, Travis, Garrett, Rachel, and Alex; our GAs, Ashley and Timothy; our Passport in Time volunteers, Adrienne, Fran, and Carl; and our undergraduate employees, Joey, Madeleine, Logan, and Melissa

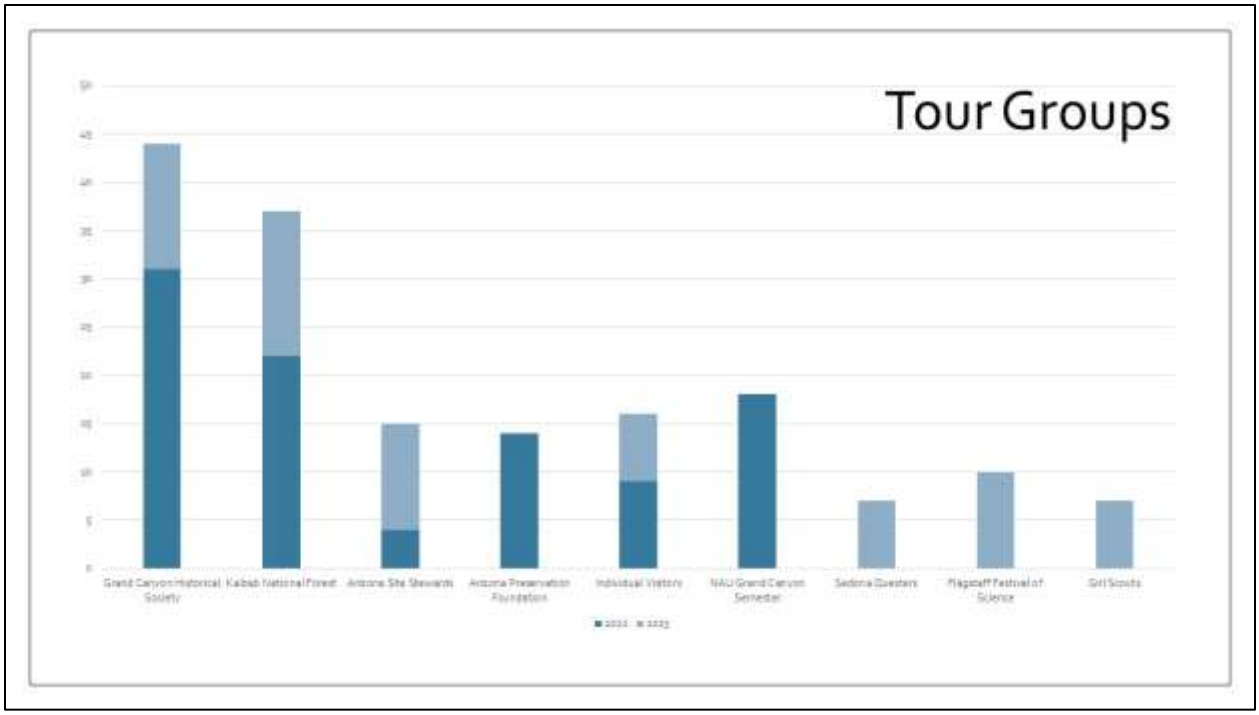
And all of the groups who arranged tours of Apex, the Grand Canyon Historical Society, Kaibab National Forest, Arizona Preservation Foundation, Arizona Site Stewards, Arizona Historical and Archaeological Society, NAU Grand Canyon Semester, Girl Scout Troop #3170, Sedona Questers, Flagstaff National Monuments, and the Flagstaff Festival of Science.



The Apex, Arizona Archaeology Project investigates a 1928 to 1936 Saginaw and Manistee Lumber Company logging camp along the Grand Canyon Railway. Through survey and excavation, we explore the lives of the men, women, and children who lived and worked at Apex. Archaeological evidence has revealed the role the laborers' largely Scandinavian heritage, the Great Depression and Prohibition, the presence of women and families, and the economic status of individuals played in peoples' lives at the rural company headquarters. Following the United States Forest Service preliminary recording of the site in 2006, we designate individual areas of activity and artifact concentrations as "Locuses" to delineate separate spaces on the landscape.



A key component of the Apex, Arizona Archaeology Project is public engagement. To that end, in 2022 and 2023, in conjunction with our field school, we ran a series of free and open-to-the-public tours of the site. Led by a paid tour guide and the field school students, visitors learned about both the history of the site and the methods and importance of historical archaeology. The Project also has two educational brochures that are distributed during tours and available at USFS Ranger District buildings. One covers the history of Apex and the Grand Canyon Railway while the other discusses the field of Historical Archaeology more generally.



In 2022, nearly 100 visitors toured Apex, and in 2023 Apex was host to 70 tourists. Each tour is organized or presented differently according to the ages, physical abilities, and backgrounds of group members in attendance. Project personnel are committed to providing tailored, yet consistent, experiences that are highly informative and interactive regardless of each attendee's prior archaeological experience. With that said, the tour format saw broad revisions over the course of the field seasons according to group responses and time spent at each particular locus.

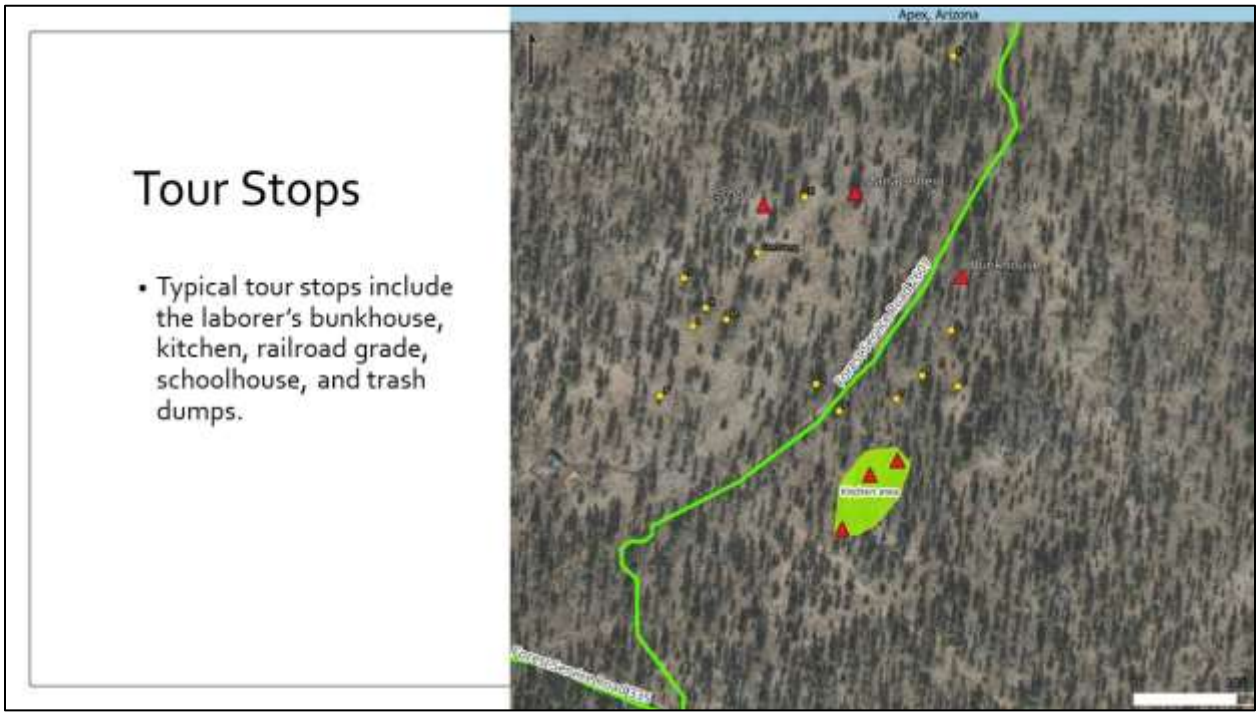
Each tour consists of our lead tour guides, at least one field school student, and a varying number of site visitors. In 2022, Ashley Mlazgar served as our lead tour guide, leading 15 tours of between 1 and 18 people, and in 2023, Timothy Maddock led 10 tours of between 3 and 11 people. On average, tours lasted between one-and-a-half to two hours.

Groups with small numbers of high-clearance vehicles are instructed to meet at the designated parking area at the site by the Apex Welcome Center, marked by two red portable toilets off of Forest Service Road 2607 at the north end of the site. In some cases, our lead tour guides drive down to the intersection of Forest Service Road 306 and state route 64 in a Northern Arizona University fleet vehicle to meet and transport larger parties or those with low-clearance vehicles due to the rugged nature of the roads. Tour groups then convene at the Apex Welcome Center, which provides shade, restrooms, sunscreen, cold water, and our brochures. Once visitors are prepared, our field staff formally introduces themselves and provides an overview of the site's history and a comprehensive safety briefing.

Safety briefings begin before the tour, as visitors are instructed to wear long pants and closed-toed shoes when coming to the site. Once at Apex, our tours open with a detailed description of potential hazards that visitors could encounter, including asbestos, rusty metal artifacts, broken glass, and tripping hazards such as buried wires. Visitors are allowed to pick up and investigate artifacts with these warnings in mind (with the exception of asbestos), but are also advised to be aware of tarantulas, tarantula hawks, scorpions, lizards, and snakes known to warm up in and around metal containers. Fortunately, only one fairly aloof tarantula has been encountered during tours so far. We also remind visitors to stay hydrated, take rests whenever needed, and to wear sunscreen.

