Idaho State University

Field Excavation Manual

Dr. Charles A. Speer

Table of Contents

Introduction

The purpose of this manual is to provide guidance on the excavation of archaeological sites by Idaho State University Archaeology Field School. All archaeological activities undertaken by staff, students, and volunteers should be done in a safe manner. The Appendix provides a summary of safety issues that individuals involved in archaeological field projects should be aware of and practice at all times.

All archaeological project activities are to be recorded on a set of forms included in this manual (Appendix). Dr. Speer will ensure along with crew chiefs for all archaeological investigations that the appropriate forms are completed for a project. The number and type of forms for a particular project are determined by the extent and content of a site and the intensity of the archaeological investigation.

Archaeological projects can be classified into the following nine types:

(A) Reconnaissance
(B) Sample Survey
(C) Full-coverage Survey
(D) Site Mapping
(E) Test Excavations
(G) Data Recovery Excavations
(H) Monitoring
(I) Rock Art Recording
(J) Burial Discovery

A narrative of the activities undertaken for each day should be written in your field journal. ***Photograph Logs*** should be used to record the context and setting of the project. This manual focuses on Test Excavations, Data Recovery, and Burial Discoveries.

Site Grid System

The site grid system is the means by which the location of all excavations and discoveries are recorded at an archaeological site. Typically, a site grid system is established using north-south and east-west baselines from a site datum, from which all provenience measurements are made in the metric system. Stakes are then set into the ground at 20-m intervals in both directions along these baselines. Distances along both baselines (called northings and eastings) provide x and y coordinates for the site grid. All excavation units that are established at the site are placed within the site grid system. For example, an excavation unit could be N 80 E 100, which is the equivalent of 80 m north and 100 m east of the site datum. The site grid system can be established using different types of surveying equipment from simple (compass and tapes) to complex (Electronic Distance Measuring Devices/Total Station). The northing for a site grid does not have to be true north, although the grid is easier to use by the excavators if it is oriented in a general north-south direction. Size of excavation units within the grid system will vary according to the site type and purpose of the unit (e.g., feature excavation versus test unit).

Excavation Techniques

There are a variety of excavation techniques, methods, and tools that can be used to investigate an archaeological site. The Appendix provides a list of tools and equipment that will be needed for an excavation project. Excavation techniques include *backhoe trenches, test units, excavation units, hand trenches,* and *surface collection units*. The following describes each technique and how it is recorded.

Excavation Provenience Control List

All excavation locations undertaken at a site must be tracked through a systematic recording system. This process involves assigning a unique number to each excavation unit, whether it is a linear trench or a square hole, and recording that number on the log form. All provenience control numbers should begin with the abbreviation for the type of unit: backhoe trench (BHT), test unit (TU), excavation unit (EU), hand trench (HT), and surface collection unit (SCU).

Backhoe Trenches

Backhoe trenches are an exploratory technique used to locate the presence, distribution, and depth of buried features at a site. They are usually used as a part of a Testing Program. Trenches are typically spaced at intervals of 10 m, 20 m, 40 m, or 50 m depending on the characteristics of the site and the project research design. Some excavations have used 5-m trench intervals, but that strategy is not recommended because horizontal stripping (see below) between trenches at 10-m intervals is more productive and less destructive. In areas where buried cultural features are located during testing, additional trenches may be excavated between the original trenches to increase the exposure of features. No trenches are to be dug deeper than 5 feet (1.52 m), or deeper than 3 feet (91 cm) in unconsolidated sand, according to Occupational Safety and Hazard Administration (OSHA) regulations. If it is necessary to go more than 1.52 m or 91 cm in depth, depending on the substrate, then the trenches must be stepped back (terraced) at a ratio defined safe by OSHA. The Project Director will determine when stepping back or shoring trenches is necessary. All trenches also must have sloped ends to provide ease of access and egress. Use caution at all times when inside a trench and if the side-walls appear to be unstable, inform the Crew Chief or Project Director, as shoring may become necessary before they can be re-entered. Do not use trenches for depositing trash; instead use a designated trash bag.

Backhoe Trenches (BHT), similar to other excavation units, are numbered sequentially within a site. To provide ease of recording, trenches are typically placed along the site's grid lines and may be oriented in a north-south or east-west direction. North-south trenches are preferred because the side-walls of east-west trenches can be difficult to see due to shadows. When testing for linear features, it may be more effective to place trenches at an angle perpendicular to the possible or known location of the feature to provide a cross-section of it. All trenches should have a datum established at the southern end by driving a wooden stake or rebar into the ground. That datum should be marked with the number of the trench and its grid provenience. Trench numbers should be assigned a unique number in sequence for a site and listed on the Excavation Provenience Control List.

Once the trenches are excavated, the side-walls are examined for features and artifacts. In most cases, it will be necessary to clean the trench side-walls with trowels and flat shovels to smooth their appearance (Figure 1). The entire length of the trench should have its side-walls cleaned. Viewing trench side-walls is best done in the morning when the light is not as intense, and spraying the trench side-walls with water from a hand-held spray bottle can sometimes improve the discovery of features, especially for trenches which have been open for a while and their sides have become

baked from the sun. Sometimes it is best to let the trench side-walls dry a little once opened to better reveal the stratigraphy within the trench.

After the trench side-walls have been cleaned, they should be examined for the presence of features and stratigraphic data. Features that are discovered can have their edges outlined slightly with the trowel to better mark their shape and extent. Those features should then be tagged with a nail and flagging tape that has been marked with a feature number assigned in sequence unique to the site

Figure 1. Cleaning the Side-walls of a Backhoe Trench with Shovels.

and recorded on the Feature No. Master List. Do not duplicate feature numbers. Features that are later determined to not be cultural in origin can have their numbers voided; do not reuse those feature numbers. The provenience of features found within a trench should be measured from the trench datum in meters.

Trench side-walls which contain features or artifact clusters should be profiled using graph paper. Trench side-walls which do not contain features or artifacts are considered sterile and do not have to be profiled, unless they contain meaningful stratigraphy that should be recorded. The Crew Chief or Project Director will determine if a trench side-wall profile is appropriate. Draw profiles of both side-walls of the trench if they contain features, even if they are the same feature cut by the trench, since this information will guide further excavation strategies for those features. Collect only diagnostic artifacts from a trench wall, or those that have fallen from the wall, and bag them according to the instructions for bagging artifacts included in this manual. Those bags must then be recorded on the Master bag/Specimen List. The trench number for collected artifacts is given only when collecting from a backhoe trench side-walls or backdirt, not when excavating other units placed over the features found in the trench side-walls (those units will have their own provenience control numbers).

Horizontal Stripping

Horizontal stripping may be done by a backhoe with a flat-edged stripping bucket, or by hand using shovels. This excavation technique is often undertaken between trenches that contain features to further expose areas where features are anticipated to be present, with far less damage done to the features compared to backhoe trenches. Horizontal stripping can also be done to identify the outlines of masonry walls, but do not remove *in situ* masonry or adobe wall outlines with a backhoe. Stripping is typically done with backhoes to the level or depth at which features appear in the backhoe trenches; this technique is called “removing the overburden,” which is usually considered free of intact features due to geological and/or cultural disturbance (Figure 2).

When determining where to place backhoe overburden materials, which can be quite sizable in volume for some sites, a convenient location that will not be excavated should be considered so that the dirt does not have to be moved again. In some cases where the site excavation area is restricted in space, moving the backhoe overburden materials once or even twice may not be avoidable. Consider this possibility when planning backhoe stripping. All mechanical stripping should be monitored by an archaeologist to assist the backhoe operator in stopping the machine if something is found and the desired depth is achieved.

Shovels are used for stripping when there is a limited amount of overburden present. Once the upper portions of features are exposed during stripping, their outlines should be marked with white or some other bright-colored spray paint and then tagged in their center with nails and flagging tape, or pin flags, marked with their assigned feature numbers. Another method of marking the feature outlines is to fold short strips of flagging tape and pin them to the perimeter of the feature with small nails.

Figure 2. Stripping the Overburden at an Archaeological Site with a Backhoe Stripping Bucket.

Test Units and Excavation Units

Excavating controlled units at an archaeological site is done for three purposes: (1) to serve as exploratory techniques where no features are visible on the surface and backhoe trenches are considered too destructive or costly (called Test Units - **TU**); (2) to expose features so their shape, size, and contents can be recorded in detail (called Excavation Units - **XU**); and (3) to expose geological or cultural stratigraphy to document site formation processes (called Stratigraphy Units- **SU**). Excavation units are generally 1 x 1 m, or 1 x 2 m, or 2 x 2 m in size depending on the nature of the deposits and size of the features, and are pre-determined by the research design or by field decisions made by the Project Director. Square and rectangular units can be established using the three nail technique involving two metric tapes and the right angle hypotenuse for the particular unit size desired (e.g., 1 x 1 m = 1.41 m; 1 x 2 m = 2.24 m; 2 x 2 m = 2.83 m) (Table 1).

Area Size (m)	Hypothenuse (m)
1 x 1	1.414
1 x 2	2.236
1 x 3	3.163
2 x 2	2.828
2 x 3	3.606
2 x 4	4.47
3 x 3	4.242
4 x 4	5.656
5 x 5	7.071
5 x 10	11.18
10 x 10	14.142
15 x 15	21.213
20 x 20	28.284

Table 1. Unit area size and hypothenuse in meters.

For example, from the southwest corner datum measure a north-south line 1 m from the datum and place a nail in this location (use a compass to determine north is a grind line has not been established); this establishes the northwest corner of a 1 x 1 m unit. Then measure a line to the east off of the northwest nail to another spot while having another tape measure the hypothenuse (1.414 m) at a 45˚ angle from the southwest corner datum to that spot; the end of the two tapes meet at the northeast corner of the unit. Place a nail in that corner. Then measure 1 m south of the northeast corner nail while having the other tape measure the hypothenuse (1.414) at a 45˚ angle from the northwest corner nail to the southeast corner. Place a nail at that spot. The 1 x 1m unit should then be square with evenly measured sides of 1 m each (Figure 3).

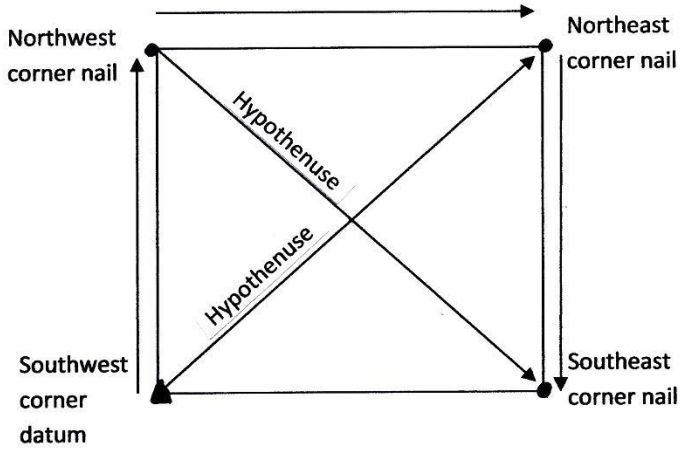


Figure 3. Laying out a unit using three nails and hypothenuse.

