JORNADA RESEARCH INSTITUTE

Spring 2025 Newsletter

JORNADA RESEARCH INSTITUTE
P. O. BOX 684, TULAROSA, NEW MEXICO 88352
WEBSITE: JORNADARESEARCHINSTITUTE.ORG

NEWSLETTER EDITOR: KATHY ROLER DURAND
KROLERDURAND@GMAIL.COM

JORNADA RESEARCH INSTITUTE

The Jornada Research Institute (JRI) has as its mission the study of the archaeological, ethnohistoric, and natural resources of the northern Chihuahuan Desert of Arizona, New Mexico, the Trans Pecos west and adjacent regions. JRI is committed to the protection and preservation of these resources so that current and future generations may benefit from their research and educational values. JRI is represented by a group of talented researchers from diverse backgrounds, allowing the institute to focus on multi-disciplinary approaches while sharing and engaging the public through a variety of educational and training opportunities.

IN THE COMMUNITY

CONTENTS

COMING IN JULY!!!

If you haven't already heard, Archaeoastronomy and Celestial Geometry: Understanding Ancient Astronomies is an international conference that Jornada Research Institute has organized at the Ruidoso, NM convention center July 7, 8, and 9 with site tours and events at the New Mexico Museum of Space History on July 10 (*Ancient Skies, Modern Eyes*). We will have 3 days filled with presentations, films, and exhibits. A Preregistration form can be accessed or downloaded from the (www.tularosabasinconference.com) website or from the www.jornadaresearchinstitute.org website. We urge you to preregister and take advantage of the reduced preregistration fees. We are trying to make registration and payment easy with a choice of printing the form, filling it out and returning it with a check to: PO Box 684, Tularosa, NM 88352; registering online at the jornadaresearchinstitute link; or on the tularosabasinconference link. At either of the website links, click on the form and follow the instructions to pay via Paypal or debit/credit card options.

You can also review details about the conference on both websites. The daily schedule with speaker line-up is accessible from either website. We have a great line up of speakers and topics. Don't miss this rare opportunity!!!

We are working on the tours but given the uncertainty of where federal lands will be accessible, we will only be able to have individuals sign up at the conference, not in advance. Creekside Village tours will not be restricted except by weather events. So, it will be possible to sign up for the July 8 evening viewing event in advance, but we are limiting participation to 35 people. The evening event on July 9 and morning tour on July 10 will require on-site sign up.

RESEARCH NEWS

Research Updates from the TXST Geoarchaeology Team
By S. Krause, T. Goedert, and M. White

In May 2025, JRI again welcomed graduate students at Texas State University to continue research in the Tularosa Basin and around the Creekside Village site. Thanks to JRI's collaboration, these students are gaining valuable training opportunities to help kickstart their careers, as they contribute new data and analyses to the growing body of knowledge regarding past environments in the region.

Figure 1. From left to right: Undergraduate research assistant Kawin Evans, graduate students/researchers Tristan Goedert, Gwen Olivier, and Marie White, and TXST assistant professor Sam Krause.

Tristan Geodert (MS student at TXST GEO) who is working with Samantha Krause and David Greenwald, led geoarchaeological testing on the canals and spring mound at Creekside Village. Geoarchaeology is a multidisciplinary field that applies earth science methods and perspectives to study the archaeological record and understand human-environment

interactions. By utilizing geoarchaeological methods, Tristan wants to expand on the previously conducted research at the Creekside Village site to better understand how the people living there interacted with their environment and how these reactions to environmental pressures might have transformed cultural patterns in the region. His investigation is guided by the following research questions:

1. How accurately can the age of the water management features at Creekside Village be estimated from the existing chronology based on relative dating methods?

2. How does the construction of the water management features at Creekside Village represent a cultural transition amongst the Jornada Mogollon to a more agricultural-intensive, sedentary society?

3. Could this cultural shift be the result of pressure from changing climatic conditions or cultural diffusion in the region?

4. To what extent can geoarchaeological methods such as isotopic geochemistry, mineralogy, palaeobotanical analysis, and particle size analysis provide insight into the evolution of water management practices and water sources over time at the Creekside Village site?

Figure 2. A profile shot of the excavation showing distinct layering within the feature.

Tristan collected sediment samples from the canals at the site, as well as at the spring mound to be radiocarbon-dated, chemically analyzed, analyzed for pollen, and tested for magnetic susceptibility. The spring mound excavations were unexpected and exciting for the research team. Once we removed the modern topsoil, it was apparent that the past spring mound surface had been dug into in areas at some point in prehistory, likely to be used as a borrow pit for gypsum adobe for building the upper wall and covering of the roofing materials of the nearby kiva. Our team continued to excavate through the $CaCO_3$ and gypsum rich spring mound deposit. This material was rich with burnt plant material, and our team collected multiple radiocarbon samples throughout the sequence for subsequent dating. The $CaCO_3$ rich sediment transitioned to a tan/pink basal material around 50cm in depth, though this horizon was again still prolific with burnt material. By 60cm we reached a compact and decomposing bedrock material. Subsequent lab work should reveal more about the nature of the spring mound during prehistory.