Accompanying safety briefings are advisories concerning proper traversal of the site. Between 2022 and 2023, 158 people have formally participated in Apex tours, but this number does not include informal visitors who may visit the site outside of the field season. To best avoid damaging the site through accelerated erosion via foot traffic, and to discourage the formation of social trails, visitors are instructed to follow single-file behind the tour guides along predefined game trails where available. These are the same trails and paths used by field staff and students when working at the site. Upon reaching a tour stop, visitors are encouraged to disperse and

explore the assemblage of the area, but not to wander too far. This proved to be difficult to enforce in some cases, which may be addressed in the future by making locus boundaries clearer to members of the public, or by only allowing for dispersal in smaller areas.



In both 2022 and 2023, tours visited very similar locations, deemed by staff to be interesting due to their well-known function, intact structures, archaeological value, or "cool stuff", a technical archaeological term. For example, each year, tours visited the laborer's bunkhouse, kitchen/dining hall area, the railroad grade, the schoolhouse, and several trash dumps. In 2023, Tim incorporated more technology into our tours to give visitors a better sense of the scale of the site and the archaeological work being conducted. Prior to departing the Welcome Center, Tim showed visitors a digital map of all currently-known locus locations, with tour-specific stops notated by red triangles. This map was made using QGIS with spatial data provided by USFS Kaibab National Forest archaeologists during the 2022 field season and was then exported to a format compatible with Avenza Maps. As Avenza is a multi-platform and free program available for smartphones, visitors could be provided a copy of the map for their own use upon request.

To demonstrate the format of the tour, we will discuss Tim's 2023 tours in detail. First, visitors were led to Locus E where Emily and students were recording artifacts and excavating a depression at the laborer bunkhouse. Here, tour attendees learned about what kind of work the field students were doing, granting them insight into the types of activities archaeologists perform. Visitors often asked questions regarding the ethnicity of the laborers at Apex, the division of the site between management and laborers on either side of the tracks, how many individuals lived there at any given time, and other insightful and challenging questions to consider. After the first few tours, field school students became much more eager to answer the public's questions and to inform them of their own theories and research interests based on their personal interests and observations on the site.

From there, the tour proceeded to the numerous wood scatters and artifact concentrations at Locus A, defined broadly as the kitchen area. This area provided a good opportunity to demonstrate the kinds of structural foundations typically seen at Apex, the foodstuffs that members of the community would have consumed, and the technology, such as the three stoves in the area, they would have used to prepare meals. However, the large size of Locus A added a substantial amount of time to the tour, mostly from walking and encouraging visitors to explore the area. This fact, coupled with the discovery of food preparation appliances elsewhere on the site, prompted Tim to drop Locus A from the tour schedule after the first three tours to focus on smaller areas with denser assemblages.

Tour attendees were then taken across the road to Locus Q, or the locomotive maintenance pit. This stop of the tour engendered questions about the role of the Grand Canyon Railway in the history and development of Apex, and visitors were excited to see fragments of tools and equipment used in the engineering and servicing of trains.

The tour next proceeded across the tracks to Locus I, or the schoolhouse. Along the way, tour attendees could see wood scatters and other structural remains indicating housing and activities associated with domestic life for Apex's administrators. Locus I represents the most substantial foundations seen at the site, and is also one of the few places where the role of women and children at Apex is readily visible. The density of the artifact assemblage at Locus I is much lower compared to other areas of the tour, so here we focused on sharing information such as the names and personalities of Apex's three schoolteachers, how many students would have attended at one time, and the school's status as one of two unsegregated schools in northern Arizona at the time.

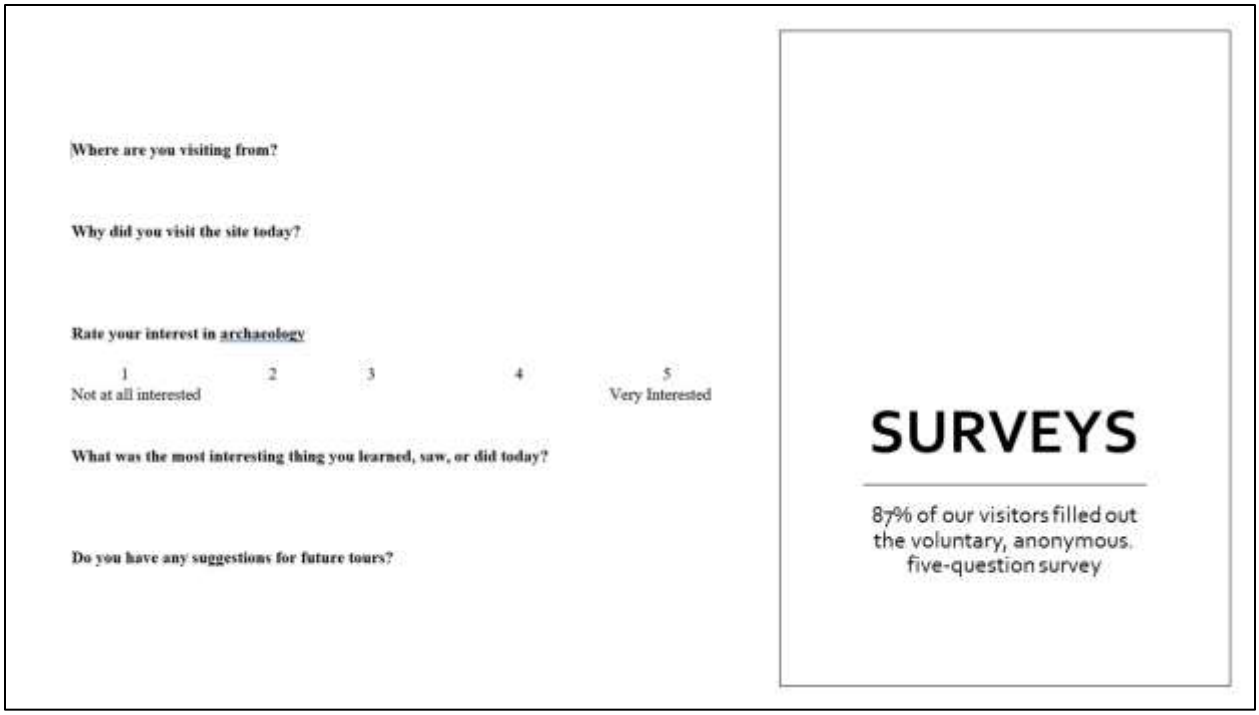
Finally, the tour concluded at Locus G, one of the sites' largest trash dumps and associated with management housing and activity. Visitors reacted in disbelief at the size of the refuse scatter and were challenged by Tim and the field school students to find specific items within the concentration. This kept them engaged up to the end of the tour as they searched for artifacts such as a wooden paintbrush (with some intact bristles) and a windup toy tractor.

As visitors returned to the Apex Welcome Center for departure, Tim offered optional surveys with questions that form the basis of our visitor data. While filling out surveys or waiting for their tourmates to finish theirs, visitors would continue to ask questions, review the educational brochures, use the facilities, and refill water. Those who caravanned into the site with our tour guide, were guided back out to Highway 64 and sent on their way. It is our hope that these tours will continue to involve and improve alongside our understanding of Apex and of historical archaeology in northern Arizona.

Our tours were not without their hiccups. One of the larger obstacles we faced was the continued trend of people preferring to stay home post-COVID. Despite high expectations of member engagement, both the Grand Canyon Historical Society and the Arizona Archaeological and Historical Society canceled one of their trips for 2023 due to low enrollment.

Parking is also a challenge, as there are limited spots for cars, and many off-roading enthusiasts understandably want to drive themselves out to the site. Part of our parking spots are also reserved for the portable toilets and giving Steve's High Country Sanitation access to the units. At least once, the port-a-potties went un-serviced because they were blocked by visitor vehicles. We were also scolded by a Coconino County employee for blocking access to a county building.

Finally, while we plan our field school and tours for June in the hopes that we'll avoid the worst of monsoon and fire season, 2023 was a rainy one. Some tours were delayed or cut short due to heavy rain, and our October Flagstaff Festival of Science tour suffered from two vehicles stuck in the mud puddles that appeared on the road due to heavy rains throughout the previous night and into the morning.



