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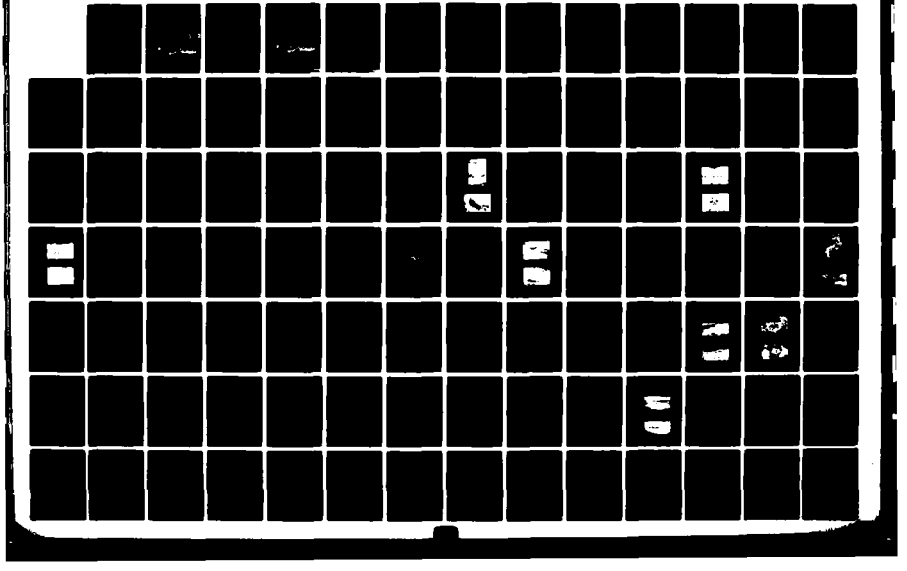

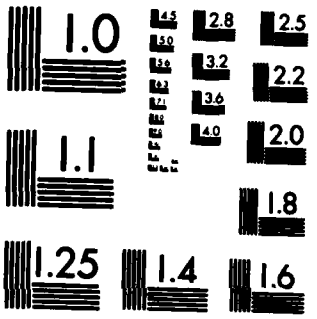

MICROCOPY RESOLUTION TEST CHART
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EMERGENCY SURVEY AND EXCAVATION IN SOUTHWESTERN NEW MEXICO

Karl W. Laumbach

With contributions by:
Molly Streuver
Marcia Donaldson
Kira Silverbird
Meliha Duran
Ann Cully
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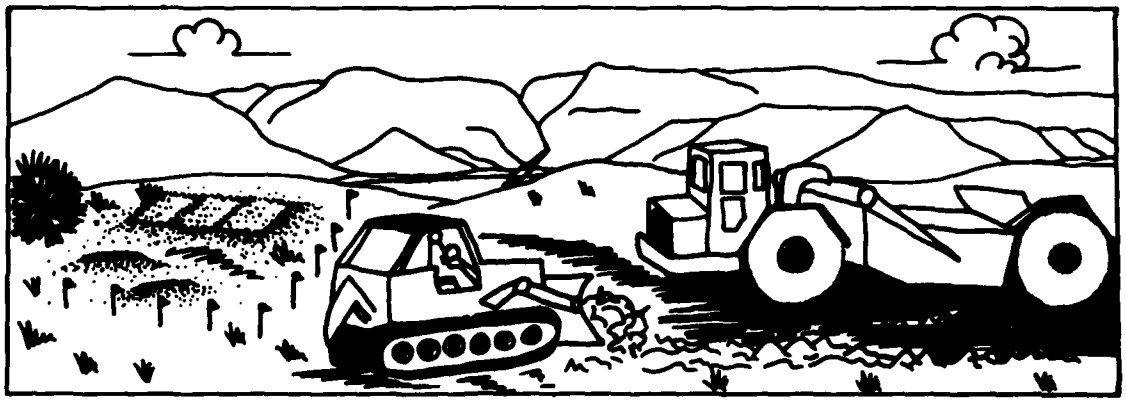

A REPORT PREPARED FOR THE U.S. CORPS OF ENGINEERS, Albuquerque District, under the direction of Patrick H. Beckett, of the Cultural Resources Management Division, Department of Sociology and Anthropology, New Mexico State University, Las Cruces, New Mexico.

January 1980

Report No. 354

50272-101

REPORT DOCUMENTATION PAGE	1. REPORT NO.	2. AD-A127437	3. Recipient's Accession No.
4. Title and Subtitle: Emergency Survey and Excavation in Southwestern New Mexico			5. Report Date: January 1980 6.
7. Author(s): Laumbach Karl W.			8. Performing Organization Rept. No. 354
9. Performing Organization Name and Address: Cultural Resources Management Division Department of Sociology and Anthropology New Mexico State University Las Cruces, New Mexico 88003			10. Project/Task/Work Unit No. 11. Contract(C) or Grant(G) No. (C) DACW47-79-M-0715 (C) DACW47-79-M-0226 (G) DACW47-79-M-0328 (G) DACW47-79-M-0580
12. Sponsoring Organization Name and Address: Department of the Army Albuquerque Corps of Engineers P.o. Box 1580 Albuquerque, New Mexico 87103			13. Type of Report & Period Covered: Final Report 1979 14.

15. Supplementary Notes

16. Abstract (Limit: 200 words)

In March, 1979, the U.S. Army Corps of Engineers began to repair levees along the major drainages in southwestern New Mexico which had been damaged by floods in December, 1978. The Cultural Resources Management Division of New Mexico State University was contracted to monitor levee construction to alleviate effects of construction on cultural resources. A total of 34 archeological sites were identified. Of these, thirty were avoided, two were tested and partially avoided, and two were excavated prior to destruction. This report describes survey procedures and reports on data obtained from the excavations.

17. Document Analysis a. Descriptors

Prehistoric Archeology, Historic Archeology, Cultural Resources Management

b. Identifiers/Open-Ended Terms

Mogollon Pithouse Period, Reserve-Tularosa Phase, Mimbres Phase, Animas Phase, Salado Phase, and Anglo-American Period

c. COSATI Field/Group

18. Availability Statement		19. Security Class (This Report)	21. No. of Pages
RELEASE UNLIMITED	DISTRIBUTION STATEMENT A Approved for public release; Distribution Unlimited	UNCLASSIFIED	153
		20. Security Class (This Page) UNCLASSIFIED	22. Price

(See ANSI-Z39.18) See Instructions on Reverse

OPTIONAL FORM 272 (4-77)
(Formerly NTIS-35)
Department of Commerce

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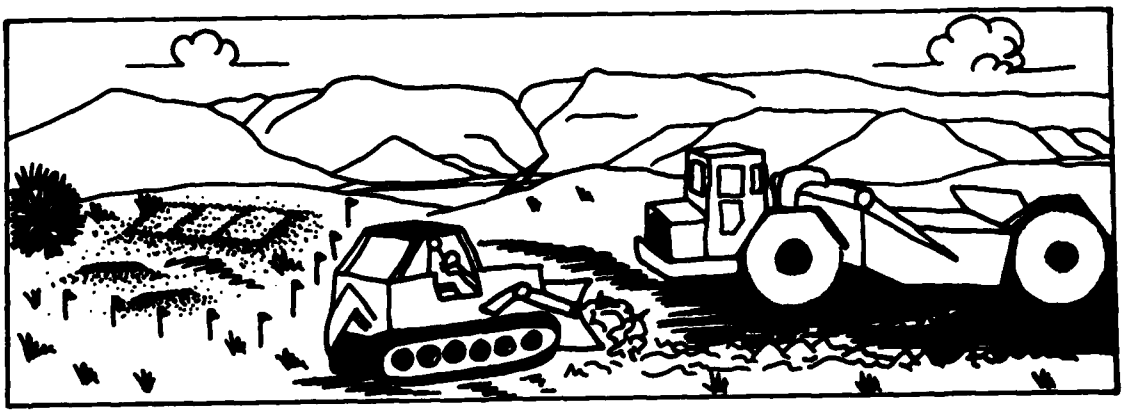

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Dedicated to the memory of

Billy Wilson

"the Gila Dude"

ABSTRACT

In March, 1979, the U.S. Army Corps of Engineers began to repair levees along the major drainages in southwestern New Mexico which had been damaged by floods in December, 1978. The Cultural Resources Management Division of New Mexico State University was contracted to monitor levee construction to alleviate effects of construction on cultural resources. A total of 34 archaeological sites were identified. Of these, thirty were avoided, two were tested and partially avoided, and two were excavated prior to destruction. This report describes survey procedures and reports on data obtained from the excavations.

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ACKNOWLEDGEMENTS

The success of any project is dependent on the cooperation between the persons involved. Special credit is due Donna Roxey, District Archeologist, U.S. Corps of Engineers, who kept the archaeologists up to date on new project developments and who unfailingly supported the sometimes difficult decisions made by the field archaeologist. Corps Engineers Ray Lunsford, Mike Beyers, John Schneider, Neil Borger, Lonnie Allan, and Dave Meador each demonstrated their concern for the preservation of cultural resources by carefully monitoring borrow activities. John Schneider, Lonnie Allan, and Mike Beyers further contributed by collecting local history and data relevant to the sites found during the project.

Appreciation must also be extended to Richard Ellison who generously gave of his intimate knowledge of southwestern New Mexico archaeology; Joe Janes, District Archaeologist of the Gila National Forest, who cooperated with survey of borrow areas on forest land; and to Mrs. Helen Lundwall of the Silver City Library who opened her slowly accumulated files from early newspapers for our use. Also, Dr. James Neely, Sue Andrews, Dave Robinson and Tom Stearns, all of the University of Texas at Austin, were especially helpful in supplying site data for the Glenwood area. Landowners who contributed data regarding historic sites include Virgil Jones and Charles Clous of Verdon New Mexico and Mr. David of Las Animas Creek.

Finally thanks is due to Beth Bussey and Kira Silverbird for carefully editing the manuscript and to Minnie Sanchez, Ruth Cunningham and Martha Telles who typed the report.

INTRODUCTION

During the late fall of 1978, all of the drainages in the Gila National Forest of southwestern New Mexico (Figure 1) suffered heavy flooding due to intense rainfall. Considerable economic damage to fields, homes, and livestock resulted. Early in 1979, President Carter declared the area to be an official disaster area. The U.S. Army Corps of Engineers under Public Law 84-99 repaired protective levees to control future flooding and to permit landowners to reclaim agricultural land made useless by the 1978 flood. Forty-nine individual projects in four major drainage areas were involved. The major drainage areas (Figure 1) and their respective projects are shown in Table 1.

* * * * * *

TABLE 1. Major Drainages and Associated Projects

GILA RIVER BASIN

Virden Valley 1	Gila River 8
Virden Valley 2	Gila River 9
Virden Valley 3	Gila Redrock 1
Virden Valley 4	Gila Redrock 2
Virden Valley 5	Gila Redrock 3
Lower Bear Creek	Gila Redrock 4
Upper Bear Creek	Gila Redrock 5
Gila River 5	Gila Redrock 6
Gila River 6	Sapillo Creek 1
Gila River 7	Mogollon Creek 2

TABLE 1. Continued

SAN FRANCISCO RIVER BASIN

San Francisco Plaza
Lower San Francisco Plaza
Starkweather Canyon
Mineral Creek
Whitewater Creek
Deep Creek
Glenwood South
Glenwood North 1
Glenwood North 2
Glenwood North 3
Glenwood North 4

MIMBRES RIVER

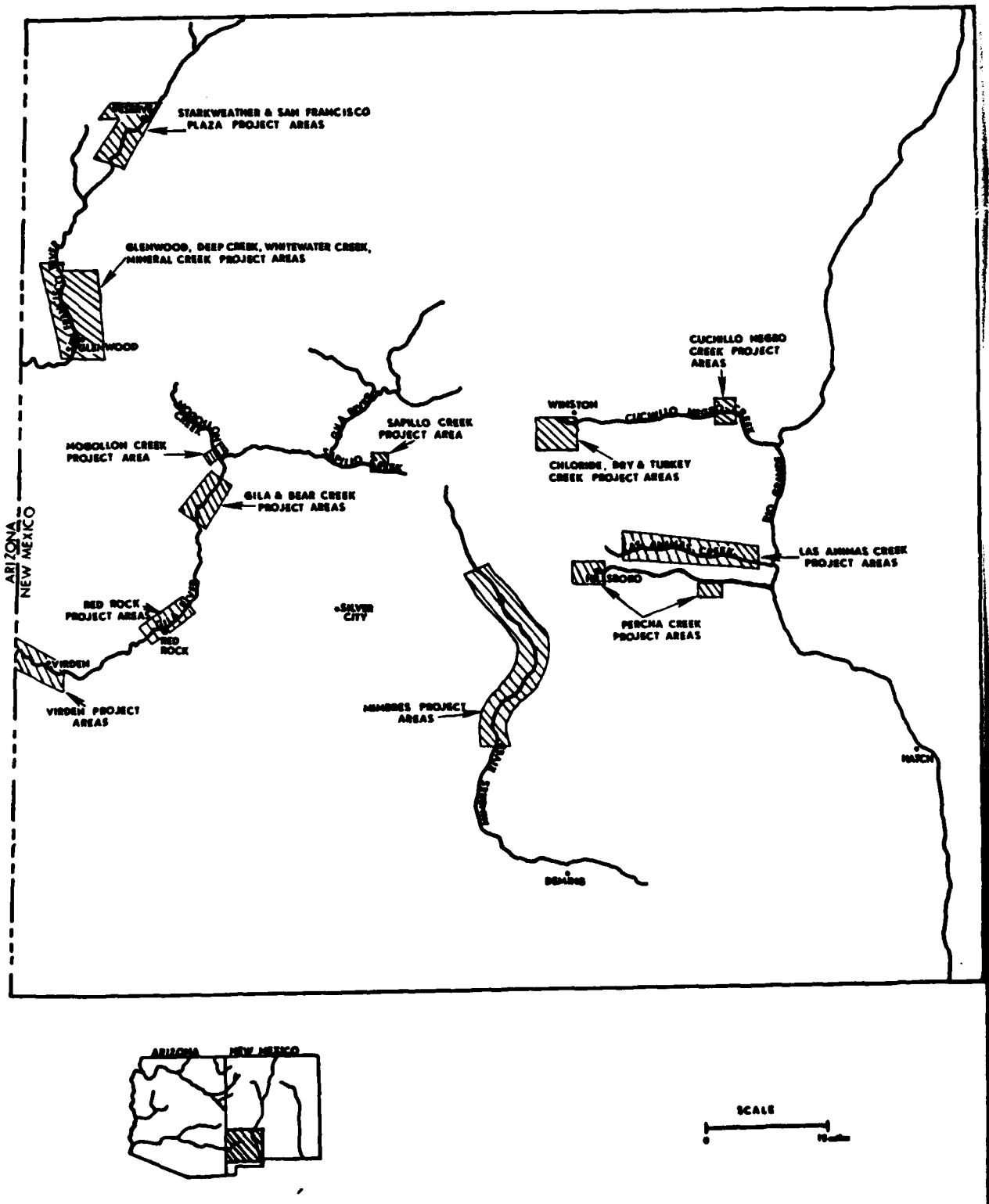
Mimbres River 1
Mimbres River 2
Mimbres River 3
Mimbres River 4
Mimbres River 5
Mimbres River 6

SIERRA COUNTY - "BLACK RANGE"

Upper Ladder Ranch
Lower Ladder Ranch
Hillsboro
Caballo
Chloride
Dry Creek
Turkey Creek
Cuchillo Negro Creek
Chatfield Ranch
Animas Lower Reach
Owens Ranch
Davis Ranch

* * * * * *

Figure 1. Project Location



The purpose of these projects was to repair levees to control future flooding. Earth for this purpose was either taken from the riverbed or, if more suitable materials were necessary, earth was "borrowed" from fields or hillsides some distance from the river. Because construction and borrowing activities involved considerable soil disturbance, cultural resources present within either the levee or borrow areas were endangered.

"Cultural resources" refers to all material evidence of past human activity. In 1960, the Reservoir Salvage Act was passed. This act as well as successive legislation has provided that any soil disturbance caused by construction activities on public land or funded by public monies must be inspected by an archaeologist prior to construction. If significant cultural resources are endangered by such construction, the resource must either be avoided or steps must be taken to mitigate the effects of construction (e.g., excavation and analysis). However, due to the classification of this project as an emergency under Public Law 84-99, the Reservoir Salvage Act did not apply. The U.S. Army Corps of Engineers was not required by federal law to make any attempt to mitigate the effects of levee construction on cultural resources. Section 15 of the Corps of Engineers regulation "Identification and Administration of Cultural Resources" (33CFR305) states that every effort should be made to avoid destruction of cultural resources during the course of an emergency project so long as work is not impeded. As a result of this regulation, the Albuquerque District Corps of Engineers contracted with the Cultural Resources Management Division of New Mexico State University to alleviate the impact of levee construction on cultural resources.

PROJECT GOALS

The goals of this effort were as follows: to locate and record archaeological sites endangered by construction, to avoid such resources by finding suitable alternatives, and if necessary, to extract as much information as possible by the collection and/or excavation of sites which could not be avoided. The last alternative was a fearful one, because only a limited amount of time could be spent excavating a site before levee construction would be impeded. If a construction contractor thought that the archaeological work was unduly slowing construction, the archaeologist could be forced to withdraw from the site. Another fear was that sufficient funds for data collection would not be available. Under Public Law 93-291, projects under $50,000 are exempt from the 1% of construction cost designated for archaeology. Many of the emergency projects were in the $100,000-$200,000 range; consequently only $1000-$2000 would be available for mitigation. This would not be adequate funding for a data recovery program of any size. It was therefore necessary to develop excavation plans which would recover the maximum amount of significant data within the alloted time and funding limit. It was determined that the goals of such excavations, if they became necessary, would be these:

1. Recover a sufficient number of diagnostic artifacts to identify the cultural and/or temporal affiliation of the site.

2. Recover as much carbonized material as possible in order to more accurately date the site and to obtain economic and environmental data from the charred vegetal and faunal remains.

3. Recover a sufficient variety of artifacts and related data to tentatively identify site functions and the technology incorporated to carry out those functions.

PERSONNEL

During the course of this project a number of New Mexico State University, Cultural Resource Management Division personnel were employed. The majority of the fieldwork was accomplished by Karl Laumbach, Project Director, who visited all of the projects at least once (and many several times) and who logged almost 7,500 miles traveling between the widely separated project areas. When circumstances dictated that the Project Director could not be present at a crucial time, David Kirkpatrick or Mark Bond took his place. Allen Rorex, Keith Leftwich, Michael Frietze, and Nancy Sillato served as archaeological assistants when excavation or collection became necessary. Lithic analysis was accomplished by Michael Frietze, John Hilley, and Carol Gourley under the direction of Karl Laumbach. Ceramics were analyzed by Toni Sudar-Laumbach. Kira Silverbird identified the faunal remains.

Consultants were contracted to perform specialized analyses. Pollen samples were analyzed by Ann Cully and flotation samples by Molly Streuver and Marcia Donaldson of the Ethnobotany Laboratory, Department of Biology, University of New Mexico. Radiocarbon dates were determined by Dr. Betty Lee Brandau of the University of Georgia.

Archaeological work was constantly coordinated with U.S. Army Corps of Engineers personnel. Corps archaeologist Donna Roxey relayed advance information from the Corps office in Albuquerque. Paul Hardman and later Ray Lunsford supervised all levee construction projects except those east of the Black Range from the Corps of Engineers office in Silver City. They were assisted by Mike Beyer. Neil Borger and the late Jerry Longenfield supervised activities in the Black Range from an office in Truth or Consequences. Engineers assigned to particular projects included John Schneider, Virden; Lonnie Allan, Red Rock; David Meador, Glenwood; Leo Garcia, Starkweather and San Francisco Plaza; J.L. Jones, Mimbres.

In most cases, the engineers communicated the archaeological recommendation to the contractor. On rare occasion, the archaeologist worked directly with the contractor. All the contractors were cooperative. J.T. Hollimon, a private contractor from Buckhorn, New Mexico, deserves special recognition for his concern and cooperation with the archaeogical work.

COORDINATING ACTIVITIES

Coordinating archaeological work with levee construction often demanded changes in scheduling. Project maps were sent from Albuquerque to the Cultural Resources Management Division in Las Cruces prior to a bid opening. Initially the archaeologist visited the project when potential construction contractors were shown the work site. One value of these visits was that areas containing cultural resources could be pointed out and borrow areas could be planned with these data in mind. An attempt was made to schedule visits after definite borrow areas were established. As each project in a particular area was let on an individual basis, it seemed practical to let several projects develop and to visit all at one time. This attempt was made difficult by two factors. First, project approval from the office of the Chief of Engineers in Washington D.C. was staggered so that one project might be well into construction before the last project in that area was let. Second, contractors would suddenly need additional borrow or would move to an area before the Corps engineer had predicted that they would. "Emergencies" of this nature required the archaeologist to make several trips to each project area. The following chart (Table 2) details archaeological monitoring of the project.

TABLE 2. Archaeological Monitoring of Projects

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Virden 1	March 1, 1979	J. Schneider	Surveyed levee area and borrows - all clear
Virden 2	March 1, 1979	J. Schneider	Surveyed levee area - all clear
Virden 2	March 8, 1979	J. Schneider	Surveyed three borrows.
			Virgil Jones - contains cultural resources (Virden 3 #1) borrow abandoned.
			Bob Shay - clear of significant resources.
			Ivan Ferguson, #1 - clear of significant resources.
Virden 3	March 16, 1979	J. Schneider	Surveyed borrows.
			Ivan Ferguson, #2 - clear but should be checked after excavation.
			Charles Clous, #1 - old stagestop (Virden 3 #4)- will need to be there when excavation starts.
			Charles Clous, #2 - possible pithouse under 8 ft. of ditch fill (Virden 3 #5). Will need to be there when borrow starts.
			Ralph Johnson - sherd scatter on east side of borrow (Virden 2 #1). Should be avoided.
			Ivan Goddner - clear.
			Ivan Ferguson #3 - needs testing, light flake scatter and possible depressions. Will test when Burns Soil man tests with backhoe.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Virden 3 Virden 4	March 8, 1979 March 8, 1979	J. Schneider J. Schneider	Surveyed levees for Virden 3 and Virden 4 - All clear - Still need to visit remaining borrows. Schneider will call me.
Starkweather	March 9, 1979	Mike Beyer	All clear - Note: borrow plans have changed; will have to check again.
San Francisco Plaza	March 9, 1979	Mike Beyer	West levee clear - Need to check borrow on eastside when water goes down.
Lower San Francisco Plaza	March 9, 1979 March 12, 1979	Mike Beyer	Both levees clear - possible borrows on eastside, need to be checked as numerous sites occur there.
Hillsboro	March 12, 1979	R. Lunsford Neil Borger	All clear. Borrow taken from streambed.
Percha Creek-Caballo	March 12, 1979	R. Lunsford Neil Borger	All clear. Borrow taken from streambed.
Cuchillo Wash	March 12, 1979	R. Lunsford Neil Borger	All clear. Borrow taken from streambed.
Dry & Turkey Creek	March 12, 1979	R. Lunsford Neil Borger	All clear. Borrow taken from streambed.
Chloride	March 12, 1979	R. Lunsford Neil Borger	All clear. Borrow taken from streambed.
Mimbres 1	March 12, 1979	Mike Beyer	All clear - not able to view north end of east side of river - if site is there, possible indirect impact, but no direct impact.
Mimbres 2	March 23, 1979	J.L. Jones R. Lunsford	Two sites on west bank which will be avoided. (Mimbres 2 #1 and Mimbres 2 #2).
Mimbres 3	March 23, 1979	J.L. Jones R. Lunsford	One disturbed site in plowed field which will not be impacted. Told Corps that no excavation could occur there. (Mimbres 5 #1).