Test Units and Excavations Units are always screened (Figure 4). Stratigraphy Units usually are not screened, but this will depend on the site and context.

Figure 4. Excavating and screening a 1 x 1 m Test Unit with the four corners of the unit staked.

All three types of controlled excavations are given Excavation Provenience Control numbers which are assigned in sequence, are unique to the site, and are recorded. These units are

typically excavated in 10-cm or 20-cm levels, or in natural layers when present, depending on the research design and field decisions made by the Project Director. It is important to maintain straight and clean side-walls within these units, and to have flat-level bottoms when not excavating in natural layers, since artifact densities and other quantified measures are calculated using these measured units. Units with straight side-walls have a professional appearance and provide even surfaces for accurate profile drawings.

After an excavation control unit is completed within a feature (e.g., the bottom the feature or a floor is found, a pre-determined depth has been reached, or there are no more cultural materials present), the Project Director will determine if further excavation is appropriate depending on the productivity and research potential of the feature. This determination will depend on whether or not there is a floor assemblage, if the entire morphology of the feature is desired, if the feature contains informative secondary trash fill, or if additional artifacts or other samples are to be collected from the feature. The excavation unit may be expanded in size, additional units may be excavated, or the entire feature may be excavated as one unit. Test units are typically dug until there are no more cultural materials found in the screen and, therefore, the unit is considered "sterile." Similar to backhoe trenches, test units and excavation units should not be excavated any deeper than 1.52 m due to OSHA regulations. If additional depth is required, the upper portion of the unit must be "stepped back" as described for backhoe trenches.

Hand Trenches

Another exploratory technique is the excavation of small hand-dug trenches (**HT**). This technique is used when full-sized units are not necessary or desired. Hand dug trenches can be any size in length and width, but are often small (e.g., no more than 50 cm in width) in order to control the amount of time to excavate them, or to minimize the potential damage to a feature that is difficult to see or define. Hand trenches that are dug outside a controlled excavation unit also should be assigned Excavation Provenience Control numbers that are unique to the site, in sequence, and are recorded. Hand trenches can be excavated within other excavation units or within features and their appropriate use will be determined by the Project Director; those hand dug trenches do not need their own provenience number. Recording the exact size and depth of a hand trench is important if its artifact density is to be measured during analysis.

Surface Collection Units

At some archaeological sites, diagnostic or otherwise informative artifacts will be located on the surface and will merit collection for analysis in the laboratory. If located outside an established

excavation unit, the provenience of a surface collection unit (**SCU**) can be the site grid provenience (northing and easting coordinates). Another way to determine provenience is to use the nearest excavation unit datum. A third approach is to record the center, or center and perimeter, with UTM (Universal Transverse Mercator Coordinate System) measurements. Keep in mind that UTM locations have a margin of error of as many as 30 cm or more depending on the GPS (Global Positioning System) equipment, so if more accurate locations are needed record the location in relationship to an established datum.

Stratigraphy

The stratigraphy of a test unit or excavation unit, as well as of a feature, is an important part of the data collected from an archaeological site. Stratigraphic layers may be geological or cultural in origin, or both, and should be recorded in detail whenever possible. Understanding site formation processes helps immensely in interpreting the human behavior that occurred at a site. Stratigraphic data can be used to assign relative dates to features and to assist in identifying associated features. Stratigraphic data can be retrieved from both natural and cultural contexts.

Natural Contexts

Soil and sediment deposits should be described in detail. Four characteristics of sediments can be described by the excavator: (1) *texture*, (2) *consistency*, (3) *structure*, and (4) *color*. It is also important to make observations about inclusions of smaller or larger materials, of intrusions of roots and rodent burrows, mottling of deposits, and the presence of calcium carbonate deposits and/or charcoal.

Texture consists of the size of the particles that make up a specific deposit. Common texture terms are (from large to small in size, respectively): *boulder, cobble, pebble, gravel* (75 to 2 mm), *sand* (2 to .05 mm), *silt* (.05 to .002 mm), and *clay* (.002 to .001 mm). Soil texture is typically defined as the varying amounts of sand, silt, and clay in a deposit. Another texture is called *loam*, but some geologists argue that identifying loam requires a particle-size analysis(Figure 5). A handy guide for determining soil texture is to take approximately 25 g of soil in the palm of the hand, add a drop of water, and knead the soil to break down all aggregates until it feels like putty. If the soil does not remain in a ball when squeezed then it likely is sand. If the soil maintains cohesiveness under pressure, then gently roll the sample into a ribbon of uniform thickness and width; extend the ribbon over the forefinger and allow it to break on its own weight. If the soil makes a weak ribbon less than 2.5 cm in length, then is it probably sandy silt; if the soil makes a medium ribbon 2.5 to 5 cm long,

then it probably is silt; and if the soil makes a strong ribbon 5 cm or longer before breaking, it is most likely silty clay or clay.

Consistency describes the hardness of a deposit. It is determined by how difficult it is to break apart pieces of a dry deposit. Different soil consistencies range from loose to extremely hard. Loose soil is non-coherent, soft soil breaks easily to a single grain in the hand, slightly hard soil can be crushed with gentle pressure between the thumb and finger, hard soil is difficult to break by the thumb and finger, and extremely hard soil cannot be broken by pressure from both hands.

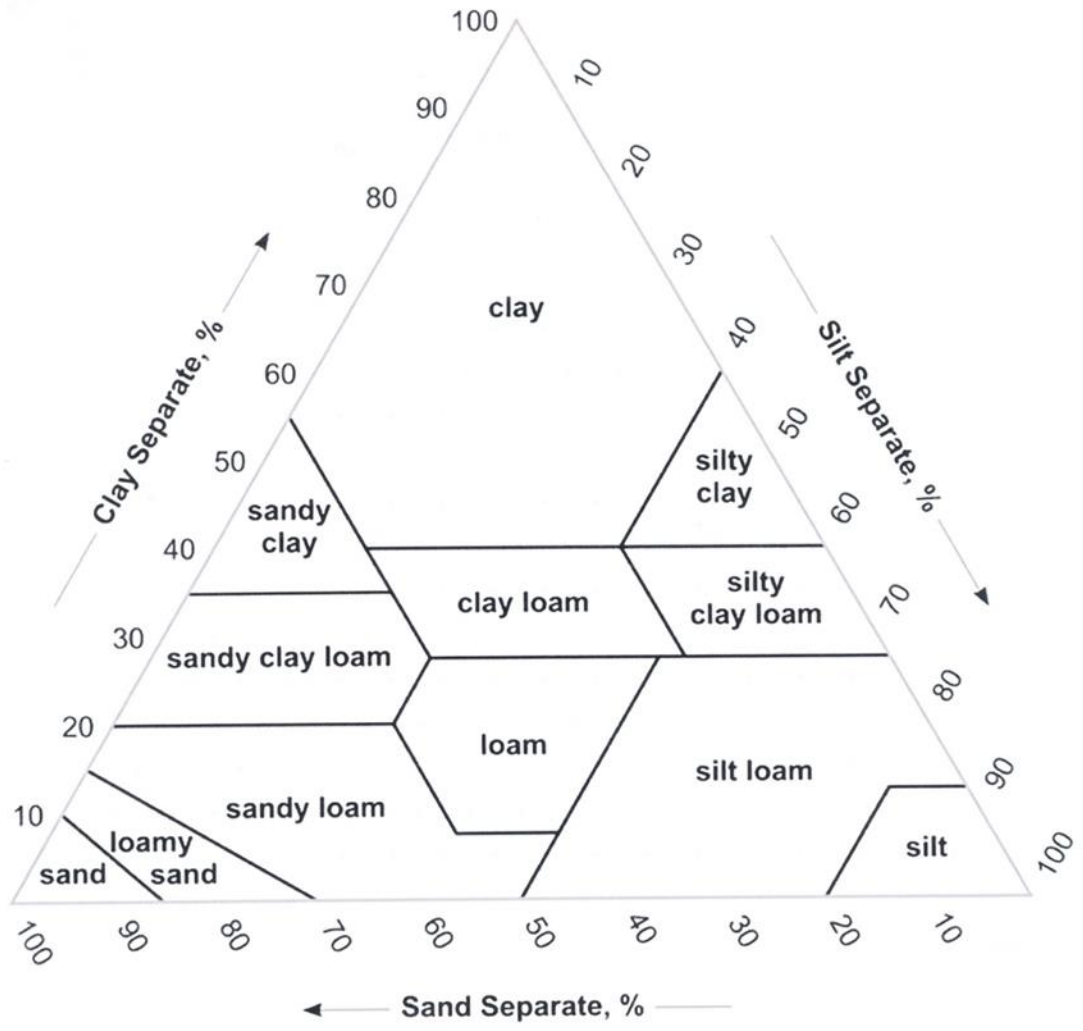


Figure 5. Soil Texture Chart.

Structure is produced by the weathering of a deposit. In general, the older a deposit the more developed its structure. The structure of a deposit is best observed in a trench wall or the wall of an

excavation unit. Soil structure is not always present or obvious. Different types of structure include (1) granular, (2) angular and sub-angular blocky, (3) prismatic or columnar, and (4) platy.

Color should be described as precisely as possible. Use a Munsell soil color chart if one is available. Be sure to note if the deposit color was determined with wet or dry soil, and in shadow or sunlight.

Cultural Contexts

There are three main types of cultural stratigraphic contexts – **Non-feature fill, Feature fill,** and **Surface contexts**. It is important to mark on the artifact or sample bag the nature and type of context if possible.

Non-feature fill consists of sediments overlying a feature. These can include the present ground surface, a plow zone (considered part of the overburden), naturally deposited overburden (which may contain a few artifacts), and sheet trash overburden which contains artifacts.

Feature fill is entirely within the edges or boundaries of a feature and includes as many as nine different types: (1**)** ***general fill*** is within structures above roof and wall fall; (2) ***combined roof/wall fall*** consists of construction materials such as rock, daub, or burned beams; (3) ***depositional fill*** lies between a floor and roof fall and can be naturally deposited by wind (eolian) or water (alluvial), or is post-abandonment trash fill; (4) ***floor fill*** is generally defined as fill located 5 to 10 cm above an identifiable floor; (5) ***floor contact*** is the horizontal zone in which artifacts and other cultural material are located on or very near the floor itself; (6) ***structure fill between two floors***; (7***) subfeature fill*** such as that within subfloor pits or postholes; (8) ***extramural feature fill***, which is fill located within features on a prehistoric surface such as pits and hearths outside structures; and (9) ***plaza*** *or* ***compound fill***.

Surface contexts are floors or occupation surfaces. Artifacts from these strata are found in direct contact with a floor or surface. Because the exact depth or level of a floor is often difficult to identify, it is a common practice to consider the last 5 cm of feature fill to be a floor context and called **floor fill**. However, it is important to distinguish floor fill from **floor contact**. Artifacts that are in floor contact are typically flat-lying or in a horizontal position. However, tools and vessels often were stored on roofs, so be sure to determine the artifacts are on a floor and not a collapsed roof. Artifacts that originated from on top of a roof, or were hanging from inside the rafters of a roof, are not usually in a horizontal position when discovered. Roof fall often contains burnt or unburnt daub (adobe).