In addition, Tristan and the team sampled sediments both inside and outside three canal excavations across the Creekside Village site to perform additional palaeoecological and geochemical testing (see Fig. 3, a cross-section of the canal that distributed water from the reservoir to the terraced fields located on the lower Pleistocene terrace slopes at Creekside Village). As shown in Fig 3., this small canal was dug into ancient loess sediment that formed on the lee-side of the main ridge at Creekside Village and where loess soil (windblown) were transformed into terraced fields. We already know that this canal was in use prior to AD 673, when one channel had been abandoned and used to construct a roasting pit in it with yucca stalks used as fuel and radiocarbon dated.Tristan has already begun processing the sediment samples from his field research back at the laboratory at Texas State University’s Geography and Environmental Studies Department, and will present the results of his thesis research in the spring of 2026.

Figure 3. Profile of the upper canal associated with Creekside Village.

In erosional exposures of the Tularosa Creek floodplain, Marie White (PhD student at TXST GEO) has been using the layers of alluvial sediment to reconstruct paleoenvironments throughout the Holocene, and revisited the site for additional sampling (Fig 4.). Much like Tristan's research, Marie's draws from methods rooted in the geosciences, and work is ongoing to understand the climatic and environmental conditions of the valley before, during, and after key periods of habitation by using bulk sedimentary material sampled from the canyon walls. Using Tularosa Creek as one of three case studies from sites within New Mexico, Marie is addressing the following research questions:

1. What is the timing, intensity, and duration of Holocene wet/dry periods at each site, and how are these expressed differently at each site (laterally, longitudinally, by altitude)?
2. How have local plant communities (via phytolith analysis) responded to these wet/dry periods at each site, and how does this compare to the modern vegetation?
3. How can phytolith analysis inform us of human land use patterns such as agriculture, introduction of exotic species, and burning, if present within the record?

Figure 4. The sampled alluvial sequence in Tularosa Creek.

The alluvial section at Tularosa Creek has a striking middle zone, about one meter thick, with many alternating layers of black, organic-rich mats and lighter, siltier sedimentary materials. Radiocarbon dates constrain this zone to ~4,100-3,700 years BP, with several dates reversed, implying a period of sustained wetlands, and possibly episodic flooding, at the onset of the late Holocene. Geochemical data via X-ray fluorescence (XRF) also suggests wet, biologically productive conditions throughout this time. More recently, evidence of heightened river activity is bracketed by dates of 1,700 and 1,330 years BP, making it a relevant record for the time of Mogollon occupation in the region.

A vigorous microbotanical analysis using phytoliths – small silicate grains created by plants – will establish a record of floral communities over time at the site. Microbotanical work such as this not only reconstructs available native natural resources available to humans but may also capture increases in key cultigens or burned biomass, suggesting human modification to the land. This method is ongoing, and preliminary results from the Tularosa Creek site and other study areas will be presented at the Geological Society of America's annual meeting in Fall of 2026 in San Antonio, Texas.

Creekside Village: the 2024-2025 Season Results
By David Greenwald

Beginning with a return to Creekside Village in November of 2024, efforts with our all-volunteer team and graduate-student researchers from Texas State University accomplished a tremendous amount.

Excavations in the Pithouses: Upon first returning, our attention was focused on Feature 11, a D-shaped pithouse positioned at the southern end of the main ridge of the site. The northeast ¼ remained unexcavated from the previous season, so our attention was initially on reaching the floor and exposing the wall of the northeast ¼. Once accomplished, we began mapping all of the interior floor features. We dug all of the floor and wall features, mostly small postholes that appeared to be arranged in two rows, amounting to 65 of these small pits, and produced a plan map of the structure. The floor area of the structure is 35 square meters, one of the largest pithouses ever excavated in the Tularosa Basin.

We had noted the presence of burnt reeds and a greater accumulation of adobe construction material associated with the postholes that lined the inner edge of the pithouse. We realized that we were probably looking at the remains of a “wattle and daub” inner wall of the pithouse (Fig. 1), which provided a more comfortable interior and prevented the gravels and cobbles into which the structure was originally built from becoming loose by leaning against the pit wall. Wattle and daub construction makes use of green saplings or reeds, woven among upright posts and then covered with a layer of mud that is pushed into the woven wattle. Based on the presence of the small postholes, the entire portion of the pithouse depression with the curved walls was lined in this manner.