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Gila 5	March 28, 1979 March 29, 1979	Mike Beyer	Surveyed levee and borrows - all clear.
Gila 6	March 28, 1979 March 29, 1979	Mike Beyer	Surveyed levee and borrows - all clear. (Both Gila 5 and 6 are near sites excavated by the Museum of New Mexico during the Cliff Highway Salvage Project in 1965.)
San Francisco Plaza	March 28, 1979	Mike Beyer	Surveyed 3 borrows on east side of river. Gave okay on two northern borrows. Found site (San Francisco #1) on (southern) borrow. It will not be used.
Virden 2	March 29, 1979	J. Schneider	Observed the blading of Goddner's borrow on south side of river. Also cleared borrow belonging to Doctor Levitz. Found historic site (Virden 3 #2).
Starkweather	March 28, 1979	Mike Beyer	Surveyed new borrow approximately ¼ mile west of project across from Forest Service office. Found an exposed hearth in a cut bank. Limited borrow to west end of area defined on map.
Starkweather	April 3, 1979	Mike Beyer	Excavated exposed hearth a westernmost borrow. Closer investigation disclosed additional cultural resources in cut bank. Limited borrow to extreme west end.
Mineral Creek	April 4, 1979	Mike Beyer	Examined levee and borrow areas as defined on the map. All clear.
Gila 7	April 4, 1979	Mike Beyer	Examined levee and borrow areas. Consulted with local archaeologist. All clear.
Gila 8	April 4, 1979	Mike Beyer	Examined levee and borrow areas. Consulted with local archaeologist. All clear.
Gila 9	April 4, 1979	Mike Beyer	Examined levee and borrow areas. Consulted with local archaeologist. All clear.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Starkweather	April 9, 1979	Leo Garcia	New borrow surveyed across from fairgrounds barn. Archaeological site found (Starkweather #1). Moved borrow 100 meters east. Borrow change was approved by Forest Service.
Mineral Creek	April 9, 1979	Mike Beyer	J.T. Hollimon (contractor) informed me of new borrow on McKean property. Surveyed the area. Proposed borrow is clear of cultural resources.
Mimbres 3	April 10, 1979	Mike Beyer	Surveyed levee and borrow. All clear.
Mimbres 4	April 10, 1979	Mike Beyer	Surveyed levee and borrow. All clear.
Virden 2	April 18, 1979	Lonnie Allan	Surveyed Harry Day borrow on south side of river, all clear.
Virden 3 & 4	April 18, 1979	Lonnie Allan	Roy Johnson borrows - one in field, one in mesquite, all clear.
		J. Schneider	W.K. Bigler 1 borrow in field, all clear.
			D. Ball borrow in field, light artifact scatter in heavily plowed area. I should be present if used.
			Crabtree borrow in field, light artifact scatter. I should be present if used. (Site Virden 3 #3).
Virden 5	April 18, 1979	J. Schneider	Donaldson borrow on hill. All clear.
Virden 2	April 25, 1979	J. Schneider	Visited charred area uncovered by contractors near river. Historic mesquite burn. All clear.
			Surveyed hillside borrow north of river and road (Clous). All clear.
			Visited Crabtree borrow, will return when borrow begins.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Virden 3	April 27, 1979	J. Schneider	Observed excavation on Crabtree borrow (Virden 3 #3), recovered limited data.
Mimbres 6	April 28, 1979	None	Surveyed levee area. All clear.
Red Rock 1	May 1, 1979	Lonnie Allan	Surveyed borrows on map. All clear
Red Rock 2	May 1, 1979	Lonnie Allan	Surveyed hillside borrow north of river, found site Red Rock 2 #1. I limited the borrow area to slope.
Red Rock 3	May 1, 1979	Lonnie Allan	Surveyed levee and borrow areas. All clear.
Red Rock 4	May 1, 1979	Lonnie Allan	Surveyed hillside borrow east of road. Found site Red Rock 4 #1. Limited borrow to slope.
Red Rock 6	May 1, 1979	Lonnie Allan	Surveyed levee and borrow. All clear.
Lower Bear Creek	May 2, 1979	Ray Lunsford	Surveyed Bill Key borrow and Pacific Western borrows. All clear.
Glenwood 4	May 2, 1979	Dave Meador	Surveyed 2 borrows on either side of road immediately north of Alma. Site Glenwood 4 #1 on hill. Borrows will not be used.
Glenwood 4	May 2, 1979	Dave Meador	Surveyed Faust borrow on south end of project. Found site Glenwood 4 #2. Limited the borrow area to avoid site.
Red Rock 2	May 9, 1979	Lonnie Allan	Surveyed area just south of proposed hillside borrow west of river. Found area away from site Red Rock 2 #1. Will be there when borrow begins.
			Surveyed 2 borrows on Grant Harper's land on east side of river. All clear.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Virden 3	May 9, 1979	J. Schneider	Surveyed Gila Branch borrow in field north of Virden. All clear.
			Called Dave Kirkpatrick to monitor borrow excavation at site Virden 3 #4 on May 10.
Glenwood 3	May 10, 1979	Dave Meador	Surveyed southern proposed borrow on west side of river. Found site Glenwood 3 #1. Limited the borrow.
	May 10, 1979	Dave Meador	Surveyed northern proposed borrow on west side of river. Too many sites, will have to look some more.
Glenwood South	May 10, 1979	Dave Meador	Surveyed 2 borrows on east side near Holliman Ranch. All clear.
			Surveyed proposed borrows on Forest Service land west of river. Found sites Glenwood South #2 and #3. Found new borrow nearby.
Glenwood South	May 10, 1979	Dave Meador	Surveyed proposed borrow on Vacher property west of river. Found one site (Glenwood South #1). Found clear borrow nearby.
			Surveyed proposed Hudson borrow west of river. All clear.
			Surveyed Shelton borrow south of Pleasanton. All clear.
			Surveyed Forest Service borrow on east side of south end of project. Would want to be there when borrow begins.
			Surveyed hillside borrows immediately north of Pleasanton. All clear.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Lower Bear Creek	May 10, 1979	Mike Beyer	Surveyed borrow on east end of north side of project. All clear.
Ladder Ranch Upper	May 11, 1979	Jerry Longenfeld	Surveyed levee and borrow areas. All clear.
Ladder Ranch Lower	May 11, 1979	Jerry Longenfeld	Surveyed levee and borrow areas. All clear.
Chatfield Ranch	May 11, 1979	Jerry Longenfeld	Surveyed levee and borrow areas. All clear.
Davis Ranch	May 11, 1979	Jerry Longenfeld	Surveyed levee and borrow areas. All clear.
Deep Creek	May 16, 1979	Dave Meador	Surveyed levee and borrow areas; All clear.
Glenwood South	May 16, 1979	Dave Meador	Surveyed two borrows near mouth of Red Colt Canyon. Both borrows are clear. Site Glenwood South #4 is nearby but is easily avoided.
Glenwood 2	May 17, 1979	Dave Meador	Northern and southern borrows east of river are clear. Middle borrow cannot be used (Site Glenwood 2 #1).
			Surveyed southern borrow on west side of river. No site found.
Glenwood 1	May 17, 1979	Dave Meador	Spurgeon borrow is clear. Lee borrow contains a site (Glenwood 1 #1).
			Surveyed Klumker and Biope borrow on west side of river. Both clear.
Glenwood 3	May 17, 1979	Dave Meador	Surveyed field borrow on southwest end project. A historic site (Glenwood 3 #5) can be avoided.
			Surveyed top of bench on west side of river. Found sites: Glenwood 3 #2, Glenwood 3 #3, Glenwood 3 #4 and Glenwood 3 #6. All should be avoided. A suitable borrow was found on north end of project. It required borrow equipment to go up a side canyon.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Glenwood 1	May 18, 1979	Dave Meador	We looked for potential borrow areas on both sides of the river. Hills are solid rock, not gravel as elsewhere. No borrow was found.
Mogollon Creek	May 18, 1979	Mike Beyer	Surveyed borrow area, all is clear.
Sapillo Creek	May 23, 1979	Mike Beyer	Surveyed levee and borrow area. Site found near borrow (Sapillo Creek #1). It can be easily avoided.
Mimbres 2	May 23, 1979	Mike Beyer	Revisited Site Mimbres 2 #1. No disturbance has occurred.
Red Rock 2	May 29, 1979	Lonnie Allan	Made general surface collection of light sherd and lithic scatter on borrow area. Monitored borrow activities. Excavated hearth revealed by equipment.
Red Rock 1	May 29, 1979	Mike Beyer	Surveyed borrow area. Gravel hill contain light flake scatter. Borrow will be monitored if used.
Red Rock 1	June 18, 1979	Lonnie Allan	A blade cut had exposed several features. Mapped site (Red Rock 1 #1)and tested several features.
Red Rock 1	June 26-28, 1979	Lonnie Allan	Mapped, tested, and photographed features at Red Rock 1 #1.
Starkweather, San Francisco Plaza, Lower San Francisco Plaza	July 9, 1979	Mike Beyer	Inspected each project. No undue disturbance was found.
Glenwood 3	July 10, 1979	Mike Beyer	Visited borrow on north end of west side. Cultural resources had been neatly avoided. Acquired site data from U.T. Austin field school.
Glenwood South	July 10, 1979	Mike Beyer	Visited south end of project. Mapped Glenwood South #4.

PROJECT	DATES VISITED	CORPS CONTACT	RESULTS
Virden 2, Virden 3, Virden 4	July 10-11, 1979	Mike Beyer	Checked borrow locations.
Mimbres 7	August 4, 1979	Mike Beyer	Checked proposed borrow areas. Southern borrow on west bank should be avoided if possible. Northern borrows are clear.
Mimbres 2 Sapillo Creek	August 4, 1979	Mike Beyer	Borrow activities did not affect cultural resources at either project.
Owners Ranch Davis Ranch Las Animas Lower Reach	August 5, 1979	Neil Borger	Remapped site at Owens Ranch, checked Davis levee, and cleared borrow and levee areas on Las Animas Lower Reach.
Whitewater Creek	August 13, 1979	Mike Beyer	Surveyed proposed borrow areas; all clear of cultural resources.

IDENTIFICATION AND MITIGATION OF IMPACT ON CULTURAL RESOURCES

A total of 34 archaeological sites were identified during the survey of levee and borrow areas (Table 3). When possible, Corps personnel accompanied the archaeologist to the borrow and levee areas. In most cases the archaeologist was provided maps which designated borrow areas. Borrow and levee areas surveyed without Corps personnel present were later verified.

The majority of the land surveyed for cultural resources was in private ownership; care was taken to obtain permission from owners. Some surveyed areas along the San Francisco River were in the Gila National Forest. Activities were coordinated with local Forest Service personnel.

When cultural resources were identified within a borrow area, every effort was made to find a suitable borrow area which did not contain cultural resources. In this manner 29 of the 34 sites were completely avoided. Two were partially avoided and the affected areas tested, and two were destroyed after testing. Additionally, a hearth exposed by flooding was excavated. All sites were recorded. Site forms were submitted subsequent to this report. A brief description of each site is presented in Table 4.

TABLE 3. SITES FOUND ON THE PROJECT

Cultural Periods Represented	Drainages Represented: Lower Gila	Upper Gila	Lower San Francisco	Upper San Francisco	Mimbres	Black Range
Mogollon Pithouse Period 200 B.C.-A.D.1000	5		3	1		
Late Mogollon Reserve-Tularosa Phase A.D. 1000-1350			6	2		
Late Mogollon Mimbres Phase A.D. 1000-1150	2	1	2		2	1
Animas Phase A.D. 1200-1275						1
Salado Phase A.D. 1350-1520			1			
Historic American Era A.D. 1845-1950	3		1			
Unknown	1		2		1	

TABLE 4. Recorded Sites

DRAINAGE	SITE	DESCRIPTION	MITIGATION PROCEDURE
Gila River	Red Rock 1 #1	Early Mogollon (?) pithouse village. Buried beneath 50 cm. of soil. It was discovered during borrow activities.	Features in blade cut were excavated. Remainder of site was avoided.
	Red Rock 2 #1	Mogollon (Mimbres Phase and earlier) habitation site.	Light artifact scatter collected. Majority of site was avoided.
	Red Rock 4 #1	Mogollon (Mimbres) habitation site.	Avoidance
	Virden 2 #1	Early Mogollon artifact scatter, possible pithouses.	Avoidance
	Virden 3 #1	Mogollon artifact scatter, possible pithouses; historic structures.	Avoidance
	Virden 3 #2	Post-A.D. 1900 historic structure	Avoidance
	Virden 3 #3	Mogollon artifact scatter; material buried by alluvium in field.	Site tested during borrow activities. Site destroyed.
	Virden 3 #4	Late 19th century stage stop site, leveled by field preparation.	Monitored borrow activities, no features were present. Collections made, library research conducted.
	Virden 3 #5	Mogollon pithouse village	Avoidance

DRAINAGE	SITE	DESCRIPTION	MITIGATION PROCEDURE
Gila River	Virden 3 #6	Rock foundations of small one-room structure; cultural affiliation unknown.	Avoidance
	Sapillo Creek #1	Small Mogollon (Mimbres Phase) habitation site.	Avoidance
San Francisco River	Glenwood 1 #1	Late Mogollon (Tularosa Phase) structures and accompanying artifact scatter.	Avoidance
	Glenwood 2 #1	Lithic scatter	Avoidance
	Glenwood 3 #1	Late Mogollon (?) field house	Avoidance
	Glenwood 3 #2	Salado pueblo	Avoidance
	Glenwood 3 #3	Mogollon pithouse village	Avoidance
	Glenwood 3 #4	Late Mogollon (Tularosa Phase) pueblo	Avoidance
	Glenwood 3 #5	Post A.D. 1900 one-room structure	Avoidance
	Glenwood 3 #6	Small late Mogollon (Mimbres?) pueblo	Avoidance
	Glenwood 4 #1	Mogollon (?) field house	Avoidance
	Glenwood 4 #2	Mogollon pithouse site	Avoidance
	Glenwood 4 #3	Small Mogollon (Mimbres?) pueblo	Avoidance
	Glenwood South #1	Lithic and ground stone scatter	Avoidance
	Glenwood South #2	Mogollon pithouse village	Avoidance

DRAINAGE	SITE	DESCRIPTION	MITIGATION PROCEDURE
San Francisco River	Glenwood South #3	Mogollon (?) field house with lithic scatter	Avoidance
	Glenwood South #4	Stone foundations of one-room; possible field house	Avoidance
	Starkweather #1	Mogollon (Tularosa Phase) room units	Avoidance
	Starkweather #2	Mogollon (?) site buried beneath alluvium; hearth exposed by flooding.	Avoided site; excavated exposed hearth
	San Francisco Plaza #1	Mogollon (Tularosa Phase) field house.	Avoidance
Mimbres River	Mimbres 2 #1	Mogollon (Mimbres Phase) habitation site.	Avoidance
	Mimbres 2 #2	Mogollon (Mimbres Phase) field houses and associated artifacts.	Avoidance
	Mimbres 5 #1	Artifact scatter in plowed field; probably Mogollon.	Avoidance
Las Animas Creek (Black Range)	Las Animas #1	Mogollon (Mimbres Phase) habitation site	Avoidance
	Las Animas #2	Animas Phase habitation site	Avoidance

DATA FROM EXCAVATED SITES

Introduction

Limited excavations were performed at five sites during the course of the project. Four of these sites, Red Rock 2 #1, Red Rock 1 #1, Virden 3 #3 and Virden 3 #4, are located on the lower Gila River. The immediate environment for each of these can best be described as a Chihuahuan Desert biotic community, dominated by mesquite and creosote, adjacent to a riverine community and a short distance from mountainous areas. The remaining site, Starkweather #2, is located near the upper San Francisco drainage. The immediate area is mountainous and quite removed from the Chihuahuan Desert zone. Vegetation is composed of a pine-grassland.

The sites tested span a temporal period of at least 1700 years. Four sites can be assigned with varying degrees of certainty to stages of Mogollon development. Another, Virden 3 #4, is an historic site of more recent vintage. It is hoped that the data recovered can someday be correlated with that from more comprehensive projects dealing with the temporal and cultural periods represented. All recovered materials will be curated by the New Mexico State University Museum.

Starkweather #2

A stone-lined hearth (Area A) was found in an arroyo bank while surveying a proposed borrow area for the Starkweather Levee project near Reserve, New Mexico (Figure 2). Recent flooding had exposed a cross-section of the hearth (Figure 3) two meters below the present ground surface. The hearth was excavated (Figure 4), as it was feared that nearby borrow activity might further damage the arroyo bank. Later, borrow activities were conducted elsewhere, and the area near Starkweather #2 was avoided.

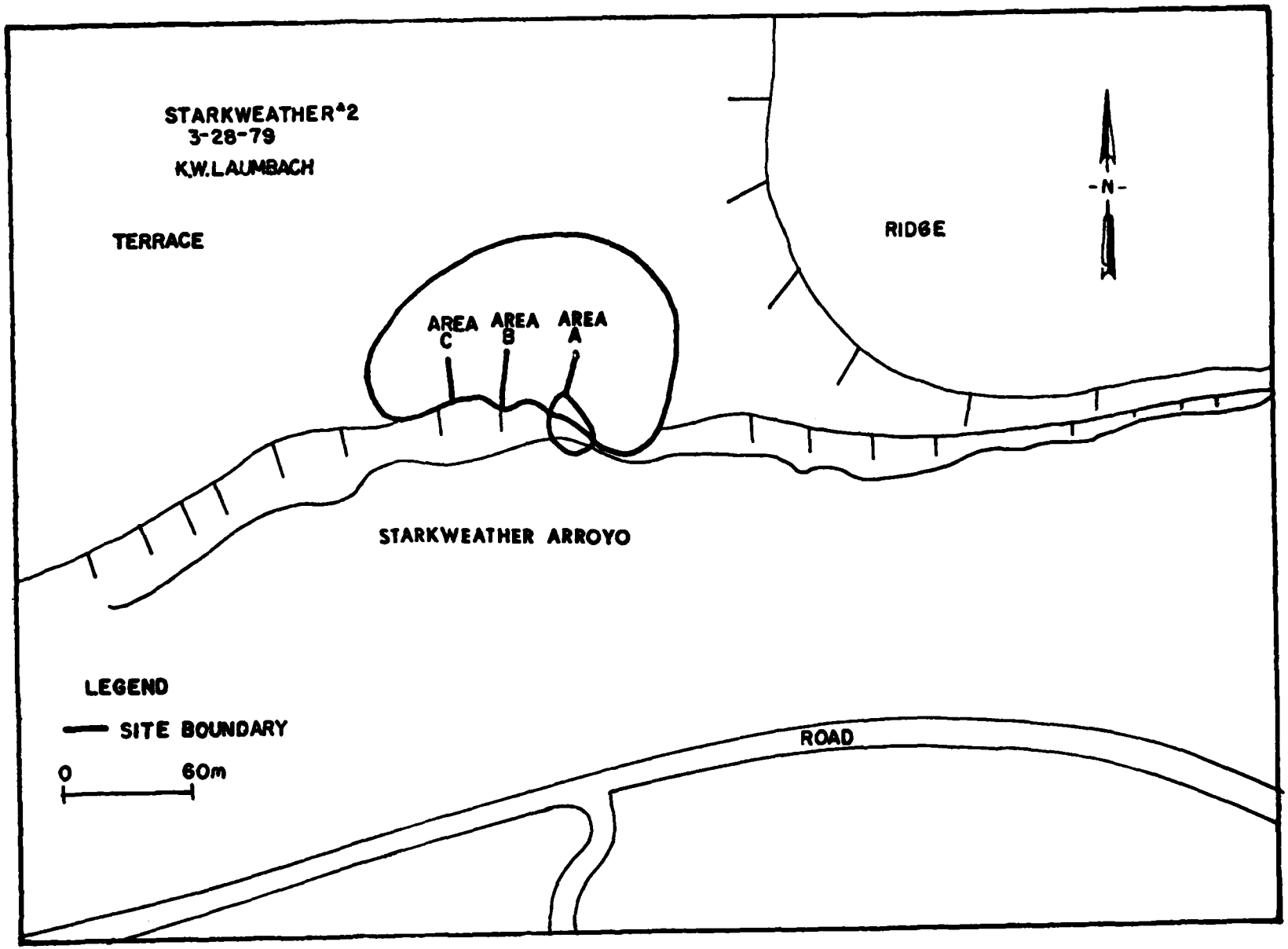


Figure 2. Starkweather 2

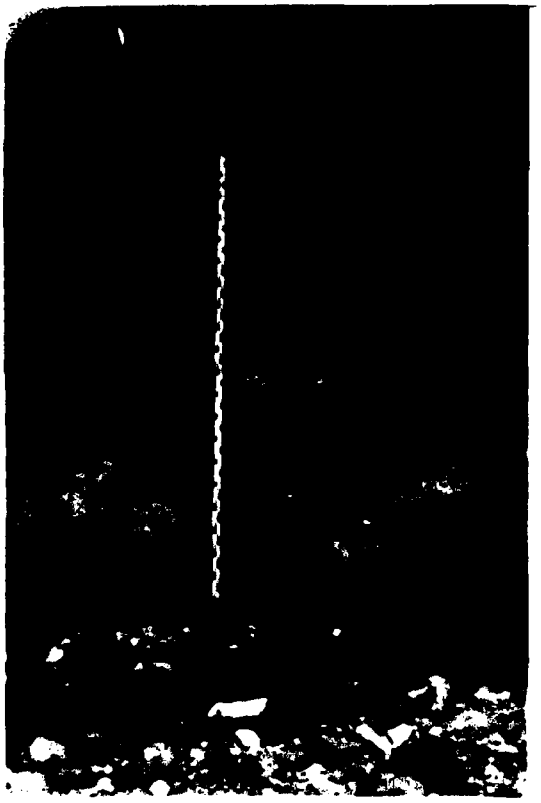


Figure 3. Starkweather 2, hearth in exposed arroyo cut prior to excavation

Figure 4. Starkweather 2, hearth after excavation

When completely excavated, the hearth was roughly circular, 1 m in width and 20 cm in depth (Figures 5 and 6). It had been completely lined with stones (Figure 8). Flooding had removed about 50% of the feature. The fill was composed of ash, charcoal, and rocks. Two artifacts, a small "palette" metate and a one-hand mano, were recovered from the fill. These artifacts were immediately wrapped to protect them for pollen wash and analysis. The remainder of the loose fill was recovered for either flotation or radiocarbon samples.

The ground surface above the arroyo bank (Figure 7) exhibited no artifacts or other signs of human presence. A large slab metate was found in the streambed some distance from the hearth (Area C). Isolated flecks of charcoal were found at a depth of 2 m in several portions of the arroyo (Area B). It is probable that a sizeable site is covered by the alluvial fill.

The soil profile of the exposed arroyo cut (Figure 5) shows that several periods of erosion and stabilization have occurred since the hearth was built. Unfortunately, a more detailed analysis of the soil genesis at this site is not available.

The radiocarbon, flotation, and pollen samples taken were analyzed. Charcoal from the hearth dated 1100 ± 95 BP (A.D. 850 ± 95 years; UGa-2864), Charred macrofossils found in the floated material included amaranth and corn. Pollen grains recovered from the mano and metate included cattail, squash, Cheno-Ams and possibly corn. A more complete discussion of the flotation and pollen analyses is found in Appendices B and C.

Although not verified by the association of diagnostic artifacts, the radiocarbon date indicates that the hearth may have been utilized by a Cibola Branch, Three Circle or Reserve Phase Mogollon population. Numerous Mogollon sites in the area support this supposition. The hearth was utilized to process corn, amaranth, and possibly other vegetal material during the middle to late summer (Appendix B).

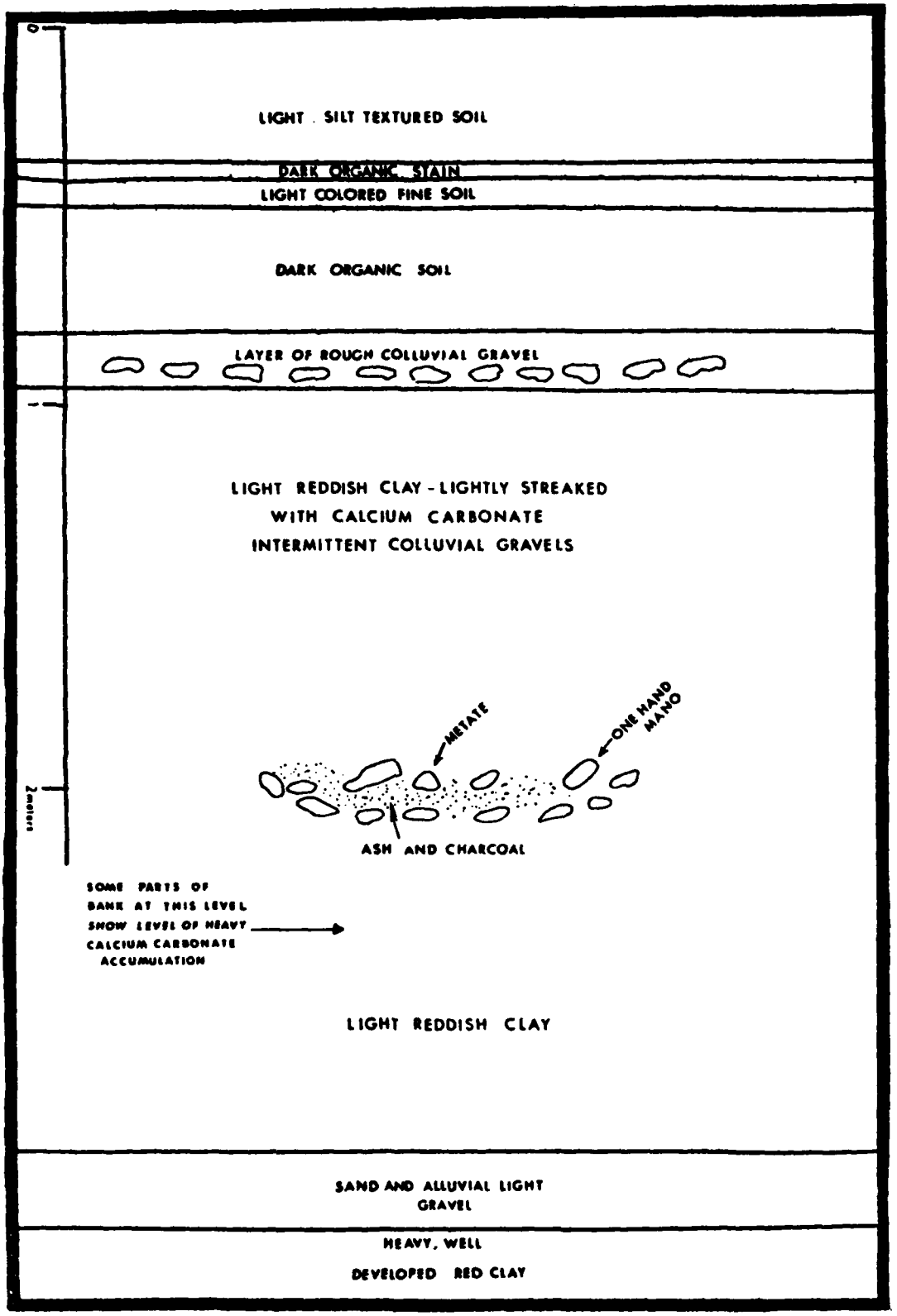


Figure 5. Profile of arroyo cut

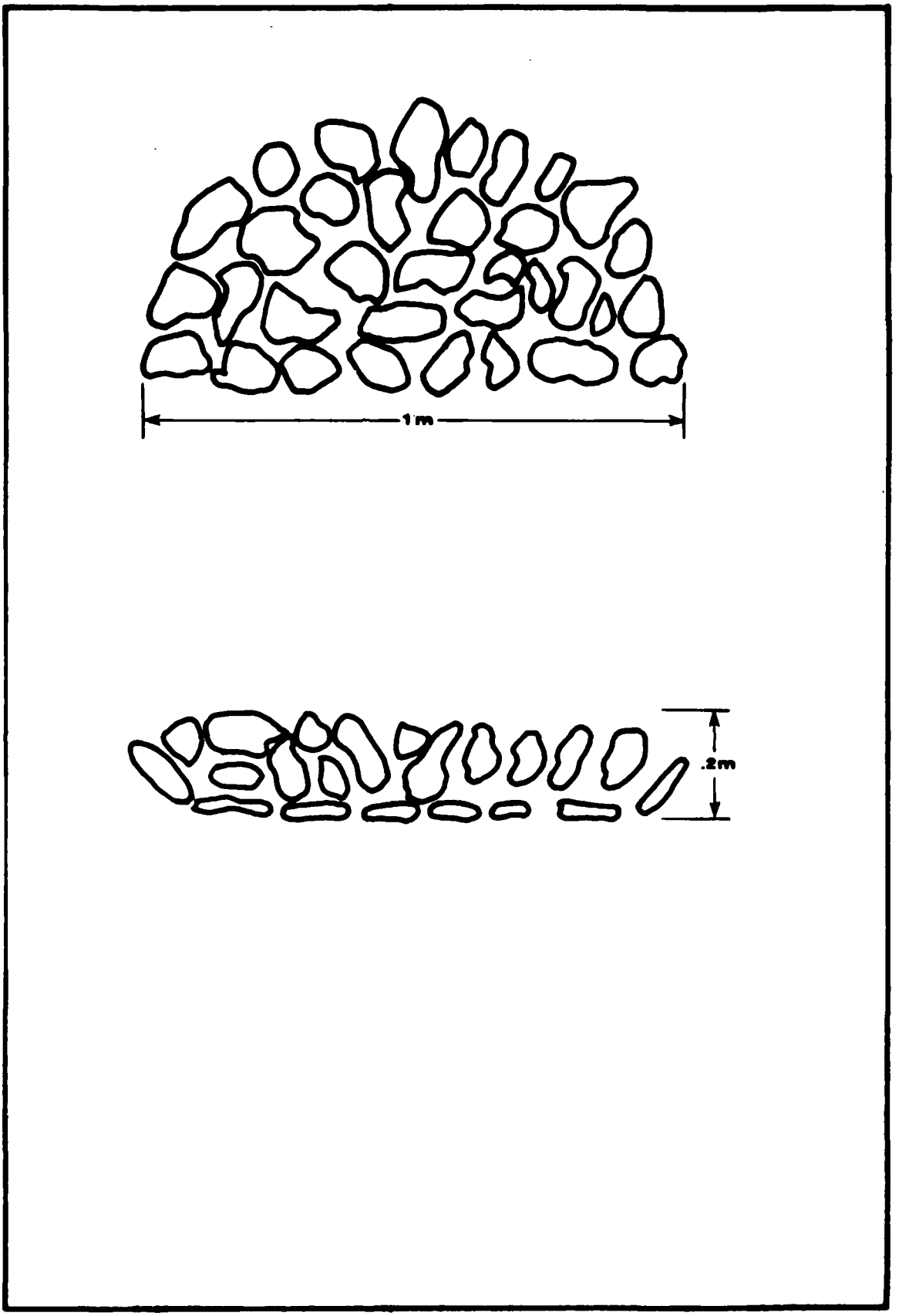


Figure 6. Plan and profile of Starkweather 2 hearth

Figure 7. Starkweather 2, ground surface above exposed hearth. A large site may exist at a depth of 2 meters throughout this landform

Figure 8. Starkweather 2, detail of stone-lined hearth

The amount of overburden on the hearth coupled with its relatively late date should serve to alert archaeologists working in areas subject to alluvial action. If 2 meters of fill can accumulate in only 1100 years, at what depth are the Archaic or Paleoindian sites to be found?