Whenever possible, try to determine if feature fill and subfeature fill contexts are sealed in some manner, or if they appear to be mixed or disturbed. ***Sealed contexts*** can be very informative, and can be especially useful for dating purposes. For example, fill from inside a vessel on the floor would be considered a sealed context if the top of the vessel has a slab, clay or sherd cover. The fill of a subfeature pit that has a similar cover also would be considered a sealed context. Marked "sealed" on the artifact or sample bag for materials collected from these contexts. Even if the subfeature is not sealed, it is best to collect the materials from that subfeature separately from the feature content. If collecting materials from a ***mixed context*** (e.g., from two overlying pithouses without clearly identifiable floors, or where there are intrusive features inside an older feature), then mark the artifact or sample bag as "mixed." Another context to identify is an obvious ***disturbed context***. For example, if a polychrome sherd or other diagnostic artifact is found in a rodent hole inside a feature, collect that artifact separately and mark its bag as "disturbed." Finally, the fill from under or inside a smashed or reconstructible vessel should be collected separately and labeled with "***RV context*"** since it may or may not be the original contents of the vessel.

Excavating Features

In most cases, excavating features requires filling out at least three forms. The first step is to assign a unique feature number from the Feature No. List, then fill out the Feature Excavation form, the Excavation Level form, and the Stratum Record. In some cases, for example a shallow room filled with erosional sand, the Level form or Stratum form may not be required; this decision will be made by the Project Director. During excavation of multiple levels within a unit, be careful to maintain the integrity of a Unit's Datum in the southwest corner of the unit. Do not leave features exposed with artifacts overnight. If necessary, cover them gently with black plastic and dirt to make them less obvious. Do not leave them under plastic for any length of time as moisture will accumulate under the plastic.

Assigning Feature Numbers

All features are given unique numbers for each site and listed on the Feature No. Master List. Feature numbers should not be duplicated within the same archaeological site, even for different field seasons at the site. Therefore, feature numbers should be in sequence for a particular site and start with a double zero to allow for a large number of features (up to 999) for that site (e.g., Feature No. 001, No.002, No. 003, etc.).

Subfeatures

Internal floor features are called **subfeatures** and their numbers are always a subset of their associated primary feature. For example, the inside of a pithouse or masonry room (the primary feature) may contain a ***hearth*** or ***firepit, subfloor pit, rock ring, rock pile, bench, upright stone, postholes, groove, trench, mealing bin, granary, trivets, steps, wall, niche, ventilator shaft, raised platform***, or other features; those would then be called subfeatures of the primary feature. Thus subfeature numbers will follow their associated feature number after a decimal and should start with a single zero to accommodate up to 99 subfeatures per primary feature (e.g, Subfeature No. 001.01, No. 001.02, No. 001.03). All subfeature numbers should be assigned in sequence only for its primary feature and must be recorded on the Subfeature Provenience Control List. Record the morphology of a pit – the shape of the top of the pit (***circular, elliptical, square, rectangular,*** or ***irregular***) – as well as the form of its walls and bottom (***conical, straight-sided with round bottom, straight-sided with flat bottom, bell-shaped***, etc.).

Small features such as hearths and pits can occur as **subfeatures** of structures or occupation surfaces, or they can be **extramural features** (those not directly associated with a structure or occupation surface). In either case, excavation should proceed by "sectioning" the sufeature/extramural feature, which is done by removing one-half of the fill and leaving the other half intact so that the internal stratigraphy of the subfeature/extramural feature is exposed in profile. Fill from the first half should be screened and artifacts assigned a provenience within the subfeature/extramural feature (e.g., "south ½ fill"). If the exposed profile provide useful information and about the feature's function, or about post-use fill, it should be sketched and photographed. Appropriate samples, such as flotation or pollen, can be collected from the remaining half of the fill. Those samples and any other artifacts recovered from screening the rest of the fill should be labeled with their specific provenience (e.g., "north ½ fill"). If the subfeature/extramural feature is very small or shallow, it may be necessary to collect all fill as a single episode; if so, label the collected fill as "entire subfeature."

Human Burials

The excavation of human burials is a sensitive subject matter to both archaeologists and Native Americans and must be done with the upmost respect, dignity, and care. Excavations of human remains require their own two-page Burial Feature form and are recorded and handled in accordance with the regulations as set forth by A.R.S. 41-844 and A.R.S. 41-865, the Archaelogical Resources Protection Act (36 CFR 296), 36 CFR 800, and the Native American Graves Protection and Repatriation Act (104 STAT. 3048 PUBLIC LAW 101-601). The Burial Feature form is designed for emergency

excavation of human remains, Appendix 5 is a more detailed set of burial forms to be filled out by a bioarchaeologist or physical anthropologist. Leaving human burials that are discovered during excavation *in situ* is the preferred course of action. If they are to be disinterred, consultation with the appropriate authorities, the land owner, and affiliated Native American groups is required.

Human burials and their associated grave goods require special treatment and are not to be viewed by the public at any time, or by site visitors without the permission of the Project Director. Any questions about human remains at a site under investigation should to be referred to the Project Director.

Human remains are not to be left exposed overnight, or over the weekend, unless absolutely necessary. If they cannot be removed before the end of a work day, then they are to be covered from view and protected in whatever manner is considered appropriate. This may involve guarding it overnight, if deemed necessary by the Project Director.

Human burials include both inhumations (usually placed within a linear pit, but also in other ways as well) and cremations (formally burned into a white or blue-gray color, gathered together, and deposited into a pit). Cremation features can be *crematoriums* (repeated burning of bodies in the same feature), *primary cremations* (the burning of single body in an elongated pit), or *secondary cremations* (final deposition of the burned remains). Inhumations can be present under the floors of structures, so excavations of structure floors should take this into consideration. Inhumations are also commonly found in extramural pits so care should be used during stripping by hand or backhoe. The presence of whole vessels in extramural contexts should increase the care with which excavation proceeds in that area.

Secondary cremations are sometimes placed inside a whole vessel to serve as a funerary urn and, therefore, caution should be taken when whole vessels are discovered in a context outside a pithouse or masonry structure. Cremated human bone has been found scattered in trash deposits and in structure fill, so excavators should always be on the lookout for these bones.

All mortuary features, particularly cremations, are to be screened through one-eight inch mesh in order to recover as much of the human bones and grave objects as possible. Bone and associated artifacts should be placed in paper bags (never plastic or foil) and packed to prevent damage during transport. All fill from cremations should be collected for reburial with the bones and grave objects. The human bone and their grave objects should be handled as little as possible beyond their identification and documentation as required by state law. All materials from the same burial are to be kept together in close proximity while in the laboratory and are not to be taken out of state. No

photographs are allowed of the human bones or grave objects unless by written permission of the affiliated tribes. No destructive analysis is allowed for prehistoric human remains in the state of Arizona, including DNA studies. Human bone and associated objects should not be washed or excessively cleaned of dirt.

Excavation Horizontal and Vertical Control

All excavation units should have their own secondary datum which is used for measuring vertical and horizontal proveniences (Figure 5). The elevation of the unit datum should be shot in by instruments from the site datum, which is usually assigned an elevation that is 10 m below datum (**MBD**) to ensure that all measurements at the site will be below the site datum. All work done within the excavation unit can then be measured both horizontally and vertically from the unit datum. For most excavation units, it is best to establish the unit datum in the southwest corner of the unit. A wooden stake or chaining pin should be pounded part way into the ground at this location with a colored nylon string attached to the stake/pin. Write on the stake, or on flagging tape attached to the chaining pin, the elevation of the unit datum in relationship to the site datum (MBD); record the MBD on the excavation forms as well. The string should reach to the farthest corner of the unit, plus an extra 10 cm or so. Attach a portable line level to the string for measuring horizontal and vertical distances of artifacts and other materials found within the unit. Always pull the string taut to take up any slack and place the line level in the middle of the string to ensure the most accurate measurements.

If no elevation has been taken of the unit datum from the site datum, then measure depths within the excavation unit in centimeters below the unit datum. Using “cmbd” indicates that the unit depths were taken from the unit datum, not the site datum. The elevations of the unit datum itself should then be tied into the main site datum at a later date by the site mapper with surveying instruments. Finally, measure the distance from the current ground surface to where the string is tied onto the unit datum (establishing it at 10 cm above ground is a good practice) and write that measurement on the unit excavation forms. Depth measurements taken within the unit will include this 10 cm distance (thus, if a completed level bottom is 20 cm below the ground surface, the vertical measurement will be 30 cmbd). This additional 10 cm is added because the ground surface level will change during the course of the unit excavation as a result of trampling and other disturbances, but the string level will remain constant as long as it is securely tied to the unit datum. Consequently, use caution in maintaining the unit datum. This can be done by leaving a wedge-shape corner during excavation where the unit datum is located and avoiding bumping into the unit datum itself.

Determining the location of a feature or artifact within an excavation unit is accomplished by using the unit’s northing and easting measurements from its datum.

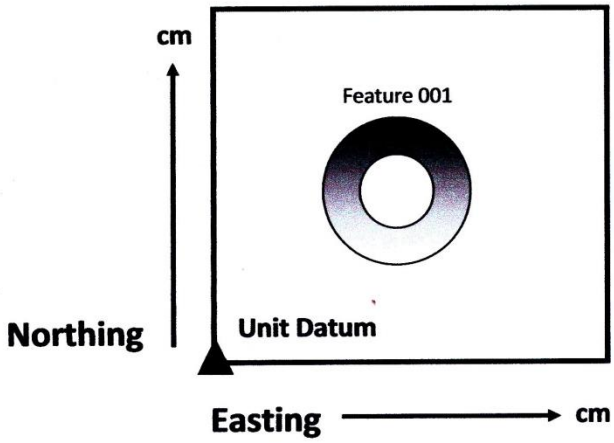


Figure 6. 1 x 1 m Excavation Unit or Test Unit.

Artifact and Specimen Bags

Collecting artifacts and other specimens from the surface or buried in the ground requires a certain protocol for registering and tracking that item(s). The bag or other container (e.g., vial, plastic bag, aluminum foil, etc.) should contain the same basic information, including detailed provenience data, for all objects and other specimens (e.g., ***charcoal, wood samples, faunal materials, marine and freshwater shell, flotation samples, pollen samples, phytolith samples, macrobotanical samples, soil samples,*** and various ***chronometric samples***) for the entire project (Figure 7). A bag may contain a single specimen, or multiple examples of the same artifact type (e.g., flaked stone, groundstone, and ceramics). Do not use plastic bags for organic materials that can be damaged through the accumulation of moisture. If the bag needs to be sealed, in most cases it is best to use masking tape rather than clear packaging tape to prevent moisture from accumulating inside the bag.