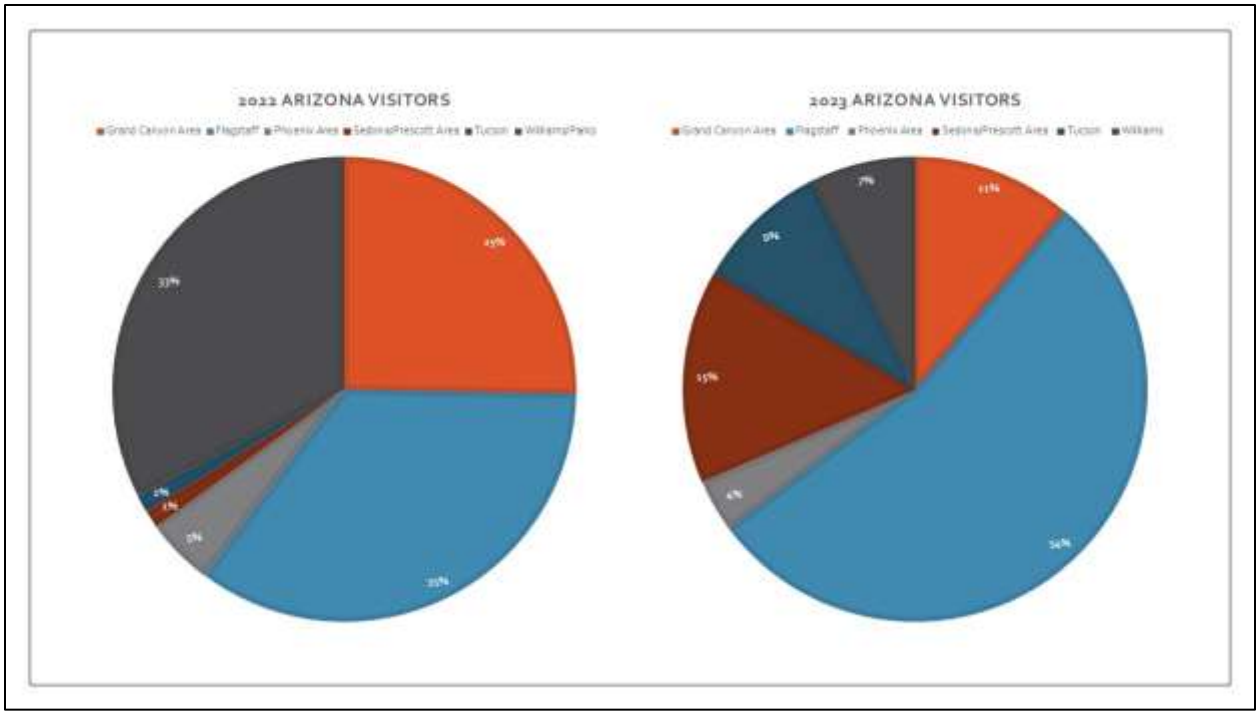
At the end of each tour, visitors were invited to complete a voluntary and anonymous survey to help us assess our tours. They were asked:

1) Where are you visiting from?
2) Why did you visit the site today?
3) Rate your interest in archaeology (1-5)
4) What was the most interesting thing you learned, saw, or did today?

And, for the 2023 season,

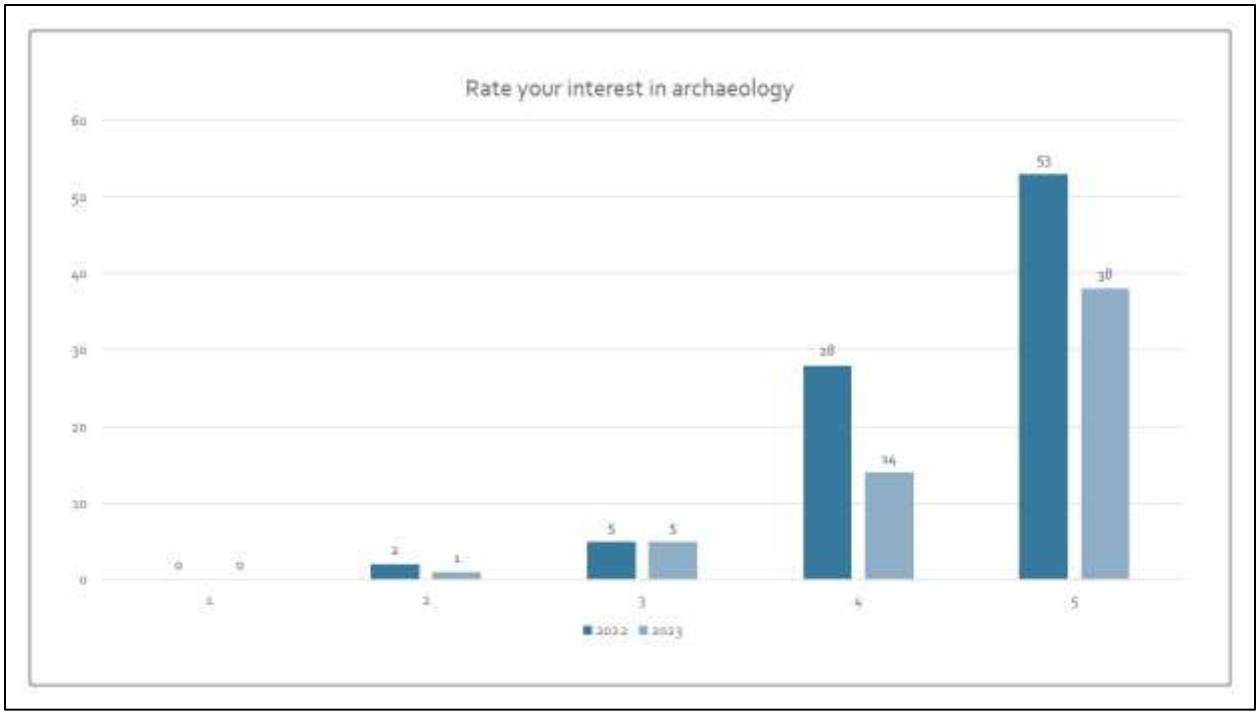
1) Do you have any suggestions for future tours?

Overall, we had a nearly 87% completion rate. Out of our 168 visitors, 146 filled out surveys. The information gathered from the surveys tells us a lot about who visited, why they visited, and what they learned.



The vast majority of visitors over both years were from nearby towns in Coconino County, most especially from Tusayan, Flagstaff, Williams, Grand Canyon Village, Parks, and Grand Canyon Junction. High numbers of visitors from the Grand Canyon area visited in 2022 (25%), likely due to the number of visitors from the Grand Canyon Historical Society and from Williams/Parks (33%), likely from the two Kaibab National Forest Service tours. The number of Flagstaff visitors was much higher in 2023 (54%), likely due to the tours organized through the Flagstaff Festival of Science, Girl Scouts, and Flagstaff National Monuments.

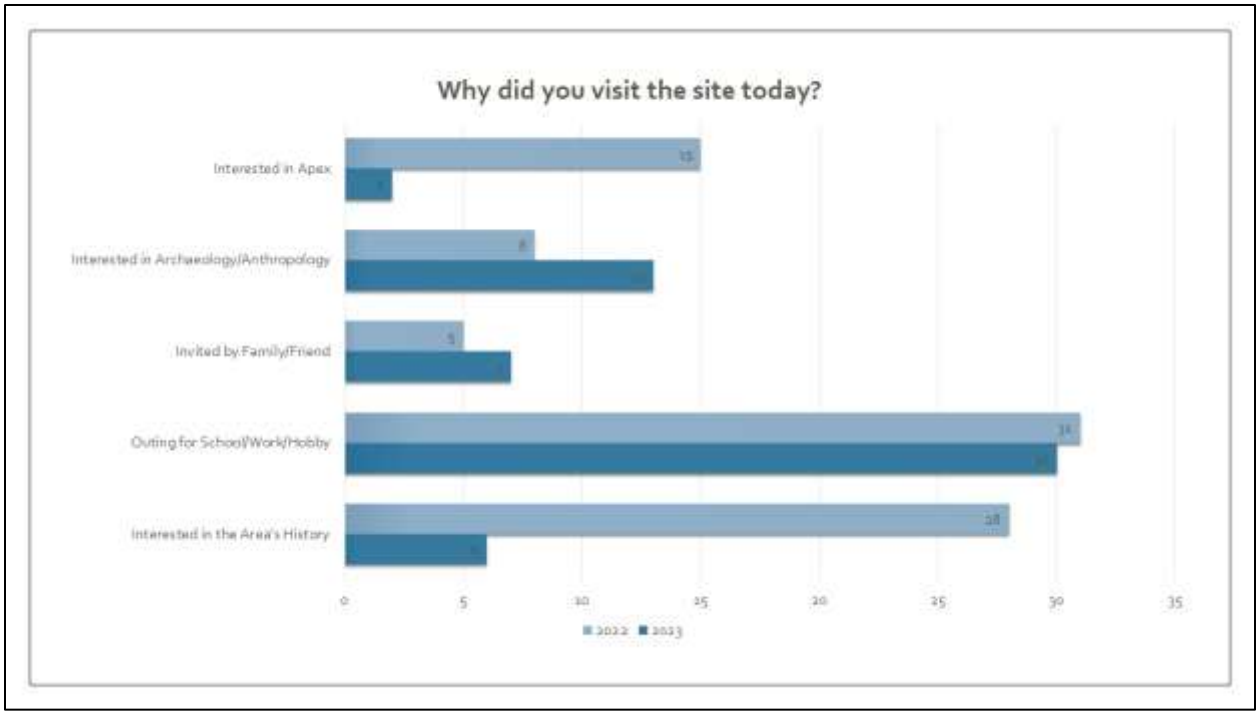
Tourists also visited from elsewhere in Arizona, including Tucson, the Phoenix area, and the Sedona area, much higher in 2023 due to the Sedona chapter of Questers who came to visit. We did get some tourists from outside the state, including one visitor each from Utah, Washington, Texas, Vermont, Maryland, North Carolina, and Oklahoma, and two visitors from New Mexico.



Unsurprisingly, people rated their interest in archaeology highly in both years. Most reported a 5 (60% and 66%) or 4 (32% and 24%) out of 5. Still, five people in both years ranked their interest as a 3, and 2 people in 2022 and 1 in 2023 only had an interest of 2. No one reported an interest level of 1 (Not at all interested).

