Field and Lab Procedures Manual

Investigations at Bear Creek Ranch, 41KR744, and the Kerrville Area, Kerr County, Texas

Eric R. Oksanen

Principal Investigator

2022 TAS Field School Personnel

Principal Investigator: Eric Oksanen

Bear Creek Ranch Land Owner/ Consulting Archeologist: Marvin Gohlke

Host Association: Hill Country Archeological Association

Local Arrangements Committee: Mike McBride, Terry Farley, Francoise Wilson, John Forister

TAS Field School Committee: Tiffany Osburn (chair), Chris Meis, Clint Lacy, Diamond Barrera, Ron Ralph, Josh Haefner

TAS Field School Registrar: Sylvia Gunn Orton

Field School Camp Boss: Jack Pool

Lab Directors: Aina Dodge and Marybeth Tomka

TAS Youth Group Leaders: Doug Boyd, Marni Francell, Sharon Menegaz

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The 2022 Field School- 41KR744- The Kemosabe Site at Bear Creek Ranch

Site 41KR744 is a prehistoric site situated on the terraces of the Guadalupe River. On-going excavations by our host, Marvin Gohlke, and the Hill Country Archeological Association have recovered a trove of Archaic stone projectile points spanning at least 7,000 years and evidence of intensive episodes of cooking resulting in the creation of numerous burned rock middens. A radiocarbon date of between 7280 and 7420 cal B.P. on deposits associated with a Bandy point is the oldest identified component, although older deposits undoubtedly exist at the site.

Many of our excavation units will target large stone features or the periphery of the burned rock middens. While some of the upper component has been disturbed by historic soil conservation practices, intact archeological features still occur close to the surface, and we are hoping to encounter these deposits at shallow depths.

Why is 41KR744 significant?

The site is a record of 7,500 years of prehistoric settlement and land use in the Hill Country and Guadalupe River Valley. Nearby excavations at the Gatlin Site 41KR621 are an interesting foil and comparison ─ the sites are similar in age, yet there are clear differences in the assemblages, despite their proximity. What was significant about the site that it was revisited for thousands of years and was an important fixture of the prehistoric landscape? The vast accumulations of burned rock from single-use hearths to burned rock middens are evidence of a complex history of the site and region. Last year's excavation uncovered an intact earth oven almost 2 meters diameter estimated to be more than 5,000 years old.

Ongoing investigations at other Texas sites, such as the Dimond-Knoll Site (41HR796) outside of Houston demonstrate prehistoric peoples interacted over great distances and we think similar long distance and complex interactions extended to what is now the Hill Country Region.

Survey

The survey team will lead a reconnaissance survey of local properties that will focus on identifying and recording prehistoric and historic sites. Survey crews will learn survey techniques, site mapping methods, and site recording using the TexSite Archeological Site Form. Survey is an important outreach and opportunity to educate the public and landowners about the TAS and to add valuable data at a local and state level. A separate survey manual will be provided to survey participants.

This manual is intended to cover the work conducted by the prehistoric excavation crews.

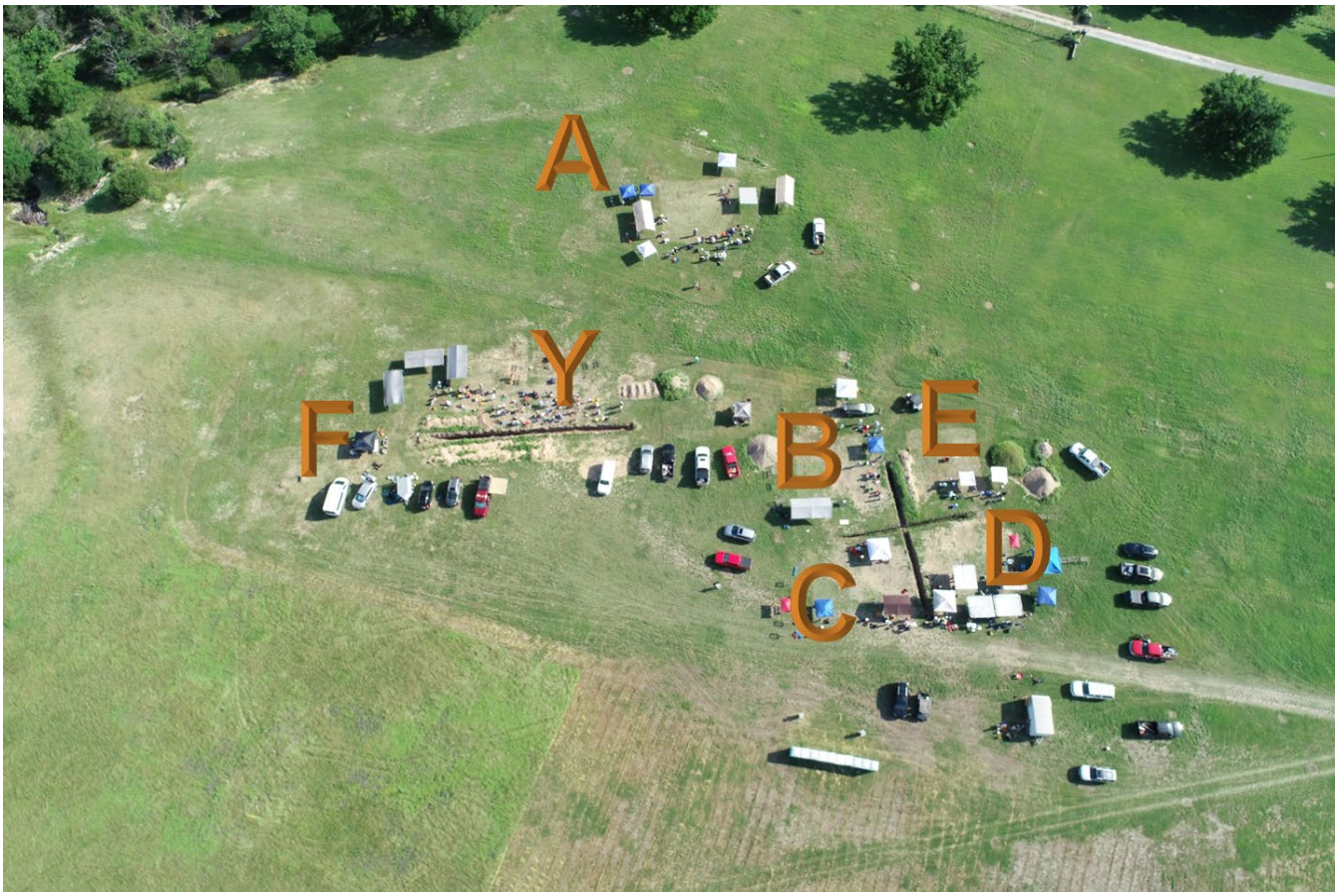
Welcome to the 2022 TAS Field School field methods and paperwork