Virden # #3 "Crabtree Borrow"

Survey of a plowed field on a sloping terrace overlooking the Gila River resulted in the observation of two chert flakes, a Mimbres Black-on-white sherd, and a small slab metate. Dark organic stains had also been observed in a trench from which pipe was being removed. A fragment of a vesicular basalt metate was observed in an adjacent field. The presence of subsurface cultural resources was considered likely. As no other suitable borrow was available, it was requested that the archaeologist be present when the area was borrowed.

Borrow was removed from the field by dirt haulers which remove a 30 cm level of earth with each bite. In the future, the use of such machines in monitoring borrow activities should be discouraged because they remove the fill before it can be examined and do not take precise levels of earth.

As the machines worked, several organic stains appeared in the blade cuts at a depth of 80-90 cm beneath the surface (Figures 9 and 10). Each was examined for either charcoal or cultural material. Most were small and all were irregular in outline. The deepest was 15 cm deep. It is thought that many of the small stains were created by decomposing root systems. Two of the stains were larger than the others. One contained charcoal; the other lithic debris. These were designated as Stain 1 and Stain 2.

Stain 1 contained a charcoal concentration but no cultural material was present. Stain 2 (Figure 11), 14 meters west of Stain 1, contained a few pieces of lithic debris and a fragment of ground stone. The fill

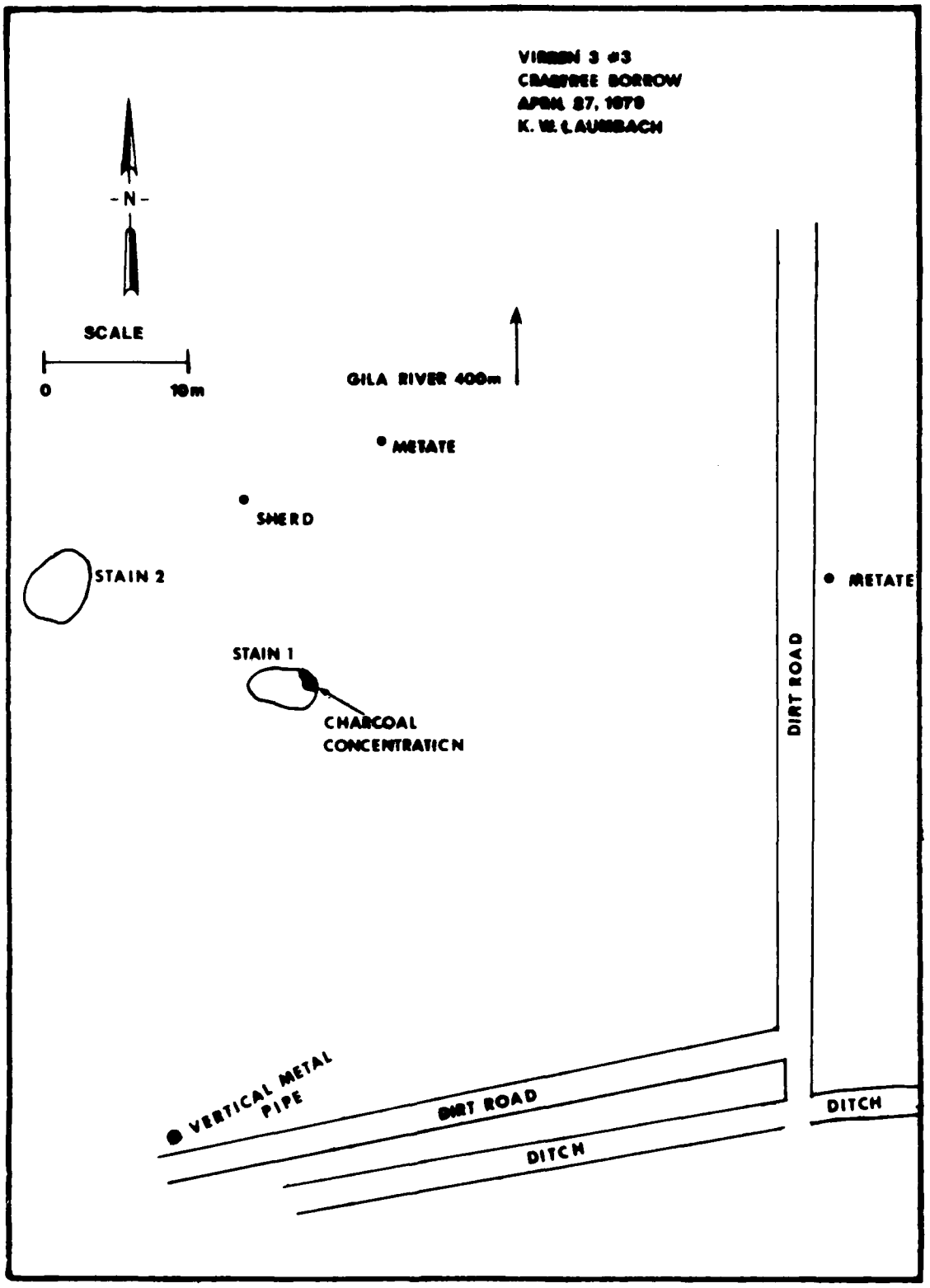


Figure 9. Virden 3 #3

Figure 10. Virden 3 #3 before borrow activities. Note furrows in plowed field

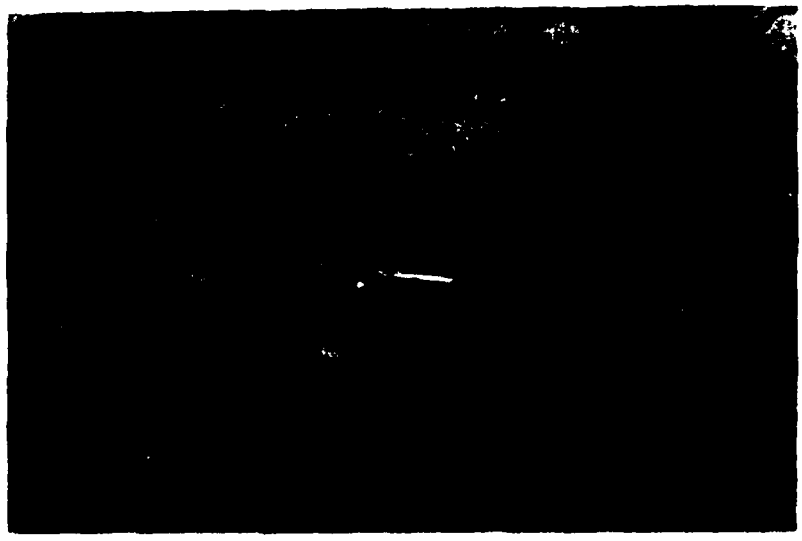


Figure 11. Virden 3 #3, Stain 2. Note concentration of alluvial gravel in foreground

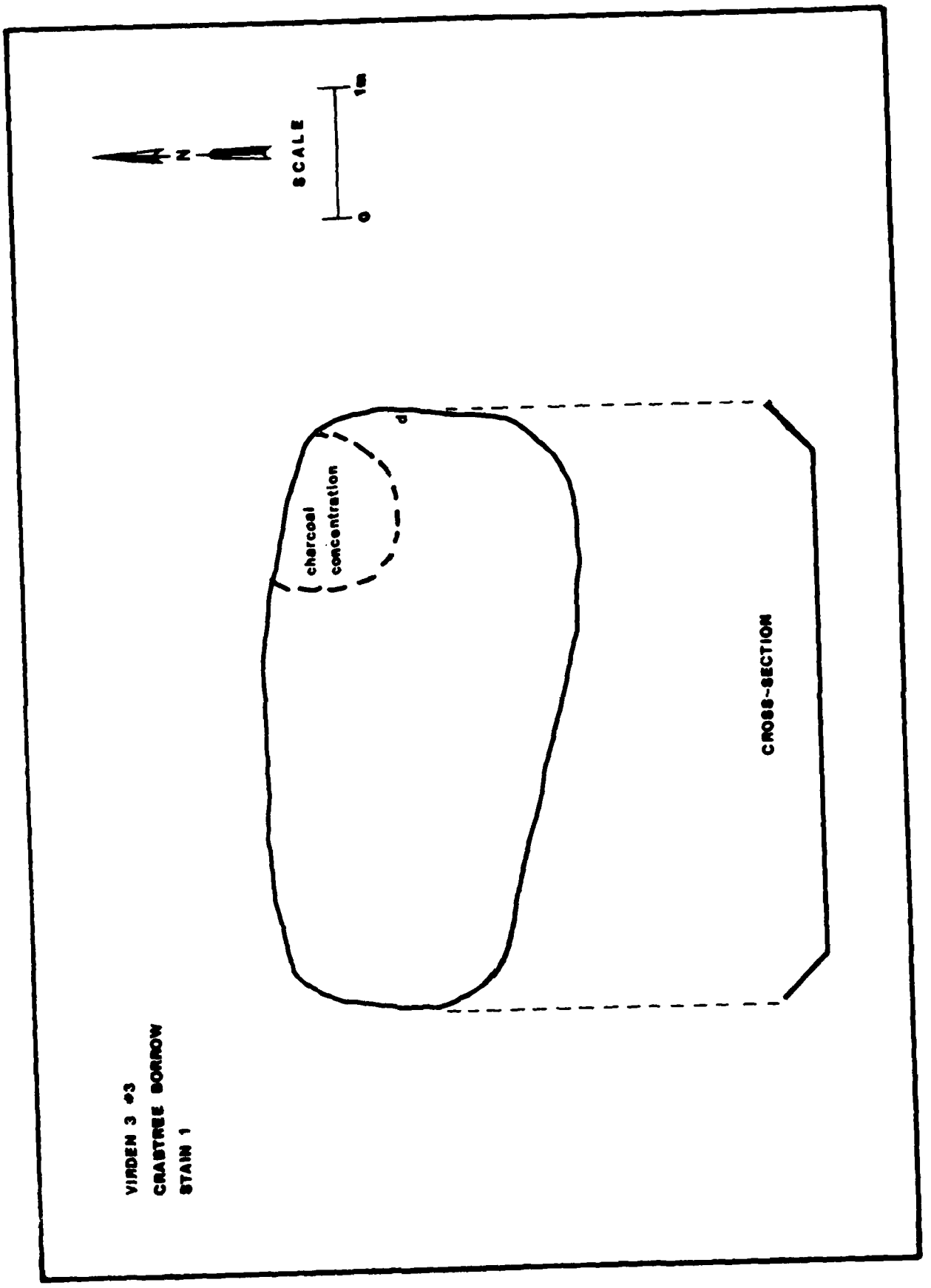


Figure 12. Stain 1

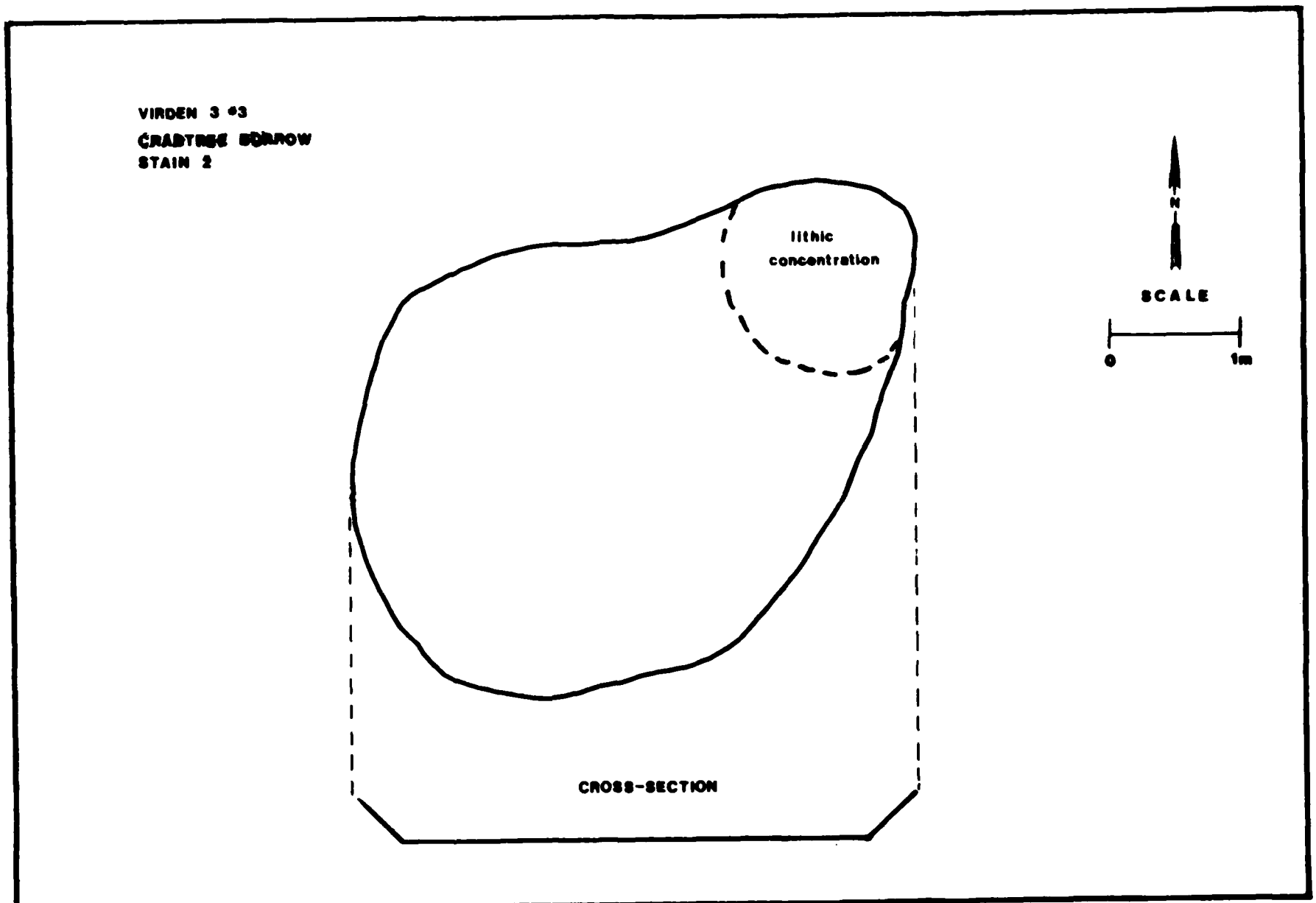


Figure 13. Stain 2

from both features was screened. No discernible living surface or floor was present at the interface of earth and stain. Figure 12 and Figure 13 depict the outline and cross-section of each stain, respectively. It is uncertain whether or not the stains represented structures. Considerable amounts of alluvial gravel were found in both the fill and the flotation samples collected from the charcoal concentration, suggesting heavy alluvial erosion. Radiocarbon and flotation samples collected from the charcoal concentration in Stain 1 were analyzed. The charcoal gave a date of 1345 ± 220 BP (A.D. 605 ± 95 years; UGa-2862). The flotation samples yielded only modern intrusive material. Faunal material consisted of two bones from medium-sized mammals (Appendix D).

Lithic Analysis

A total of 11 flakes and one core were recovered from Stain 2. Chalcedony, basalt, and rhyolite were present. Two rhyolite and one chalcedony flake exhibit cortex. Two flakes exhibit possible wear patterns. The rhyolite core exhibited 90% cortex. Table 5 lists lithic debitage attributes. One small oval slab metate was recovered from the surface and fragments of a one-hand mano were found in Stain 2.

Conclusions

The data from "Crabtree Borrow" are inconclusive. A date of A.D. 605 suggests a Mogollon occupation; early Mogollon sites of this general period were recorded in the valley during this project. Whether the site was "open" or "structural" is not known. The Mimbres Black-on-white sherd recovered from the surface suggests that the site was revisited as the C-14 date is not compatible with that ceramic type. The slab metate and one-hand mano further suggest that the site was utilized in the processing of wild plant foods. Processing of domesticated crops is usually associated with the formalized trough metate and two-hand mano.

TABLE 5. Crabtree Borrow, Virden 3 #3 - Lithic Debitage

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present: Whole Flakes	Cortex Present: Partial Flakes, Shatter	Total Debitage
Basalt	1	0	0	0	0	0	1
Chalcedony	2	5	1	0	0	1	7
Rhyolite	1	2	1	0	1	1	3
TOTAL	4	7	2	0	1	2	11

Cores

(measurements in millimeters)

Material Type	Number	No. of Platforms	Platform Preparation	Cortex Present	TOTAL
Rhyolite	1.0 - 2	3	0	90%	1

Description of Wear or Retouch

Chalcedony - Stain 2-2, L. 22.6, W. 16, Th. 2.8, whole flake, no cortex, platform preparation present, bending fracture present on edge.

Rhyolite - Stain 2-10, L. 21.4, W. 23.9, Th. 5.4, Flake, 50% cortex present, platform preparation present, microflake removal on lateral edge.

Given the amount of damage from erosion and the accumulation of alluvial fill which covered the features described, only a careful excavation of nearby areas will provide data significant to the cultural and functional aspects of this site.

Red Rock 1 #1

The initial survey of this borrow area noted cortex-bearing flakes of several material types on a low flat bench overlooking the floodplain of the Gila River. As the bench contained considerable gravel (much of it workable silicious material), it was thought that the flakes were a result of knappers testing and collecting suitable cobbles from the hill. Permission was tentatively given to borrow the area. The first blade cut exposed a series of subsurface features indicated by dark organic soil (Figures 14, 15, and 16). Much credit must be given to Lonnie Allan, Corps engineer who had been present at the Virden 3 #3 borrow, for recognizing the significance of the stains at Red Rock 1 #1. Borrow operations were halted and the archaeologist was called. Meanwhile the landowner decided that the hill should not be borrowed. Further borrow activities occurred elsewhere.

The blade cut was 3½ m wide, 58 m long and averaged 50 cm deep (Figure 15). Several features were exposed and a large basin metate fragment was rolled up by the blade. Other blade work shown on the map (Figure 14) only cleared the vegetation and did not disturb the subsurface.

A datum (metal rebar) was set on the northeastern edge of the site. Stakes were placed at 5 m intervals along the blade cut. Each feature was assigned an alpha designation, A through H. Features A, D, F, G, and H were excavated. Features B, C, and E appeared to have been created by the blade pulling stained earth over the area or by water erosion of features. Time did not permit additional testing.

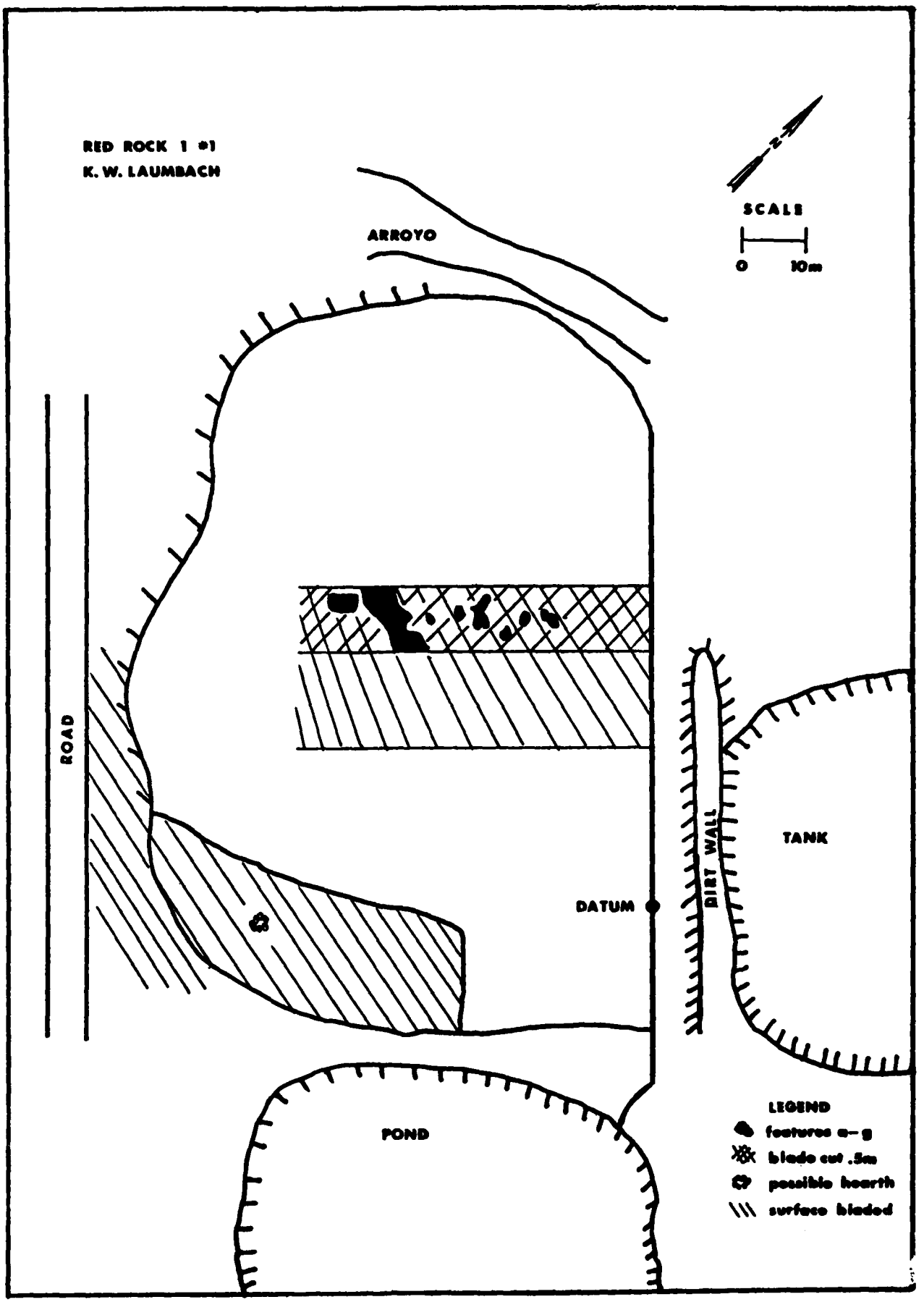


Figure 14. Red Rock 1 #1

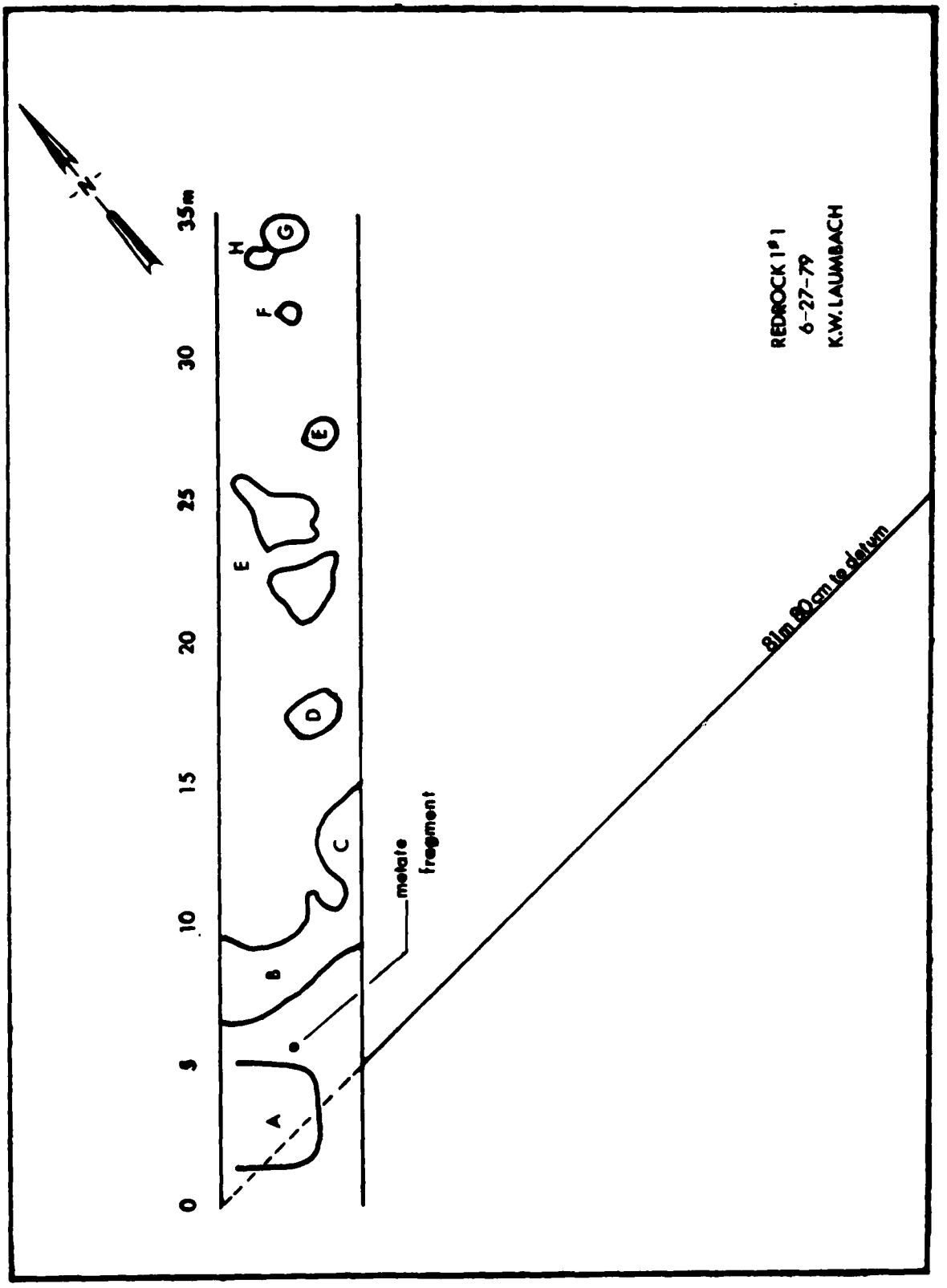


Figure 15. Detail of bladed area

Figure 16. Subsurface features exposed by blade cut. Note dark stains

Figure 17. Shallow pithouse, Feature A, during excavation. Upright trowels mark perimeter of feature