For those with higher levels of interest in archaeology, being on an active archaeological site was especially enlightening. Visitors remarked that they liked seeing the excavations and learning why we were working where we were. Two people specifically commented that they didn't know how much information archaeologists could learn from excavating privies after seeing our unit in the possible schoolhouse outhouse.

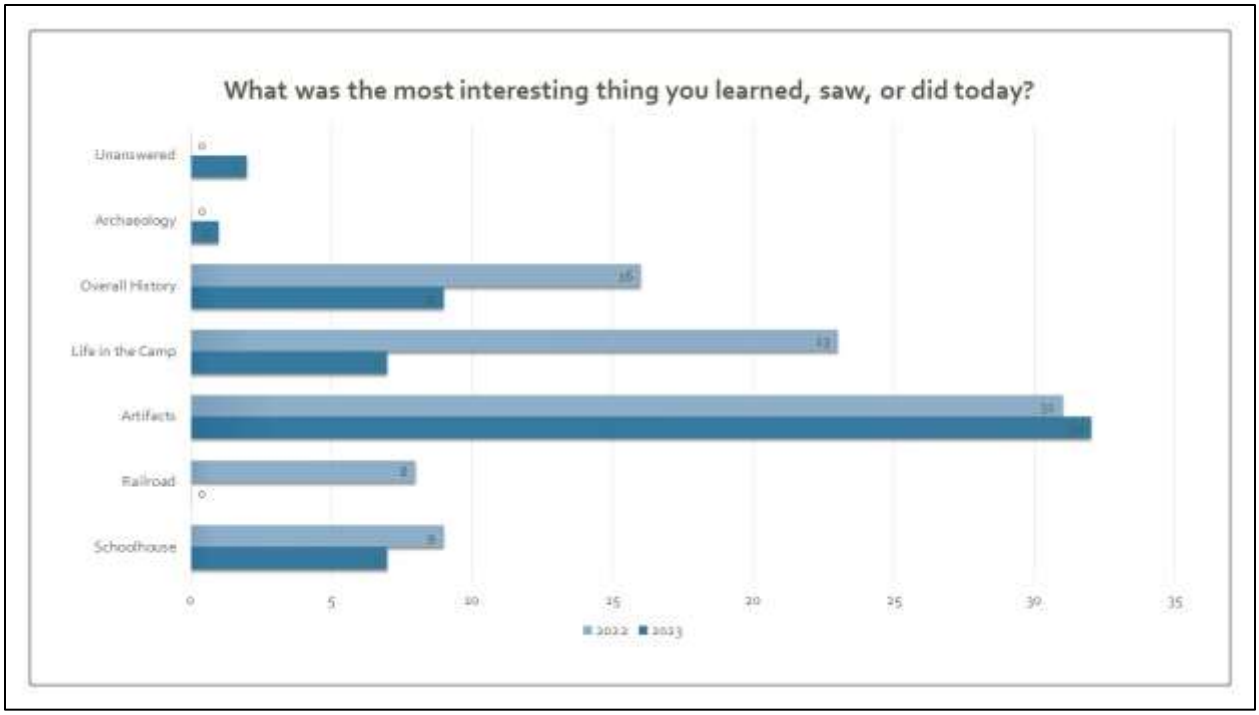
Still, even those with lower levels of interest in archaeology seemed to get something out of the tours. One survey explained: "I had very little curiosity in this field before. I feel very intrigued and inspired now." Another remarked that, "Before coming here, I've never thought much about archaeology or had much interest in it, but today really opened my eyes and I thought it was so cool!"



There were clear differences between the 2022 and 2023 survey answers to the question, "Why did you visit the site today", suggesting a difference in advertising success. In 2022, most people expressed some interest in the area's history (32%) or Apex, specifically (17%), as a motivating factor for coming on a tour. Due to the number of tours organized through the Grand Canyon Historical Society and Arizona Preservation Foundation that year, it is likely that a large number of our tourists were already interested in and familiar with the history and archaeology of the area. The two tours organized with the Kaibab National Forest, one tour with Arizona Site Stewards, and a visit from NAU's Grand Canyon Semester seems to account for the high number of people (35%) who mentioned some sort of school or work outing as their motivation.

The make-up of the visitors in 2023 skewed the visiting reasons much more towards noting a School, Work, or Hobby Outing as their purpose (52%) than other reasons. As before, the KNF and Arizona Site Stewards came to visit, but so did archaeologists from Flagstaff National Monuments, Sedona Questers in search of a project to fund, Girl Scouts earning their Archaeology badge, and Passport in Time volunteers working at the site. The company and organization planning the trip seemed paramount for their motivation in attending the tour than any general interest in the tour's subject. In 2023, visitors also mentioned an interest in the area's history (10%), Apex specifically (3%), and archaeology more broadly (15%).

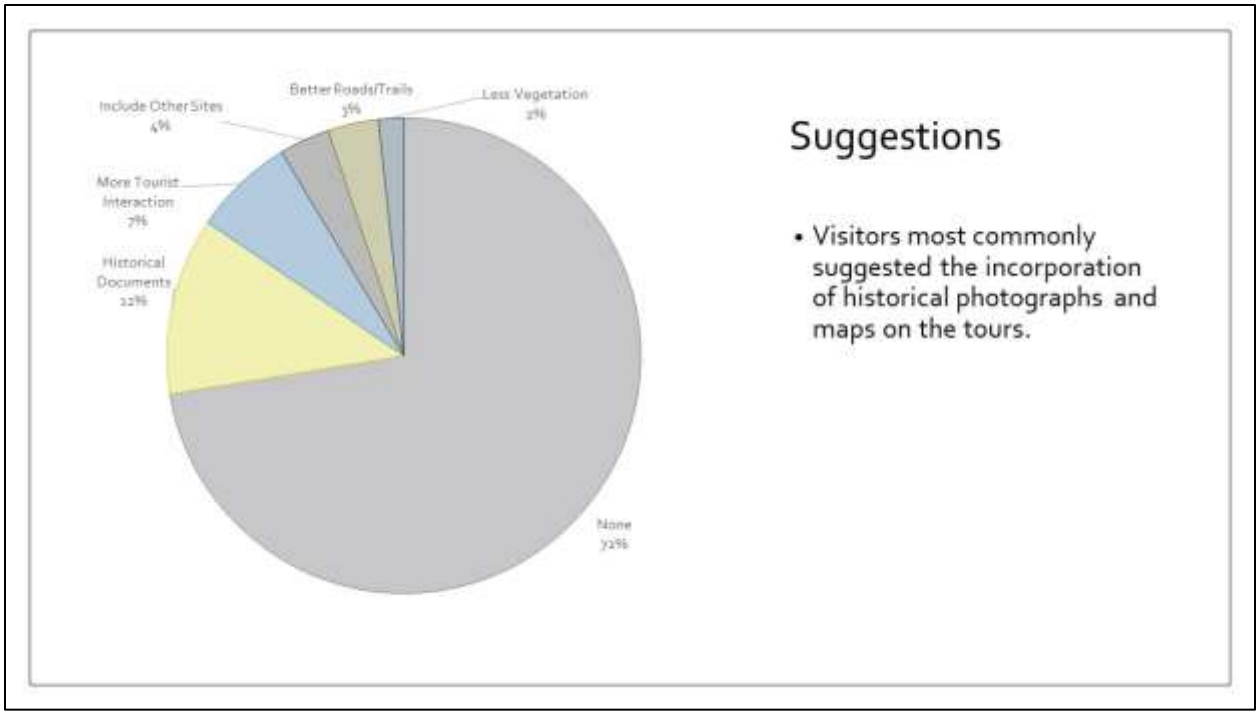
In both years, a few people attended tours because they were invited by family or friends (6% and 12%).



In both 2022 and 2023, more people described the artifacts as the favorite thing they saw or learned about during their tour, accounting for 35% of answers in 2022 and 55% of 2023 answers. One person explicitly wrote, “artifacts = fun”.

People also enjoyed learning about life in the camp (26% and 12%), the overall history of the area (18% and 16%), and the schoolhouse (10% and 12%) in fairly equal amounts across both years. Interestingly, 8 (9%) of the 2022 visitors enjoyed visiting the still-existing railroad grade most, but no one in 2023 mentioned it at all in their surveys, even though the tours both years stopped along the line and maintenance pit and in neither year was the railroad the focus of any of our archaeological research.