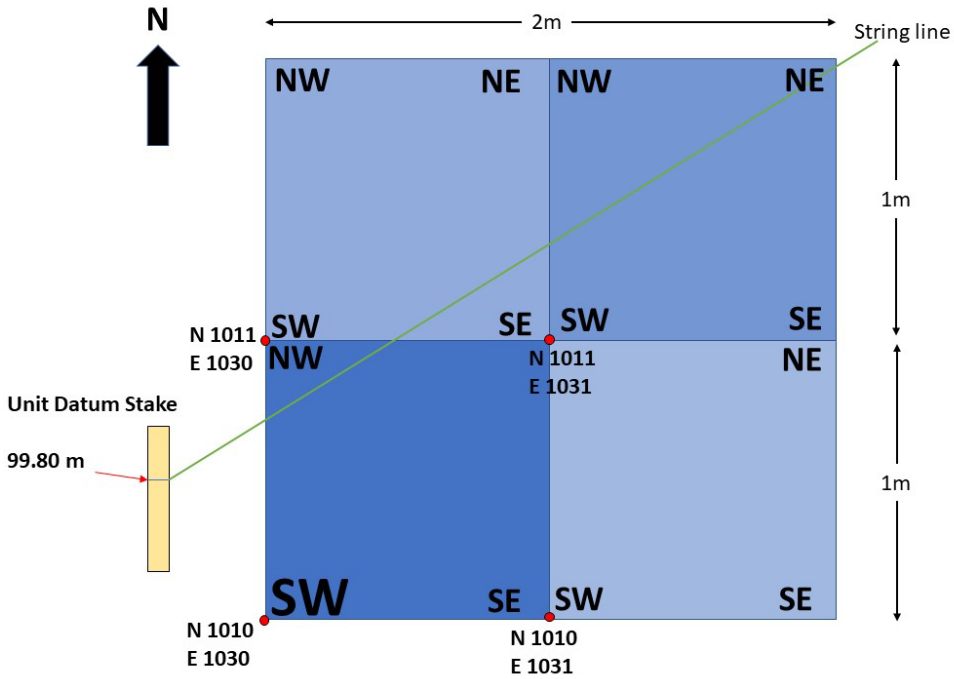
This year's TAS field school investigations will continue the work of last year's field school and the long-term work of the Hill Country Archeological Association. There are no major changes from last year, though field tags have been updated, and we will follow the established procedures for the project to maintain continuity with their records and future work. For last year's participants and workers these forms will seem familiar- you may get your form from last year back to complete- and we tried to keep them flexible and adaptable to anticipated situations and the unexpected.

The excavations require only the basic tool kit to be used: a flat shovel, trowel(s), line level, measuring tape or rule, a scoop or pan, a pencil and sharpie. A list of additional optional field gear can be found on the TAS website under Field school Fieldwork and Lab Info. The Field School brings together a diverse range of experience, preferences and interests, and there are numerous excavation techniques and tools. Whether to use trowel or spade, excavate quickly or with a brush is determined by circumstance and the instruction of the crew chiefs and area supervisors. Excavating in the hearth field will differ from relatively rock-free areas and burned rock middens. There is no set quota of excavation for the field school and participants are encouraged to work at their own comfortable pace with an emphasis on camaraderie, enjoyment, learning, and discovery. In some instances, properly recording findings, drawing, describing, and sampling will take longer than excavating. We all benefit from a few properly documented excavation units versus many poorly documented levels.

Blocks, Units, Coordinates

In this investigation, we are primarily excavating in arbitrary 10-cm thick levels with the 1-x-1 m unit as the standard size. Four units will be grouped as a 2-x-2 m unit. One crew will be assigned to a 2-x-2 m unit. These 2-x-2 m units are composed of four 1-x-1 m units. The 2-x-2 units are grouped together into Block Areas (Block). Each Block is a designated letter (A, B, C, D, E, Y (Youth)….) and is overseen by one or more Block Supervisors. The size of the Blocks varies between 5-x-5 m (Block F) to the typical 10-x-10 m, and then the Youth Group Block, which is more linear. Any block may be expanded depending on findings as we are hoping to expose large horizontal distributions. Each unit will have a designation based on the site grid coordinates of the south-west corner. There is a control point (datum) with the North (N) designation as N 1000 and an East coordinate (E), as E 1000, for unit N1000 E1000. As measurements are in metric, this corresponds to North 1000 m and East 1000 m on the site map. The elevation at this location is an arbitrary set 100 meters. All unit designations and elevation datums are based upon these coordinates. Unit datums are in relation to the site datum and coordinate grid.


A
Y
F
B
E
D
C


N
2m
String line
NW
NE
NW
NE
1m
N 1011
E 1030
SW
SE
SW
SE
NW
N 1011
E 1031
NE
Unit Datum Stake
99.80 m
1m
SW
SE
SW
SE
N 1010
E 1030
N 1010
E 1031

Depth and Elevation

Elevation is likewise in meters, using a string line and rule or tape to measure downwards from a datum. Elevation is relative to the site datum, which has an arbitrary elevation of 100 meters. Each 2-x-2 m will have an elevation datum stake. A string line attached to the stake at a line or notch (marked with the elevation in meters at the line or notch) that will be used to record elevation. Elevations are recorded to the nearest mm when precisely recording select artifacts and sample elevations. A starting elevation might read as 99.80m and ending elevation 99.70m, a 10-cm difference. At 41KR744, elevation of the existing ground surface is relatively constant making measuring easier and reducing common errors. However, datum stakes may have differing elevations due to terrain or other circumstances so be sure to check stake for line level elevation when moving from unit to unit within a block or when moving from block to block.

Unit numbers are written on flag tape tied to the southwest corner of each 1 x 1 m excavation unit. This unit number locates the unit within the site, and should be written on all Excavation Level Records, artifact collection bags, profile drawings, photograph logs, and other records associated with the unit. Crew Chiefs will assign crew members to work in each 1-x-1 m excavation (with 4 units making up each 2-x-2).

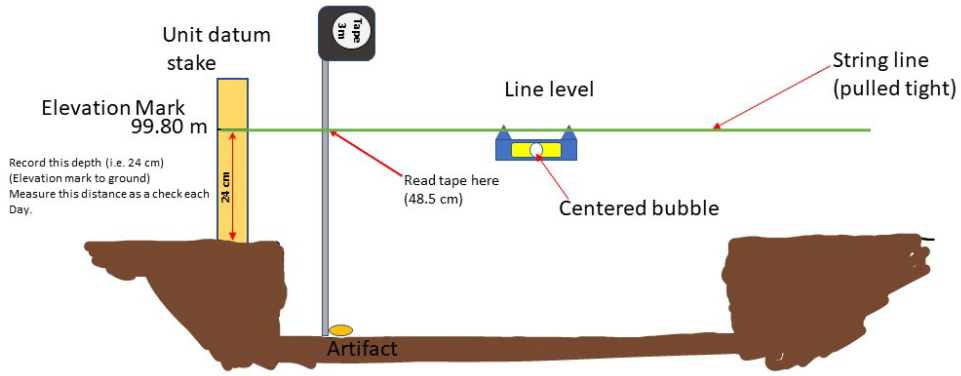
Protect the Elevation Datum Stake. Place excavation kits or water bottles in a semicircle around the stake to keep people from kicking it or dropping equipment on it. When the level string is not in use, coil it up and place it at the base of the elevation datum stake where it is out of harm's way. If the elevation datum stake is hit, the Crew Chief must contact the Block Supervisor and ask for the elevation to be checked and possibly re-established.

To attach a level string to the elevation datum stake, tie a 3 m long piece of nylon twine tightly around the stake, seating it in the notch. Place a line level on this string. Stretch the level string across the unit and, holding it taut, raise or lower it until the bubble is centered between the lines on the level. All points along the level string are now at the elevation marked on the elevation datum stake.

Check line levels for accuracy daily, and whenever they have been stepped on or otherwise damaged. To determine whether a line level is accurate, mark a point in the unit. Place the end of a measuring tape on that point and extend it vertically past the level string. Make note of the measurement where the string crosses the tape. Then reverse the line level, put it back on the line, set the end of a measuring tape on the same point, and take the reading again. If it differs by less than 1 cm the line level is accurate. If it differs by 1 cm or more check it again; if it is still off, mark "defective" on the line level with a Sharpie and dispose of it.

Before excavating, use the level string to record elevations of the unaltered ground surface at five points: one at each corner of the unit and one in the middle. To calculate these elevations, stretch the level string out over a point and level the string. Set the end of a measuring tape on the ground surface and hold the tape vertically. Note the

measurement where the level string crosses the tape, rounding it to the nearest whole centimeter. Subtract this number from the elevation on the datum stake to determine the absolute surface elevation for that point.