Feature A

Prior to excavation, Feature A was a large circular stain of dark earth (Figure 17). When excavated, Feature A was the remains of a shallow, circular, pithouse (Figures 18 and 19). The exposed diameter was 3.5 m northeast-southwest. The northwestern portion of the feature was beneath undisturbed fill leaving 2.5 m exposed on a northwest-southeast axis.

The fill was composed of organic soil. Bone, charcoal, flakes, and a ground stone fragment, belonging to the bladed metate, were recovered. Flotation and radiocarbon samples were also collected. A floor was found in the center of the feature at a depth of 45 cm. This depth decreased as the perimeter of the feature was reached (see cross-section Figure 19). No floor features (e.g., hearths) were present. Time limitations did not allow complete excavation of the structure. Excavated portions of Feature A are marked in Figure 18.

Charcoal from the feature was radiocarbon dated at 1590 ± 155 BP (A.D. 360 ± 155; UGa-2939). Charred macrofossils were not recovered from this feature. Faunal material included jackrabbit, cottontail, muskrat, and mountain sheep (Appendix D).

Feature D

Also indicated by an organic stain, Feature D was completely excavated. Thought to be a roasting pit, this feature was 80 cm deep, 110 cm long and averaged 71 cm wide (Figure 20). It was filled with charcoal flecks and fire-cracked rock (Figure 21). Several pieces of lithic debris and bone were recovered. Flotation and radiocarbon samples were collected. The feature was radiocarbon dated at 1680 ± 110 BP. (A.D. 270 ± 110; UGa-2940). Corn was the only charred vegetal material. Several unburned plant species were found and may be associated pre-

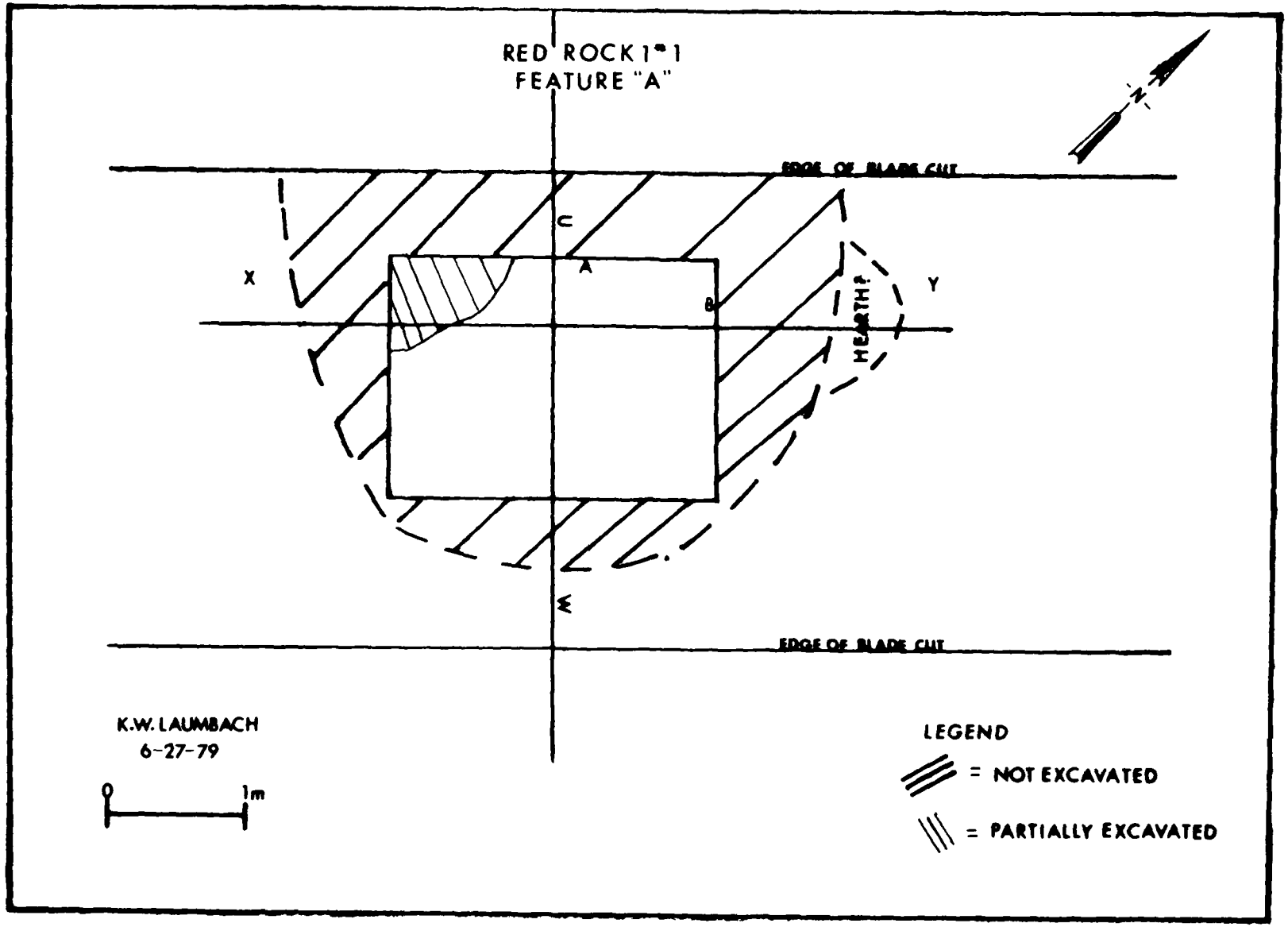


Figure 18. Excavated area of Feature A

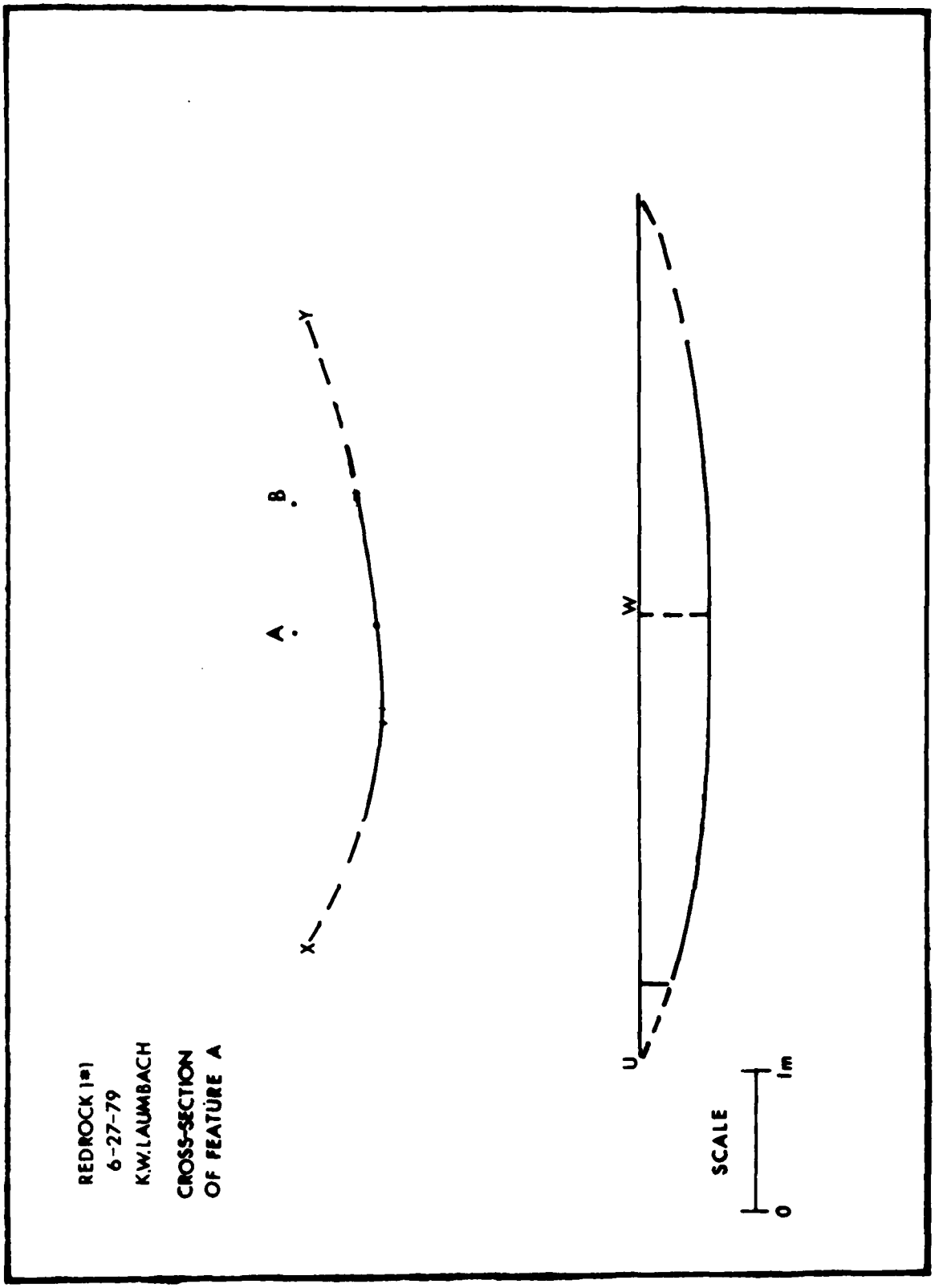


Figure 19. Cross section of Feature A

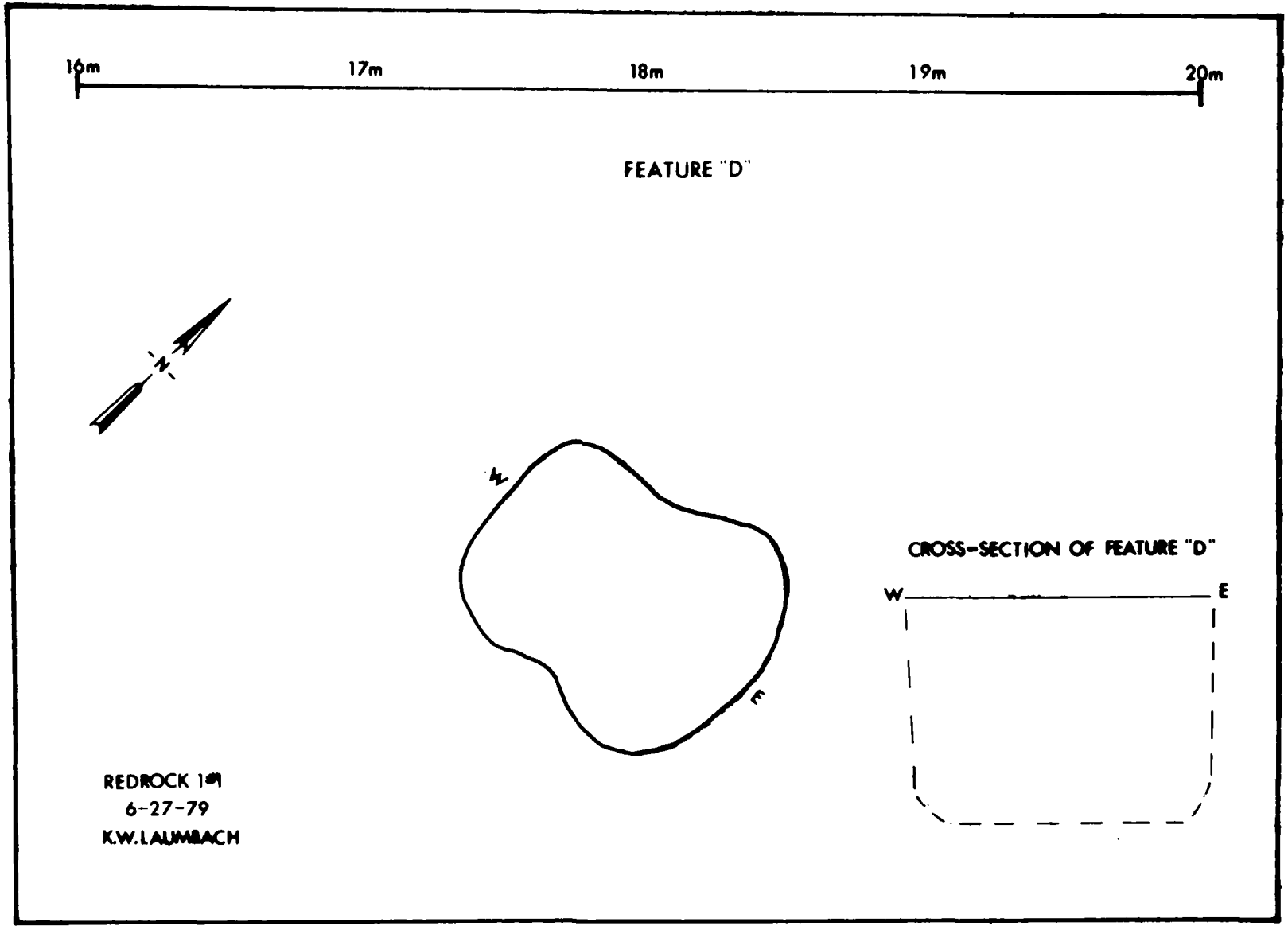


Figure 20. Feature D

Figure 21. Red Rock 1 #1, Feature D, a roasting pit after excavation. Rock pile was in fill

Figure 22. Red Rock 1 #1, Feature G, a roasting pit. Note depth of blade cut

historically (Appendix B). Faunal material included jackrabbit, cottontail, dove, Harlequin quail, wood rat, and possibly deer or sheep (Appendix D).

Feature F

Feature F was a shallow organic stain measuring 55 cm by 45 cm (Figure 23). Excavation revealed an average depth of 8 cm. A few charcoal flecks and lithics were present. Very little fire-cracked rock was found. This feature was probably a hearth.

Features G and H

Features G and H (Figure 23) were two adjacent circular organic stains, each averaging 1 m in diameter. Both contained lithic artifacts, bone fragments and considerable fire-cracked rock. Flotation and radiocarbon samples were collected.

Feature G (Figures 22 and 23) was deeper than Feature H when both were excavated. Feature G was 80 cm deep while the depth of Feature H was only 20 cm. Feature G is thought to have been a roasting pit similar to Feature D. Feature H appears to have been a shallow hearth associated with Feature G.

Feature G was radiocarbon dated at 550 ± 245 BP (A.D. 1400 ± 245; UGa-2941). Flotation yielded unburned examples of chenopods and portulaca (Appendix B). Faunal material consisted of one indeterminate bone from a small or medium-sized mammal (Appendix D).

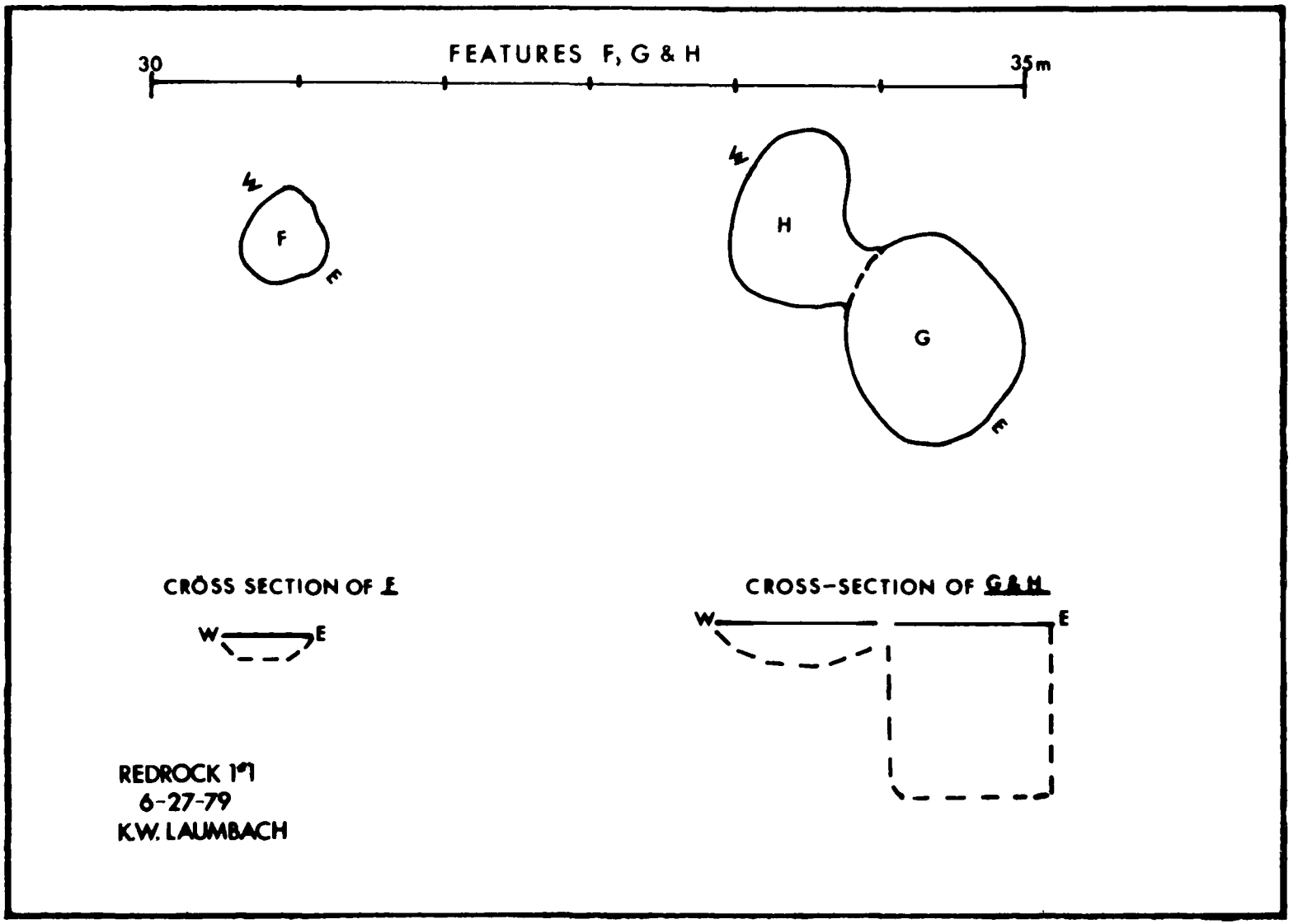


Figure 23. Features F, G, and H

TABLE 6. Red Rock 1 #1 - Lithic Debitage and Core Assemblage (All Features)

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present: Whole Flakes	Cortex Present: Partial Flakes, Shatter	Total Debitage
Basalt	3	30	1	1	3	9	33
Andesite	0	8	0	0	0	8	8
Chalcedony	2	4	0	1	0	0	6
White Chert	2	2	0	1	0	1	4
Red Chert	0	4	0	0	0	0	4
Brown Chert	2	2	0	1	0	0	4
Chert	1	8	1	1	0	4	9
Rhyolite	0	22	0	1	0	6	22
Quartzite	0	4	0	0	0	1	4
Tuff	0	9	0	0	0	0	9
Obsidian	1	1	0	1	0	0	2
Diorite	0	2	0	0	0	0	2
Aphanetic Granite	0	2	0	0	0	0	2
Unknown	0	4	0	0	0	2	4
TOTAL	11	102	2	7	3	31	113

Cores

Material Type	Cores	Number	No. of Platforms	Platform Preparation	Cortex Present	TOTAL
Gray Chert	1	RR-1-D-1	1	1	0	1

TABLE 7. Red Rock 1 #1, Feature A - Lithic Debitage

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present: Whole Flakes	Cortex Present: Partial Flakes, Shatter	Total Debitage
Andesite	0	1	0	0	0	1	1
Tuff	0	2	0	0	0	0	2
Basalt	0	5	0	0	0	1	5
Aphanetic Granite	0	2	0	0	0	0	2
Red Chert	0	4	0	0	0	0	4
White Chert	0	1	0	0	0	0	1
Rhyolite	0	6	0	0	0	1	6
Quartzite	0	1	0	0	0	0	1
TOTAL	0	22	0	0	0	3	22

TABLE 8. Red Rock 1 #1, Feature D - Lithic Debitage

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present: Whole Flakes	Cortex Present: Partial Flakes, Shatter	Total Debitage
Basalt	0	5	0	0	0	2	5
Chalcedony	0	1	0	0	0	0	1
Chert	1	1	1	1	0	0	2
Obsidian	1	1	0	1	0	0	2
Rhyolite	0	5	0	0	0	2	5
Quartzite	0	2	0	0	0	0	2
Tuff	0	4	0	0	0	0	4
TOTAL	2	19	1	1	0	4	21

Cores

Material Type	Cores	Number	No. of Platforms	Platform Preparation	Cortex Present	TOTAL
Gray Chert	1	RR-1-D-1	1	1	0	1

Description of Wear or Retouch

White Chert - RR1-D-3, L. 49.2, W. 21, Th. 7 mm, whole flake, no cortex, platform preparation and bidirectional flake scars present, lateral bifacial retouch, edge rounding, utilized edge is 11.4 mm long, straight, and has 30° angle.

Obsidian - RR1-D-7, L. 11, W. 8.2, Th. 1.8 mm, whole flake, no cortex, bidirectional flake scars, distal and lateral bifacial retouch, utilized edges are 8.2 and 11 mm long. Both are straight and have edge angles of 30°.

Rhyolite - RR1-D-6, L. 16, W. 22.9, Th. 8 mm, flake fragment, 10% cortex, lateral unifacial retouch, rounding, utilized edge is 4.3 mm long, straight, and has angle of 30°.

TABLE 9. Red Rock 1 #1, Feature F - Lithic Debitage

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present: Whole Flakes	Cortex Present: Partial Flakes, Shatter	Total Debitage
Rhyolite	0	1	0	0	0	0	1

Red Rock 1 #1, Feature G - Lithic Debitage

Basalt	2	8	1	1	2	3	10
Andesite	0	3	0	0	0	3	3
Rhyolite	0	4	0	0	0	2	4
Chert	0	5	0	0	0	3	5
Quartzite	0	1	0	0	0	1	1
Unknown	0	1	0	0	0	0	1
TOTAL	2	22	1	1	2	12	24

Description of Wear or Retouch

Basalt - RR1-G-2, L. 52.8, W. 50, Th. 17.5 mm, whole flake, 10% cortex, unifacial, retouch of distal edge for 2.3 mm. Straight edge with 30° angle.