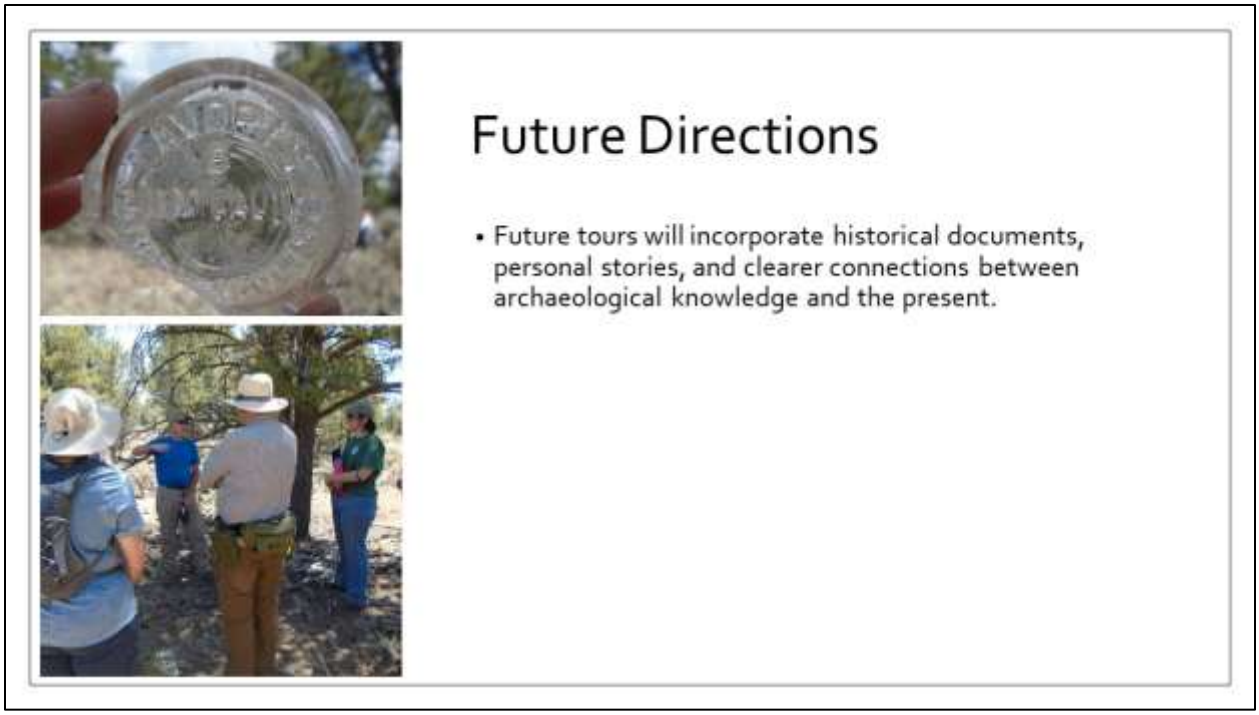
Many comments cited specific artifacts they had seen and held, such as toys, Norwegian sardine cans, Prince Albert tobacco tins, Orange Crush bottles, shaving cream tubes, a New Mexico license plate, radio parts, and a deodorant bottle. Several people even indicated they enjoyed things like the “can dumps”, “garbage”, “trash”, and “old, rusty things”, all of which have negative connotations, indicating that we successfully communicated the importance of even less-aesthetic parts of the archaeological past.



The newly added question requesting suggestions for future tour seasons produced interesting results. Most people answered this question with some variation of "None". Visitors commonly used words like "fun", "fantastic", "great,", "wonderful," "loved", "awesome," "excellent," "amazing," "enjoyed", and "very cool" to describe their experiences on the tours.

The most helpful suggestion came from 7 surveys who requested that we bring historical documents, such as maps and photographs, to show while at the site. This is something we would like to include, but historical documents for the site are scarce and we are still searching for them. The weather may also have been a contributing factor. Due to rain, on several tours, we handed out the brochures, which contain maps and historical images, at the end of the tour, rather than at the beginning. Four people requested more intimate tours, with smaller groups, more stories, and more hands-on interaction with the artifacts. Two wished the tour visited other sites in the area or discussed related sites during the tour. While we do not have time to arrange such tours within the confines of our current schedule, we understand peoples' interest in the surrounding area and Apex's connections across the landscape.

Less helpful suggestions included that we clear the sagebrush and juniper as the tourist was allergic to the vegetation, and that we purchase 4x4 vehicles for the dirt roads. If only we had such a budget!



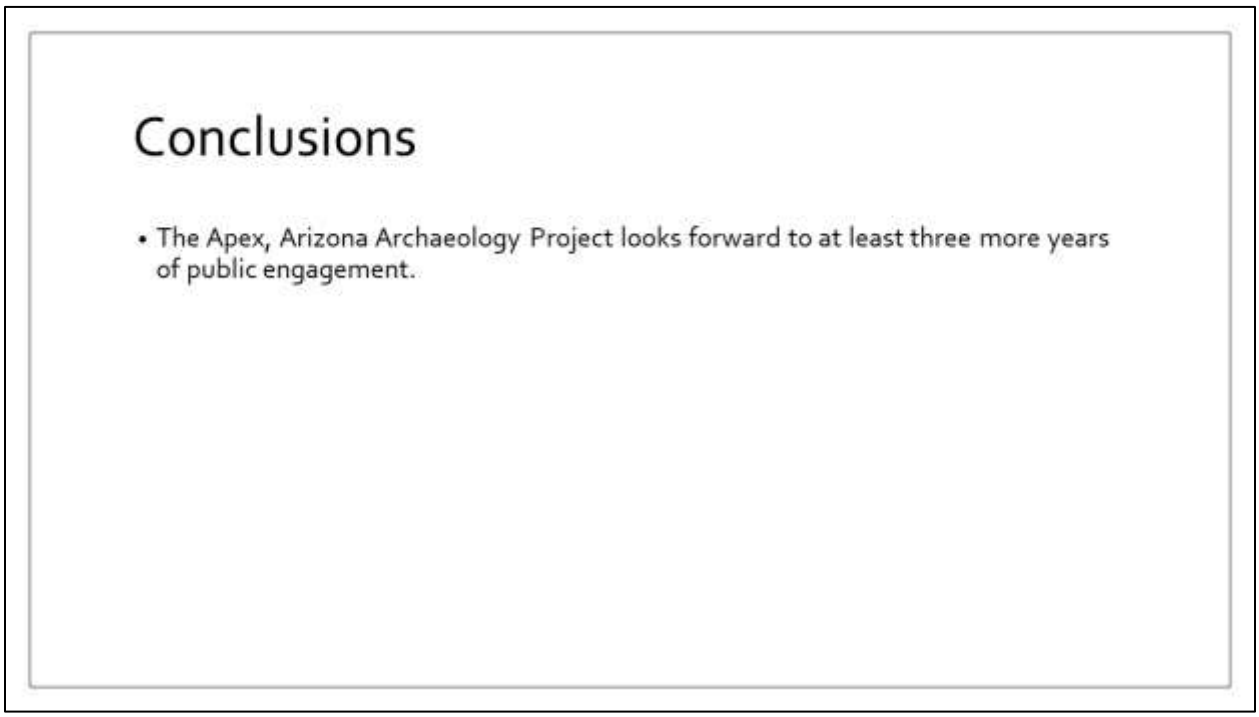
While the surveys help us understand who is visiting our site and why, we also use the comments and feedback to improve our tours. We ensure that popular stops, like the schoolhouse and railroad grade, remain part of the tour, highlight new artifacts and finds based on what people enjoyed, and can tailor new versions of our educational brochures based on what people want to learn about.

For example, knowing that visitors would like to see historical documents as much as we would like to share them, motivates us to make this a priority in preparing for the next field season. Photographs, stories, and maps help foster connections to the past, making it feel closer, more personal, and, perhaps, more important and worthy of preservation. This is especially true at our site, which is only around 100-years old, so many artifacts and brands are familiar to modern people. One visitor commented that they loved "seeing a log cabin syrup can that I remember seeing as a child." Another helped us identify a bottle base labeled "Lavoris" as an early mouthwash based on memories of her dentist father having the brand in his practice.

More personally, on one tour, it came to light that one of the visitors' grandfather was the Apex camp cook and that his mother, who was still alive in 2022, had attended the schoolhouse. He told stories of his uncle's birth in Williams and being brought to Apex as a newborn. His survey noted that his favorite part of the tour was seeing his "Grandfather's wood stove". Another visitor on the same tour said his favorite part was learning from "the guy whose mom lived here", and yet another was surprised that people who lived at Apex were still alive today.

One theme we could address more explicitly with visitors is the relevance of archaeology to the present day. While our educational brochures touch on this, several survey comments indicate that tourists enjoyed hearing about the connections between the past and present. One noted, "I learned that the settlers have about as much trash as we do and lots of waste", while another

enjoyed discussions “comparing seasonal work of the modern day to the lives of work town laborers in terms of mental health and culture.”



The Apex, Arizona Archaeology Project has three more years of collaborative work left on our Archaeological Resources Protection Act permit. This means we have three more years of student training, volunteer programming, and educational tours ahead of us. Our program considers public outreach as a central component of what we do. What is the use of archaeology if we aren’t including the most important stewards of history in what we do?

APPENDIX C: MADELEINE LEVESQUE'S 2024 NAU UNDERGRADUATE RESEARCH SYMPOSIUM POSTER

Notions of Health and Hygiene in the Depression-Era United States: Apex, Arizona

NAU NORTHERN ARIZONA UNIVERSITY
Department of Anthropology

Madeleine Levesque

NAU NORTHERN ARIZONA UNIVERSITY
Department of Anthropology

Abstract: The United States' views on health and hygiene have been developing for centuries, undergoing several major changes. At the turn of the 19th century and into the early-mid 1900s, new fields of health sciences emerged and beauty standards evolved, impacting American consumption and perception of toiletry items. Many items are now household staples, such as deodorant, toothpaste, laxatives, and topical cosmetics like moisturizers and makeup, while some are a bit outdated, such as Lysol as a feminine hygiene product. This culture of cleanliness was very pervasive as shifting notions of health, hygiene, and appearance reached the laborers and occupants of the Depression-era Saginaw and Manistee logging camp of Apex, Arizona, despite being largely isolated from major towns and cities. Based on the artifacts found on site in Apex, it is apparent that residents bought into emerging and popular ideas of health and hygiene, such as the unacceptability of body odor, irregular bowel movements, and unkempt appearances.