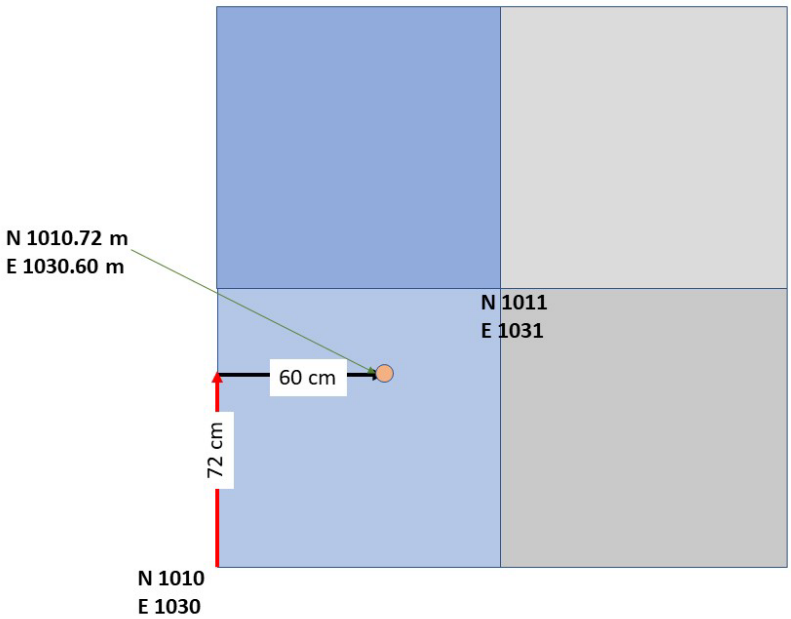
Measuring the elevation of an artifact using the unit datum stake, string line, line level and metric tape. Remember that your tape will give a reading in cm, while the datum elevation is in meters.

The elevation at the top of the artifact is 99.80 m (the elevation mark) –48.5 cm (the measuring tape reading of 48.5 cm). Converting the tape reading to meters (0.485 m) gives us the elevation of **99.80-0.485= 99.315 m**

Measuring elevation.

Unit/Level Form and Feature Form

The two principal forms for recording are the Unit/Level Form and the Feature Form. Supplementary is the Mapping Form which is a grid to map and draw. The Unit/Level Form should be familiar to many people and past. The form allows for flexibility- and is adaptable to the complexity of the excavation. Critical pieces of information are the unit designation, level and elevation. Coordinates within a unit are measured from the SW corner, for example in Unit N1010 E1030, a projectile point may have a plotted coordinate N1010.72 E1030.60; 72 cm north and 60 cm east of the SW corner. Depth as measured from the datum string line in centimeters and elevation, calculated from the Block Datum should be recorded in the appropriate part of the form. These must be correct for the form to be useful. Crew Chiefs will verify this information is correct.



Soil texture can be noted and color, using Munsell soil color book if available. There is no need to be exact in soil descriptions. What is important is to note changes, such as gravels, abrupt changes in texture such as clay to sand, animal disturbances and modern impacts.

- Features

The Feature Form is used to document Features that occur within a unit (or in a trench or shovel test). What is a feature? A feature is a location of an activity or event that can range in size and complexity from a simple hearth of fired clay to a burned rock midden or collapsed house structure and brick-lined well. If an excavator is unsure if they have encountered a feature, the Crew Chief and Block Supervisor may help with the determination and identification. Features are assigned a Feature Number from the Feature Log. Both Unit/Level Forms and Feature Logs use the supplementary Mapping Form and graph paper if needed.

We expect a variety of burned rock and lithic features and it is likely numerous features will be recorded in each block. When a feature is designated, the excavator shall consult with the crew chief and Block Supervisor on how to excavate, record and sample. Given the range of possible features, we choose not to require a set sampling strategy such as retaining 25% of all fill or 100% collection of all feature material. We are aiming for a representative sample of a feature- and certain types of features may require 100%

collection, while others may be a small percentage. The investigation should determine the spatial distribution of the feature, its size and elevation, a description, and estimated

function.

Guidelines for sampling were compiled by TAS Archeobotanist Dr. Leslie Bush. See Special Sampling section for collection procedures. So far, there has been low preservation of organic material in feature fill. When promising, we will still collect feature fill material for further processing.

- Feature Log

At the beginning of each day, Block Areas will be assigned sequential feature numbers on a Feature Log to assign to excavators. Each block will have their own independent Feature Log and numbering. Feature Logs are returned to the main lab table for scanning at the end of each day.

- Field Specimen Tag (FS#)

The Field Specimen Tag (FS#) is used to identify any artifact or sample collected. This is a sequential and unique number to that one item, sample or collection. It is essentially a ticket that has the positional information and unit designation for the item. These tags are placed in the bag with the item. The Field Specimen Tag is assigned from the Field

Specimen Log Book, which identifies the Block, unit, and provenience, and type of item associated with the Field Specimen Tag Number. One level in a unit may use ten or more FS#. As a level is excavated within a unit, artifacts may be mapped in place, samples collected. Non-diagnostic artifacts collected from the screen such as debitage, shell fragments and bone fragments may be collectively bagged under a single FS#.

While digging, plot and collect any projectile points, stone tools, and unique items found in place. Use measuring tapes to determine the distance of each item from unit corners, and plot and number (FS#) that location on the plan view on the Excavation Level Record Map. After the specimen has been removed, measure the elevation of the surface on which it was resting, using the level string and a measuring tape.

Each point plotted specimen should be indicated on a numbered list keyed to the mapping plan view.

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Each point plotted specimen should be indicated on a numbered list keyed to the mapping plan view. Artifacts will be collected in polyethylene bags. These are the final curation bags and may be written on with the Block, Unit Level and FS#. At the least the Field Specimen Tag shall be placed in the artifact bag. Items such as bone require special treatment and may be wrapped in tissue and enclosed in a paper bag. Consult with your crew chief if you encounter fragile bone or shell. These may require special collection methods. The Block Supervisor will advise how to collect such specimens. In most cases this will be excavating additional matrix around the bone or shell and wrapping the specimen in tissue and placing in a rigid container such as a small cardboard box or plastic film canister.

FS# Log Sheets

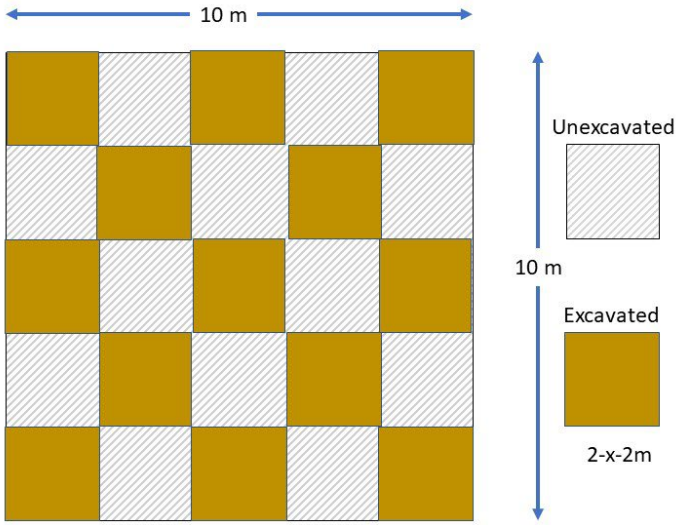
At the start of the day, each Block will be assigned FS# Log sheets with pre-assigned numbers. Additional FS# Log sheets will be provided as needed. The FS# will be independent for each Block. The FS# Tag is not prelabeled. As a unit is completed in a Block, the completed form is submitted to the Block Secretary where the form is verified, and the entry is made in the FS Log sheet. After the Unit/Level Form is verified, the excavators can proceed to the next level or unit as determined by the Crew Chief or Block Supervisor.