Basalt - RR1-G-5, L. 57.6, W. 46.8, Th. 21 mm, whole flake, 10% cortex, platform preparation and bidirectional dorsal flake scars. Bending fractures and unifacial flake removal on lateral ventral side for 12.7 mm. Straight and concave edge at a 30° angle.

Basalt - RR1-I-1, L. 70.9, W. 73.4, Th. 26.9 mm, whole flake, 25% cortex, bifacial flake removal on ventral side of distal end, convex edge 23.3 mm long with 30° edge angle.

TABLE 10. Red Rock 1 #1, Feature H - Lithic Debitage

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present: Whole Flakes	Cortex Present: Partial Flakes, Shatter	Total Debitage
Chert	0	2	0	0	0	1	2

Red Rock 1 #1, Surface - Lithic Debitage

Basalt	0	12	0	0	0	3	12
Chalcedony	2	3	0	1	0	0	5
White Chert	2	1	0	1	0	1	3
Andesite	0	4	0	0	0	4	4
Rhyolite	0	6	0	0	0	1	6
Diorite	0	2	0	0	0	0	2
Brown Chert	2	2	0	1	0	0	4
Tuff	0	3	0	0	0	0	3
Other	0	3	0	0	0	2	3
TOTAL	6	36	0	3	0	11	42

Description of Wear or Retouch

Chalcedony - RR1-S-7, L. 23.3, W. 16.6, Th. 3.5 mm, whole flake, no cortex, bidirectional dorsal flake scars, bifacial microflake removal and rounding, utilized edge is 16.6 mm long, straight and at a 30° angle.

White Chert - RR1-S-8, L. 13.4, W. 12.5, Th. 2.5 mm, whole flake, no cortex, lateral edge exhibits bifacial microflake removal and rounding for 13.4 mm, utilized edge is straight at 30° angle.

Brown Chert - RR1-S-23, L. 33.4, W. 22.9, Th. 9 mm, whole flake, no cortex, one lateral edge exhibits bifacial microflake removal for 18 cm. The edge is straight and has a 60° edge angle.

Analysis of Lithic Materials

A total of 113 flakes and 1 core were recovered from the site. Basalt, rhyolite, and chert were the most common materials. All materials, with the exception of obsidian, were recognized in local gravel deposits. A low frequency of cortex-bearing flakes suggests that suitable cobbles were reduced fairly completely. The recovered core had only one platform and exhibited no cortex. A few instances of dorsal, bidirectional flake scars and one biface suggest that biface manufacture may have taken place on the site (Laumbach 1980). The recovered biface is a projectile point which is similar in style to late Cochise (Archaic) projectile points. The intended style was difficult to determine by the presence of several step fractures which are thought to have caused the point to have been discarded before completion. Nine pieces of debitage exhibited some form of wear or retouch. Tables 6-10 list lithic attributes by feature.

Ground stone is represented by two mano fragments, an oval, well worked one-hand mano, and two fragments of a heavy basin metate.

Conclusions

Data from Red Rock 1 #1 suggest that it is a relatively early Mogollon pithouse village. Although diagnostic ceramics were not present, a sequence of Mogollon sites has been recorded in the Red Rock Valley (Lekson 1978). Furthermore, pit ovens filled with rocks and shallow pithouses are known to occur in early Mogollon sites (Wheat 1955:36-37). Occupation of the site probably occurred between A.D. 200 and A.D. 400. The late date for Feature G is unexplained but may have been due to a contaminated sample as the charcoal collected was small flecks mixed with the fill. The suggested late Archaic affiliation of the projectile point recovered from Feature G is compatible with the dates from Features A and D.

Economic data suggest that the population of Red Rock 1 #1 was practicing agriculture as well as exploiting the plant and animal communities of the nearby mountain, desert and river ecozones. This supports the versatile subsistence strategy suggested for early Mogollon populations in the Red Rock valley by Lekson (1978:55). Later strategies appear to become more valley oriented and less dependent on resources found elsewhere. The riverine-terrace location of Red Rock 1 #1 diverges slightly from the upland-valley margin settlement pattern noted by Lekson (1978:54). This is probably due to the amount of overburden on lower sites subjected to alluvial action.

Considerable data remain to be collected at this site. The landowner plans to construct a dirt tank there in the future. An attempt should be made to excavate prior to construction.

Red Rock 2 #1

Survey of a hillside borrow resulted in the discovery of some 20 Mimbres Phase surface rooms and several pithouses (Figure 24) on a bench overlooking the Gila River (Figure 25). As no suitable borrow could be found elsewhere, an area near the site which contained a light sherd and lithic scatter but not structures, was selected as borrow. It was requested that the archaeologist be present to monitor the borrow activities (Figure 26).

The borrow area was flagged and a general surface collection of sherds and lithic artifacts was made. A small concentration of historic glass was also mapped and collected.

The surface of the borrow area was covered with sand and gravel. Blade work revealed that the gravel was continuous beneath the surface. No structures were present. The only feature found was a small circular hearth (Figures 27 and 28). This feature was excavated but wet conditions had deteriorated the fill and neither the flotation nor the radiocarbon samples collected yielded additional data. A mano fragment was recovered from the hearth.

Analysis of historic, lithic, and ceramic artifacts was completed at New Mexico State University.

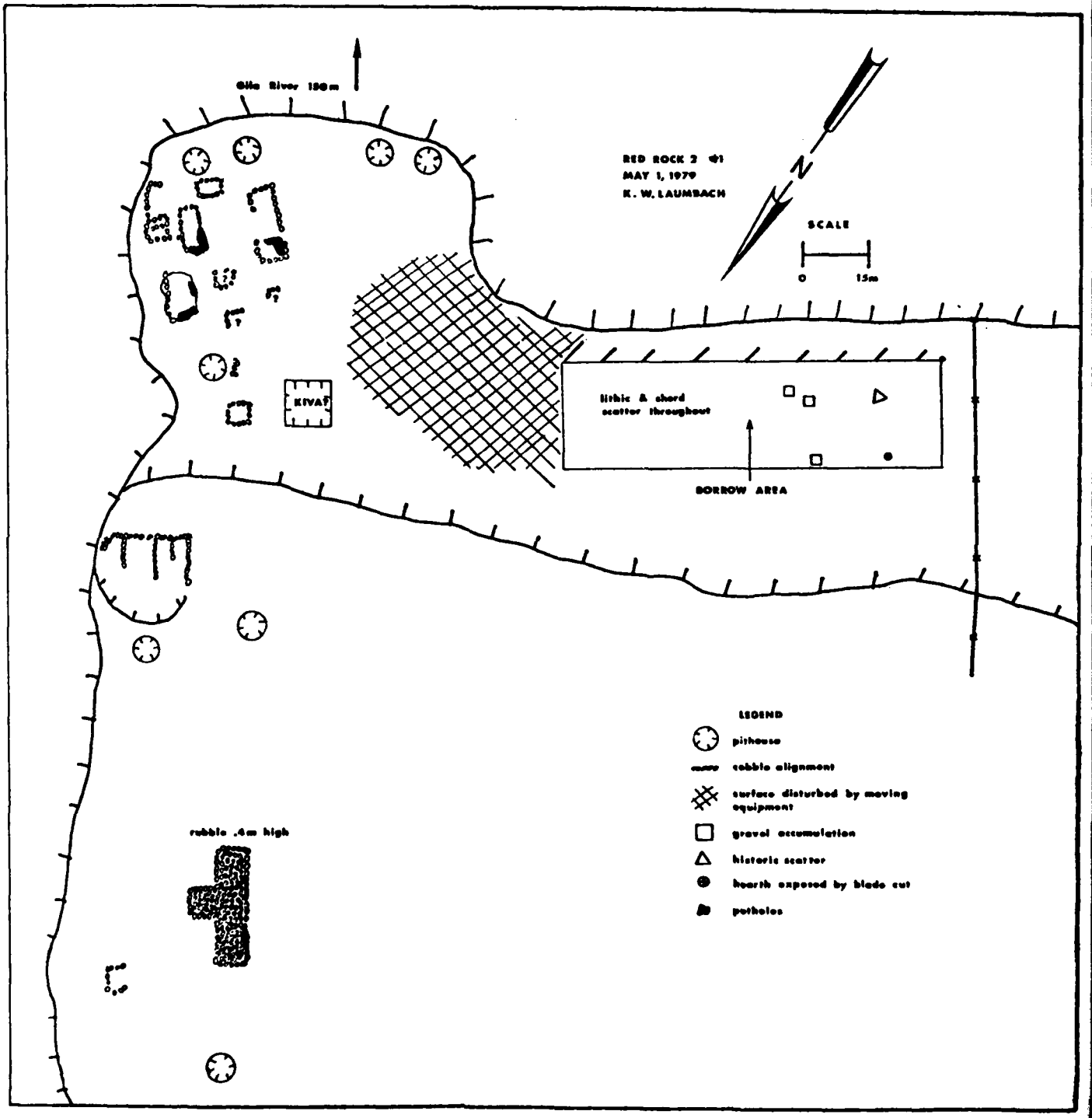


Figure 24. Red Rock 2 #1

Figure 25. Gila River near Red Rock project area

Figure 26. Borrow activity at Red Rock 2

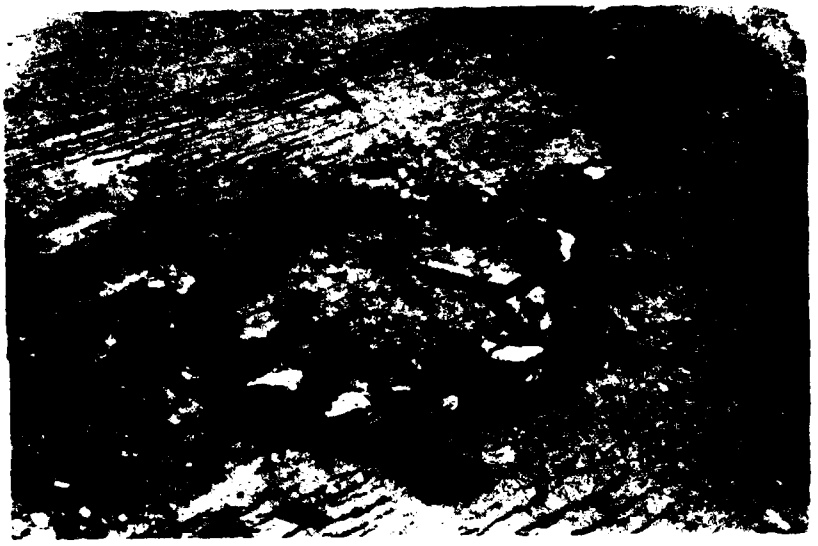


Figure 27. Hearth exposed at Red Rock 2 #1

Figure 28. Talking to contractors during hearth excavation at Red Rock 2 #1

Ceramics

* * * * * *

TABLE 11. Red Rock 2 #1, Ceramics

TYPE	DESCRIPTION
San Francisco Red	2 bowl sherds
Mimbres Black-on-white	2 sherds
Alma Plain	31 sherds total
	8 bowl sherds
	3 jar sherds
	20 undifferentiated
Corrugated brown ware	1 jar sherd

Total sherds - 36

* * * * * *

Although the San Francisco Red and Alma Plain ceramics are found early in the Mogollon sequence, their association with Mimbres Black-on-white and the proximity of a Mimbres Phase site would suggest a common temporal period for the assemblage.

Description of Ceramics Recovered from Excavations at Red Rock 2 # 1

Toni Sudar-Laumbach

Alma Plain (31 sherds)

Surface color: ranges from brown to reddish brown.

Surface treatment: all sherds possess unslipped, untextured, plain surfaces. Fifteen of the sherds have one or more badly damaged and weathered surfaces.

Bowl forms: interior and exterior surfaces are scraped smooth and well compacted. Intermittent polishing occurs on both surfaces.

Jar forms: exterior surfaces are scraped smooth and are compact and exhibit intermittent polishing. Interior surfaces are generally smooth although scraping striae do occur.

Paste: all sherds have fine textured pastes which are heavily tempered with evenly distributed, heterogeneous materials.

Color: eleven sherds have carbon streaks or dark colored cores; the remaining sherds have cores which are colored similarily to the surface colors.

Tempering material: twenty-seven sherds are tempered with sand composed of rounded and subangular particles; translucent quartz is the predominant mineral which is mixed with other mineral particles of various colors. Five sherds are tempered with a detrital material or weathered rock of a granitic nature; particles are angular and consist of opaque white materials in combination with quartz and dark mineral particles.

Corrugated Mogollon Brown ware (1 sherd)

Surface color: reddish brown

Suface treatment (jar form): interior surface is well smoothed and compacted. Exterior surface exhibits corrugations with shallow indentations, all of which were polished over creating a flattened and smeared appearance.

Paste: a fine textured paste which is heavily tempered with evenly distributed, heterogeneous materials.

Color: reddish brown

Tempering material: Sand composed of rounded and sub-angular particles of translucent quartz and other minerals.

Mimbres Black-on-white (2 sherds)

Surface color and surface treatment: Interior surface of both sherds are smoothed and compact; one sherd exhibits scraping striae. Color on interior surfaces of both sherds is gray; both are unslipped. Exterior surfaces of both sherds are slipped with a thin, chalky white slip which is not polished. Only one sherd possesses remnants of design motifs which include a hatched element opposed by a solid, linear element. Paint is a mineral pigment which is brownish black in color; painted elements exhibit intermittent polishing.

Paste: both sherds have fine textured pastes which are moderately tempered with a homogeneous material.

Color: in both sherds the core color graduates from a dark to light gray from the interior to exterior surface.

Tempering material: both sherds are tempered with a detrital material or weathered rock possibly granitic in nature; particles are angular and consist primarily of opaque white material with minor quantities of translucent quartz.

San Francisco Red (2 sherds)

Surface Color and surface treatment: Interior surfaces of both sherds are smoothed and compact and possess remnants of reddish brown colored slip. Exerior surfaces of both sherds are eroded and damaged.

Paste: both sherds have fine textured paste which are heavily tempered with evenly distributed, heterogeneous materials.

Color: both sherds have cores which are colored similarly to the surface colors.

Tempering material: both sherds are tempered with sand composed of rounded and subangular particles; translucent quartz is the predominant mineral and is mixed with other mineral particles of various colors.

Lithic Analysis

A total of 86 pieces of lithic debitage was collected from the surface. Basalt, chert, and andesite are the most frequent materials. All materials, except obsidian, were observed in local gravel deposits. A few instances of bidirectional dorsal scars indicate biface manufacture. Two biface fragments were recovered. A low frequency of cortex bearing flakes further suggests that considerable secondary reduction took place. Two cores, both with considerable cortex are thought to have been rejects. Thirteen flakes exhibited retouch or wear. Table 13 lists attributes of lithic artifacts.

Three *mano fragments* were recovered (Table 12). Two are of granite; one is of vesicular andesite. Their presence suggests that some grinding of vegetal material occurred in the area.

* * * * * *

TABLE 12. Groundstone Artifacts from Red Rock 2 #1
(measurements in millimeters)

Artifact No.	Length	Width	Thickness	Type	Material
No. 1	117.8	96	41.2	Mano Fragment Type unknown	Vesicular Andesite
No. 2	89.4	58.2	34.	Mano Fragment Type unknown	Granite
No. 3	41.6	31.6	16.9	Mano Fragment Type unknown	Granite

* * * * * *

TABLE 13. Red Rock 2 #1 - Lithic Debitage and Cores

Material Type	Whole Flakes	Partial Flakes, Shatter	Platform Preparation	Bidirectional Flake Scars	Cortex Present		Total Debitage
					Whole Flakes	Partial Flakes, Shatter	
Basalt	13	7	3	1	9	5	20
Obsidian	2	2	0	1	1	1	4
Red Chert	2	5	0	2	1	2	7
Lt. Grey Chert	1	1	0	0	1	1	2
Grey Chert	2	4	0	0	1	1	6
Quartzite	2	1	1	0	1	0	3
Purple Chert	2	0	0	0	0	0	2
White Chert	4	11	2	0	1	2	16
Chalcedony	1	4	1	1	0	2	5
Rhyolite	1	3	2	0	1	3	4
Andesite	1	9	1	1	3	6	17
TOTAL	31	47	10	6	19	23	86

Cores

Material Type	Artifact No.	No. of Platforms	Platform Preparation	Cortex Present	TOTAL
Andesite	RR 82	3	0	60%	1
Unknown	RR 88	1	0	50%	1

Description of Wear or Retouch

Basalt - RR1, L. 73.1, W. 68.2, Th. 26.6 mm, whole flake, 75% cortex on dorsal side, unifacially retouched on distal end for 46.5 mm. Utilized edge angle is 35° and is convex shaped.

Basalt - RR12, L. 46.1, W. 41.7, Th. 13.5 mm, whole flake, no cortex, bending on lateral side. Edge angle is 25° straight edge.

Basalt - RR14, L. 49, W. 37.2, Th. 15.9 mm, whole flake, 30% cortex with platform preparation. Unifacial bending and microflake removal for 39.8 mm. Edge is concave, convex and straight.

TABLE 13. Continued

Basalt - RR16, L. 42.8, W. 27.4, Th. 19.4 mm, whole flake, 50% cortex on dorsal side and exhibits platform preparation. It is laterally retouched unifacially, edge is concave and 14 mm long at 35°.

Red Chert - RR30, L. 71.2, W. 57.5, Th. 18.6 mm, shatter, 95% cortex on dorsal side. Lateral unifacial retouching for 11.7 mm. Edge is concave with an angle of 70°.

Red Chert - RR31, L. 23.5, W. 17.2, Th. 5.2 mm, whole flake, 5% cortex, unifacial flaking on distal end for 10.5 mm. Utilized edge angle is 80°.

Gray Chert - RR35, L. 32.9, W. 25.5, Th. 5.3 mm, whole flake, no cortex, lateral bending with concave edge of 20 mm.

Gray Chert - RR36, L. 22.7, W. 19, Th. 3.3 mm, whole flake, 10% cortex on dorsal side. Bending on distal edge. Edge is convex 21.6 mm long.

Gray Chert - RR38, L. 32, W. 25.5, Th. 8.7 mm, shatter, no cortex, unifacially retouched on distal end for 20.6 cm. Utilized edge angle of 75% on a concave edge.

Quartzite - RR65, L. 24.4, W. 22.1, Th. 5.1 mm, whole flake, 20% cortex. Platform preparation unifacial microflake removal and bending for 16.4 mm. Concave edge with angle of 70°.

White Chert - RR59, L. 46.5, W. 34.6, Th. 16.1 mm, shatter, no cortex. Platform preparation present. Lateral and distal unifacially microflaked for 50 mm. Edge is convex with a 40° angle.

Chalcedony - RR60, L. 16.9, W. 20.3, Th. 4.8 mm, whole flake, no cortex. Lateral and distal retouching for 29.5 mm. Edge is convex with a 60° angle, irregular.

Bifaces

White Chert - RR48, L. 16.8 mm, W. 13.8 mm, Th. 6.8 mm, broken biface, no cortex, bifacial flake removal on 3 sides. Concave with 60° edge angle.

Andesite - RR79, L. 29 mm, W. 19 mm, Th. 6.8 mm, no cortex, non-patterned bifacial flake removal. Roughly leaf shaped, broken distal end, possible projectile point preform.

Historic Artifact Analysis

Meliha S. Duran

Historic artifacts from the Red Rock 2 #1 site were catalogued and described, and an attempt was made to identify the one brand name represented. Fifteen artifacts were recovered. They are summarized in Table 13.

* * * * * *

TABLE 14. Red Rock 2 #1. Historic Artifacts

Article No.	Description	Comments
RR1-RR5	purple bottle fragment	along lower edge: THE NIVISION-WEISKOPF CO.
RR6-RR9	light green bottle fragments	possibly size of 702 pop bottle
RR10, 12-14	white glazed stoneware	lid to sugar bowl
RR11	white glazed stoneware	possibly bowl rim
RR15	milkglass rim fragment	jar

* * * * * *

Several artifacts provide a date range. The purple glass is useful for dating the assemblage. Before World War I (1917), iron or manganese was added to clear glass. If exposed to the sun's ultraviolet light, the glass would turn purple.

One bottle base had writing along the lower edge: "The Nivison-Weiskopf Co. Cin. O-". The Nivision-Weiskopf Company started before 1904, and closed in 1931 (Toulouse 1971).

The light green bottle may have contained a carbonated beverage. The base indicates a small container, possibly with a capacity of seven or eight ounces. The green color was commercially produced after 1930 (Duran and McKeown 1980).

The white milkglass fragment may be from a one-ounce mentholatum jar. These first appreared around 1900 (Ward, Abbink and Stein 1977: 240).

Two utility ware ceramic vessels were recovered. These types of ceramics were readily available and relatively inexpensive. One piece is the lid to a sugar bowl or tea pot, the diameter ca. 3/4 in. The other vessel may be a bowl, judging from the diameter (ca. 5/4 in.).

Thus, data indicate that the concentration of historic refuse probably dates from the period between 1900 and 1940.

Conclusions

The borrow area adjacent to Red Rock 2 #1 served as a limited activity area for the nearby site. Primary and secondary lithic reduction and grinding of vegetal material, as well as a host of other activities, may have occurred there during the prehistoric occupation. At some time after 1930, the area was used, possibly only once, as a dump for broken glass.

Virden 3 #4

Virden 3 #4 (Figure 24) was located on a low terrace in the northwest corner of a plowed field. The terrace had also been plowed and if the landowner had not provided information, it is possible that the site would not have been recognized since little evidence was present. Mr. Charles Clous from nearby Virden, New Mexico, informed the archaeologist that a structure reputed to have been a Butterfield stage stop had once existed on the borrow site. Clous, a lifetime resident of the area, recalled the following information:

1) The walls of the structure were made of adobe bricks laid widthwise instead of lengthwise, resulting in a thick wall.

2) Gunports built into the walls were filled in during the early 1920s.

3) A family had lived there during the 1920s.

4) A mesquite thicket once surrounded the structure.

5) A spark from a ditch cleaning fire had ignited the roof, burning the house to the ground in the 1920s.

6) A gunfight involving Billy Wilson and a man named Shriver had occurred at the site in the 1880s.

7) Mr. Clous had leveled the foundations when clearing the terrace for use as a field.

Because of the possibility that subsurface features (e.g., outhouses) might exist, the archaeologists were called prior to borrow activity. Dave Kirkpatrick and Keith Leftwich monitored removal of borrow from the site.

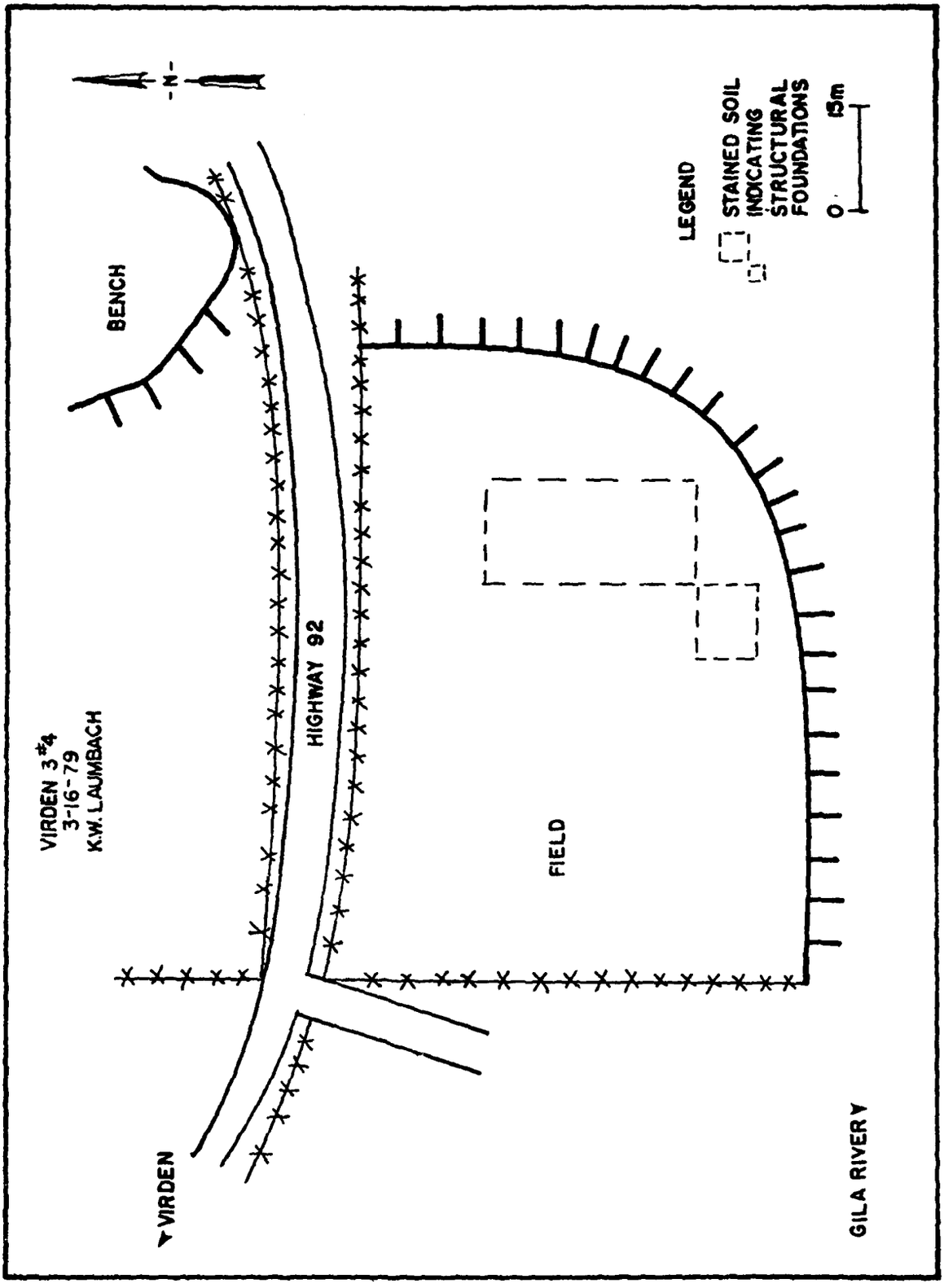


Figure 29. Virden 3 #4

Surface artifacts were collected, photographs taken, and a map drawn prior to borrow activity (Figure 30). Shallow bulldozer blade cuts revealed a discolored rectangular area 30 m long and 15 m wide, marking the original foundation. A smaller structural outline was present on the southwest corner of the larger stain. No artifacts or other features were exposed in these cuts (Figure 31).