Digestive Health

Gastroenterology grew as a field during the 1930s and 1940s, and with this came increased public interest, and marketing towards the public, in the digestive system's inner workings. A major theme in gastroenterology included 'curing' various afflictions via purgation with a focus on constipation; constipation was seen as a uniquely 'American' disease that reflected sedentism, laziness, and an over-processed, over-indulgent diet and lifestyle (Whorton 1993). Purgation using laxatives emerged as a health fad to cleanse the bowels of excess or slow-moving bowel. Advertising posited that constipation and built-up fecal matter would poison the bloodstream, lead to body odor, and indicated poor health (Whorton 1993). It appears that residents of Apex bought into these ideas, as there were numerous laxative bottles found on-site, including pepsin syrup (pictured middle left), Charles H. Fletcher's Castoria Oil (pictured bottom left), and magnesium citrate/milk of magnesia (top left, image found on Ebay–depicts two possible embossments. The label is more clear here than what was found at Apex). Since there were several brands and formulas of laxatives found on site, it is likely that people had their 'laxative of choice' that was not being provided by the company store. This reflected the ubiquitousness of this health concern and fad.

Body Odor

By the Great Depression, Body odor was generally accepted as unhygienic. Products like mouthwash, flavored toothpaste, and deodorant were marketed en masse. Body odor was associated with poor hygiene because it implied bacterial growth—this reflects the growing acceptance of germ theory. By the 1920s, "halitosis," or bad breath, was invented as a medical condition and the cure, mouthwash, was marketed incredibly successfully (Clark 2015). A Lavoris mouthwash bottle as well as Pepsodent toothpaste (1915 packaging pictured middle right) were found on-site, both mint flavored. The mint flavor popular in oral hygiene products, and breezy, tingly sensation is due to menthol, which through the popularization of Listerine mouthwash (menthol and eucalyptus based), became associated with cleanliness (Pooley 2021). The milk glass container of antiperspirant deodorant, pictured bottom right, the "Mum" brand from Bristol-Myers, was found on-site. This was marketed towards women, as women's body odor was especially unseemly. It indicated being so unhygienic that one would be unable to form female friendships nor garner male attention ("Alleviating Body Odors"). Even though routine bathing (or really bathing at all) would have been rare at Apex due to lack of running water or showers, it appears people were still conscious of their body odor.

Feminine Hygiene

Chloride of lime lids, Old Dutch Cleanser cans, and multiple clorox bottles were found at Apex, which were likely used as disinfectants for community hygiene purposes to sanitize communal privies and kitchens. However, a separate shard from a smaller bottle of Lysol was found (pictured bottom right), indicating it had a purpose besides cleaning or community hygiene. Throughout the 20th century, Lysol concentrate was marketed towards women as a feminine hygiene product/vaginal douche to remove odor, as well as a contraceptive (spermicide) (Eveleth 2013). The shard found on-site (pictured right, the image below the bottle) has a label similar to the cursive label/watermark found on whole bottles in advertisements marketing lysol as a feminine douche. The glass bottle to the right is a full-sized version of a Lysol bottle found on Ebay whose watermark appears to be placed on the shoulder, which is where the shard appears to come from as well.

Body Hair Removal

Body hair removal was popularized for women in the 1920s with the era of flapper attire, where the legs and armpits would be exposed by short, sleeveless dresses ("Hair Removal"). It was also seen as masculine. Men's facial hair removal, however, was already part of basic hygiene by the early 1900s due to the trapping of lice, oil, dirt, odor, sweat, and bacteria in beards and moustaches ("Hair Removal"). A Gem "butterfly" style safety razor, patented in 1904, was found on-site (pictured bottom left) which could be used to shave at home, whereas straight razors were commonly used in barbershops ("Gillette U.S. Service Razor Set"). The shift from facial hair removal being a service to something accessible at home reflects the expectation that being clean-shaven/facial hair upkeep be part of basic at-home hygiene routines, an idea that was evidently adopted by Apex residents. The advertisement to the left reflects the idea that hair was a harborer of dreaded 'unpleasant odors,' now unacceptable and unhygienic.

Conclusions:

- By the time Apex was occupied, the association between health/hygiene and bacteria, body odors, and presentability had been established in mainstream American culture–occupants of Apex bought into these ideas, and seemed to follow and keep up with expectations of cleanliness.
- The fear of smelling bad, and the idea that the body's natural tendency is towards decay, bacteria, etc. was an effective marketing strategy for laxatives, toothpaste and mouthwash.
- There was a general acceptance that body odor is unpleasant, even offensive, and people naturally smell bad, which needs to be cosmetically altered.
- Despite the site being rural and isolated from major cities, and the fact that many laborers were Swedish immigrants, these emergent American trends of health and hygiene were so compelling that they kept up with them.

Acknowledgements: I would like to thank Dr. Emily Dale for being an amazing faculty mentor this year, for her support and encouragement, and for all of the opportunities to expand my knowledge and historical archaeology experience through this project. Thank you to everyone who participated in Dr. Dale's field school for all of the wonderful information and photos included in the databases. I am also thankful to Cheyenne Carpenter, the Interns to Scholars program, and the incredible undergraduate research program at NAU.

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Photos of Apex artifacts were taken by Apex, Arizona Archaeology Project personnel

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Lysol advertisement: https://antiquedandotes.blog/2019/06/26/lysol-a-contraceptive-horror-story/

Body hair advertisement: https://hellowlux.com/blogs/8-vintage-ads-that-show-what's-changed

Pepsodent packaging: https://www.madeinchicagomuseum.com/single-post/pepsodent

Magnesium citrate bottle: https://www.ebay.com/itm/2-Different-Embossed-Citrate-Of-Magnesia-Crown-Top-Medicine-Bottles-Clear-1920s/183758786347?utm_

Lysol bottle: https://i.ebayimg.com/images/g/HRAAAOSwGphfBVbn/s-l1600.webp

APPENDIX D: FLOTATION ANALYSIS

NAU 2023 Apex Field School Flotation and Pollen Analyses
Bruce G. Phillips
BGP Consulting LLC

Apex was a small logging community on the Kaibab National Forest; the site was occupied from 1929 to 1936. During the 2023 Northern Arizona University field school at Apex, a suspect privy (Privy 1) adjacent to the bunkhouse (Locus E) was excavated. The author assisted by collecting two sediment samples for pollen and macrobotanical (flotation) analyses. The samples represented individual dumping episodes, evidenced by charcoal/ash in discreet sedimentary deposits. Subsequently, the two samples were submitted to BGP Consulting for subsampling and then flotation and pollen processing and analyses. The prime analytical goal was to identify economic resources (e.g., plant food) used by the inhabitants of the bunkhouse; environmental information also was sought.

Located on the Colorado Plateau, the site is situated on two hilltops and flanking slopes, overlooking the former railroad spur line running through the center of the small valley; elevation ranges range from 6,580 to 6,620 feet above mean sea level. Located within the Rocky Mountain (Petran) Montane Conifer Forest (Pase and Brown 1994), native vegetation consists mostly of a ponderosa pine (*Pinus ponderosa*) canopy and grass-shrub understory; piñon pine (*Pinus monophyla*), juniper (*Juniperus* sp.), and sagebrush (*Artemisia* sp.) are commonly interspersed among the taller pines. At lower elevations to south and southwest, vegetation turns to Great Basin Conifer Woodland (Brown 1994), dominated by piñon and juniper. Scattered grasslands and parks are found in both communities.

Flotation

When charred, plant remains become inert and no longer subject to decay. Uncharred remains typically decay in soil within 200-300 years, depending on climate and edaphic conditions (Miksicek 1995; Schiffer 1987). Thus, charred remains in prehistoric context are expected to represent human activity rather than occurring naturally or through bioturbation. Charred remains are typically recovered by flotation: sediment samples are agitated in water, and the plant remains that float to the surface are collected, sorted, and analyzed. Charred seeds, maize cob fragments, and rare squash rinds reflect subsistence activities. Recovered charcoal could have been fuel, construction material, or possibly containers, such as baskets. A wide range of available plants were used in numerous ways and differential preservation reveals only part of the picture. As historic contexts in Arizona usually are less 200 years old, uncharred plant remains recovered by flotation also must be considered as potentially introduced by people, as well as intrusive animals.

Methods

Flotation samples were processed using a Flote-Tech flotation machine. The gravel portion of the sample was examined for artifacts and then discarded. During analysis, each dried light fraction was first passed through a series of geologic sieves with mesh sizes of 2, 1, and 0.5 mm. Such presorting produces subsamples with similar size particles, which are more effectively scanned. Each fraction was then sorted at 7 to 40X under a binocular dissecting microscope. Charred seeds were identified with the aid of modern comparative material and standard references (e.g., Martin and Barkley 1961). Typically, 20 pieces of wood charcoal are randomly picked from the 2 mm screen, snapped to expose a fresh cross-section, and identified using comparative material and references (Minnis 1987; Hoadley 1990). No samples were sufficient for full analysis. Instead, all pieces of wood large enough to manipulate were identified.

Seed density (the number of seeds per liter) and standardized richness (the number of taxa per liter) were calculated. Both measures are generally higher in thermal features and intensively used contexts, and lower in seasonal, less intensively used contexts (Miksicek 1987, 1995). These measures were used to examine the seasonality and permanence of occupation.