- Unit Log Sheets

Each Block has a log of each unit opened, the starting and ending elevations, and the excavators.

Block Excavation Procedures

Blocks should be excavated at a uniform rate to create the greatest horizontal exposures with a consistent floor. To that end, features such as burned rock hearths should remain in place as the Block is exposed. In some instances, units within a Block may be un-excavated to provide stratigraphic information and later excavated.



Block Excavation

- Photography

Each Block should have a designated photographer who will record using the Photolog. Photos should use that camera's image numbering system. Attention should be paid to Features and completed Block floors. At the completion of a unit, the floor should be photographed as this will aid in creating mosaics. Photographers should also document work in progress, unique and not-so-unique artifacts (after they are mapped), crew shots and general site activity. At the end of each day, photos will be downloaded at the lab table. A photographic scale should be used for unit photos.

- Screening

Screening will be done primarily with 1/4 -inch mesh screen. The sediments at 41KR744 vary in texture and hardness, primarily determined by moisture content- newly exposed

soil tends to be easier to excavate and screen. When screening, care should be taken to avoid breaking or abrading artifacts. Everything should be collected from the screen except for modern plant debris (leaves, branches, roots, etc.) and natural materials such as gravel. Screeners may find it convenient to collect sub-category bags such as sorting burned rock and debitage in separate bags.

Tarping- When possible, we will try to cover portions of the block at the end of the day to preserve soil moisture. Equally important is to collect any loose tools and implements at the end of each day. Rain has foreshortened field schools and it may make it difficult to recover tools.

<u>The Expected</u>

- Lithics-Debitage and Stone Tools

These will be the most common artifact categories. Care should be taken when encountering large flakes (>2 cm) as these may be more complex artifacts and can be damaged by steel excavation tools. Larger artifacts- typically 2 cm and greater should be mapped in place.

- Ground Stone
- Ground stone are lithics used or altered by grinding or smoothing as opposed to chipping. Ground stones are used to make flours, powders, paints and pastes from seeds, plants and minerals and animal products. Ground stone vary in size from hand held stones to large, stationary basins. They are an important source of information and the number of ground stones recovered distinguish this site from nearby sites. The largest recovered fragment was from the Youth Area.

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- Lithics-Burned Rock

Burned rock, principally limestone, will be the most common feature material in size, mass, and quantity. If you are unsure about what is burned rock, the Crew Chiefs and Block Supervisors will assist you. It is also possible to have un-burned rock in a collection of burned rock. Burned rock is evidence of deliberate heating for cooking in a variety of methods. The size of the individual rock, the overall shape and size of the accumulation, and the degree to which rocks are fractured are all important observations for reconstructing their function. Burned rock is also the curator's bane and can quickly overwhelm storage. We will be quantifying burned rock recovered in the excavations. For a given feature or unit/level, burned rock shall be collected for further processing- this may be done at the screen or at the lab, depending on the quantity. The size will be measured using incremental templates- where a rock is placed on the smallest opening and then recorded.

Other intrigues

Participants should be aware of metal objects, at or near the surface. Many will be recent debris from ranching, but some may be Native American objects, such as the crushed brass-like metal fragments. These are a strong resemblance to “tinklers” bell-like adornments.

Still other possibilities

Ceramics- pottery historic era and prehistoric are significant, informative artifacts. They can provide an age and even area of origin. Few prehistoric ceramics have been recovered from the nearby Gatlin Site and at Kemosabe.

The Unexpected-Human Remains

Human remains found on public and private lands may be subject to the jurisdiction of the Health and Safety Code (Title 8, Chapters 711-714). If you think you have found human bone(s) excavating or on survey, stop excavating and get the assistance of the Crew Chief, Area Supervisor(s) and the Principal Investigator. Please be conscientious and respectful of remains if this should occur. The next course of action could involve local law enforcement visiting the location to determine if the remains are associated with a crime.

The Lab

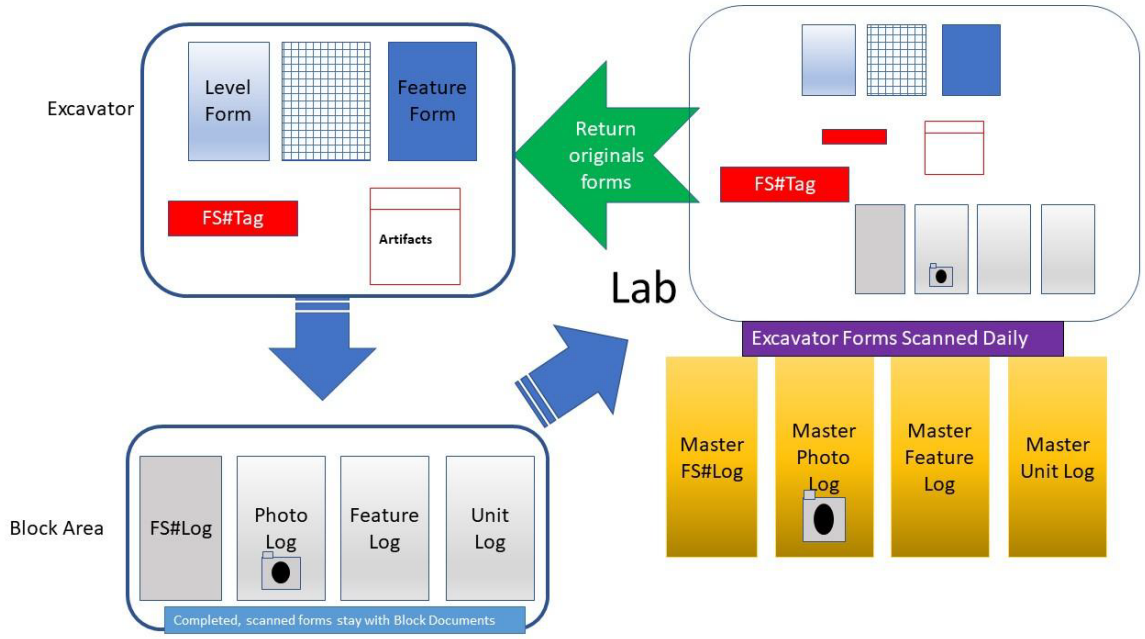
The Lab is the repository for artifacts, forms and photos at the end of the day. The Lab will issue the morning FS# Logs, FS# Tags, Photologs and incomplete paperwork from the previous day. The Lab has a collection of all forms needed. The artifacts and records will remain on location with our host and landowner, Marvin Gohlke. The Hill Country Archeological Association has on-going local investigations that includes 41KR744 and we are integrating the Field School with their records and procedures.

FS#-LC# Field Specimen to Lab Catalog

Lab work involves processing the artifacts from the field into the appropriate analytical category such as ceramic, lithic, bone, and metal. The FS# will be assigned a Lab Catalogue number, a designation for curation and further analysis. The extent of analysis will be determined by the amount of material, the skills of the analyst and overall interest of the Lab. The Lab will inventory the samples collected and any special requirements.

The Final Lab procedures are likely to change and adapt once excavations commence.

Paperwork Flow Chart



Basic Supplies List

Excavation:
Trowels- various shapes if you have them. These should be sharpened before use.
Small pick/ Brick or geologic hammer/ Ingalls Pick
Small spade
Wooden/Bamboo implements
Line Level
Metric tape or rule
Dust pan or scoop
Golf-tees, skewers to mark objects
Clipboard
Pencils
Sharpie
Flag tape
Knee pads/ kneeler
Gloves
Sturdy footwear- closed toe, preferably with a tread that won't damage excavations
Additional: compass, arrow or scale

Survey:
Boots
Compass
Gaiters if you have them
Gloves
Sharpshooter or similar shovel
Backpack
Water
Sharpie
Pencils
Clipboard
Additional: GPS, camera

Communication and Emergency Notification

All Area Supervisors and Crew Chiefs are encouraged to have a charged and functional mobile phone with them at all times in order to communicate with the P.I. Director, Camp Boss, crew members, and emergency personnel from the local area. The phone numbers of these individuals will be provided to you prior to the beginning of field work, and you should provide yours to the P.I. for distribution to key individuals. We will have two different excavations and multiple survey teams in areas of varying cell phone coverage, so communication is important.