Paddlewheel earth movers were used for the initial borrow removal. These machines, in contrast to those used at Virden 3 #3, were excellent for the purpose of monitoring the subsurface as they left a clean, smooth, level area in which to observe if features were present. No subsurface features were recognized and few artifacts were recovered from the borrow.

During the earth removal by the paddlewheelers, Clous visited the site. Kirkpatrick commented on the lack of artifacts and features. Clous stated that at least six inches of fill were removed from the borrow area and deposited below the terrace when he (Clous) removed the foundations. This leveling probably destroyed the site.

The majority of artifacts were recovered from the redeposited fill below the terrace. These artifacts were brought to the surface by soil fluctuations initiated by the passage of filled (60 ton) road trucks.

During excavation, another resident, Virgil Jones, visited the site and imparted the following information:

1) The mesquite thicket had been on the north and east side of the structure.

2) The main door of the structure was on the west side and another door had opened to the north.

3) The outhouse had been in the mesquite thicket and was possibly covered or destroyed by highway construction.

Figure 30. Virden 3 #4 prior to borrow activities, note foundation line in middle ground

Figure 31. Virden 3 #4 after removal of surface by machinery

4) The old road had passed on the west (south?) side of the structure. There had been a hog pen south of the house.

To complete the excavation, a series of trenches was cut in the area where the outhouses might have been. Nothing was found.

Historic Artifacts

Meliha S. Duran

Ninety-one historic artifacts were recovered from the surface of Virden 3 #4. Metal, glass, and ceramic artifacts were collected, and are summarized in Table 14.

* * * * * *

TABLE 15. Historic Artifacts Recovered from Virden 3 #4

Artifact	No. of items	Comments
Metal		
Metal bar, bent on ends	1	possible singletree from horse tackle
pipe with elbow	1	
rod with hexagonal nut	1	
fragments of sheet metal	2	
square nail	2	
U-staple	1	
washer	1	home-made, hole is off-center
shaped metal	1	sheet metal, possible lead alloy, folded
Glass		
clear glass fragment	1	edge has row of knobs, may be lamp globe
clear glass handle	1	may be from water pitcher, slight purpling
clear glass fragments	9	window glass, varying thickness
clear glass fragments	1	wavy edge, lamp globe
clear glass fragments	4	indeterminable, may be from 1 vessel

TABLE 15. Continued

Artifact	No. of items	Comments
light purple glass fragments	7	may be from 1 vessel, *jar
dark purple glass fragments	3	hexagonal base fragment, rim fragment not screw-on lid
brown glass fragments	3	3 vessels: round base, round base, 1 3/4" diameter, square base
light green glass fragments	2	flat pieces, like window glass
light green glass fragments	3	1 vessel, bottom resembles pop bottle
light turquoise or aqua glass fragments	10	2 vessels: lip & neck with hand applied neck, lip fragment, 8 body sherds
dark turquoise or aqua glass fragments	7	rim from canning jar and body sherds
dark turquoise or aqua glass fragments	1	base from medicine bottle: "-root - --dney liver & bladder cure"
milkglass	1	canning jar seal
milkglass	2	2 vessels: plate base, bowl or cup base
Ceramics		
stoneware	1	blue-on-white design, raised design
stoneware	1	brown-on-white design
stoneware	1	pink & blue flowers on white, possible cup
stoneware	1	blue-on-white design, brand reads: Petrus, Regout & Co., Maastricth, Excelsior, Made in Holland.
stoneware, white glaze	16	2 vessels: cup, large plate or bowl (1 fragment burned)
stoneware, white glaze	3	1 vessel, plate
stoneware, white glaze	1	plate or bowl
stoneware, white glaze	1	massive curved piece, door handle
porcelain	1	may be porcelain doll head, surface and paint indicate hair
Total	91	

*vessel counts indicate a minimum number of vessels that may be present.

* * * * * *

The artifacts were cleaned and catalogued. Cataloging included identifying the artifact, measuring the dimensions, and noting brand names and other distinguishing features. Glass fragments were measured if a diameter could be approximated. Many glass fragments showed no distinguishing characteristics except color. Minimum vessel counts were based on color, using bases and necks as important features. Some glass fragments were chipped along the edge. However, since the items were recovered from the surface of the site -- where they were subjected to vehicular, human and animal traffic -- and were all placed in one collection bag, no reworking is presumed for this collection.

None of the artifacts provided a definite date for the site; however, a general period of use can be inferred. Purple glass dates between 1880 and 1917 (Ward, Abbink and Stein 1977:240). The discoloration is caused when sunlight hits manganese, an additive to clear glass. During World War I, the maganese was no longer available. Aqua or turquoise glass was manufactured between 1880 and 1910 (Ward, Abbink and Stein 1977:240). One bottle had a hand-applied lip, indicating manufacture before automatic bottle machines starting in 1902 (Ward, Abbink and Stein 1977:230).

Several different kinds of bottles were present. These included a canning jar (plus a milkglass seal), a possible pop bottle, and a possible beer bottle. One bottle base read "--root --dney liver & bladder cure". This bottle may have contained "The Great Dr. Kilmer's swamp-root kidney liver & bladder cure specific" (Adams 1969:43). Other glass included window glass, lamp globes for kerosene lamps, and a handle from a pitcher.

A variety of stoneware fragments were recovered, including fancy painted pieces that may have been more expensive dinnerware and plain white utility ware. The brand on a piece with a blue-on-white design indicates the piece was imported from Holland. Two pieces of ceramics were catalogued which were not kitchenware. There was a fragment of a white stoneware door handle, which was too massive and had too much glaze to be dishware. A fragment of a porcelain doll's head was identified by the brown waves of hair painted on the surface.

Thus, based on the artifacts alone, the site was used between 1880 and 1917. However, earlier or later use is possible. No stratigraphic inferences were possible as the site had been disturbed by field preparation for farming activities.

Literature Search

A visit to the Silver City Municipal Library yielded information on both the stage line and the participants of the gunfight. Helen Lundwall, librarian, has developed a clipping file of local surnames which appeared in the early Silver City newspapers. The file begins in 1873 with the first Silver City newspaper and is currently complete through the late 1880s. Sequences of newspaper accounts from which the following discussion is based are presented in Appendix E.

The Stage Line

Although local tradition held that the structure was a Butterfield stage stop, this is doubtful. Like its predecessor, the San Antonio and San Diego Mail Line (1857-58), the Butterfield Overland Mail Company (1858-1861) crossed the Arizona-New Mexico border at Steen's Pass (Lang 1940:78). Steen's Pass is 32 miles due south of the Virden stage stop site. Succeeding overland mail companies used this same route as did the Southern Pacific railroad when it was constructed in 1881.

It is more probable that the Virden 3 #4 site was used as a stop by stages running between Silver City, New Mexico, and Globe, Arizona, which passed through the town of Richmond, now called Virden, New Mexico. According to newspaper accounts, this line began operation in 1876, boomed from 1877 to 1881, and was discontinued in 1882. Mining activities near Clifton, Arizona, were dependent on Silver City and farms on the lower Gila for supplies, creating favorable conditions for

the stage line. The arrival of the railroad to Shakespeare, New Mexico, in 1881, created a new source for supplies. A stage line between the Shakespeare depot and Clifton soon put the Silver City-Globe express out of business. A mail route was maintained between Silver City and Clifton by George Guthrie after the stage line was withdrawn. Guthrie maintained a house and a store at Richmond. A mention of Guthrie's (store?) in Richmond being used as a stage stop appears in an 1882 newspaper. However, it is not clear if Guthrie was using the stages to carry the mail or if the stage stop was used by the new line from Shakespeare. A notice that the Guthrie house in Richmond burned to the ground in 1886 precludes the possibility that the Virden site and Guthrie's home were the same building. Guthrie, while serving as Justice of the Peace, was murdered in 1884 by a disgruntled defendant.

An account of the Billy Wilson gunfight in October, 1884, suggests that the site was the Wilson home at that time. The building was probably only a temporary domicile for Wilson as a fire had destroyed his home in July of 1884. Wilson constructed a new home in 1885.

The Gunfight

The gunfight at the Virden 3 #4 site occurred on October 9, 1884. At that time, the site was part of a ranch belonging to William "Billy" Wilson, commonly known as the "Gila Dude." He is not to be confused with Billy Wilson, a sidekick of Billy the Kid and later a convicted horse thief. The altercation at Virden 3 #4 resulted from a "fence law" dispute. Fence law in New Mexico Territory stated that a rancher could gather and hold all livestock found on his property which belonged to someone else providing that the owner was notified. It further stated that the owner was liable for damages as well as upkeep for his stock while being held. On October 6, 1884, Wilson corralled a number of stray cattle bearing the 24 Circle brand of John Troffer. Frank Shriver, Troffer's foreman, and Sam Ringo, a cowboy, visited the Wilson ranch the following day. According to the Silver City Enterprise they

forceably recovered Troffer's cattle, refused to pay damages and pistol whipped Wilson, who was alone and unarmed. Shriver and Ringo parted from Wilson with the advice not to corral any more cattle or they would "do him up." Upon finding more of Troffer's stock on his property the following day, Wilson promptly corralled them and notified Troffer. On October 9, Shriver and Ringo again visited Wilson at his ranch. The exact details are not known but Ringo received a bullet in his left side and Wilson continued to hold the livestock in custody. Wilson was brought to Silver City under arrest by C.B. Stocking of Carlisle. A preliminary hearing of the case, scheduled for October 18, was postponed until November 6. The November 6 hearing resulted in Wilson, Henry Horn and Bartow Wallace being charged with assault with attempt to kill Sam Ringo. Horn and Wallace are presumed to have been in Wilson's employ. The trial was to have taken place at the next term of district court. Unfortunately, the Silver City newspapers do not mention the case further. Two conclusions can be made regarding the trial results.

Sam Ringo did not die as a result of the shooting. The newspaper states he was still alive as of October 18, and the "attempted" murder charge of November 6 implies that Sam Ringo survived.

William Wilson was not penalized for the shooting as his name occurs in the context of a respected and well-liked farmer and citizen through December of 1886. This would suggest that he was either acquitted or, as the case is not listed on the newspaper dockett of the next session of District Court the following January, the case was probably dismissed. The newspaper account of the shooting indicated that considerable public sentiment was with Wilson. It is interesting to note that Troffer sold his ranching interests to the Hart brothers in December of 1884. It is possible, although somewhat speculative, that the Wilson-Ringo affair and the associated public sentiment encouraged this move. As evidenced by the newspaper comments, Billy Wilson was preparing to move to his new house by August of 1885.

Conclusions

There is no documentation, other than local folklore, that Virden 3 #4 either served as a stage stop or was the scene of the Wilson-Ringo shooting. It was common practice for stages to stop at ranches along the route to feed and water the horses as well as deliver passengers and mail. Due to the site's proximity to Richmond (¼ mile), it would have provided a convenient location.

If indeed a stage stop, it is probable that the earlier Silver City-Globe line utilized Virden 3 #4 as a station rather than for later lines. Billy Wilson's alleged occupation in 1884 suggests that the building was not in use immediately prior to the burning of his house. It is logical to assume that the stage stop location would have been shifted to Guthrie's store after he took over the mail route in 1882, thus accounting for the abandonment of the site prior to Wilson's arrival. In any case, Guthrie's store became the local stop as of 1882, making it possible for Virden 3 #4 to have been the earlier stop. Postal service to Richmond was discontinued in June of 1884, suggesting that the stage line through Richmond may have also been discontinued, a fact which, if true, would preclude the possibility that Virden 3 #4 was used as a stage stop after 1884. Most likely the site served intermittently as living quarters for cowboys until the family mentioned by Clous moved in to the house in the 1920s. The artifacts found reflect various aspects of domestic life not likely found on sites utilized solely for equipment storage or ranch/farm work.

RECOMMENDATIONS AND CONCLUSIONS

In retrospect, the attempt to alleviate the effects of levee construction on cultural resources was almost an unqualified success. The majority of the sites were avoided. The maximum amount of temporal and economic data was recovered from those sites impacted by borrow activities. Only at Virden 3 #3 is there a possibility that data were lost.

It should be stressed that the key factor in the success of the project was the cooperation between archaeologist, engineer, and contractor. Personnel involved in future projects should remember that the needs of all must be recognized so that suitable alternatives can be established.

In terms of technique, the project was coordinated smoothly through the central office in Silver City. Information was relayed as quickly as possible by conscientious Corps personnel.

In regard to data recovery of subsurface materials while monitoring actual borrow activities, one important suggestion can be made. Machinery should be made available which will allow the archaeologist to assess the nature of the cultural resources present. The dirt trucks used at Virden 3 #3 took relatively deep cuts in the soft fill and did not allow adequate examination of the fill as the fill was immediately transported to the levee. In contrast, the paddlewheel scrapers used at Virden 3 #4 took shallow clean cuts (approximately 3 in. in depth) and allowed greater definition of subsurface features. The hard gravelly surface at Red Rock 2 #1 resisted the dirt trucks' attempt to borrow to a great degree, inadvertently allowing careful examination of minute levels and the easy definition of features. Ideally, a backhoe should be available to the archaeologist to test the site prior to borrow activities. In practice this proved difficult to arrange. Archaeologists faced with similar situations are urged to evaluate the various means of earth removal at their disposal in order to maximize data recovery.

Emergency field work in the style of "salvage archaeology" is not the preferred method to extract archaeological data from a study area. Such work tends to produce isolated bits of data which when considered by themselves allow only limited interpretation (Nelson, Rugge and LeBlanc 1978:205). In spite of the validity of this criticism, when time, money, and the immediate needs of a living population dictate, there is a place for the "emergency" project. Without such projects, a great deal of data would never be recovered for integration with related data. More important, sites which could be easily avoided would be needlessly destroyed. As a result of this project the majority of threatened sites were completely avoided. Where complete or partial avoidance was not possible, cultural, temporal, and economic data were recovered by excavation and analysis, or archival research. These data and those recorded from the survey are now available to aid in the formulation of research projects which are able to approach field work in a more cautious manner.

APPENDIX A

AN ARCHAEOLOGICAL OVERVIEW OF THE U.S. ARMY CORPS OF ENGINEERS PROJECT AREA IN SOUTHWESTERN NEW MEXICO

INTRODUCTION

The prehistory and history of the U.S. Corps of Engineers Project area in southwestern New Mexico spans some 10,000 years of human occupation. This occupation includes a long indigenous cultural development as well as several instances of other established cultures migrating into the area. The summary below follows the stage system described by Willey and Phillips (1958), which is based on the economic subsistence base of each successive cultural development.

The Lithic or Paleoindian Stage (10,000 B.C.-7500 B.C.)

*** Probably present along all drainages ***

The lithic (Paleoindian) Stage, which dates from late glacial or early post-glacial times (ca. 10,000 B.C.), is thought to have been based on the hunting of Pleistocene megafauna, although foodplants were undoubtedly utilized when they were available. The earliest dated evidence of gathering is the presence of a mano in a deposit dated at 9340 B.C. (Haury 1950:178-191). People were probably organized into small, highly mobile bands, with the nuclear family serving as the basic social unit (Willey and Phillips 1958:41).

The Lithic Stage has been divided into several "complexes," which are classified roughly by age, general geographic vicinity, and distinctive tool types. These include the Llano Complex, the earliest human occupation in the region, which contains both the well-known Clovis and Folsom projectile point types. The sequence is known primarily from a

site in Blackwater Draw, in east-central New Mexico (Agogino 1968:4). Clovis points have been found near the Rio Grande in Socorro County and on the Plains of San Agustin, immediately north of the Gila Forest (Weber 1963:225-226), while Folsom points are widely distributed throughout the southwestern part of the state: near Hatch, El Paso (Everitt and Davis 1974:17; Quimby and Brook 1967), on the Plains of San Agustin (Beckett 1980) and in the adjacent foothills (Weber 1963:227-228; Hurt and McKnight 1949:192), and probably elsewhere in the southern deserts and foothills surrounding the mountains in the Gila National Forest area.

The Plano Complex is the last of the so-called Early Man horizons. It dates from 9500 to 7000 B.P. and includes the Agate Basin, Cody, and Angostura cultures and point types, all of which are found in portions of New Mexico. In Socorro County, east and north of the project area, all of the Plano Complex point types have been found except Milnesand points (Weber 1963:228). At the Cruz Tarin Site, Southwest of Hatch, Milnesand and Hell Gap Plano Complex projectile points were found, as were numerous Folsom points (Everitt and Davis 1974:23-26).

No Paleoindian artifacts have been reported from cave sites within the Gila Forest, nor have any Paleoindian sites been reported from the desert areas immediately adjacent to them. However, Clovis-like points have been reported from the Lordsburg Mesa region (Laumbach 1979:65) and from southeastern Arizona (Mehringer and Haynes 1965; Haury 1953). The lack of similar evidence in the immediate area could be due to a Paleoindian preference for plant and animal resources found in grassy open plains away from the mountainous areas, or the high probability that such sites are buried under colluvial or alluvial deposits. The probability that Paleoindian sites exist within the drainage areas affected by the Army of Corps of Engineers project is good; however, no sites of this period were found during the project.

The Archaic Stage (7500 B.C.-A.D. 1)

*** Probably present along all drainages ***

The Archaic cultures are generally characterized by a heavy reliance on wild plant foods and the hunting of post-Pleistocene animal species. The dry period created by the end of the moist Pleistocene resulted in the adoption of a subsistence strategy based on seasonal trips to predetermined resource areas. A definite biological continuum between the Paleoindian and Archaic populations has not been demonstrated.

The Archaic cultures of the southwestern United States have been collectively termed the Desert Culture (Jennings 1953). Although all are similar, differences between groups by geographic area have been defined. The Desert Culture adaptation that is found in southwestern New Mexico and southeastern Arizona is known as the Cochise (Sayles and Antevs 1941). The Cochise development is divided into three successive temporal stages. The dates given here are taken from Whalen (1971:67) and include

Sulphur Springs	7500 B.C. - 3500 B.C.;
Chiricahua	3500 B.C. - 1500 B.C.;
San Pedro	1500 B.C. - A.D. 200.

The earliest and least understood stage of the Cochise Culture is the Sulphur Springs Stage (Sayles and Antevs 1941:8-9). To date, only seven sites of this stage have been discovered, all of them in southeastern Arizona (Whalen 1971:72). Flaked stone tools, ground stone, and, probably, leaf-shaped, heavily barbed and corner-notched projectile points are present on these sites (Sayles 1958:70-71).

Considerably more data is available for the succeeding Chiricahua and San Pedro stages. During these stages the hunting and gathering groups acquired cultigens. Corn was introduced in the Chiricahua Stage ca. 2000 B.C. (Dick 1965:105). Squash appeared at the same time, while

beans were added 1000 years later in the San Pedro Stage (Dick 1965:92-105). Many wild plant foods were also collected (Whalen 1971:99-100).

Cochise Culture sites have been found in the Army Corps of Engineers project area in New Mexico. One desert locality containing evidence of Chiricahua and probable San Pedro Stage occupations is LA 12778 located about 20 miles northwest of Lordsburg (Laumbach 1979). The site is situated on an extensive dune ridge, and was probably the scene of seasonal mesquite-gathering and hunting expeditions. The Cochise Culture is also known from Tularosa and Cordova Caves near the upper San Francisco River (Martin, et al. 1952). In its unaltered form, Cochise Culture extends at least as far as the Rio Grande on the east (Beckett 1973) and to the middle Rio Grande on the north (Campbell and Ellis 1952). Bat Cave (Dick 1965) yielded data on the Cochise development. Additional sites on the Plains of San Augustin are attributed to the Cochise culture (Beckett 1980). Open sites within the mountainous regions of the project area are rare, although isolated Archaic projectile points have been found in these areas (LeBlanc 1976b:personal communication; Laumbach, personal observation). Alluvial and colluvial actions may have either obliterated or covered open Archaic sites in the mountains. It was thought that borrow activities during the Corps of Engineers Project might reveal such sites; however, none were found.

The Formative Stage

Near the beginning of the Christian Era the Cochise Archaic Tradition changed from a nomadic hunting and gathering existence to a sedentary horticultural economy and entered the Formative Stage. The Formative Stage is defined by an increasing dependence on domesticated plants, the production of ceramics, and the establishment of permanent villages. The Formative culture which developed from the Cochise Archaic in southwestern New Mexico is known as the Mogollon (Haury 1936). This group was distinguished from other Southwestern pueblo groups (e.g., Anasazi, Hohokam) by a distinctive set of artifactual and architectural traits.

Haury (1975:351-352) holds the view that the advent of the Formative stage in the Mogollon culture was precipitated by the arrival of the Hohokam in southeastern Arizona ca. 300 B.C. The Cochise Archaic groups thus acquired the concepts of sedentary villages and agricultural technology which came already developed into the Southwest with the Hohokam. The Mogollon culture occupied all of the areas affected by the Corps of Engineers Emergency Project in southwestern New Mexico until ca. A.D. 1150 when the southern area was generally abandoned. Mogollon abandonment of the northern area did not occur until ca. A.D. 1350.

The Mogollon culture has been divided into five successive periods and six geographic branches (Wheat 1955:11). Each branch includes a series of successive phases. Two of the Mogollon branches designated by Wheat are present in the Corps of Engineers Emergency area: the Mimbres and Cibola. The Mimbres Branch occupies the southern portion of the study area from the New Mexico border to the Rio Grande. The area to the north of the Mimbres Branch, defined by Wheat as the Cibola Branch, has been subdivided, assigned other names, and is generally not well understood (Danson 1957:99-103; Wheat 1955:11; Gladwin 1934; Bullard 1962:68-77). An attempt to distinguish boundaries between the Cibola and Mimbres Districts was made by Danson (1957:309). There appears to be considerable overlap, but roughly speaking, a line drawn between the present communities of Reserve and Winston, New Mexico, would make a good approximate boundary. Danson (1957:99) defined an intermediate Alpine Branch which lies roughly between Reserve and Quemado, New Mexico, and is bordered on the east by the Plains of San Agustin. It separates the Cibola (northern) and Mimbres (southern) Branches. This entire district (both Cibola and Alpine Branches) will be referred to here as the Reserve-Tularosa area after the ceramic types which distinguish its puebloan material culture from that of the Mimbres District during the later phases.

Early Mogollon (300 B.C.-A.D. 1000)

*** Known to be present on San Francisco, Gila, Mimbres and Rio Grande drainages ***

As both the southern and northern areas had similar beginnings, their early development will be discussed jointly. The early Mogollon chronology is based on stratigraphic deposits in Tularosa and Cordova Caves (Martin and Rinaldo 1952). Additional chronology was provided by excavations in Bat Cave (Dick 1965). Tentatively dated at 300 B.C., the earliest Mogollon artifact assemblage appears to be a San Pedro Cochise assemblage with the addition of pottery and pithouses. Early pithouses are shallow dish-shaped structures like that found at Red Rock 1 #1. The associated ceramics consist of a brown ware (Alma Plain) which was produced throughout the Mogollon sequence, albeit with slight decorative modifications through time (e.g., polishing, corrugations). A polished redware (San Francisco Red) is also usually found in these early sites, although presumably it was not manufactured until approximately A.D. 200. The extent of early Mogollon dependence on domesticated crops, as opposed to hunting and gathering, is unknown. Dependence on agricultural products is thought to have increased throughout the early Mogollon sequence.

Western Mogollon material culture appears to have changed little from its inception until A.D. 1000. Mogollon Red-on-brown appears in the southern area in limited quantities about A.D. 500. The practice of smudging the interiors of red and brown ware vessels begins in the northern area at about the same time. The appearance of Three-Circle Red-on-white ca., A.D. 800, with the use of a white slip, heralds the beginning of northern (Anasazi) influence. Pithouses are quadrilateral with ramp entrances which distinguish them from Anasazi pithouses which are round with roof entrances. Ceremonial structures appear in the earliest periods. They were constructed in a variety of shapes and are distinguished from domiciles chiefly by their size. Both Virden 3 #3, ca. A.D. 600, and Starkweather #2, ca. A.D. 850, represent this early Mogollon period in the project area.

Prior to A.D. 900, Mogollon settlements were usually located on benches above stream valleys. Later, the larger settlements tended to be closer to the valley bottoms. A variety of explanations exists for this dichotomy (Wheat 1955:34-35): 1) Prior to A.D. 900 defensive locations were necessary; 2) Extensive agriculture practiced prior to A.D. 900 required all available bottomland and improved agricultural practices later allowed the luxury of bottomland habitation; 3) Prior to A.D. 900 hunting and gathering were a major focus of Mogollon subsistence strategy and locations on benches and mesas allowed easier access to a variety of exploitable ecozones; 4) Pithouses on low ground tend to fill with water. With the exception of the latter, none of these suggestions have been substantiated by hard data. Based on site size and density, there does appear to be an increase in population during the later phases.

Sites attributable to this general period found during the Corps of Engineers project are located on the lower Gila drainage (5), the lower San Francisco drainage (3) and the upper San Francisco drainage (1).