Then the relative degree of disturbance was calculated. Originally inspired by Kwiatkowski (1986) and augmented by Miksicek (1995), the disturbance index qualifies the integrity of a sample according to the number of animal pellets, insect parts, and uncarbonized remains (scale of 0-5 each). Disturbance indices tend to be higher in young, near-surface samples, such as the current assemblage, and lower in deeper, ancient samples, as uncharred plant remains decay with time (Miksicek 1995).

Finally, densities of individual taxa recovered in each sample were determined. Due to the small size of the assemblage, average density and ubiquity calculations were not warranted (Miksicek 1987).

Results

Common plant names are used throughout this chapter. Nomenclature follows Kearney and Peebles (1960) and Brown (1994). Two uncharred taxa and one charred taxon were identified in the flotation assemblage (Tables 1 and 2); no cultigens were found. FS 5 (1 liter) had a relatively low parts/liter index, possibly indicating generalized activity, such as swept trash. Sample size however, might have played a role in the low index. That is, considerably smaller FS 6 (0.3 liters) contained numerous pine needle fragments, potentially equaling a single leaf specimen and inflating the parts/liter index. Similarly, the number of taxa per liter in FS 5 was low (2, including unidentifiable seed remains) compared to FS 6 (6.7 taxa/liter). Disturbance indices were very high. Nearly all categories ranked as 5, and nearly all of both light fractions consisted of rootlets, other unidentifiable fibrous plant debris, and animal pellets. In prehistoric contexts, such high disturbance indicators typical suggest that a portion of the original assemblage has been lost to

formation processes. In the assemblage, however, uncharred remains could also be the result of human introduction, as plants would not have been buried long enough to decay.

Table 1. Taxa identified in flotation samples, Privy 1, NAU 2024 Apex field school.

Family, Genus, or Species	**Common Name**	**Seasonal Availability**
Non-wood		
Pinus monophylla	Piñon seed	Late summer-early fall
Pinus ponderosa	Pine needle fragment	Year-round
Wood		
Juniperus sp.	Juniper	Year-round

Table 2. Flotation data, Privy 1, NAU 2024 Apex field school.

FS	**5**		**6**	
Parts/liter	2.0		13.3	
Taxa/liter	2.0		6.7	
Disturbance Index	80.0		93.3	
Non-wood				
	Count	Parts/liter	Count	Parts/liter
Unidentifiable seed	5	5.0		
Unidentifiable seed fragment	(1)	1.0		
Piñon seed	1	1.0	3(1)	13.3
Pine needle fragment			20	66.7
Vesicular material	1	1.0		
Wood (count))				
Juniper	5			

() Charred specimens

Piñon and ponderosa pine remains generally reflected the surrounding pine forest. Juniper made up the small wood collection, all from FS 6. Juniper burns much cleaner and for longer than pine and may have been the preferred fuel wood on site. Vesicular material represented charred sap-like material exuded from soft tissue, such as monocot stalks, fruits, and other non-wood plant remains. The high number of seed fragments in FS 5 likely resulted from bioturbation. The single charred piñon seed was the mostly likely specimen to have been used by an Apex resident. While uncharred piñon seeds could have been brought in by rodents, the charred seed indicated some form of thermal preparation. The burned seed might have been discarded as trash.

Pollen

Pollen grains are male cells carrying genetic material necessary for reproduction, and range in size from about 8 µm to 120 µm (0.008 mm-0.12 mm). For pollination, pollen is carried by wind (anemophilous) and by animals (zoophilous). At any time, varying amounts of pollen are in the air (pollen rain). Pollen assemblages resulting from the pollen rain are expected to reflect surrounding plant communities. As pollen falls to the ground, it is incorporated into sediment. In a strict sense, most pollen recovered from unconsolidated sediment is not fossilized, but is nevertheless called fossil pollen. In cultural settings, pollen assemblages are affected by human activity, obscuring the natural pollen rain. Pollen is often found in contexts that would not happen naturally; in such cases, the pollen can be interpreted culturally. In a sense, fossil pollen grains are artifacts, and can therefore be used to examine certain aspects of behavior, such as subsistence.

Methods

Sediment samples were sent to the Paleoecology, Palynology, and Climate Change Laboratory at University of Colorado-Denver, for pollen extractions. Sample bag contents were mixed thoroughly, and 10-gram subsamples were taken. Approximately 19,666 grains of *Lycopodium* tracers were added to estimate pollen concentration. Hydrochloric acid was added to each sample to dissolve *Lycopodium* tablets and carbonates. After rinsing with deionized water, potassium hydroxide was added, and samples were heated in a hot water bath for 10 minutes to deflocculate consolidated clay and organics and to remove humic acids. To reduce the heavier matrix fraction, the material was then sieved through a 180 µm-mesh screen. Smaller sands and large silts were removed using a suspension and decant method. The sample was then treated with hydrofluoric acid to remove remaining silicates. An acetolysis mixture of acetic anhydride and sulfuric acid was added to the sample and placed in a hot water bath for eight minutes. The sample was then washed with glacial acetic acid. The remaining residue was washed with water and alcohol, stained with safranin, and suspended in glycerol.

At BGP Consulting, extracts were mounted on slides and examined at a viewing power of 400X on an Olympus BHTU compound microscope. Subsequent percentage calculations were based on 100+ and 200+ grain counts. Identifications were aided by BGP Consulting reference material and keys (Kapp et al. 2000; Moore et al. 1991). Each fossil pollen grain was identified to the generic level when possible. If a grain could not be differentiated from similar genera, it was identified only to the family level. Pollen grains that were broken, corroded, or deteriorated beyond recognition were assigned to the “degraded” category.

Pollen concentrations (grains/gram) were calculated with the following formula:

$$\text{Concentration} = \frac{\text{pollen grains counted}}{} \times \frac{\text{tracer concentration}}{}$$

tracers counted sample volume

Pollen concentration values are estimates of the quantity of fossil pollen preserved in each gram of sediment. In natural settings, these values can indicate sedimentation rates, pollen production and dispersion rates, and the effects of differential preservation. In cultural settings, concentrations can indicate the intensity of site and/or feature use. Because many factors can influence pollen concentrations, they must be interpreted with discretion. The figures are estimates; differences on an order of a magnitude or more are likely significant (Susan Smith, personal communication, 2016).

Degraded pollen assemblages are not uncommon in the Southwest (Hall 1981, 1985; Holloway 1981). Many factors cause pollen deterioration, and the process is not well understood. Mechanical factors can cause grains to be crushed or torn apart, whereas chemical agents can affect their structural integrity. Chief among chemical agents is the cycle of wetting and drying (Holloway 1989), which commonly affects open-air sites. Another factor is high heat, which can oxidize and destroy pollen grains. Also affecting the number and distribution of pollen types is the amount of sporopollenin in grains of different plants. Sporopollenin is a highly resistant organic compound that allows pollen to be preserved in sediments and other settings. Because Cheno-Ams and Asteraceae often have large amounts of the compound and hence preserve well, they are often over-represented in the pollen record. As mentioned above, degraded grains were tracked in the analysis.

Results

Nomenclature and plant ecology follow Kearney and Peebles (1960); plants are discussed using their common names, except for Cheno-Ams, and high- and low-spine Asteraceae. Other sources for flowering season are Gish (1989), Rea (1997), and Smith (1995). Twenty-three taxa were identified in pollen samples (Tables 3 and 4); no cultigens were found.

Table 3. Taxa identified in pollen samples, Privy 1, NAU 2024 Apex field school.

Scientific Name	**Common Name**	**Flowering Season**	**Pollination**
Cacti			
Platyopuntia	Prickly pear	Spring–early summer	Insect
Riparian			
Typha	Cattail	Summer	Wind
Trees			
Juniperus	Juniper	Late winter–early spring	Wind
Pinus monophylla-type	Piñon pine-type	Summer	Wind

Pinus ponderosa-type	Ponderosa pine	Late spring	Wind
Herbs and shrubs			
Artemisia	Sagebrush	Summer	Wind
Asteraceae, high-spine	Includes sunflower, seepwillow, desert broom	Spring–fall	Wind/insect
Asteraceae, low-spine	Includes bursage, ragweed	Summer–fall	Wind
Caryophyllaceae	Pink family	Spring	Insect
Cheno-Am	Includes goosefoot (*Chenopodium*), pigweed (*Amaranthus*), and others	Spring–fall	Wind/insect
Ephedra	Mormon tea	Spring	Wind
Euphorbia	Spurge	Spring–fall	Insect
cf. Fabaceae	Resembles members of the Pea family	Spring–fall	Insect
Liliaceae	Lily family	Spring	Insect
Poaceae	Grass family	Spring–fall	Wind
Rhamnaceae	Buckthorn family	Spring	Insect
Sarcobatus	Greasewood	Spring	Wind
Sphaeralcea-type	Globemallow	Spring–fall	Insect

Table 4. Pollen data, Privy 1, NAU 2024 Apex field school.