Regular communication should be maintained with the P.I., Area Supervisors, Lab, and Camp Director. Area Supervisors and Crew Chiefs are expected to provide updates as needed regarding questions, concerns, discoveries, equipment/supply requests, and emergencies.

Crew members should report any emergency situations to their Crew Chief or Block Supervisor. Supervisors must report all emergencies immediately to the Field School Committee members and the P.I.

Emergencies may be defined as health related, pertaining to safety considerations for any investigation area, reporting the discovery of human remains, regarding personnel conflicts, weather related, of any other serious matters that require the attention and/or assistance of TAS Field School management.

Emergency Numbers for the Field School at Bear Creek Ranch

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1. **911** for any serious injury or problem.
2. **Kerr County Sheriff**
   400 Clearwater Paseo, Kerrville 830-896-1216
3. **Kerrville Police**
   429 Sidney Baker St., Kerrville 830-257-8181
4. **Ingram Police**
   226 TX 39, Ingram 830-367-2636
5. **Kerrville Fire Department**
   87 Coronado Dr., Kerrville 830-257-8449
6. **Peterson Regional Medical Center (hospital)**
   551 Hill Country Drive, Kerrville 830-896-4200
7. **Peterson Urgent Care**
   1740 Junction Hwy, Kerrville 830-258-7669
   Monday-Friday 7 am to 4 pm Saturday 8 am-4 pm
8. **Franklin Clinic**
   723 Hill country Drive C, Kerrville 830-792-5800
   Monday-Friday 8 am-6 pm Saturday 8:00 am to 1:00 pm
9. **Hill Country Memorial Hospital**
   State Hwy 16, Fredericksburg 830-997-4353

Field Form Examples and Lithic Guides

Unit/Level Form

Grid

Feature Form

FS# LOG

FS# Tags

Historic Site Form

Historic Excavation Forms

Historic FS# Tags

Photolog

Block Unit Log

Shovel Test Log

Shovel Test Form

Lithic Analyst Guides (HCAA) Flakes and Bifaces

Special Sampling

SAMPLING FOR FLOTATION, POLLEN, PHYTOLITHS, STARCH GRAINS, VIBRATIONAL SPECTROSCOPY, AND CHEMICAL RESIDUES

These guidelines were compiled in Spring 2014 based on the references below, TAS flotation sampling in 2010, 2011, and 2013, and conversations with Linda Scott-Cummings, Laura Short, Marybeth Tomka, Alston Thoms, and Kevin Hanselka. Many thanks to all for generously sharing information and advice.

Leslie L. Bush
March 2014

References

Laurence, Andrew and Alston Thoms
2011 *Microfossil and Molecular Field Sampling Procedures for Earth Oven Features*. Ecological Archaeology Lab, Department of Anthropology, Texas A&M University, College Station, Texas. Unpublished ms., May 31, 2011.

Pearsall, Deborah M.
2000 *Paleoethnobotany: A Handbook of Procedures*. 2nd ed. Academic Press, San Diego, California.

Scott-Cummings, Linda
2007 *Manual for Pollen, Phytolith, Starch, FTIR,AMS Radiocarbon, and Macroflora Sampling.* Paleo Research Institute, Golden, Colorado. Available online at: http://www.paleoresearch.com/mainsite/manuals/PRI_Sampling_Manual.pdf

Sudbury, J. Byron

2011 *Quantitative Phytolith Analysis: A Working Example from Modern Prairie Soils and Buried Holocene A Horizons*. Research Monograph No. 1. Phytolith Press, Ponca City, Oklahoma.

FLOTATION SAMPLING

WHEN TO SAMPLE

High Priority Contexts

- Visible Charcoal
- Cultural feature (pit feature, post mold, occupation surface, burned rock midden, house floor)
- High integrity contexts (intact)

* 2 of these 3 characteristics are sufficient cause to take flotation samples

** If a feature has discernable cultural strata or zones, each of those strata or zones should be sampled separately.

*** Extensive areas with visible charcoal such as sheet midden, housefloors, and non-central areas of burned rock middens may be subsampled on a grid system, with flotation taken (for example) from the southwest corner of every or alternate squares.

**** If charcoal for radiocarbon dating is removed from a flotation sample, items removed (and ideally the lot number) should be noted on the flotation sample. Otherwise, the sample will appear to contain less charcoal than was actually the case.

Low Priority Contexts

- No visible charcoal
- Context not interpretable (can't tell what it is or whether it's archaeological)
- Low integrity contexts (disturbed)

Control Samples

Control samples will be taken by the flotation crew and/or at the discretion of the Principal Investigator. Excavation crews need not take control samples unless specifically directed.

COLLECTING THE SAMPLE

Flotation samples should be collected with as little disturbance to the soil as possible, ideally taken in a single shovelful from earth to bag. **12" x 12" bags** work well with the current TAS flotation system, and **gallon bags** will do in a pinch. If the flotation context is an intact, interpretable feature with visible charcoal, **fill 4 to 6 bags**. A 20 x 20 x 10 cm rectangle of soil should fit nicely into a 12" x 12" bag, and it's easy to draw on feature maps.

***Samples should be double-bagged with a flotation label card placed between the bags.**

DOCUMENTING THE SAMPLE

1. Fill out the flotation card as completely as possible with special attention to **depth**.
2. Map the location of flotation samples on unit plan and feature profile maps.

FLOTATION LABEL CARDS

Field bags may be filled out and used as flotation cards. Alternately, this sample flotation card may be modified and reproduced on paper, cardstock or Tyvek. Remember that paper-based cards should not come into direct contact with the soil sample.

Site #		Context FS#
Operation		Unit Type
Unit Coordinates	N	E
Level	Depth	Stratum/Zone
Feature #	Portion	
Description		
Excavator		Date

SPECIAL SAMPLING

(For Starches, Pollen, Phytoliths, Residues, and Vibrational Spectroscopy)

Artifacts

- Groundstone Tools
- Earth oven elements > 10 cm
- Tools (e.g., when pitches or waxes are evident on points)
- Pottery (e.g., with evidence of cooking residue)

PROCEDURES

1. Expose tops only of the artifacts (*Do not remove the artifact from the ground! – not even for a quick selfie*).
2. Wash your hands and clean your trowel. If possible, put on powder-free latex gloves.
3. Remove artifact from the soil with a layer of dirt around it (especially from under the artifact) and place in a new, labeled paper bag. Write on the bag with pencil, not Sharpie, to avoid off-gassing.
4. No food or smoking in the area during collection. Any food or smoking the day of collection should be noted on field forms.
5. Samples in paper bags should not be transported from the field in any container that also contains plastic bags or gloves.

Soil contexts

- Small subsamples from flotation will be reserved for pollen, phytolith, and other studies. Although this is not optimal procedure, it is often informative.

- Crew members need not collect pollen and phytolith column samples unless specifically instructed. Usually these will be collected by specialists or their representatives in the field using the hand method described by Pearsall with additions from Scott-Cummings:

PROCEDURES

1. Wash hands and trowel and tie hair back.
2. Clean the profile and re-clean the trowel. Sample collection should be completed within ten minutes of exposing the profile.
3. Sample bottom to top, one stratum per sample. Contiguous strata of 2 cm or less are preferred.
4. Trowel should move across a single stratum (*trowel side-to-side, not up and down*).
5. Each sample should consist of ½ to one liter of soil collected in a sterile container.
6. Rubbing alcohol can be added to phytolith samples to discourage microbial activity, but this can damage pollen. Drying or freezing samples is preferred when practical.
7. Clean the trowel between samples.
8. Map the sample locations on unit profiles.