All artifact and samples bags must be logged into the Bag/Specimen Master List, which is based on a searchable spreadsheet that requires abbreviations (see below). Become familiar with these abbreviations. Instructions on how to fill out the bags and bag/spec sheet are included in Appendix 3. Write legibly and in indelible ink (with an extra fine-point sharpie if possible) so the information can be easily read and understood by other people; do not fill out an artifact or sample bag with a pencil (pencils may be used for maps only). Do not worry about staying within the lines, but write legibly, and add other important information about the artifact or sample below the bag stamp that will help with laboratory processing and analysis. Below is an example of a standardized field specimen bag form/stamp for paper bags. Field forms should be filled out in pencil because it does not run if it gets wet and corrections can be made if necessary and the form remain legible.

FIELD SPECIMEN(S)

Project No. _____ Site No. _____
Project Name _____
Specimen Type_____ Date_____
Unit No._____ Unit Type_____ Level_____
Grid Provenience _____Screen Size_____
Feature No. _____ Feature Type_____
Bag No._____ Excavator(s)_____

Additional information can be added here on the bag.

Figure 7. Example of a Bag/Specimen Stamp.

List of Abbreviations for the Master Bag/Specimen List

Samples/Specimen Codes (Types)

CER	Ceramics (both sherds and complete vessels; **S** for sherd on plan maps and profiles)
FLS	Flaked Stone (all flaked stone with the exception of projectile points and obsidian)
GS	Ground Stone (e.g., manos, metates, mauls, mortars, cores, and architectural stone such as door slabs, etc.)
MIN	Minerals, manuports: includes both worked and unworked minerals and other small stones (e.g., turquoise, stone jewelry, soapstone, talc, pigments, mica, quartz crystals, gypsum, schist, fossils, etc.). Put description in Comments.
OBS	Obsidian
PP	Projectile Point, entire or partial (pad with tissue and place in vial)
SH	Worked and unworked shell (not egg shell)
FAU	Faunal material (worked and unworked) and egg shell.
POL	Pollen sample
FLOT	Flotation sample
C14	Carbon 14 sample
AMAG	Archaeomagnetic sample
DAUB	Daub/construction material sample
DENDRO	Wood/dendro sample

SOIL Soil and Geomorphological samples (samples of soil collected for other purposes than pollen, flotation, phytholiths, etc.)

BOT Vegetal sample

BONE Human bone

HIS Historic artifacts (e.g., glass, metal, historic ceramics and wood, and composite artifacts - items made of both wood and metal). ***Historic Faunal Materials*** should be bagged as FAU HIST.

PHYTO Phytholith samples and washes

OTHER Things that the field crews can't figure out what to do with in the field

Horizontal Unit Codes (Types)

TU Test Unit (used during Testing Phase of project)

XU Excavation Unit (used during Data Recovery Phase of project)

FF Full Feature (entire feature)

BHT Backhoe Trench (BHT No.1, BHT No.2, etc.)

HT Hand Trench

N1/2 Feature Portion (S 1/2, SW 1/4, etc.)

SCU Surface Collection Unit (Specific Location)

SITE Artifacts point-provenienced to the general site with grid designation (PL number, if one was designated, listed in comments). Also, if the site has been halved or quartered for surface collection, horizontal unit designation may be listed as NW 1/4 SITE, E 1/2 SITE, etc.

PL Point Location (artifacts "shot in" with total station or GPS unit)

Vertical Unit Codes (Level)

RWF Roof/Wall Fall (construction material in feature fill)

FLF Floor Fill (within 5 cm of floor contact)

FC Floor Contact (at floor contact)

FEA FILL Feature Fill (general fill, either above floor fill, or fill in a non-architectural feature that is not within a primary feature [i.e. hearth, extramural pit, etc.])

SUBF FILL Subfeature fill (fill in a subfeature within a primary feature)

EF Extramural Fill (contents of small features or subfeatures located outside another feature, usually architectural, and sometimes associated with an outdoor use-surface)

MOD SURF Modern Surface (present ground surface)

FILL NFS Fill Not Further Specified (often fill taken from units not in a designated feature, when provenience is uncertain, or when pulled from a trench wall with no associated feature; describe in comments and list Trench No. if from a trench)

MF Midden Fill

PF Plaza Fill

CF Compound fill

BDIRT Backdirt (removed from an excavation unit, a trench, etc., and not found until later)

BP Burial Pit (any materials removed from burial pit feature)

OTH Other (Better to ask Project Director to identify if unknown)

Collecting Specialized Samples

There are several archaeological specimens that are not usually considered artifacts but which can be very informative if collected properly and their context adequately described. These include ***flotation samples, pollen samples, macrobotanical remains, charcoal samples, dendrochronology samples,*** and ***soil*** or ***sediment samples***. Use the Specimen/Sample Form for recording these samples and be sure to also record them on the Feature Excavation Form, Part 2 if they are recovered from a feature.

Flotation Samples

Flotation samples are collected to retrieve charred seeds and other plant parts that can provide information about subsistence and paleo-environmental conditions. Flotation samples should be collected in double-bagged #16 bags. Enough dirt should be collected to fill two of these double bags, about three-quarter full for each bag. The typical sample size is 2 to 4 liters. If a feature does not contain enough dirt to fill the two bags, that is okay, obtain as much dirt as possible. The exact volume of material collected will be recorded in the laboratory after the excavation project. Seal the folded over opening of the bag well with clear plastic packaging tape, as well as the seams on the bottom of the bag. It the dirt is wet, put a strip of tape around the middle of the bag. Do not tape over the bag label. Put ***Bag 1 of 2*** and ***Bag 2 of 2*** on the bags and on the Bag/Specimen Master List.

The sampling strategy for collecting flotation samples will be outlined in the project research design. Do not collect flotation samples unless the context of the sample has the potential to yield meaningful data. Those contexts are typically structure fill and floor contexts, as well as subfeature contexts such as hearths and storage pits. A few control samples also may be collected from excavation units for comparative purposes. In large extramural features such as trash mounds and roasting pits, a series of flotation samples should be collected from different levels, especially if a

cross-section of the feature has been exposed. For roasting pits and hornos, the top of the feature should be sampled because that is where the food that was cooked was located. Sampling lower levels of roasting pits and *hornos* has the potential to retrieve remains of the plants that were used as fuel. The fill of reconstructible or whole vessels also are good candidates for flotation samples.

Pollen Samples

Pollen samples are useful in providing data on the general environmental conditions at a site during its occupation and after it was abandoned, as well as about specific activities at the site involving plant products. Pollen samples should be collected only from freshly exposed surfaces, such as occupation surfaces, structure floors, plazas, compounds, and extramural features. Pollen samples obtained under artifacts resting on the floor of a structure, such as under a mano, and near the hearth can be especially productive as can samples collected beneath slabs lining a floor. Pollen samples can also be collected in a series column from different levels in a trash mound, storage pit, or deep roasting pit.

Collect pollen samples in a thin stratum with a clean trowel (use distilled water if available). Try to avoid including artifacts, gravel, charcoal and wood in the sample. A double bagged #2 bag can be used, filling one-half of the bag (one-half to one cup) and sealing its top with masking tape (do not use plastic bags or packaging tape as they trap moisture and causes molds). Horizontal and vertical proveniences should be written on the bag. Composite samples from across the surface of a structure's floor are acceptable, and often preferred, but be sure to label the bag that it is a composite sample. If a groundstone tool is collected from a sealed context for a pollen wash, write on the sample "Do not wash – Pollen wash."

Macrobotanical Remains

Seeds, grains, and other plant parts are called macrobotanical remains. All plant parts, with the exception of modern flora, that are found within excavation units during excavation or during screening should be collected. These samples should be put into small vials, but not in tin foil or plastic bags since they retain moisture. Use tissue paper to protect the sample if it appears fragile.

Charcoal and Radiocarbon Samples

Prehistoric wood samples can provide important information about environmental conditions and on patterns of wood use. Wood pieces that have been burned and are larger than 5 mm in size often can be identified to species. Recording the exact context of discovery is essential to interpreting wood use at a site, and every effort should be made to describe that context on the forms. Charcoal samples

also can be used for radiocarbon dating. Therefore, they should be collected with a clean trowel and placed in aluminum foil to avoid contamination from other organic materials. Thus, a charcoal sample should not be touched by someone's fingers, which contain oils, or allowed to be in contact with any portion of a person's body (to avoid fibers contaminating the sample). Annual plants such as corn cobs, grasses, seeds, and beans make excellent radiocarbon samples and should always be collected, either *in situ* with a clean trowel or removed from a screen with clean tweezers, and carefully wrapped in aluminum foil. The Project Director will decide when it is appropriate to collect radiocarbon samples from a site.

Dendrochronology Samples

All potential tree-ring samples should be taken when possible because they can often provide accurate dates. These samples are typically found *in situ* as burned posts or burned roof beams. Dendro samples generally need to be at least 2.5 cm in size to be dated. Fragile samples can be wrapped in string, and then wrapped in cotton batting secured with more string to stabilize them. Do not use plastic bags or metal foil since both retain moisture that can destabilize the specimen. A paper tag label tied to the sample with string is a good practice to ensure that the provenience information remains with the sample at all times until it is submitted to a tree-ring laboratory.

Archaeomagnetic Samples

Archaeomagnetic samples are those taken from a well-burned surface such as a hearth or burned floor or wall for the purposes of dating the feature. The sample location needs to be hard and orange or red in color due to oxidation. Collecting archaeomagnetic samples requires training and a special kit. Do not disturb the burned area in any way because the sample area must be preserved if an accurate date is to be obtained. Once a potential sample is identified, it should be covered with dirt, plastic, and more dirt to protect it from drying and cracking before it is sampled.

Faunal Remains

Non-human bones are called faunal remains. They should be collected separately from other materials and placed in vials if they are small. For fragile faunal specimens, use tissue to protect them during transport to the laboratory. Get confirmation from the Project Director or other experienced individuals that the specimen is animal bone and not human bone.

Shell Remains

All marine and freshwater shells should be collected. Desert snail shells also should be collected. Since shell can be fragile, especially freshwater shells, use care in packaging them by placing them in a vial or other container and use tissue as well. If the shell appears to have been worked, then note that on the bag and on the excavation forms.

Soil and Sediment Samples

Soil and sediment samples can be used to determine the depositional processes at an archaeological site, and the post-depositional changes that have taken place. Particle-size analysis of the sample will determine the percent of sand, silt, and clay in the sediment. Thus, avoid including artifacts, charcoal or wood in the sample, but do not remove plant parts as they may be useful in the interpretations of post-depositional processes.

To collect a soil and sediment sample, fill a double-bagged #8 bag half full with soil from one specific location. Restrict that sample to less than 10 cm of vertical deposits and from only one layer of sediments. Avoid mixing sediments that are visually different in the same sample. Seal the bag with masking tape; do not use clear packaging tape. Be sure to mark the location of the sample on the profile or plan view map of the excavated area.