FS	**5**		**6**	
Sum	105		201	
Concentration (grains/gram)	33,831		129,524	
Types/sample	12		14	
	Count	%	Count	%
Degraded	13	12.4	8	4.0
Platyopuntia			1	0.5
Typha	1	1.0		
Juniperus	12	11.4	15	7.5
Pinus monophylla-type	22	21.0	70	34.8
Pinus ponderosa-type	12	11.4	47	23.4
Asteraceae, high-spine	3	2.9	1	0.5
Asteraceae, low-spine	16	15.2	21	10.4
Caryophylaceae			1	0.5
Cheno-Am	10	9.5	11	5.5
Ephedra	3	2.9		
Euphorbia	1	1.0		
cf. Fabaceae	2	1.9	5	2.5
Liliaceae			1	0.5

Poaceae	9	8.6	15	7.5
Rhamnaceae			1	0.5
Sarcobatus	1	1.0	3	1.5
Sphaeralcea-type			1	0.5

Measures of productivity (number of samples with sufficient amounts of pollen for analysis), pollen concentration, percentage of degraded grains, and the numbers of pollen types per sample reflect the integrity of the data set and validity of interpretations. FS 5 was sufficiently preserved for a 100+ grain counts and FS 6 for a 200+ grain count. FS 6 had a greater pollen concentration, higher number of types, and lower proportion of degraded grains than FS 5, indicating better overall preservation (Bryant and Hall 1993). These measures in both samples, however, were well above thresholds used to determine data reliability. That is, samples containing fewer than 2,000 grains/gram, high percentages of degraded grains (>40%), and few types per sample (four or fewer) to be poorly preserved and that data do not accurately reflect the original pollen assemblage (Bryant and Hall 1993; Hall 1981). Both Apex samples are considered good representations of the past environment.

Piñon-type pollen dominated both assemblages; ponderosa pine-type and low-spine Asteraceae were subdominant. The higher combined pine frequencies in FS 6 suggested deposition in the early to middle summer, when the conifers typically flower, though the difference was subtle. Collectively, the assemblage generally reflected mixed pine forest with an understory of bursage and various grasses, herbs, and shrubs. Conspicuously absent was sagebrush pollen. It is possible that Apex residents removed the large shrubs while landscaping and maintaining grounds. Future analysis will specifically look to identify *Artemisia* pollen. Cattail (*Typha*) pollen in FS 5 might have come from drinking water consumed by sight residents or blown in from a nearby perennial stock tank. While the lone prickly pear grain could have originated from a residual flower on fruit plucked by a site resident, the cactus may have simply been growing in the vicinity of the privy and was deposited naturally.

Conclusions

In summary, two paired flotation and pollen samples were analyzed. Both flotation samples contained uncharred piñon seeds; single charred piñon seed may have been used by site residents. Other uncharred remains included pine needle fragments and unidentifiable seed and seed fragments. Juniper was the only charred wood identified. High disturbance indices showed that the feature was heavily impacted by bioturbation. Both pollen samples were viable for analysis, though FS 6 was better preserved. Both samples generally reflected a mixed pine forest, with a bursage and grass understory. Lacking were sagebrush pollen grains. As the large shrub proliferates on the site today, it is possible that residents had once remove brush from the site and sagebrush has since become reestablished. A prickly pear grain might have come from fruits used by residents, but

more likely was incidental. No evidence of cultivated or imported plant foods were identified in either assemblage.

The current archaeobotanical assemblage includes the second Apex flotation and first pollen datasets. Despite lacking clear evidence of subsistence activities, the assemblage provides foundational empirical data to build on. In particular, issues of flotation sample size aside, the vast differences in part/liter and the types of remains with in each sample represent individual dumping episodes, each potentially reflecting differing site activities. Within pollen samples, variable pollen preservation and differences in pine frequencies further indicated discreet dumping episodes rather than general site fill. With further excavations and analysis, a larger sitewide dataset will smooth anomalous spikes, like the high pine needle fragments in the small FS 6 sample; more pollen data will make subtle differences, such as pine blooms, more apparent. Future research can include a site plant inventory and limited plant specimen collection and collection surface pollen control samples, further bolstering the empirical dataset.

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APPENDIX E: 2024 EDUCATIONAL BROCHURES

Born in 1900 and reborn in 1989

Transporting people from Williams to Grand Canyon National Park

The Grand Canyon Railway was not simply a mode of travel for tourists to the Grand Canyon, but was also an expansive center of a burgeoning community of all different kinds of people and industries.

Our Supporters:

NAU Northern Arizona University Department of Anthropology

Forest Service U.S. Department of Agriculture

Northern Arizona University Department of Anthropology and the Kaibab National Forest

This project was made possible with funding by the Arizona Humanities

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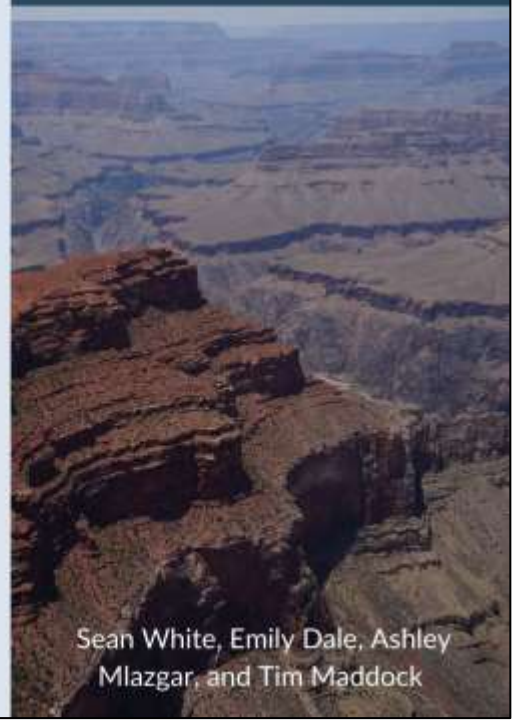
References:

Al Richmond Cowboys, Miners, Presidents & Kings : the Story of the Grand Canyon Railway.

Pat Stein Logging Railroads of the Coconino and Kaibab National Forests

Archaeology on the Grand Canyon Railway

Apex, Arizona Archaeology Field School



Sean White, Emily Dale, Ashley Mlazgar, and Tim Maddock

History of the Railroad

The 64-mile long Grand Canyon Railway was originally conceived in 1893 by Bucky O'Neil, who planned to use the line to transport the lucrative copper ore found in the region. Finally completed in 1901, the railway served the surrounding mining, ranching, and logging communities by moving products out and goods in.

The railway also brought thousands of tourists from Williams to the Grand Canyon until the line was discontinued and dismantled in 1968.

Railroad grade and axe head (inset) at Apex. Photos by Emily Dale.

Rose B. Wilson's 1934 Apex class in front of the schoolhouse. Photo from Al Richmond.

Apex, Arizona

Founded by the Saginaw and Manistee Lumber Company in 1928, Apex was home to their mostly Scandinavian lumberjacks and their families until 1936. The camp contained worker dorms, family houses, and a schoolhouse. Railroad spurs and maintenance buildings helped keep the timber moving.

Mexican and Native American employees of the Grand Canyon Railway worked at the nearby Apex siding. Their children attended the Apex school, one of the few unsegregated schools in Arizona at the time.

Archaeology at Apex

The collaborative Northern Arizona University and Kaibab National Forests Apex Archaeology Project will survey, map, photograph, and excavate the building foundations, trash scatters, and artifacts still at the site to answer questions, such as:

- What was life like at an Arizona company town during the Great Depression?
- What was the relationship between the Scandinavian lumber workers and the Native and Mexican railroad workers?
- What evidence of the lumber industry is at the camp and along the logging spurs?

The Future of the Railroad

Although the heyday of the Grand Canyon Railway is in the past, this cornerstone of the region continues to serve adventurous travelers who choose leave their vehicles, for the comfort of its cars and easy access to the natural wonder of the Grand Canyon.

What is Historical Archaeology?

Historical Archaeology is the archaeology of time periods for which we have written records.

Since historical documents are often biased, archaeological materials can provide voices for those mis-, under-, or un-represented in writing, such as Native Americans, women and children, or lower classes.

The Apex "Jack-O'-Cantern", a modified metal can potentially used as a Halloween decoration.

Our Supporters:

NAU NORTHERN ARIZONA UNIVERSITY
Department of Anthropology

FOREST SERVICE US DEPARTMENT OF AGRICULTURE

Northern Arizona University Department of Anthropology and the Kaibab National Forest

This project was made possible with funding by the Arizona Humanities

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Photos by Emily Dale, Garrett Hoskinson, and Travis Cumming.

Historical Archaeology in Arizona

Apex, Arizona Archaeology Field School

Sean White , Emily Dale, Ashley Mlazgar, and Charlie Webber, Tim Maddock

What do Archaeologists Study?

Archaeologists study people, through the material culture they leave behind, including pottery, bottles, cans and even buildings.

Numerous federal, state, and local law protect cultural resources more than 50 years old. Archaeologists study Arizona's more recent history of the 1800s and 1900s.

A toy horse found in one of the family housing areas at Apex.

Arizona's Kaibab National Forest holds the archaeological remains of 100-year old mining camps and 1000-year old pueblos!

How do Archaeologists Gather Data?

Survey

Archaeologists systematically walk the land, or survey, to catalog artifacts on the surface. This is the most common method archaeologists use.

Excavation

Archaeologists systematically remove dirt from a site, or excavate, in order to study subsurface materials.

Historical Research

Historical archaeologists also consult historical documents like censuses, newspapers, diaries, and photographs to get first-hand accounts of life in the past.

If you see a possible artifact on the ground, please leave it where you found it, even if you are unsure if it is an artifact.

If you think you have found an archaeological site or important artifact, leave it be, and contact the local archaeologists.

Get Involved!

You can join the Arizona Site Steward program or sign up for a Passport in Time project to help preserve Arizona's heritage and history.