CONTROL SAMPLES

Unless other arrangements are made, soil control samples will be taken by the flotation crew prior to and during field school. Air samples should be taken by crews during collection of pollen or phytolith column samples or collection of artifacts for special analysis (e.g., manos or earth oven elements for starch grains). Artifact control samples should be taken by the crew that took the archaeological artifact samples for special analysis.

Soil

- ***Flotation***
  - Samples should be taken from off-site locations at depths comparable to those from which cultural flotation samples will be taken
  - Samples should be taken from on-site locations in “sterile” areas between features

- ***Phytoliths and pollen***
  - Samples should be taken from near-surface soil (5-10 cm deep) prior to site disturbance for excavation. Take pinch samples from a 10 x 10 m area with special attention to leeward areas of rocks and areas with fine soil texture. Total soil collected should be approximately 50 g.

- ***Artifact studies: residues, fibers, and starch, pollen, and phytolith washes***
  - If sampling earth oven elements, collect off-site rocks using the same procedures. Dirt collected along with other artifacts is usually sufficient.

Air

- ***Microfossil, vibrational spectroscopy, and molecular studies***

  (other air samplers are available, but this is the most simple)

1. Line a sterilized petri dish with distilled water.
2. Leave it exposed to the atmosphere at the site for the duration of the artifact sampling procedures.
3. When finished, pipette the water into a test tube.
4. Seal and save to be sent along with sample for analysis.

Artifacts

If earth oven elements or manos are collected from archaeological deposits, off-site rocks of the same type should be collected as control samples using the Special Samples-Artifacts procedures described above.

UNIT/LEVEL FORM

Hill Country Archeological Association/TAS Field School 2021 Kerrville

Site: Area/Block:

Unit: N / E (SW Corner) Size:_____ Level:____ Date:_____

Excavator(s):

Discussion: Describe sediments, disturbances, soil changes, artifacts, feature(s), other data noted during excavation. Note differences from level above. Continue on back ☐

Feature Form Y/N Type of feature, size

Soil: Texture, color, inclusions, disturbances

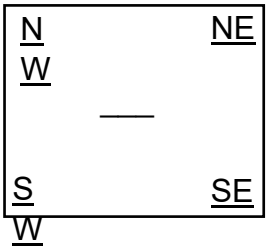
Cultural Material: Lithics, burned rock, bone, metal, modern debris

FS Numbers Used:

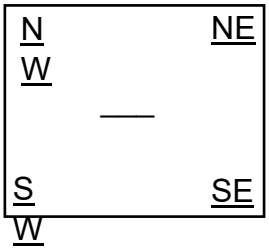
Datum:_____

Line Level Elevation:_____

Beginning Elevations



Ending Elevations



Site: Unit: Level: Feature:
Date: Excavators:

Key:

____ per square

_____North

Page ___of ___

1 of 5

UNIT/LEVEL FORM

Hill Country Archeological Association/TAS Field School 2021 Kerrville

Site: 41KR744 Area/Block: A

Unit: N 1010 E 1030 (SW Corner) Size: 1-x-1 Level: 2 Date: 04/01/2021

Excavator(s): E. OKSANEN T. JONES

Discussion: Describe sediments, disturbances, soil changes, artifacts, feature(s), other data noted during excavation. Note differences from level above. Continue on back ☒

Feature Form Y/(N) Type of feature, size

Soil: Texture, color, inclusions, disturbances

Clay loam, compacted, 10YR 6/1 Dark Brown.
Occasional $CaCO_3$ nodules - 1-2cm, Whole and fragmented snail sh
Fence post in NE corner - extends whole level
Some evidence of disc/furrows at top of level

Cultural Material: Lithics, burned rock, bone, metal, modern debris

78 flakes / flake fragments
23 burned limestone (FCR) - Largest 5cm - gravel size fragmen
2 modified flakes -
1 Pedernales point -
1 Fence staple
1 - Deer tooth

FS Numbers Used: 1012 - Flakes; 1013 - FCR; 1014 - modified flake (A); 1015 - modified flake (B); 1016 - Pedernales Point (C) - Distal tip missing; 1017 - Deer tooth (D)