Cibola Branch, Reserve-Tularosa Period (A.D. 1000-1300)

*** Present on the San Francisco and Cuchillo Negro Drainages ***

The general pattern of Mogollon development in the northern area diverges significantly at A.D. 1000. The architecture (surface rooms of stone masonry), ceramics, and artifact assemblages of the northern area take on a decidedly Anasazi flavor. Whether this is due to contact through trade or actual migration is unknown. The majority of the work on sites of this period has been done by Martin and Rinaldo near Reserve, New Mexico (Martin 1940; 1943; Martin and Rinaldo 1947; 1950a; 1950b). More recent work on similar and possibly later sites has been done across the border in Arizona (Martin et al. 1962; Martin et al. 1964; Martin et al. 1967; Hill 1970). Reserve Black-on-white and, later, Tularosa Black-on-white are the ceramic indicators for this complex.

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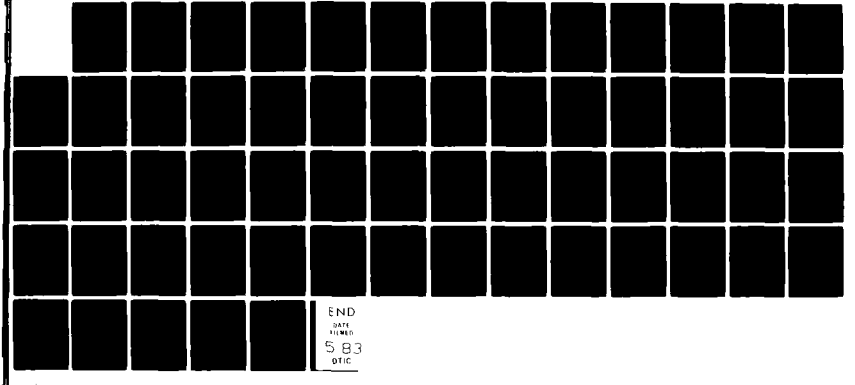

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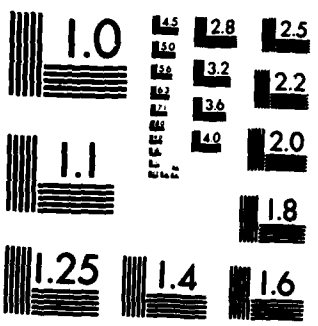

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Large and small sites of this tradition were recorded on the upper and lower San Francisco drainage. The later sites are composed of large blocks of contiguous rooms usually located on benches or elevated areas near the river. Ceramics found on these sites suggest an abandonment of the San Francisco drainage area ca. A.D. 1350. It is believed that this population is, in part, ancestral to the modern population of Zuni to the north.

Mimbres Branch, Mimbres Period (A.D. 1000-1150)

*** Present on the Mimbres, Cuchillo Negro, Las Animas, Percha, lower San Francisco, lower and upper Gila drainages ***

The southern area maintains a distinct Mogollon character. Large room blocks of contiguous, above-ground masonry structures and the use of a white slip on ceramics are thought by some to be the result of the northern influence, but may merely be a local development. Mangus (Mimbres Boldface) and the later Mimbres Classic Black-on-white ceramic types, as well as unique burial practices, reflect the individuality of the Mimbres culture area.

The Mimbres District has recently come under considerable scrutiny because of the high market value of late Mimbres ceramics which has resulted in the wholesale destruction of large Mimbres sites. As a result, a great deal of knowledge has been lost. Recent work by LeBlanc (1976a, 1977, 1978) and Graybill (1975) has provided most of the available data.

After a period of population increase and expansion, the Mimbres cultural tradition suddenly dissipated ca. A.D. 1150. There is not a complete explanation for their disappearance. The rise of the trading center of Casas Grandes in northern Mexico is believed to have been instrumental in the Mimbres abandonment (LeBlanc 1978:13). The Mimbres population may have provided a source of labor for the extensive build-

ing at Casas Grandes. Whether by force or by choice, the Mimbres people quickly lost their material culture tradition, as neither their architecture nor their unique ceramic designs appear elsewhere in the archaeological record.

Sites attributed to this period were found on the lower San Francisco, the upper and lower Gila, the Mimbres, and the Las Animas drainages during this project.

Animas or Black Mountain Phase (A.D. 1175-1300)

*** Present in the Gila, Mimbres, and Las Animas drainages ***

The Animas phase was first defined in the Animas Valley (Kidder, Cosgrove and Cosgrove 1949) south of Lordsburg. Confusion in the subsequent literature led LeBlanc (1977:11) to label this manifestation the Black Mountain Phase after a large site on the Mimbres River near Deming, New Mexico. A great deal of confusion still exists as to the origin of this population.

The northernmost sites known for this period are found on the lower Gila (Lekson 1978:37), the Mimbres Valley, and from this survey, the Las Animas drainage north of Hillsboro. Architecture, ceramics and, in part, burial practices diverge so sharply from the preceding Mimbres phase that it is difficult to give credence to a continuum of population between the two phases. Pueblos are adobe, often multi-storied room blocks enclosing central plazas. The ceramic assemblages, the architecture, and instances of decapitation suggest an affiliation with Casas Grandes. However, the presence of both cremations and inhumations in these sites reflects a mixed population. The high frequency of Chupadero Black-on-white, particularly in the eastern sites, suggests considerable contact with Rio Grande populations. The Animas Phase site found on this project is only eight miles from the Rio Grande and can potentially yield significant data on this period.

Salado (A.D. 1350-1520?)

***** Present on the Gila, lower San Francisco, and Mimbres drainages *****

The area along the Gila, Mimbres and San Francisco Rivers in southwestern New Mexico was reoccupied by what appears to have been an intrusive culture ca. A.D. 1350. This group, termed the Salado, has been the subject of considerable controversy (Martin and Plog 1973:315-317; Haury 1945). Believed by some to have originated along the Upper Little Colorado in Arizona, they are distinguished there by Roosevelt Black-on-white, a variation of Tularosa Black-on-white. This group is thought to have migrated south to join the Hohokam along the Gila and Salt drainages in southern Arizona (McGregor 1965:364-376). There the Salado are distinguished from the Hohokam by a series of carbon paint polychrome ceramics and large adobe pueblos, as well as other traits. Martin and Plog (1973:315-317) suggest that this polychrome tradition does not represent an intrusive culture but rather a separation of Hohokam social structure.

Sites exhibiting Salado traits are present in the Gila River Valley of southwestern New Mexico (Lekson 1978:37; LeBlanc 1976a:15). Such sites have also been found in the Upper Mimbres Valley (LeBlanc 1977: 20-21). One Salado site was found on the lower San Francisco during this project. These sites are thought to represent a late migration (ca. A.D. 1350) from the Hohokam core area. A large multi-storied, enclosed adobe Salado pueblo is currently being excavated along the Gila River near Cliff, New Mexico, by Richard Ellison. Fortified sites in the mountains representing late Mimbres and Tularosa populations have been reported by Danson (1957:111). The construction of these defensive sites may have been necessitated by the arrival of a foreign group such as the Salado. The Salado are thought to have abandoned the Gila and Mimbres Valleys about A.D. 1520 (Ellison 1975:personal communication). The appearance of Salado ceramics containing cremations at Hawikuh near Zuni (Smith, Woodbury & Woodbury 1966:205) suggest that the Salado population joined that at Zuni in the early 1500s.

Historic Period

The following brief overview of the historic period in southwestern New Mexico has been summarized from the excellent historical overview (written by Dr. John P. Wilson in 1975) for the Las Cruces Bureau of Land Management District.

The Apache

Although the exact date of Apache entry into southwestern New Mexico is unknown, Fray Alonso de Benavides records their established presence in the area by at least 1630 (Forrestal 1954:43-45). Whether or not they appeared early enough to affect the Salado is unknown. From the mid-1600s through the 1880s, these Apache spread terror throughout southwestern New Mexico, southeastern Arizona, and northern Mexico. Massive campaigns against the Apache by both Spanish and American governments occurred within the project area. They were eventually driven into Mexico or removed to reservations in Arizona.

Organized into small bands, Apaches lived in camps composed of brush huts. Due to the perishable nature of their settlements and a lack of diagnostic artifacts, Apache sites are extremely difficult to identify. The gunports reputed to have been present at Virden 3 #4 are probably due to the Apache threat.

The Spanish, Mexican, and American Occupations

Spanish activities within the Corps of Engineers project area were extremely limited until the late 1600s (Wilson 1975:5-8). At that time, the first of a long series of more or less successful campaigns against the Apache was launched from presidios based in southern Arizona and

New Mexico as well as northern Mexico. It was not until 1800 that a Spanish settlement was founded within the project area. This settlement consisted of a triangular adobe fort built to protect miners working at the Santa Rita copper mine. The mine and settlement operated as continuously as the Apaches would allow.

American fur trappers appear in the project area in the 1820s, after the Mexican revolution with Spain allowed American entry to New Mexico. When the United States took possession of New Mexico from Mexico in 1846, Stephen Watts Kearny led a contingent of dragoons from Lake Valley through Santa Rita and down the Gila River into Arizona. The Mormon Battalion led by Lieutenant Colonel Philip St. George Cooke crossed the southeastern portion of the project area while blazing a wagon trail to California in the same year. In the years following the American takeover, military forts and camps were established at Santa Rita, near Cliff on the Gila, in the Burro Mountains, near Cookes Peak, near Pinos Altos, and on the Mimbres River. Numerous other temporary campsites no doubt existed as Apache campaigns continued until the mid-1880s.

Mining became an important industry in the 1860s, producing numerous settlements and small homesites. This industry continues today even though the ores in demand have shifted through the years. Numerous small stagecoach lines were developed between 1860 and 1880. The Silver City-Globe line which passed by Virden 3 #4 is a good example. Some of these lines continued in use even after the railroads were introduced in 1881.

Railroads made a significant impact on the area. Numerous spur lines connected the mining camps to the major rail lines and encouraged the development of both agriculture and ranching. Farming has continued to be a source of livelihood but, due to limited arable land, remains second to both mining and ranching.

APPENDIX B

BOTANICAL REMAINS

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INTRODUCTION

Flotation samples were examined from four sites exposed by flooding or emergency flood control measures in southwestern New Mexico. Three sites (Red Rock 1 #1, Red Rock 2 #1, Virden 3 #3) are located on the lower Gila River drainage, at an average elevation of approximately 4000'. Both riverine (riparian deciduous trees and grasslands) and desert shrub vegetation (primarily mesquite and creosote bush) are readily available in this area. The fourth site (Starkweather #2) is near the San Francisco River near Reserve, New Mexico. Starkweather #2 is situated at an elevation of 5800', in a mixed pinon-juniper grassland community.

RED ROCK 1 #1

The site, consisting of a late Archaic or early Mogollon pithouse and associated features, was exposed by a blade cut.

Features D and G (both 80 cm deep and 50-60 cm wide) are thought to have been roasting pits, as numerous fire-blackened rocks are present. Loose fill with charcoal flecks from Feature D was C_{14} dated at A.D. 270 ± 110. A very late date from Feature G is thought to be inaccurate, as the feature is otherwise temporally compatible with the rest of the site (Karl Laumbach 1979:personal communication). The predominant constituent in both samples was unburnt Chenopodium, or goosefoot (Table 1). These two samples were otherwise quite different; while G contained few taxa, all unburnt, D contained a wide diversity of types, including burnt corn remains (a kernel and 2 cob fragments). The Feature G assemblage is actually what would be expected from diffuse, probably post-use, fill such as is described for these two features. The Feature D assemblage is more appropriate to a use context, such as a hearth or firepit. Several taxa in both samples (Chenopodium, Amaranthus, the two species of mustards, Phacelia, and Portulaca) are possible candidates

Table 1. Flotation Results from Red Rock 1 #1.

	AMARANTHACEAE *Amaranthus*	CACTACEAE *Opuntia*	CAPPARIDACEAE *Cleome*	CHENOPODIACEAE *Chenopodium*	COMPOSITAE	CRUCIFERAE *Descurainia*	*Lepidium*	EUPHORBIACEAE *Euphorbia*	HYDROPHYLLACEAE *Phacelia*	LEGUMINOSAE *Astragalus*	NYCTAGINACEAE	POLYGONACEAE *Persicaria*	PORTULACACEAE *Portulaca*	CULTIVARS- *Zea mays* kernels	*Zea mays* cupules	Others	Unknowns	Unidentifiable	# TAXA	Total Seeds: Actual Count	Total Seeds: Estimated
Red Rock 1 #1																					
Feature D	1/1[1]	1/1	1/1	32/32		3/3	12/12		7/7				2/2	1/1*	+*			3/3	11	63	63
Feature F	1/1			8/8*											+*			1/1*	4	10	10
Feature G				48/48				4/4					4/4						3	56	56
Total # Seeds	2/2	1/1	1/1	88/88		3/3	12/12	4/4	7/7				6/6	1/1	+			4/4		129	129
# Samples Found in	2	1	1	3		1	1	1	1				2	--2--				2		3	
% Samples Found in	67	33	33	100		33	33	33	33				67	--67--				67		100	

Average # of Taxa=6.0

*Some or all items burnt. [1]a/b: a= actual # of seeds counted; b= estimated # of seeds in sample.

for modern intrusion. These plants are all weedy annuals producing abundant small seeds which could easily blow into the site if it was exposed for any length of time. No specimens in either sample were burnt. In particular, Lepidium silicles (capsules which enclose seeds) are certainly modern. These delicate and brittle structures were in pristine condition, and would deteriorate rapidly with the help of soil moisture and bacterial action.

Plant taxa found in Feature D span the growing season from June (Descurainia, Phacelia) to September (Chenopodium, Amaranthus, Portulaca). Feature G seed types, on the other hand, are all late summer ripening. Information regarding date and duration of the exposure of the samples' locations would be useful in reconstructing possible dispersal histories of these seeds.

Feature F, a shallow concentration of ash, contained sparse botanical remains which were nevertheless suggestive of hearth use. Three out of four taxa were burnt, and these included goosefoot (a likely candidate for economic use) and corn.

RED ROCK 2 #1

This flotation sample was taken from an isolated hearth 150 meters north of a 20-30 room Mimbres Phase pueblo, located in a vegetation zone similar to Red Rock 1 #1. The botanical assemblage (Table 2) is reminiscent of Feature G at Red Rock 1 #1: a limited variety of unburnt seed types, predominantly goosefoot. Purslane is present as in Feature G, but in this case a late spring annual, tansy-mustard, is included. As in the case of Feature G, there is a good likelihood that most or all flotation remains are modern intrusions.

Table 2. Flotation Results from Red Rock 2 #1, Crabtree Borrow, and Starkweather Area A.

	AMARANTHACEAE *Amaranthus*	CACTACEAE *Opuntia*	CAPPARIDACEAE *Cleome*	CHENOPODIACEAE *Chenopodium*	COMPOSITAE	CRUCIFERAE *Descurainia*	*Lepidium*	EUPHORBIACEAE *Euphorbia*	HYDROPHYLLACEAE *Phacelia*	LEGUMINOSAE *Astragalus?*	NYCTAGINACEAE?	POLYGONACEAE *Persicaria*	PORTULACACEAE *Portulaca*	CULTIVARS- *Zea mays* kernels	*Zea mays* cupules	*Others*	Unknowns	Unidentifiable	# TAXA	Total Seeds: Actual Count	Total Seeds: Estimated
Red Rock 2 #1				39/39[1]		2/2							11/11				1/1[2]	2/2	5	55	55
Crabtree Borrow							21/25			2/2									2	23	27
Starkweather Area A	5/7*						12/13				2/2*	3/3*		4/4*	+*			3/3*	6	29	32

*Some or all items burnt. [1] a/b: a= actual # of seeds counted; b= estimated # of seeds in sample.

[2] Unknown 9060

VIRDEN 3 #3 "CRABTREE BORROW"

This site is at the lowest elevation (3700') of the four sites discussed in this report, and apparently is also closest to permanent water (cottonwoods are listed as part of the flora present in the immediate vicinity of the site; these require permanent groundwater). Remains on the site consisted primarily of concentrations of charcoal and organic stains. A C_{14} date places this site a few hundred years later (A.D. 605 ± 220 years) than Red Rock 1 #1.

Flotation was not productive of any insight into prehistoric plant use. Plant remains consisted entirely of undoubtedly modern peppergrass (Lepidium capsules) and locoweed seeds (Astragalus).

STARKWEATHER #2 "STARKWEATHER BORROW"

The flotation sample was taken from a stone-lined hearth with ashy fill averaging 10 cm in depth. Aside from some intrusive pepper-grass (capsules), all seed taxa were burnt. Several types possibly represent economic use (for example, pigweed). Corn remains were present (4 kernels and 4 cob fragments). Items extracted during earlier analysis and noted as Cucurbitaceae (squash or pumpkin) proved to be dubious identifications. One example was actually a rock and two other burned specimens are morphologically idiosyncratic for Cucurbitaceae (too narrow, too fat, apex too enlongated); Dr. William C. Martin suggests that they correspond better to the family Nyctaginaceae. There remains the possibility that these seeds may have been subjected to unusual circumstances (i.e., fresh, wet seeds thrown into a very hot fire) that resulted in abnormal distortion. If the seeds are Cucurbits, they are probably of the genus Cucurbita (based on the characteristics of the margin), but no conclusive identification as such can be made. Experimentation with modern materials may shed some light on the matter.

COMMENTS ON PLANT TAXA RECOVERED

ıt of the plant types recovered were weedy annuals --plants which abundant crops of small (ca. 1 mm) seeds. Ten of the 14 taxa ered, and 88% of the seeds, are from weeds. Such plants have an ge under disturbed conditions, and were probably prevalent pre- cally near human habitations, trash dumps, and agricultural Several taxa found in this series of samples (Amaranthus, dium, Portulaca, and Dexcurainia) are edible weeds with a well- ted history of food use in the Southwest. Amaranthus and dium were used extensively in similar manners: greens from the tender plants (available in April and May) were used much as (Krenetsky 1964:43; Robbins et al. 1916:53; Whiting 1966:18; 1944:560; Curtin 1949:70; Elmore 1944:44; Castetter 1935:15-16), numerous seeds (available in late summer to early fall) were y ground and used in a batter (Stevenson 1915:66; Reagan 1928: ank 1932:26; Hough 1897:38).

rtulaca, a small, somewhat succulent annual appearing in mid- and bearing numerous small seeds in September and October, has ollected in quantity to be eaten raw or "the fleshy leaves and ıre boiled and eaten" by the Acoma and Laguna (Castetter 1935) and (Swank 1932:62-3; Krenetsky 1964:47; Whiting 1966:19). It has een dried slowly for storage, as at Isleta (Jones 1930:39), and eds have been eaten (Elmore 1944; Stevenson 1915). In his tab- ı of energy consumption by the modern San Juan Pueblo, Richard ists Portulaca greens as comprising a substantial 13% by weight nly 1% of calories) of all wild gathered plants (1968:158).

escurainia, tansy-mustard, was valued for its early (May and June) rop (Balls 1970:25-6; Castetter and Underhill 1935:24; Curtin ; Whiting 1966:77). In moist years, an abundant cover may be d by this plant, and in such cases the tiny seeds are produced in ıantities. Descurainia seeds form a substantial portion of some flotation assemblages (approximately 14% at Chaco sites, for

instance). The small number of unburnt seeds found here must be viewed with caution; they may simply be intrusive.

Cleome (beeweed) was considered a versatile plant resource, with uses noted for food (Whiting 1966:18; Jones 1930:26), pottery paint (Stevenson 1915:82; Robbins et al. 1916:59) and dye. The plant is not an ubiquitous weed, and its larger seed seems to be dispersed more selectively than the genera discussed above. Even the single occurrence of beeweed in Feature D at Red Rock 1 #1 is thus regarded as a possible indicator of prehistoric economic use.

A single prickly pear seed, found with the Cleome seed in Feature D, may also point to economic use. The relatively large seeds (ranging from 2-7 mm) were sometimes separated out from the tasty fruits before eating (Castetter and Underhill 1935:22-3); the seeds also survive whole in coprolites (Fry and Hall 1975:89; Stiger 1977).

Corn is the only cultivated species for which a clear and certain identification is possible. Burnt remains consisting of cupules (the cob unit that holds a pair of kernels) and kernels were found at Red Rock 1 #1 (late Archaic; C_{14} dates ca. A.D. 300) and Starkweather #2 (C_{14} of A.D. 850 ± 95). This indicates that corn was a part of the subsistence regime at each of these sites, although it is not known what its relative importance was (nor even whether it was acquired by agriculture, or by trade with other settlements).

Several taxa recovered by flotation are considered useful primarily for ceremonial or medicinal purposes, or are considered inedible. Few or no ethnobotanical uses are recorded for Euphorbia, Phacelia, Astragalus, and Persicaria. Phacelia (scorpionweed), for instance, is known to be specifically avoided. The plant smells bad, and glandular pubescence on the leaves "causes dermatitis in susceptible persons" (Kearney and Peebles 1964:698). Members of Persicaria, a section of the genus Polygonum, often contain an acrid juice "irritating to the skin, eyes, and nostrils" (Kearney and Peebles 1964:246), hence the name, smartweed. Presence of such taxa in flotation samples is interpreted as

contamination that may be modern (in the case of sample locations near the surface, or exposed) or contemporary with site use (as in the case of the burnt Persicaria seeds at Starkweather #2).

Small silicles (fruits) attributable to the genus Lepidium were recovered from three of the sites (representing all three vegetative associations). These fruits dehisce (break open) along a central septum, releasing seeds. Since there is a one-to-one correspondence between seed and silicle segment, the latter were counted as representing a single seed each. No Lepidum seeds were recovered by flotation. Silicle remains varied from pristine (obviously introduced recently) to some which were considerably darkened and shrunken (older, but probably not prehistoric). Lepidium fruits are quite similar and hence difficult to distinguish to the species level. All Lepidium remains recovered (including those from the Starkweather #2) compare well with L. Thurberi Wooton, a native species common in southwestern New Mexico at elevations lower than 5000' (Kearney and Peebles 1964:333). Pepper-grass has strong-tasting aromatic oils distributed throughout the green plant and seeds, and for this reason has never figured as a significant food source. The few references to ethnobotanical uses are as flavorings or for medicinal purposes (i.e., Jones 1930:34).

SUMMARY

Plant remains recovered by flotation include 13 taxa, plus unknowns (Table A-3). A high proportion are weedy types, including both food resources and inedible plants (the latter probably being prehistoric or modern contaminants). Very few of the seed remains were burnt (Amaranthus, Chenopodium, Persicaria, corn, and the two seeds which are either Cucurbita or possible Nyctaginaceae). Unburnt seeds must not be ruled out as candidates for association with site use, especially in Pueblo or historic contexts. We must caution, however, that in this series of samples from older sites, post-occupational contamination probably accounts for the presence of most unburnt specimens.

Table 3. Summary of Flotation Data

	AMARANTHACEAE *Amaranthus*	CACTACEAE *Opuntia*	CAPPARIDACEAE *Cleome*	CHENOPODIACEAE *Chenopodium*	COMPOSITAE	CRUCIFERAE *Descurainia*	CRUCIFERAE *Lepidium*	EUPHORBIACEAE *Euphorbia*	HYDROPHYLLACEAE *Phacelia*	LEGUMINOSAE *Astragalus ?*	NYCTAGINACEAE ?	POLYGONACEAE *Persicaria*	PORTULACACEAE *Portulaca*	CULTIVARS- *Zea mays* kernels	*Zea mays* cupules	Others	Unknowns	Unidentifiable	# TAXA	Total Seeds: Actual Count	Total Seeds: Estimated
Total # Seeds	7/9[1]	1/1	1/1	127/127		5/5	45/50	4/4	1/1	2/2	2/2	3/3	17/17	5/5	+		1/1	9/9		236	243
# Samples Found In	2	1	1	4		2	3	1	1	1	1	1	3	2	3		1	4			
# Samples with burned specimens	1	0	0	1		0	0	0	0	0	1	1	0	2	3		0	2			
# Sites Found In	2	1	1	2		2	3	1	1	1	1	1	2	2	2		1	3			
% of all Seeds	3.7%	0.4%	0.4%	52.3%		2.1%	20.6%	1.6%	0.4%	0.8%	0.8%	1.2%	7.0%	2.1%			0.4%	3.7%			100%

*Some or all items burnt. [1]a/b: a= actual # of seeds counted; b= estimated # of seeds in samples.

Samples from Features D and F at Red Rock 1 #1 and from Starkweather #2 should be the most reliable in depicting prehistoric selection of plant food items. Annual weeds appear to have been used at both sites (Amaranthus at Starkweather #2, and Chenopodium and possibly Amaranthus at Red Rock 1 #1). Several other weed types appear only at Red Rock 1 #1, probably a reflection of the desert shrub habitat. These latter are unburnt, and not certain to be prehistoric. Cultivars (corn, and possibly squash at Starkweather #2) appear at both sites, indicating that agriculture was a direct or indirect part of the subsistence pattern in each case.

This series of six flotation samples depicts many variables; four archaeological sites of different ages, located in two vegetative associations, are represented. Samples were taken from provenience types including hearths, roasting pits, and occupation surfaces, in sites of varying size and configuration. Due to the many variables operating here, and the small number of samples, we are limited to making descriptive statements about individual sites. Unfortunately, preservation is generally poor in open sites, and this particular series of samples seems to have suffered a considerable level of modern contamination.

ACKNOWLEDGEMENTS

Dr. William C. Martin and Paul J. Knight, of the Herbarium, Department of Biology, University of New Mexico, provided helpful opinions about the taxonomic affiliations of problematic items.

APPENDIX C

TWO POLLEN WASH SAMPLES FROM STARKWEATHER AREA A

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INTRODUCTION

At the request of Karl Laumbach, Cultural Resources Management Division, New Mexico State University, two pollen washes were attempted from artifacts recovered from an archaeological site called Starkweather 2, Area A, near Reserve, New Mexico. The artifacts were a one hand mano and a palette metate. The site is described by Laumbach (personal communication) as a stone-lined hearth, approximately 1m in diameter, 10 cm in depth, and ash filled. The hearth is approximately 2 m below the present surface, and was exposed by recent arroyo cutting.