Plan Views, Profiles, and Cross-Section Mapping

Plan views, profiles, and cross-section mapping should be done on metric graph paper (Figure 8)**.** All graph paper maps should include at least five sets of information. These are: (1) project name, site number, unit number, and feature number if applicable; (2) a scale bar in cm or m (writing 1 inch = cm is not enough); (3) north arrow (or E and W direction if a profile or cross-section); (4) date the map was drawn; and (5) the name of the person drawing the map (see Figures 8 through 10 for examples of Test Unit Level Plan View, Test Unit Profile, and Pithouse Feature Plan View).

Drawing a map of a unit and/or feature should be done so that the feature is as large as possible on the map allowing it to provide informative details, but yet fits onto one sheet of graph paper. First, take the measurements of the perimeter of the feature or unit that is to be mapped, then determine the scale to use. One inch = 10 cm, 20 cm or 50 cm is usually the best scale for these types of maps. The metric system is used for prehistoric features because it is the universal scientific measuring system.

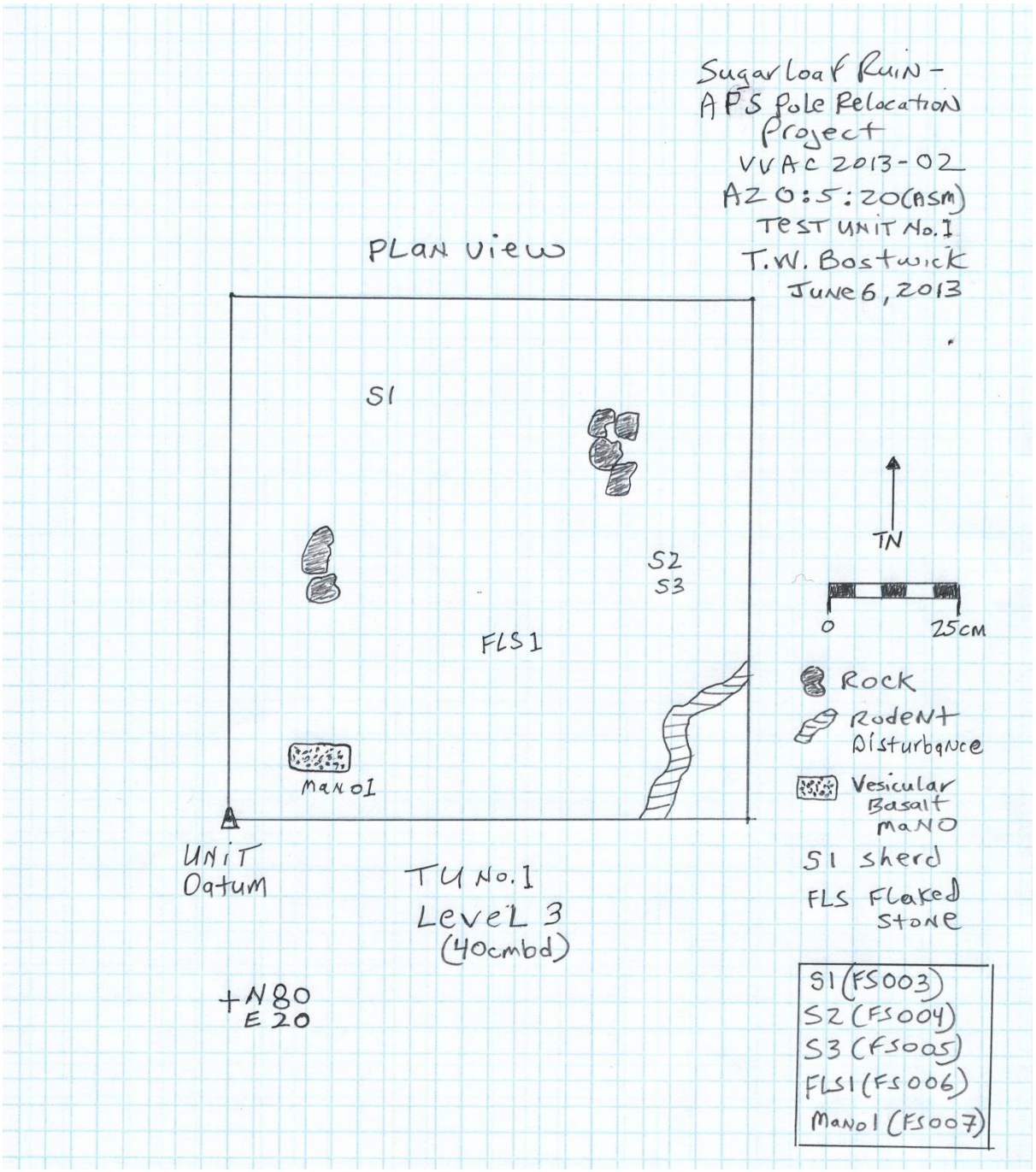


Figure 8. Example of Test Unit Level Plan View.

If the feature is historic, it must be mapped in feet, not metric, because the English measuring system was used in historic times (use one inch = I foot). It is best to map individual historic features on separate sheets using the English measuring system (1 m on metric graph paper = 3.28 feet). For a site with prehistoric and historic features, use the metric system for the site map and provide

supplemental notes with specific English measurement for each historic feature or artifact (e.g., lumber, nails).

Profiles of excavation unit walls or cross-sectioned features can be accomplished by inserting nails into the edge of the wall or cross-section and tying a taut nylon string containing a line level between the two nails. All measurements of stratigraphic levels or cultural materials above and below the line levels can be made using this system (Figure 9). All profiles should include a description of each natural stratum defined. Abbreviations or symbols can be used to differentiate the different strata, but a key must be provided on the map that explains them. The location of the profile nails and the line level should be clearly marked on the profile. Profiles of trench walls and excavation unit walls should indicate which wall was sketched. Leave nails in place until they are added to the general site map or note their provenience on the profile map.

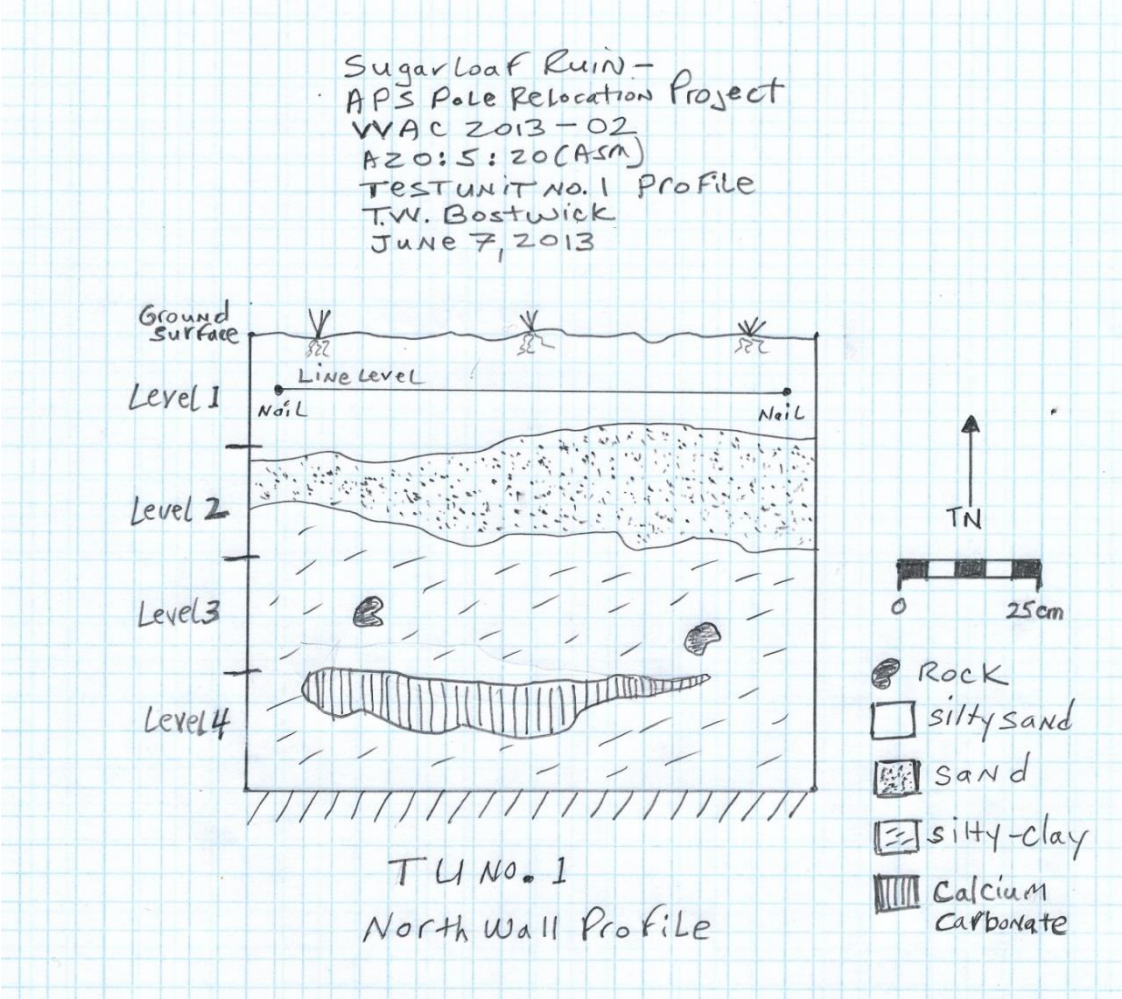


Figure 9. Example of Test Unit Profile.

Plan views of features should be as detailed as possible (Figure 10). Establish a feature control datum near the feature to facilitate measuring and mapping. Be sure to record the location of this datum within the site grid system. All floor contact artifacts should be point-provenienced and located on the feature map. List the field specimen numbers for each of the point-provenienced artifacts. Provide at least one cross-section of the feature to show depths of the feature and subfeatures.