Datum: SW corner

Line Level Elevation: 99.80

Beginning Elevations

NW 99.50	NE 99.51
99.51	
SW 99.51	SE 99.50

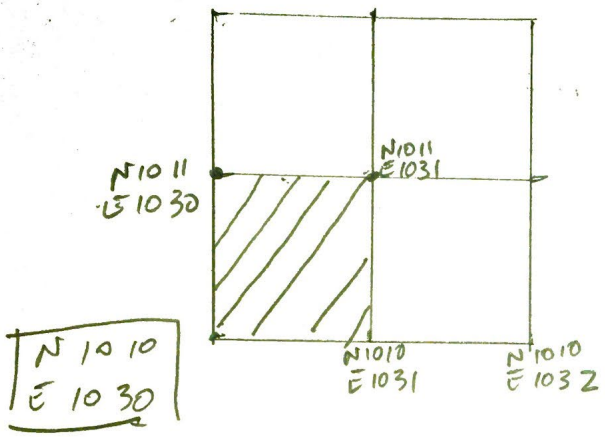
Ending Elevations

NW 99.40	NE 99.40
99.41	
SW 99.40	SE 99.40

From Front

2 of 3

BLOCK A

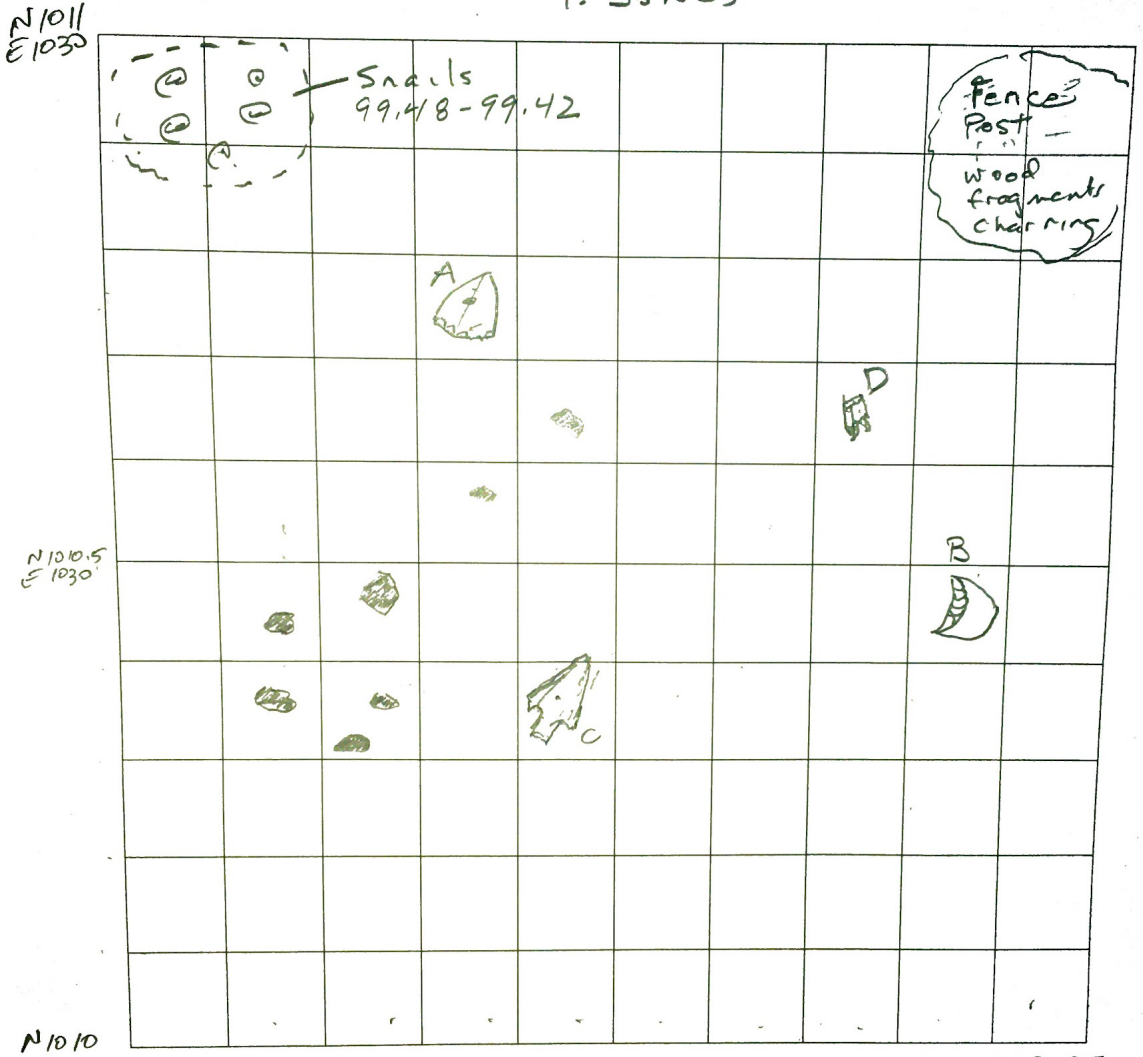


E. OKSANEN

T. JONES

BLOCK A

Site: 41 KR 744
Date: 04/01/2021
Unit: N 1010 E 1030
Excavators: E. OKSANEN, T. JONES
Level: 2
Feature: N/A



Key:

10 cm per square

North

Page 2 of 2

A - FS 1014 99.48 N1010.76 E1030.35
B FS 1015 99.45 N 1010.45 E1030.85
C FS 1016 99.42 N 1010.38 E1030.45
● - FCR - (Not collected individually)
D - 1017 - 99.45 N1010.65 E1030.73
Deer tooth?

FEATURE FORM

Hill Country Archeological Association

PROJECT_____SITE_____

Feature #_____FS#s_____Date_____

Location_____Excavator(s)_____

Depth_____ cm below surface (upper/lower)

Elevation_____ m (top and bottom)

Description/Contents

Description/Contents

Map/Drawing? Y/N Soil Sample Y/N Photo: ID

HCAA FIELD SACK LOG SITE: AREA: PAGE #_____

RECORDER:

								TOOL		FLAKE			BIFACE						
FS #	DATE	UNIT/ FEAT	LEVEL	DEPTH	NOR	EAST	SCRN	PROJECTILE PT	PERF, SCRAPE, SPOKE	DEBITG	DEG	MOD /USE	STAGE	CORE	BONE	CERAMIC	CHAR	OTHER	NOTES
1800																			
1801																			
1802																			
1803																			
1804																			
1805																			
1806																			
1807																			
1808																			
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TAS Field School 2021 **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________
TAS Field School 2021 **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________
TAS Field School 2021 **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________
TAS Field School 2021 **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________
TAS Field School 2021 **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________	**TAS Field School 2021** **41KR744 FS:** N: ________ E : ________ Unit: ________ Other Assoc: ________ Level: ________ Depth: ________ Contents: ________

Shovel Test Form

Admin Use Only: Pg._____ of _____

Project: **Date:** **Area:**

Project #: **Recorder/Team:** **Site:**

SOIL KEY: **Sa**=Sand; **SaLo**=Sandy Loam; **Lo**=Loam; **SiLo**=Silty Loam; **ClLo**=Clay Loam; **Cl**=Clay

ST # ☐pos ☐neg	Alluvial / Upland	Vegetation	Disturbances	Location: (relation to creeks,roads, struc., etc.)
Property/County	☐floodplain ☐drainage	☐mesquite/scrub ☐cacti	☐eroded ☐fill	
	☐terrace ☐hilltop	☐juniper ☐vines/briar	☐construction	
	☐lowland ☐ slope	☐grasses S/T ☐ tree litter	☐plowed ☐planted pine	
SITE #	☐fan ☐prarie	☐hardwoods ☐coniferous	☐logged ☐other______	
	GSV%_______________	☐wetland ☐other	__________________	

Depth	Munsell	Soil	Inclusions %	**Comments and Cultural Material - List Artifact/Count/Depth:**
				Termination: ☐basal clay ☐bedrock ☐depth ☐water table
				☐other:

ST # ☐pos ☐neg	Alluvial / Upland	Vegetation	Disturbances	Location: (relation to creeks,roads, struc., etc.)
Property/County	☐floodplain ☐drainage	☐mesquite/scrub ☐cacti	☐eroded ☐fill	
	☐terrace ☐hilltop	☐juniper ☐vines/briar	☐construction	
	☐lowland ☐ slope	☐grasses S/T ☐ tree litter	☐plowed ☐planted pine	
SITE #	☐fan ☐prarie	☐hardwoods ☐coniferous	☐logged ☐other______	
	GSV%_______________	☐wetland ☐other	__________________	

Depth	Munsell	Soil	Inclusions %	**Comments and Cultural Material - List Artifact/Count/Depth:**
				Termination: ☐basal clay ☐bedrock ☐depth ☐water table
				☐other:

ST # ☐pos ☐neg	Alluvial / Upland	Vegetation	Disturbances	Location: (relation to creeks,roads, struc., etc.)
Property/County	☐floodplain ☐drainage	☐mesquite/scrub ☐cacti	☐eroded ☐fill	
	☐terrace ☐hilltop	☐juniper ☐vines/briar	☐construction	
	☐lowland ☐ slope	☐grasses S/T ☐ tree litter	☐plowed ☐planted pine	
SITE #	☐fan ☐prarie	☐hardwoods ☐coniferous	☐logged ☐other______	
	GSV%_______________	☐wetland ☐other	__________________	

Depth	Munsell	Soil	Inclusions %	**Comments and Cultural Material - List Artifact/Count/Depth:**
				Termination: ☐basal clay ☐bedrock ☐depth ☐water table
				☐other:

flakes

Primary or (1 degree) flake – cortex remaining on one complete side – usually has a big percussion bulb – is usually the result of hard hammer stone impact – first flakes taken off of a core/cobble.

Secondary or (2 degree) flake – cortex is partially on one side and completely off of the other side of flake – can have a big percussion bulb but bulb is usually smaller and usually made by soft billet percussion, like with a deer antler.

Tertiary or (3 degree) flake – no cortex remaining at all – usually result of percussion by soft billet – sometimes difficult to find percussion bulb – if very small flake then it could be a pressure flake resulting from very last stage of reduction, typically done by pointed end of deer antler.

Blade flake – any of the above three types that is 2 X longer than wide.

Utilized flake – Any of the above (1, 2, 3 degree, or blade) flake types which is 4cm or greater in length and which has an edge that has use wear such as "scallops" along the cutting edge of the flake

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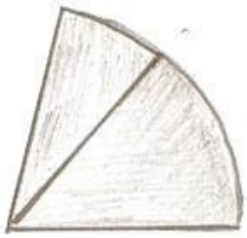
Re-touched/Modified - A Flake that has been knapped to sharpen edge.