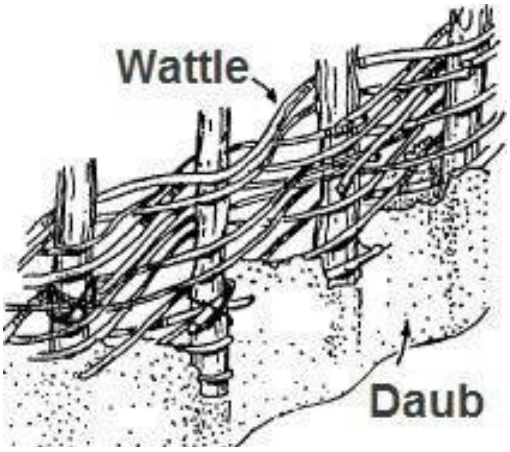


Figure 1. Illustration of wattle and daub construction.

The southeast side of the pithouse possesses a straight wall, serving as the flat side of the “D”. It is also the lowest side of the pithouse. Based on the main support postholes, it is likely the southeast side had a steeply sloping framed wall with the entryway located midway. We also noted that the central hearth aligned with a bulbous entryway, which was less than 1 meter in length. Between the entryway and the hearth was a narrow “trench” in the floor, possibly where a deflector slab has been set. Deflectors are common features between the hearth and entryway to prevent air from passing directly over the hearth and spreading ash and embers as air circulated when the hearth was in use. However, the deflector was absent. From early in our investigations of Feature 11, we had noted that the structure had not burned and was likely dismantled with salvageable timbers recycled. This may explain the absence of the deflector as well; tabular stone is exceedingly rare in the vicinity of Creekside Village.

As we continued our studies relating to the nodal cycle and the southeast lunar maximum rise, I was able to witness the association of the alignment of Feature 11 with the lunar event on January 26th between 5:35 and 5:40 AM. The architectural alignment of Feature 11 is keyed to the southeast lunar maximum event. Needless to say, it was quite cold at that time, while waiting to confirm my suspicions about this association.

Upon completion of Feature 11, we began cross trenching the pithouse depression immediately to the north, Feature 12 (Fig.2). This structure was destroyed by burning and has produced a substantial collection of dendro samples for tree-ring dating. After the cross trenching was completed, we calculated that the diameter of this nearly perfectly circular structure was nearly 9 meters, or 44 square meters of floor area. In May, we removed the last of the fill from the interior. Careful sweeping has exposed numerous floor features and stains. We began excavations of some of the floor features before vacating for the summer months. The features identified so far include a central hearth, a large, shallow pit of unknown function, two major support postholes, one confirmed bell-shaped pit and probably two more. It neighboring structure had two bell-shaped pits of similar shape and size. Although a possible entryway is located in the wall at nearly due south, we are not yet sure of this structure's orientation. We anticipate that nearly 100 small postholes are present around the interior perimeter of this structure, similar to Feature 11.

Figure 2. Aerial view of two pithouses at Creekside Village. Feature 11 on the right is D-shaped, whereas Feature 12 on the left is circular and under excavation in this image.

The conflagration that consumed this pithouse was intense. It also appears that the structure was still occupied at the time it caught on fire based on the numerous artifacts that have been found in situ on the floor or on the roof of the structure. The heat of the fire caused several of the ground stone tools to not only fracture but pieces spalled off with some seemingly flying across the structure. A large El Paso undecorated olla appears to have exploded with very large sherds scattered across much of the south half of the floor. Another large olla was on the roof. Although it primarily collapsed within itself, its basal fill contained fine ash, which may represent shelled corn. A botanical sample will be submitted to determine that actual content.

Figure 2 shows Feature 11 to the right and Feature 12 to the left after it was cross-trenched. Note the presence of two of our volunteers in the lower right quarter of Feature 12: Delton Estes and Mary Taylor. The trenches are 50 cm wide for scale. We will return in the fall to continue excavations within this circular structure. At the present time, we are able to say that the two structures were not absolutely contemporaneous; rather the circular structure is likely earlier, based on intrusive decorated pottery. It contains some Three Circle Red-on-white sherds with a few early Mimbres Style I with Feature 11 containing only Mimbres Style I. Perhaps our future dates will generate ranges of AD 700 – 750 for Feature 12, compared to AD 750-860 for Feature 11. Also note in the far, lower left-hand corner of the photo is the darker stain of another pithouse depression.