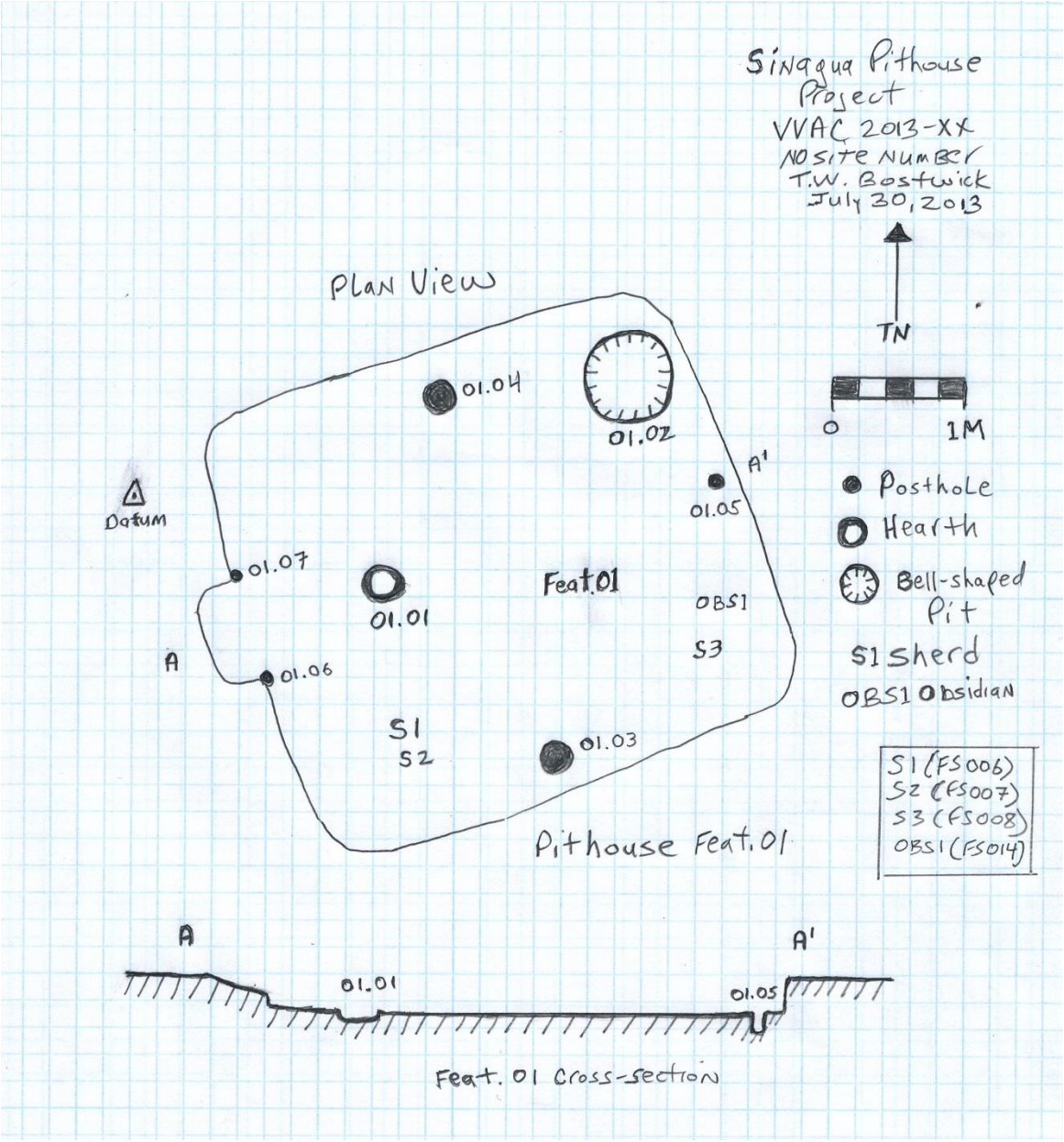


Figure 10. Example of Pithouse Feature Plan View and Cross-section.

Photography

The photography of an excavation project is an important component of the record of that project. If feasible, a single person or a few persons should be designated as photographer(s), rather than the excavators themselves. All photographs should be numbered in sequence and recorded on the Photograph Log (Form No. 7). Digital photographs are now the accepted standard for archaeological excavations, as long as they are minimally 5-megapixel images. Generally, the higher the megapixels, the better the quality of the photograph, and many cameras now shoot at least 10 or more megapixel images. Always use a photograph scale with unit, feature, and artifact photographs. Photographs of excavation units and features should include a north arrow. Scales with standardized color bars are useful for conservation purposes because the photograph, as well as the artifact itself, can be checked through time to see if they are degrading (Figure 11).

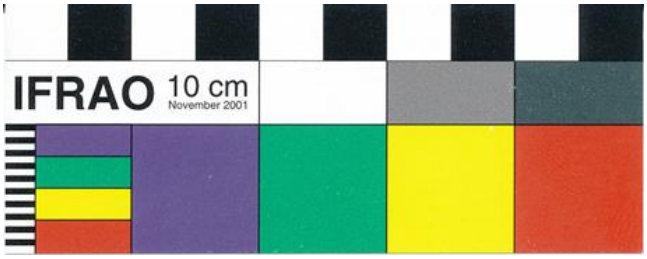


Figure 11. Example of a 10 cm Scale with Colorbar.

"Mug boards" or "Menu boards" should be included in the photographs of excavated features and units; these boards should contain information about the project, such as site number, project name, unit and/or feature number, and date (Figure 12). Be sure to take photographs of people working, as well as overall site views, as part of the project record.

When filling out the photograph log, do not use ditto marks to repeat the same information in an data column. Instead, use a wavy line with an arrow at the end of the line. Ditto marks can be mistaken for the number 11.

Figure 12. Example of a Menu Board and North Arrow Scale (25 cm) for a Test Unit.

Conclusions

This manual was designed as an instructional guide for the excavation of an archaeological site by members of the Idaho State University Archaeology Field School. If ever in doubt about a technique or procedure, ask the Project Director, never undertake any action that you are not sure about. This field manual is meant to be a guide; is it possible that the Project Director may decide to adjust the techniques or methods outlined in this manual to better suit a particular archaeological site or materials. Happy digging!

Appendix
SAFETY ISSUES

All volunteers are expected to follow safe practices while participating in projects sponsored by Idaho State University. While it is impossible to anticipate all risks, the following information will help achieve a safe and enjoyable experience for all participants. During excavation or survey, report any hazardous conditions to the appropriate project supervisor as soon as possible. And remember to have fun!

Environmental Hazards

Field archaeologists often work in adverse weather conditions. Heat, cold, rain, and wind all present field crews with particular challenges. Always be aware of your body's needs when you work (or play) outdoors and adjust your behavior as necessary. Protect your skin from sun with clothing or sunscreen and a wide-brimmed hat. Seek shade when possible during the middle part of the day, and immediately if you feel nauseous, light-headed, or disoriented. Drink plenty of water throughout the day—if you aren't urinating regularly, you aren't drinking enough. A headache is another common indication of dehydration. Eat frequent meals and snacks, including salty foods to replenish salt lost when sweating. Increase your food intake in cold weather or during strenuous exercise to provide adequate energy. Dress appropriately for the work and the conditions. Always wear sturdy boots or hiking shoes. Long pants offer protection during survey in dense vegetation and during excavation. Carry extra clothing in cold or wet conditions, particularly a warm hat and wind-resistant outer layer.

Lightning is a real hazard for those working outside. Lightning can strike miles in front or behind a storm, so take action early. Seek a safe location if there is less than 30 seconds between lightning and thunder (per NOAA recommendations). If possible, relocate to a car insulated building. When you are away from vehicles, seek uniform cover such as trees of similar height. Avoid open ground or high places, isolated trees, or shallow alcoves. Stay low and insulate yourself from the ground with a pack or thick clothing.

In some situations, protective equipment such as hard hats, gloves, safety glasses, and respirators may be advisable. Gloves are useful during excavation and screening to prevent blisters, cuts, and insect bites. Sunglasses or safety glasses protect your eyes from dust, debris, and ultraviolet rays. Not only do glasses improve eye comfort, but long-term exposure to unfiltered sunlight can cause lasting damage to your vision. Dust masks can reduce sinus irritation but should only be used to filter sediment (dirt and dust). In enclosed spaces such as alcoves, or in situations where the risk of inhaling toxic fumes, bacteria, or fungus exists, use a respiratory with a HEPA filter and be sure you

understand how to properly fit and maintain the mask before using it (most filter manufacturers recommend being fitted by a medical professional familiar with the equipment).

Archaeological projects can expose participants to a variety of pathogens that can cause serious illness. Rabies can be contracted from being bitten by an infected animal, often small mammals such as fox or skunks. Plague is carried by fleas and is usually contracted when the fleas jump from one mammal to another and bite the new host. Both rabies and plague can be prevented by avoiding contact with live or dead animals. If you are bitten by an animal seek medical treatment as soon as possible. Another mammal-borne pathogen is hantavirus, which is contracted by inhaling the virus contained in urine and feces of rodents (mainly deer mice). Avoid contact with rodents and droppings, particularly in closed areas such as structures or alcoves. The virus is killed by UV light so rodent nests encountered during excavation should be exposed to the sun or sprayed with bleach before being removed (to avoid aerosolizing the virus). HEPA filter masks should be worn during exposure to infested areas (such as caves). Plague, rabies, and hantavirus are serious and potentially fatal infections. If you have been exposed to animals, nests or dens, or droppings and you have symptoms including fever, chills, headache, swollen lymph nodes, shortness of breath seek medical attention immediately.

Insects can also carry disease. West Nile virus is carried by some species of mosquitoes, so wearing full-coverage clothing or using insect repellent can provide protection. Ticks can carry several types of disease, so check yourself for ticks after spending time in brushy or riparian environments. Valley Fever (*Coccidioidomycosis*) is a fungal infection cause by inhaling spores present in the soil. It has a relatively high occurrence in archaeologists and others working outdoors in the Southwest. Both West Nile virus and Valley Fever cause mild flu-like symptoms in most people but produce serious, even life-threatening, illness in others. The webpage of the Center for Disease Control and Prevention (www.cdc.gov/) offers information about these and other conditions, including symptoms and treatment options.

Venomous insects can pose a hazard. Scorpions and spiders are typically found in protected locations in alcoves or open areas. Wear gloves or use a stick when turning over rocks or logs. Shake out clothing or shoes that have been on the ground before putting them on. Bites from these insects are rarely fatal, but can be extremely painful. Seek medical attention if symptoms such as fever, chills, nausea, or numbness occur. Bee and wasp stings are painful but generally not serious, but an anaphylactic reaction can be fatal within minutes. If you know you are allergic to bees or wasps, carry an Epi-pen at all times and inform your crew members how to use it. Wasps and non-Africanized bees are unlikely to sting unless provoked, so do not swat at them and avoid hives. Light-colored clothing is less likely to agitate bees. Africanized bees are dangerous because they swarm to attack. If bees

swarm and begin to sting, seek shelter inside a vehicle or building or run in a straight line for at least a half mile (the typical territory of a hive).

Be away of snakes, which often hide in vegetation clumps or under rocks and logs. Avoid blind placement of hands and feet. Never approach or try to pick up a snake. If you are bit by a snake, try to stay calm and seek medical help immediately. Snakebite is rarely fatal, and panic behavior does nothing but place others in danger. Immobilize the wounded limb but do not apply a tourniquet or ice, and do not try to extract venom with incisions or suction. Do not try to capture or kill the snake; modern antivenom treatment does not require knowing the exact type of snake.

Survey and Excavation Safety

Archaeological fieldwork inherently involves potentially hazardous activities, which can be performed safely with proper awareness and precautions. It is always a good idea to have a brief safety meeting before beginning work to discuss project specific hazards. This also serves as a reminder to participants to be mindful of safe practices for themselves and others. All expeditions should carry a well-stocked first-aid kit, extra water and food, vehicle maintenance gear, and any necessary weather- or task-specific equipment. It is also advisable that at least one project member have current first-aid training.

Safe survey work requires attention to the terrain and natural hazards. In addition to looking for artifacts, always watch your footing. Take extra care in areas with loose rock, steep slopes, and unstable or undercut arroyo edges. Heavy vegetation can obscure rocks or animal burrows and pose a tripping hazard. If your knees or ankles are prone to injury consider wearing braces while hiking, and always wear study shoes.