Flakes that have been re-touched can also be utilized and show edge wear, likewise, flakes that have been utilized can also be subsequently re-touched

BIFACE STAGES

Stage	Mean Width/Thickness Ratio	Mean Edge Angle
	2-3	50-80 degrees
1 - sequential flake removal has occurred on both surfaces of a flake or core to form a single edge about its circumference. Significant cortex can still remain, flake scars deep and short, percussion bulb negative usually deep. Shape is amorphous or ovate	can be as great as 5 on "flake" blanks or as low as 2 on cobbles	

Gatlin Site examples

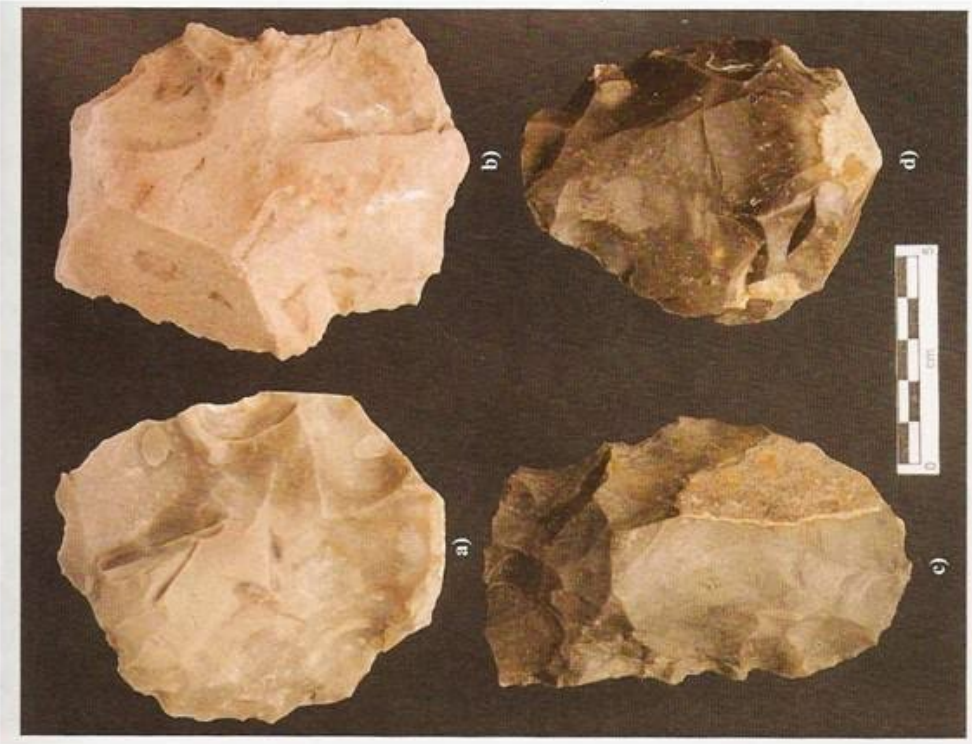
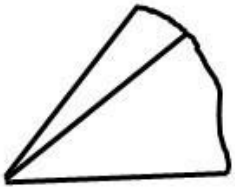


Figure 24. Stage 1 complete bifaces. Lot numbers: a) 408; b) 644; c) 404; d) 1133.4

BIFACE STAGES – cont'd

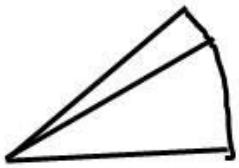
Stage	Mean Width/Thickness Ratio	Mean Edge Angle
2 Longer flake scars which can continue to center of biface. Some cortex remaining on chert mass. Weight is greatest reduction from Stage 1. Shape more ovate and oval pointed.	2-3	40-50 degrees 

Gatlin Site examples

Figure 27. Stage 2 complete bifaces. Lot numbers: a) 535; b) 383.1; c) 636.1; d) 1333.4.

BIFACE STAGES – cont'd

Stage	Mean Width/Thickness Ratio	Mean Edge Angle
3 Greatest thinning occurs at this stage. Mean weight is halved from Stage 2. Flakes removed around edges meet in center or can extend over center line. Typically symmetrical and oval with point.	3-4	30-40 degrees



Gatlin Site examples

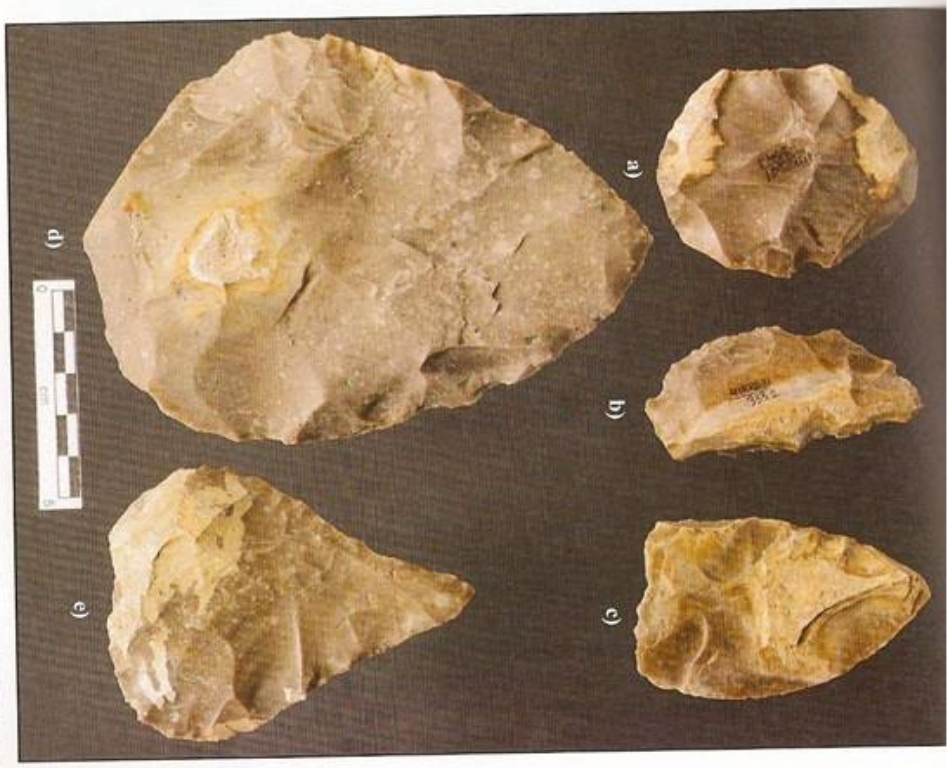
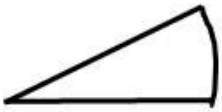


Figure 30. Stage 3 complete bifaces. Lot numbers: a) 354.1; b) 333.2; c) 1153.3; d) 1170; e) 1219.

BIFACE STAGES – cont'd

Stage	Mean Width/Thickness Ratio	Mean Edge Angle
4 Further refinement in symmetry, edge straightness and thinning.	4	30 degrees



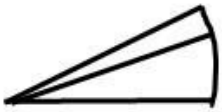
Gatlin Site examples

Figure 32. Stage 4 complete bifaces. Lot numbers: a) 873.1; b) 494.1; c) 1273; d) 1189.2.

Stage	Mean Width/Thickness Ratio	Mean Edge Angle
4 (further refinement in symmetry and edge straightness)	4	 **30 degrees**
5(final stage before final tool-sometimes called preform-sharpened or serrated edges – may have hafting elements)	**5 or greater**	**20-30 degrees** 
6 (completed tool or point)		

BIFACE STAGES – cont'd

Stage	Mean Width/Thickness Ratio	Mean Edge Angle
5 Final stage before completed tool/point stage, sometimes called preform. Sharpened and/or serrated edges, may have hafting elements.	5 or greater	20-30 degrees



Gatlin Site examples

Figure 34. Stage 5 complete bifaces. Lot numbers: a) 551.1; b) 274; c) 753.1; d) 1487.1; e) 332.

Stage		
6 Completed tool or point	5-10 or greater	Less than 20 degrees.

Stage	Mean Width/Thickness Ratio	Mean Edge Angle
4 (further refinement in symmetry and edge straightness)	4	 **30 degrees**
5(final stage before final tool-sometimes called preform-sharpened or serrated edges – may have hafting elements)	**5 or greater**	**20-30 degrees** 
6 (completed tool or point)		