Three Rivers Scanning Project 2023-2025

By Margaret Berrier
JRI Associate June 2025

Figure 1: Three Rivers Documentation and Photos from ASNM project 1986-1992. Bureau of Land Management, Las Cruces Office. Photo by Trinity Miller

From January 2023 to March of 2025, I scanned the black and white photos, maps, and rock art supplements for the ASNM rock art documentation done by the Archaeological Society of New Mexico's Rock Art Recording School done between 1986 and 1992 (see Figure 1). The documentation project was headed up by Colonel James G. Bain but was later completed by Helen and Jay Crotty after Bain's death in 1987. In 1994 Human Systems Research published a summary of the work and a table of the results (Crotty and Duran 1994). The Las Cruces Office of the Bureau of Land Management (LCOBLM) provided some funds for the project, but the field school funded the recruiting and training of the participants and supervised an estimated 9,000 person-hours of field work (Duran and Crotty 1994:1) but there were countless other hours put in before the data was published. Copies of the photos and files reside in the LCOBLM and at ARMS in Santa Fe, New Mexico. Additional files from another documentation of the area south of the old face were also scanned.

At that time the methods used were state of the art for rock art documentation but were pre-GPS and pre-digital photography. The element counts appear in the 1994 results as tables across 48 pages. The data was also on a floppy disc in Lotus format making it a challenge to study. David Kirkpatrick of HSF provided me with the floppy disc and my colleague Robert Mark of Rupestrian Cyber Services converted it to Excel. This makes it more available for use. But the locations and photos were still a challenge to access without obtaining permission to access them and traveling to Las Cruces or Santa Fe to look at them. Three Rivers is an amazing place to visit but it is nearly impossible to say you have seen every one of the over 21,000 images and even harder sometimes to relocate ones that you have seen. With the encouragement of Trinity Miller, my BLM contact, I decided to scan all the documents, and she was gracious enough to grant me permission to take some of the folders home a few at a time. We hope at some point to make the files available with researchers. Although there are no GPS locations part of the documentation included grid maps of sections of the ridge that make the images relatively easy to find if one is diligent. These scans now reside with the LCOBLM and me.

Figure 2. Relocated boulder found after scanning black and white photos and files from the ASNM documentation of Three Rivers. Found in September of 2024.

One of the unexpected results of this project was finding images like Figure 2. Despite over 80 visits to the site I had never seen this well executed image of the facing birds with a cloud-terrace standard in the middle. From the files I could see it was close to another image I knew so I went out on another survey trip and found it deep under cover of a large cat claw. There are other images I have yet to find but I am already noticing correlations and repeated patterns that I didn't notice were so extensive. I have already written one short paper on one of those and have two others in progress. There is a wealth of information at Three Rivers and the availability of the scanned files makes it much easier to discover. I hope the same will be true for others. I am working with LCOBLM to determine how access will be managed. Another possible use will be for indigenous elders to view the data if they are unable to visit the site. Another possible use of the scanned photos would be a study of vandalism over the last 35 to 40 years.

It was also discovered that the area just east of the visitors' center had not been documented. It may be possible in the future to use volunteers to complete some of these suggested activities.

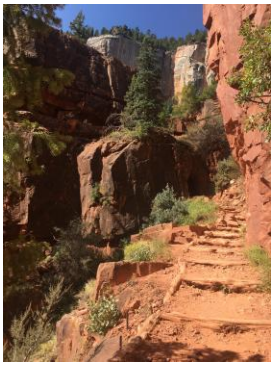
While conducting some of the searches for the images I found in the file we also discovered a few images (although not many) that were not recorded by the ASNM Field School. One of the recent discoveries was very surprisingly another example of the facing birds motif. This one was noticed just off the trail by Trinity Miller. Figure 3 is an enhanced photograph of that image.

Figure 3. Additional undocumented image found in March 2025 by Trinity Miller during a monitoring visit. DStretched and converted to black and white.

Reference:
Duran, Meliha S. and Helen K. Crotty
1994 Three Rivers Petroglyph Site: Results of the ASNM Rock Art Recording Field School. HSR Report No. 9301. Human Systems Research, In. Tularosa, New Mexico.

FINAL WORDS

Greetings to all our readers, this is your new editor Kathy Roler Durand. I am excited to begin helping out the JRI community by putting this newsletter together twice a year. Jeff Hanson has done so for the past 10 years, so I have big shoes to fill! I hope everyone enjoyed the new format. If you have any comments, concerns, or ideas for future submissions please feel free to contact me at krolerdurand@gmail.com. It will help A LOT if you would put JRI Newsletter in the subject line of any emails you send. Thank you very much and have a great summer. Hope to see you in Ruidoso at the archaeoastronomy convention. If not, our next newsletter comes out in December.



Happy trails!