Safe excavation work starts with knowing your limits and not straining your body. Shoveling, using a pick, lifting rocks or buckets of dirt, and hauling equipment or boxes of artifacts present opportunities for injury. Be sure to lift using your knees rather than your back, and ask for help to lift or move heavy loads. Change position regularly while digging to reduce muscle strain. Be sure that excavation equipment is well maintained and use the right tool for the job. Do not leave equipment where people can trip or it can fall into excavation units.

One often-overlooked danger of excavation involves collapse of trench or excavation unit walls. Never walk or stand near the edge of excavation units or trenches. Cut steps or use ladders to enter and exit deeper units; do not stand on buckets or other unstable objects. The Occupational Safety and Health Administration (OSHA) has established detailed and comprehensive rules that govern acceptable excavation unit depth based on the sediment type and unit size configuration. These rules are available online at (www.osha.gov/law-regs). Most VVAC projects will not involve deep

excavation units, but in such cases a person trained in OSHA safety compliance should be consulted or present on site to assess the safety of the excavation units.

Driving a Vehicle

One of the most dangerous activities that most people engage in, often without considering the inherent risks, is driving. Those of us involved in archaeological pursuits often cover long distances in search of field opportunities. We drive in all weather conditions and often on poorly maintained or unimproved roads. Safe driving begins with focusing attention on the road and potential hazards. Stay alert for changing conditions or hazards such as animals or road damage. Reduce your speed in bad weather. Avoid driving when you are tired, particularly after dark. Wear your seat belt. Do not talk on the phone or engage in text messaging while driving. Keep your vehicle in good repair and carry appropriate maintenance equipment (and know how to use it). These are common sense tips, but too often we do not think about driving as a potentially dangerous activity that requires mental awareness.

ARTIFACT/SPECIMEN BAG INFORMATION

PROJECT NO.:

Use the following format for project numbers: VVAC 2013-01 (Assigned in Lab).

SITE NO.:

Official full site number. Use Arizona State Museum (ASM) numbers if one has been assigned.

GRID:

Grid coordinates. Record the northing and easting from the southwest corner of the excavation unit. Feature centerpoints can be used as necessary; note "center point" in comment.

DESIGNATION OF BAG NUMBERS:

Bag list will start with bag No. 001. Bag numbers are consecutive and should not be duplicated for the same site.

FS No. :

This is a unique number given to a collection of field specimens/artifacts from a specific provenience. Use BAG 1 OF 2 and BAG 2 OF 2 used to differentiate two bags of the same sample. A particular feature, excavation unit, trench, or other well-defined context may have numerous FS numbers, both as separate bags and as multiple bags of the same artifact type (e.g, flaked stone, ceramics, etc). There is no limit on the number of sequential FS numbers that can be assigned to a particular feature, unit, etc. The FS number is often the same as the Bag Number for a particular excavation unit, feature, or subfeature.

BAGGING ARTIFACTS:

Bag different artifact types from the same feature (or other discrete context) in separate bags or other containers, each with their own bag number: ***Flaked Stone, Ground Stone, Ceramics, Projectile Points, Fire-cracked Rock, Faunal Material, Shell, Charcoal,*** as well as ***Soil Samples, Flotation Samples, Pollen Samples, and other materials***. Large amounts of the same material type collected from the same provenience should be bagged with preservation of the artifacts and ease of portability in mind; for example, bag small flakes with other small flakes and cores with other cores.

Bag large Ground Stone implements separately to ease their transport and preservation. Rather than making one huge bulging bag for a unit of the same material, such as Flaked Stone or Ground Stone, split materials between a few smaller bags and give each bag its own bag number. Correctly recording the provenience information will ensure that analysts can link materials from specific units together. Fragile materials, such as *projectile points, obsidian, faunal materials, worked and unworked shell, unfired ceramics, and small or fragile worked ceramics and ground stone* should be padded with tissue and placed in a vial or small box. Unusual, diagnostic, or fragile items should be described on the bag in the Comments section. For artifact provenience, point-provenienced artifacts (PL) are given Northing and Easting of the center point of the artifacts. Or their location can be measured by distance and direction from an established datum. Artifacts collected from the surface or from feature fill have a grid provenience based upon the southwest corner point of a nearby, Excavation Unit, Test Unit, or feature with an assigned number.

FEATURE NO:

All features are designated a unique number for that site, starting with 001. A master feature list is maintained by the field director or crew chief where all features are registered and given a number for that site project. Feature and subfeature designations must be numeric, letters are not acceptable. ***Subfeatures*** are those located inside or otherwise closely related to another feature (e.g., a hearth, subfloor pit, storage unit, bench, posthole, etc.). The number of subfeatures should include a decimal following the main feature's number (e.g., subfeatures 1.01, 1.10, 1.111). A subfeature can have its own subfeature (e.g., a pit within a hearth); if so, then add another decimal to the number (e.g, 1.01.01). All subfeature numbers must be associated with their primary feature number.

UNIT SIZE:

All ***Excavation Units*** and ***Test Units*** should have their unit size designated (e.g., 2x2m, 1x1m, 1x2m). The field director will determine unit sizes to be excavated. 1x1m units can be expended when further exploration or completing the excavation of a feature is warranted.

LEVEL:

Level designation is determined by protocol developed for a particular testing or data recovery project. Unless otherwise noted, ***unit and feature Fill*** is excavated in 10 or 20 cm levels, beginning at Level 1, Level 2, etc., finishing at floor fill. ***Floor Fill*** is usually excavated at 5 cm above floor contact to

floor contact itself, and is described as such on the level form. ***Floor Contact*** is for those artifacts or other specimens that are clearly lying horizontal on the floor of the structure or feature.

ELEVATION:

All elevations are given in ***Meters Below Datum*** (**MBD**) format, with an arbitrary primary datum determined for the site. If this information is not available, the elevation of features and artifacts should be determined by the cm distance below the unit datum (**cmbd)**. Fill is designated with an elevation range (upper to lower level). Point-provenienced and floor contact artifacts are designated with a specific elevation MBD or **cmbd**. During monitoring, elevations may also be given in cm below modern surface (**cmbs)**.

NAME:

Use the first initials and last name of the excavators; list all excavators /screeners of a particular unit.

DATE:

Date when artifacts were collected in the field. Spell out month (abbreviations okay), then day, followed by year.

SCREEN:

Fill is screened with 1/4" or 1/8" mesh. A dash (—) should be placed through the field when materials and/or samples have not been screened.

COMMENTS:

This field is used to designate further explanation of the field specimen. For Example:

- Description of material type of Historic artifacts
- Designation of multiple bags for one FS number (see notes, above)
- Designation of PL No. (point located artifact, a.k.a. point-provenienced artifact)
- Notes from analysis, such as bag voided
- Description of artifact (e.g., shell bracelet, tab knife, mano fragment)
- Additional provenience information

COUNT:

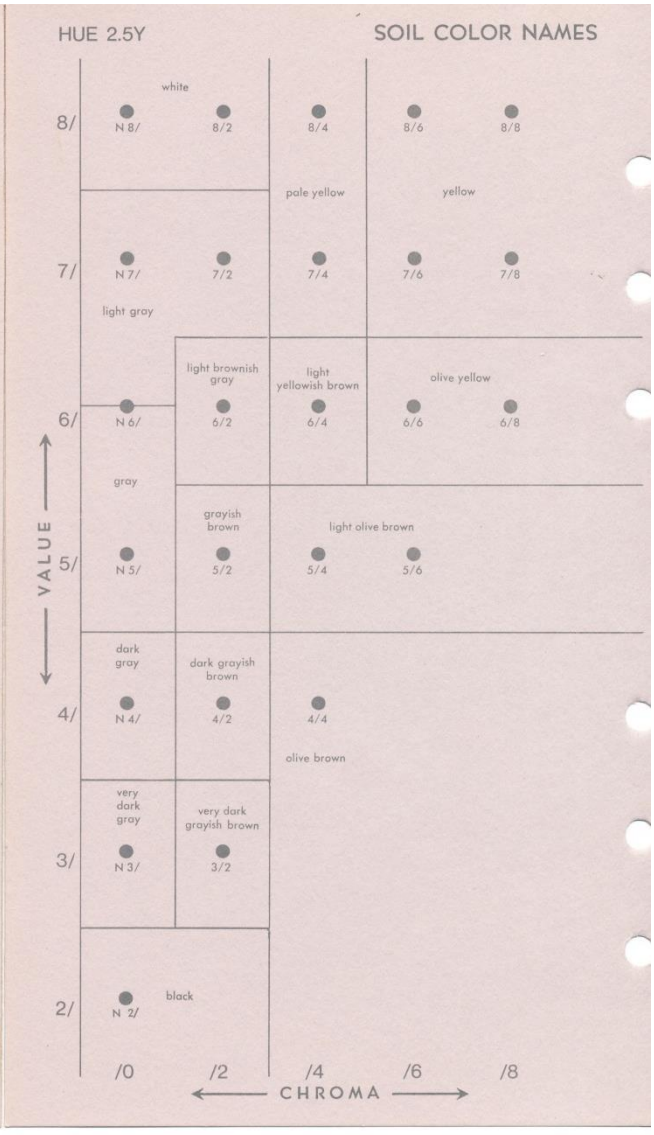
Number of artifacts in a particular bag as reported by the analyst (for lab use only).

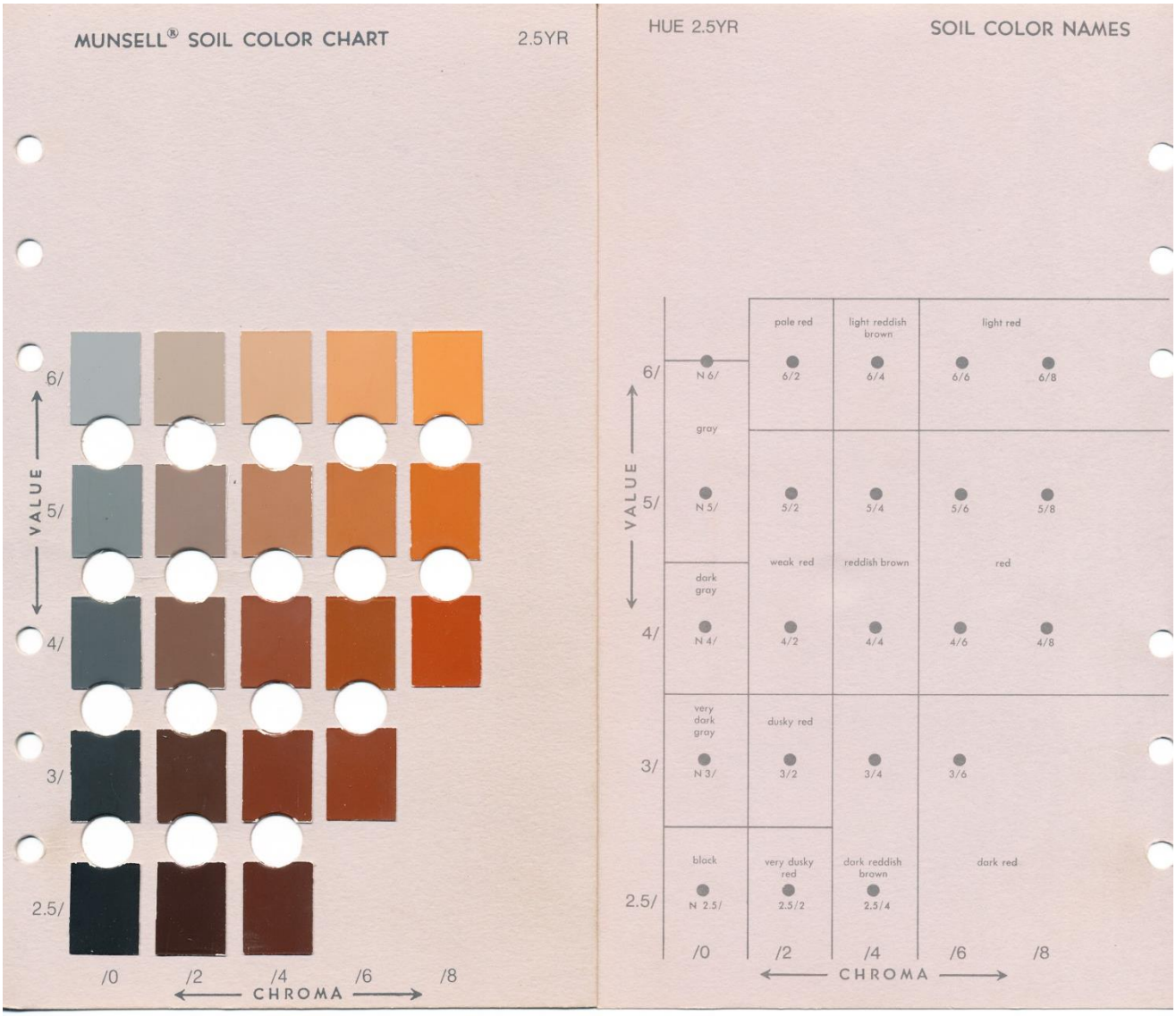
ARCHAEOLOGICAL EXCAVATION EQUIPMENT

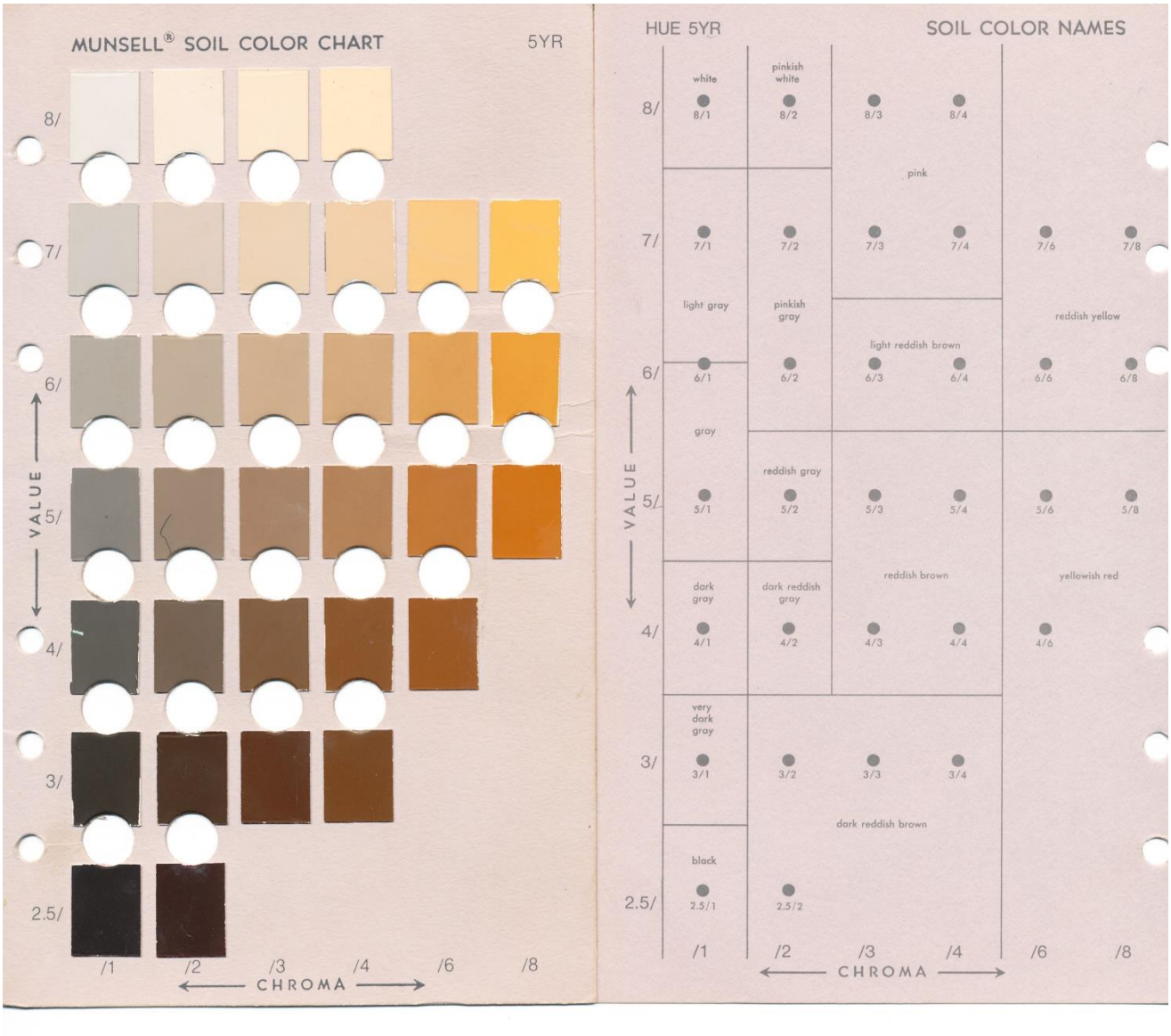
ITEM	CHECKED
Square nose shovels	
Round-end shovels	
Metal file for sharpening shovel edges when needed	
Wheel barrow(s), heavy duty with rubber tires	
Hand picks (mattocks) and a full-handled pick	
Mallet or rock hammer	
Pointed and rectangular trowels	
Root cutters	
Scissors	
Whisk broom	
Large and small paint brushes (1 to 2 inches)	
Large and small soft brooms	
Small wooden sculpture or bamboo tools	
1/4 inch wire mesh two- person sifter	
1/8 inch wire mesh hand sifter	
1/4 inch wire mesh hanging box sifter	
Five-gallon, clean plastic paint buckets with handles	
Field forms with notebook or container	
2 mm metric grid sheets	
Clipboards or “field desks”	
Large, hand-held mapping board	
Chaining pins (better than wood stakes for unit datums)	
Small wooden stakes, pointed on end	
Pin flags and flagging tape	
Small and large nails (for marking features and for profiling)	
3 to 5 m locking metal tape	
10 m locking metal tape	
50 or 100 m cloth tape	
Soil scoops or metal dust pans	
Line levels	
Plumb bob	
Heavy duty nylon string, colored	
Tarps or 6-mil thick plastic to cover features (for rain or for overnight)	
Field box for storing some field supplies and equipment	
Letter board (menu board) with letters and numbers	
Photo scales – small: 5 or 10 cm, and larger: 25 cm	
Large North arrow (with scale)	
Meter scale (for unit excavation photos)	

EXCAVATION EQUIPMENT ITEM (continued)	CHECKED
Plastic protractor and metric rulers	
DSPencil, erasers, and pencil sharpener	
Medium-sized black Sharpies with pointed tips, and fine-point black Sharpies	
Roll of aluminum foil, medium to heavy duty	
2 mil thick acid free poly bags: small, medium and large size	
Ziplock storage bags, gallon size	
Paper bags: heavy grade thickness; other sizes as well (for pollen/ebot, etc)	
Thick rubber bands	
Liter or 2-liter bucket for flotation samples	
Vials and cotton balls for fragile artifacts	
Tissue for packing fragile specimens	
Sturdy boxes to pack artifacts and samples for transport	
Clear packing tape	
Custom designed bag stamp with provenience and other pertinent information	
Silva or Brunton compass with declination adjustment	
GPS unit or Total Station (specify)	
Stadia Rod	
Digital camera, minimum 5 megapixels (10+ megapixels preferred)	
Munsel Soil Color Charts	
Soil Texture Chart	
Folding table	
Water cooler with paper cups	
Trash bags	
Dust masks	
First aid kit	
Hard hats and safety vests if backhoes being used	
Other (specify)	


MUNSELL® SOIL COLOR CHART
2.5Y
8/
7/
6/
5/
4/
3/
2/
VALUE
/0
/2
/4
/6
/8
CHROMA


HUE 2.5Y
SOIL COLOR NAMES
white
N 8/
8/2
8/4
8/6
8/8
pale yellow
yellow
N 7/
7/2
7/4
7/6
7/8
light gray
light brownish gray
light yellowish brown
olive yellow
N 6/
6/2
6/4
6/6
6/8
gray
grayish brown
light olive brown
N 5/
5/2
5/4
5/6
dark gray
dark grayish brown
N 4/
4/2
4/4
olive brown
very dark gray
very dark grayish brown
N 3/
3/2
black
N 2/
8/
7/
6/
5/
4/
3/
2/
VALUE
/0
/2
/4
/6
/8
CHROMA


MUNSELL® SOIL COLOR CHART
2.5YR
VALUE
6/
5/
4/
3/
2.5/
/0
/2
/4
/6
/8
CHROMA
HUE 2.5YR
SOIL COLOR NAMES
N 6/
pale red
6/2
light reddish brown
6/4
light red
6/6
6/8
gray
N 5/
5/2
5/4
5/6
5/8
dark gray
N 4/
weak red
4/2
reddish brown
4/4
red
4/6
4/8
very dark gray
N 3/
dusky red
3/2
3/4
3/6
black
N 2.5/
very dusky red
2.5/2
dark reddish brown
2.5/4
dark red


MUNSELL® SOIL COLOR CHART
5YR
8/
7/
6/
5/
4/
3/
2.5/
VALUE
/1
/2
/3
/4
/6
/8
CHROMA
HUE 5YR
SOIL COLOR NAMES
white
8/1
pinkish white
8/2
8/3
8/4
pink
7/1
7/2
7/3
7/4
7/6
7/8
light gray
pinkish gray
light reddish brown
reddish yellow
6/1
6/2
6/3
6/4
6/6
6/8
gray
reddish gray
5/1
5/2
5/3
5/4
5/6
5/8
reddish brown
yellowish red
dark gray
dark reddish gray
4/1
4/2
4/3
4/4
4/6
very dark gray
3/1
3/2
3/3
3/4
dark reddish brown
black
2.5/1
2.5/2