The site is located near Reserve, New Mexico, about 2 miles from the San Francisco River. Vegetation surrounding the site is described by the archaeologist as being dominated by pinyon, juniper and grama grass with occasional stands of ponderosa pine. Donart, Sylvester and Hickey (1978) describe the area as a woodland formation, with dominant species being single-leaf pinyon (Pinus monophylla), juniper, and scattered stands of ponderosa pine and gambel oak.

METHODS

The artifacts were unwrapped under a fume hood and the sediments scraped and brushed off into separate clean beakers. Loose dirt inside the wrapping was also put in. Each artifact was rinsed with dilute (20%) hydrochloric acid (HCl), and was brushed with a stiff nylon brush to retrieve any pollen-bearing sediments from cracks or small holes in the artifacts, and to loosen any cemented material. A final rinse of distilled water was given to each artifact. The contents of each beaker were placed in 50 ml test tubes, centrifuged, and the liquid portion poured off. After rinsing, centrifuging and decanting, the following procedure was done on each sample:

1) About 25 ml of hydroflouric acid (HF) was added to each test tube to eliminate sand and clay, and allowed to sit 24 hours. Centrifuging and decanting followed.

2) Samples were rinsed twice, with centrifuging and decanting following each rinse.

3) A rinse with glacial acetic acid followed, prior to the acetolsis step. A mixture of 9 parts acetic anhydride to 1 part sulfuric acid (H_2 SO_4) was added to the samples to remove organic material. Centrifuge tubes were placed in a warm water bath for 15 minutes. After centrifuging and decanting the acetolysis mixture, glacial acetic acid was added, centrifuged and poured off

4) Samples were rinsed twice with distilled water.

5) The remaining, pollen bearing material was placed in glass vials, and slides were made of each sample.

6) Slides were scanned under a Leitz ortholux microscope at 400 and 900 x.

Identifications of pollen grains were based mainly on How to Know Pollen and Spores by R.O. Kapp (1969) and on unpublished keys and reference material in collections of the Ethnobotany Lab.

RESULTS AND DISCUSSION

An entire slide was scanned for both samples. Results given in Table 1 are poor in terms of numbers. Because the usual statistical goal of 200 grains counted was not reached, grain counts were not converted to percentages. Many of the grains were fragmented and poorly preserved.

While the numbers are low, 13 taxa are present. Most taxa are expected to occur, at least in low numbers, in this area. Several taxa, such as Typha (cat-tail) and Cucurbita (gourd) may have been introduced by humans.

TABLE 1 . MANO AND METATE WASH, STARKWEATHER
AREA A, POLLEN GRAIN COUNTS

	STARKWEATHER MANO	STARKWEATHER METATE
PINUS SP.	4	8
JUGLANS	2	
ACER	1	
GRAMINEAE	5	13
CHENO-AM	24	10
COMPOSITE, HIGH SPINE	1	2
EPHEDRA		1
PORTULACA	1	
RANUNCULACEAE		1
LEGUMINOSEAE		1
PROSOPIS		1
TYPHA		4
CUCURBITA	1	
ZEA MAYS ?	4*	3*
TOTAL	43	44

*Identification tentative; lack of discriminating features

Typha was found in the typical tetrad (Kapp 1969). This plant grows in permanent, sluggishly-moving or standing bodies of water. The pollen does not normally travel a great distance (Potter and Rowley 1960). Thus, its presence here indicates that a more or less permanent body of water was nearby, or, more likely, that humans brought cat-tail plants into the site. The roots, stems and seeds of the cattail are documented as being used for subsistence by modern Southwest Indian groups (Castetter 1935, Harrington 1967). Typha pollen occurs in other areas in archaeological contexts associated with hearths (Madsen 1979).

The category of Cheno-Am pollen consists of plant members of the family Chenopodiaceae (goose-foot) and the genus Amaranthus of the family Amaranthaceae (pigweed). Pollen of plants of these groups is virtually indistinguishable from one another with the light microscope. In the mano sample, pollen of this type occurred in clumps, which indicates presence of the actual plant parts. Plants of this group are documented as having been used as food, both for greens and meal from seeds, by the Zuni, Hopi and Navajo (Castetter 1935). Such plants are also weedy annuals, which may be encouraged by human disturbance of an area around a site. Further evidence for use of these plants in or around the hearth is found in the flotation results. Struever and Donaldson (Appendix B) report burned Amaranthus seeds from the hearth.

One badly fragmented portion of a Cucurbita pollen grain was observed in the wash sample from the mano. Since pollination occurs in this genus by insects carrying pollen from one plant to another, the pollen grains are large and few in number when compared to pollen of wind-pollinated plants. The large pollen grains are less likely to be deposited by chance, and their presence in a sample probably indicates use of a wild or domestic cucurbit by humans. Struever and Donaldson (Appendix B) report possible cucurbit seeds in the flotation remains.

Seven grains were observed the samples which may be corn pollen. I have called these Zea mays (?). While the structure of the grain looks like that of corn pollen, the crumpled condition made it impossible to determine whether the characteristic pore was present. Corn remains

were reported by Struever (Appendix B), so it is not unlikely that corn pollen could be present.

CONCLUSIONS

Numbers of pollen grains were low. However, Typha, Cucurbita, clumped Cheno-Am and possibly Zea mays pollen were observed, indicating that these plant resources were being used in and around the hearth. The presence of other pollen grains observed, such as pine, grass, Ephedra (mormon tea) and others, are probably the result of pollen rain and alluvial redeposition. Results of the analysis do not provide any evidence for differences in past climate from that of the present.

APPENDIX D

FAUNAL REMAINS

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FAUNA OF THE AREA

The prehistoric occupants of the Corps of Engineers project area in southwestern New Mexico had a rich and varied environment from which to gather their resources, including The Gila, San Francisco, Mimbres and Las Animas drainages, the Chihuahuan desert, and the mountainous areas of the present Gila National Forest. The study area is seen here in terms of resource zones, corresponding to general vegetation patterns and faunal assemblages. The zones are these:

1. Riverine
   a. River
   b. River valley - deciduous trees
2. Desert
3. Grassland - occurring in thin bands on the interface between the desert and the juniper belts
4. Mountain
   a. Pinon - juniper
   b. Ponderosa pine

The following is a list of animal species in these environments (from Findley et al. 1975; Bailey 1931; Ernst and Barbour 1972; Berman 1978; Stebbins 1954; Conant 1958; Peterson 1961), available both prehistorically and presently unless otherwise indicated. Corresponding resource zones for each species are indicated.

MAMMALS

Order Chiroptera		
various bats Order Lagomorpha		
Family Leporidae		
Sylvilagus audubonii	Desert Cottontail	Pinon-Juniper & lower elevations
Sylvilagus floridanus	Eastern Cottontail	Mountain Zones, especially Ponderosa
Lepus californicus	Black-tailed Jackrabbit	Pinon-Juniper & below
Order Rodentia		
Family Sciuridae		
Eutamias dorsalis	Cliff Chipmunk	Mountain
Eutamias cinereicollis	Gray-collared Chipmunk	Ponderosa
Ammospermophilus harrisii	Harris's Antelope Squirrel	Desert
Citellus tridecemlineatus	Thirteen-lined Ground Squirrel	Grassland
Citellus spilosoma	Spotted Ground Squirrel	Desert
Citellus variegatus	Rock Squirrel	Broken terrain in mountains
Citellus lateralis	Golden-mantled Ground Squirrel	Mountain meadows
Cynomys ludovicianus	Black-tailed Frairie Dog	Desert, Grasslands
Sciurus aberti	Abert's Squirrel	Ponderosa
Tamiasciurus hudsonicus	Red Squirrel	Ponderosa
Family Geomyidae		
Thomomys bottae	Botta's Pocket Gopher	All Zones

Perognathus penicillatus	Desert Pocket Mouse	Desert
Dipodomys ordii	Ord's Kangaroo Rat	Desert
Dipodomys merriami	Merriam's Kangaroo Rat	Desert
Family Castoridae		
Castor canadensis	Beaver	River
Family Cricetidae		
Reithrodontomys megalotis	Western Harvest Mouse	All Zones
Peromyscus leucopus	White-footed Mouse	Grasslands
Peromyscus eremicus	Cactus Mouse	Grassland/Juniper
Peromyscus maniculatus	Deer Mouse	All Zones, especially mountains
Peromyscus boylii	Brush Mouse	Mountains
Peromyscus truei	Pinyon Mouse	Mountains
Onychomys leucogaster	Northern Grasshopper Mouse	Desert
Onychomys torridus	Southern Grasshopper Mouse	Desert
Sigmodon fulviventer	Tawny-bellied Cotton Rat	Grasslands
Neotoma albigula	White-throated Woodrat	Desert/Mountains
Neotoma micropus	Southern Plains Woodrat	Grasslands
Microtus mexicanus	Mexican Vole	Mountains
Microtus longicaudus	Long-tailed Vole	Mountains
Ondatra zibethicus	Muskrat	River
Family Erethizontidae		
Erethizon dorsatum	Porcupine	All Zones, especially mountains

Order Carnivora		
Family Canidae		
Canis latrans	Coyote	All Zones
Canis lupus	Gray Wolf (present prehistorically)	Mountains, Desert
Urocyon cinereoargenteus	Gray Fox	Mountains
Vulpes macrotis	Kit Fox	Desert, Grasslands
Family Ursidae		
Ursus americanus	Black Bear	Mountains
Ursus arctos	Grizzly Bear (present prehistorically)	Mountains
Family Procyonidae		
Bassariscus astutus	Ringtail	Grasslands, Mountains
Procyon lotor	Raccoon	River, Desert
Family Mustelidae		
Spilogale gracilis	Western Spotted Skunk	Mountains, Desert
Mephitis mephitis	Striped Skunk	Mountains, Desert
Mephitis macroura	Hooded Skunk	Desert, occasionally mountains
Conepatus mesoleucus	Hog-nosed Skunk	Desert, Mountains
Taxidea taxus	Badger	Grasslands especially, also mountains
Family Felidae		
Felix concolor	Mountain Lion	Mountains
Lynx rufus	Bobcat	Desert, Mountains
Order Artiodactyla		
Family Tayassuidae		
Dicotyles tajacu	Javelina	Desert, Mountains

Family Cervidae		
*Cervus elaphus	Elk	Mountains
Odocoileus hemionus	Mule Deer	All Zones
Odocoileus virginianus	White-tailed Deer	Mountains
Family Antilocapridae		
Antilocapra americana	Pronghorn Antelope	Grasslands
Family Bovidae		
**Ovis canadensis	Mountain Sheep	Mountains

BIRDS

Buteo jamaicensis	Red-tailed Hawk	Mountains, Desert
Buteo albonotatus	Zone-tailed Hawk	All Zones
Callipepla squamata	Scaled Quail	Desert
Lophortyx gambelii	Gambel's Quail	Desert near water
Cyrtonyx montezumae	Harlequin Quail	Mountain
Columba fasciata	Band-tailed Pigeon	Mountain
Geococcyx californianus	Roadrunner	Desert, Open Pinon-Juniper
Zenaida asiatica	White-winged Dove	River, Desert
Zenaida acroura	Mourning Dove	River, Desert

*Cervus merriami, the southern New Mexico race of elk, became extinct around 1900. The northern race, Cervus elaphus, was reintroduced and is the present race (Findley et al. 1975:327-8).

**The southern New Mexico race of bighorn (Ovis canadensis mexicanus) were extinct in the Gila National Forest area by 1927. The northern race, Ovis canadensis canadensis was reintroduced (Findley et al. 1975:335).

Otus trichopsis	Whiskered Owl	Mountain
Bubo virginianus	Great Horned Owl	All Zones
Corvus corax	Common Raven	Mountain, Desert
Corvus brachyrhynchos	Common Crow	Mountain, River
Pandion haliaetus	Osprey	River
Riparia riparia	Bank Swallow	River
various other birds		

REPTILES

Order Squamata (snakes and lizards)

Crotalus atrox	Western Diamondback Rattlesnake	Desert, up to 5000'
Crotalus viridis	Prairie Rattlesnake	Desert
Crotalus mollossus	Black-tailed Rattlesnake	Mountains
Hypsiglena torquata	Night Snake	Desert
Lampropeltis getulus splendida	Sonora Kingsnake	Desert
Leptotyphlops dulcis	New Mexico Blind Snake	Desert
Rhinocheilus lecontei	Long-nosed Snake	Desert
Thamnophis cyrtopsis	Black-necked Garter Snake	Mountain
Thamnophis marcianus	Checkered Garter Snake	River
various lizards		

Order Testudinata (turtles)		
Terrapene ornata	Ornate Box Turtle	Desert, River
Kinosternon flavescens	Yellow Mud Turtle	Desert, River
Kinosternon sonoriense	Sonora Mud Turtle	Desert, Mountains
+*Trionyx spiniferus*	Spiny Softshell	River

AMPHIBIANS

Rana pipiens	Leopard Frog	Mountain, River
various toads		

+There is some indication that the spiny softshell may have been an historic introduction into the Gila drainage (Ernst and Barbour 1972:262).

Excavations at Red Rock 1 #1 yielded 100 animal bones weighing 50.6 grams. They were identified using the comparative skeletal collection at the Department of Environmental Biology, the University of Texas at El Paso. Faunal remains from the Redrock site are listed below by feature:

FEATURE A

West ½

medium/large mammal	4 long bone shaft fragments
	1 indeterminate bone
medium mammal	5 long bone shaft fragments
	6 vertebra fragments
small mammal	3 indeterminate bones

East ½

Lepus californicus	right calcaneus
	indeterminate metapodial
	left ulna - 2 fragments
Sylvilagus sp.	left mandible with 4 teeth
large mammal	3 long bone shaft fragments
	3 rib fragments
medium/large mammal	4 long bone shaft fragments
medium mammal	8 long bone shaft fragments
	1 probable vertebra fragment
	1 probable metapodial fragment

South ¼

Ondatra zibethicus	right proximal tibia - young animal
Lepus californicus	right mandible
	right scapula
Ovis canadensis	left calcaneus
large mammal	2 long bone shaft fragments
	12 rib fragments

FEATURE D

Lepus californicus	1st left metapodial
	3rd right metapodial
	left calcaneus
	1st thoracic vertebra
	left ulna shaft
	right femur
	right tibia shaft
	sternum
probable Lepus	scapula (spine)
	right lower incisor
	3 rib fragments
Sylvilagus sp.	axis
Neotoma, probably N. albigula	right humerus
Odocoileus/Antilocapra/Ovis	proximal tibia epiphysis (very young individual)
medium/large mammal	1 long bone shaft fragment

medium mammal	4 long bone shaft fragments
	distal phalanx
	4 indeterminate fragments
	3 cranium fragments
	probable metapodial
small mammal	4 long bone shaft fragments
Zenaida asiatica	coracoid
probable Cyrtonyx montezumae	sternum fragment
medium bird	ulna shaft fragment
indeterminate fish	vertebra

FEATURE G

probable small/medium mammal	1 indeterminate bone

Virden 3 #3, Crabtree Barrow, yielded 2 medium mammal long bone shaft fragments, not identifiable further.

CONCLUSIONS

The faunal remains from Red Rock 1 #1 indicate exploitation of the varied resource zones in the Gila National Forest area. The muskrat and fish remains indicate the harvesting of riverine resources, while the sheep and harlequin quail indicate hunting in the mountains. Jackrabbits and cottontails are available in desert and mountain habitats, as well as by the rivers, so their exploitation probably reflects availability rather than a particular habitat preference for hunting.

APPENDIX E

ACCOUNTS TAKEN FROM THE EARLY SILVER CITY NEWSPAPERS

KEY TO ABBREVIATIONS:

ML	Mining Life - April 17, 1873 - February 6, 1875
H	The Herald - March 6, 1875 - April 16, 1881
H	The Southwest and Grant County Herald - April 23, 1881 - March 3, 1883
SS	The Southwest Sentinel - March 10, 1883 - December 29, 1885
E	The Silver City Enterprise - October 16, 1882 - present

WILSON, WILLIAM

E 6/6/1884 The house of Wm. Wilson, near Richmond, was destroyed by fire last week. Billy & his employees lost everything in the way of clothing, blankets, etc., that they had. Loss estimated at $1,600, with no insurance.

SS 9/6/1884 Wm. Wilson on registration board for Lower Gila precinct.

E 17/10/1884

THE RINGO-WILSON SHOOTING

Sam Ringo, a Well-Known Cowboy, Seriously Wounded by William Wilson -- The Hearing Set for To-Day

Sam Ringo, a cowboy in the employ of John Troffer, on the lower Gila, was shot in the abdomen by William Wilson, an old resident of this city, and an extensive rancher on the lower Gila, the scene of the shooting. The immediate cause of the shooting, as we learn from disinterested parties, was about as follows:

During the summer, cattle belonging to stockmen in the vicinity of Richmond and Duncan frequently broke into the fields of farmers, and as a consequence, were many times corralled, and damages assessed. In some cases the damages were paid and the stock released, and at other times the stock was turned loose upon the promise of owners to see that a recurrence did not take place. Many of the ranches are surrounded with barbed wire fences, but there are some which have no fences, and are an easy prey to cattle, especially at night. On Monday, the 6th inst., Mr. Wilson corralled a number of cattle belonging to John Troffer, for whom

Ringo works, for damages done his crop. Ringo and Frank Shriver, Troffer's foreman, went to Wilson ranch, and forcibly took the cattle, refusing to pay the damages asked. They also beat Wilson over the head with a revolver, and threatened to "do him up" if he penned any more cattle belonging to the party they represented. Wilson was unarmed at the time and could not defend himself. On the day following, Wilson found some mules and horses belonging to the same party, in his field, which he corralled and notified the owner. At about 11 a.m., on Thursday, Ringo and Shriver visited Wilson's place and demanded the stock. What followed will be developed at the examination to-day. The stock, as we learn, is still in Wilson's corral, and Ringo carries a bullet in his left side, which in all probability will be fatal to him. The feeling in the matter is about evenly divided. The ranchmen unite in the opinion that Wilson was justified in the matter while some of the cattlemen claim to have damaging evidence against Wilson, who with two men in his employ, was placed under $1,000 each to appear before Judge Givens to-day, which amounts were promptly furnished.

The result of the trial, with such other information as may develop, will appear in our next issue. The physician attending Ringo says the chances are against his living.

SS 10/18/1884 Letter asking public to suspend judgement in the Wm. Wilson shooting case - letter is from W.H. Shriver, who says the facts will show a different condition of affairs than published in the enterprise.

SS 11/8/1884 Wm. Wilson, Henry Horn & Bartow Wallace charged with assault with attempt to kill Samuel Ringo on the Gila last month, were arraigned before Justice Wilson on Thurs. & ordered to give bonds of $500 each to appear at the next term of District court.

SS 1/24/1885 Wm. Wilson, of the Lower Gila, spent a few days in town during the week.

SS 1/24/1885 We hear it from Billy Wilson's own lips that next month he will put aside "this life of celibacy" & will take unto himself a companion more congenial than "single blessedness," to go hand in hand down the stream of life with. We did not learn who is to be the unlucky partner.

E 1/30/1885 Bill Wilson, The Gila dude, says the report published in Saturday's Sentinel to the effect that he is going to be married is a base, premeditated no such thing, and that he can lick the man who wrote it.

SS 8/1/1885 District court: Wm. Blackburn vs Wm. Wilson.

SS 7/18/1885 Wm. Wilson, commonly known as the Gila dude, has been spending a week or so in the city. He returned on Wed. to look after the new house he is putting up on his ranch.

SS 8/15/1885 Billy Wilson's castle on the Gila is nearly finished, & he is now engaged in town in collecting a carefully selected pack of dogs to stock it with.

SS 9/1/1885 Wm. Wilson, the celebrated dude ranchman of the Lower Gila, left town on Fri. afternoon & won a bet by so doing.

SS 12/1/1885 Wm. Wilson on grand jury.

E 2/12/1886 Quite an important land contest case is in progress before E. Stine, probate clerk. The parties to the contest are Wm. Blackburn & Wm. Wilson, of the Lower Gila.

E 2/19/1886 The Wilson-Blackburn land contest case was finished Wed. before E. Stine, and the parties departed for home to await the action of land office officials.

E 8/6/1886 Notice of mortgage sale of property in S.C. mortgaged by Wm. Wilson to Elizabeth King.

E 8/20/1886 Wm. Wilson mentioned in article on opening of S.C. National Bank.

E 9/3/1886 The Gila dude, Wm. Wilson, is in the city. Wm. is rather an old-style dude. As a watermelon grower he is a grand success.

E 10/15/1886 Registration board & place, Precinct #8 (Lower Gila) Jacob Lightfoot, Wm. Wilson, P. Rucker, at Lightfoot's house.

E 10/29/1886 Wm. Wilson, the celebrated old-style Gila River dude, was here during the week.

E 11/19/1886 Wm. Wilson brought in the ballot box from precinct 8.

E 12/3/1886 Wm. Wilson of the Lower Gila, is in the city.

E 12/17/1886 Wm. Wilson, of the Middle Gila, is in the city. It is understood that he came in to take dancing lessons of Prof. Maurice.

THE SILVER CITY-GLOBE STAGE LINE

'13/1876 New road opened Silver City to Globe via Pueblo Viejo - 50 miles shorter.

/23/1876 Silver City-Globe. D B Lacey's Express leaves on its 1st trip tomorrow - 4 or 5 changes of team enroute.

/13/1877 Route Silver City-Globe 209 miles

Silver City	00
Burro Springs	21
Richmond	39
Fork Clifton & Pinal Roads	18
Ash Springs	6
Safford	33
Camp Thomas	25
San Carlos	32
Globe	35

2/3/1877 Lacy's Silver City-Pinal Express. Office at Higbee & Miller's

4/7/1877 Ranch and way station established at Burro Springs -run by Mr. Voorhes.

7/3/1877 Travel between Silver City and Clifton is increasing so rapidly that the contractors are making arrangements to run a 4 horse coach over the line. The mail communications should certainly be increased to tri-weekly service.

7/14/1877 Jonathon Foster now running 2-horse coach Silver City - Clifton. Leave Silver City Thursday - arrives Clifton Saturday. Passengers, express & freight.

H	7/28/1877	D B Lacy has withdrawn Silver City-Globe express
H	8/4/1877	J F Bennet sells interest in Silver City-Ewell, Arizona mail line to Joseph Reynolds
H	8/4/1877	Meeson & Marriage take over Silver City-Globe line dropped by Lacy. Frank Carpenter will be in charge
H	8/25/1877	Meeson & Marriage purchase Lacy's stock & coach hitherto used in the Silver City-Globe express business. To be used on above business. Frank Carpenter, in charge.
H	1/17/1880	N.W. White running weekly express & passenger line Silver City-Clifton & extending his trips as far as the gold placers on the Frisco above Clifton (White/Stevens)
H	10/16/1880	Jn. McMillan takes Stevens place
H	6/19/1880	Stevens & White Clifton Express - weekly headquarters Schutz Bros., M. Stevens, agent
H	10/16/1880	Stevens & White (Clifton Coach Line) disolve partnership. John McMillan takes Stevens place
SS	8/22/1883	Partnership of White & Arnold disolved. White continues at old stand.
	3/18/1882	N.W. White has withdrawn stage line Silver CityClifton because of another line running from Railroad at Shakespeare to Clifton - Guthrie of Richmond to carry mail

LOWER GILA

ML 1/24/1874 Article on Gila Colony

ML 2/-/1874 Cook and Hammond join the Gila colony

ML 3/28/1874 Richmond selected for name of new settlement on the Gila

ML 3/7/1874 7 families of Californians arrived & located farms on lower Gila near Doc. Hammonds farm.

ML 5/2/1874 N.B. Mikesell and G.W. Cook report from Richmond: Settlers getting their crops in good shape. Lot of land being planted to corn & great deal of wheat sown; beans, onions & garden truck. The colony is taking out a large ditch to supply water for irrigating - 4 miles long, 4' deep, 12' wide on bottom & 16' wide on top. Mikesell leading spirit of colony & headed that portion who came from Arizona.

ML 5/16/1874 Ralston Ditch Co. formed. Mikesell resident manager. Warren Black, of Camp Grant, Ariz., president. Large amount of corn being planted, also sorgum. Mr. Morrisey & partner have just settled here with large amount of stock.

ML 1/6/1875 Material for the bridge across the Gila, on the Clifton road loaded for its destination.

ML 5/16/1875 Pueblo Viejo about 35 miles west of Richmond on the Gila. Farmers there have good crop of barley.

H	5/2/1875	Bridge across the Gila built by Hammond & Webb. Mr. H. Wilson, who lives about 4 miles below the bridge, is foreman of the ditch company and settlement. Mr. W. Buck, of Camp Grant, is largely interested in this enterprise.
H	2/27/1876	Post office established on lower Gila - called Richmond. G.W. Arnold, postmaster.
H	3/5/1876	Read's crossing of the Gila about 12 miles below bridge or Clifton crossing.
H	4/8/1876	All land on the lower Gila near the Arizona/New Mexico line has been taken up. Clifton provides a market for all crops.
H	5/13/1876	New road to Globe via Pueblo Viejo
H	7/29/1876	Sterling Burwell - resident of Richmond
H	1/3/1877	Route Silver City to Globe, 209 miles: Silver City to Burro Springs, 21 miles, Richmond 39 miles, Forks of Clifton & Pinal roads, .18, Ash Springs 6 miles, Safford 33 miles, Camp Thomas 25, San Carlos 32, Globe 35.
H	3/16/1878	Article on Lower Gila - Pueblo Viejo
H	3/23/1878	I. Solomon owns largest store in Pueblo Viejo
H	12/7/1878	Thomas Levy - store at Lower Gila
H	3/29/1879	Thomas Levy married to Rosella Walls. Has Gila store and travelers way station on road from Silver City to Clifton & Globe

H	10/12/1878	A.L. Webb dies at his ranch on lower Gila. Leaves considerable property.
H	5/20/1882	J.H. Carroll - store at Gila crossing
SS	6/7/1884	There is no longer any post office at Richmond, and mail residents of that neighborhood should now be addressed to Duncan, Arizona Territory.

H	8/14/1880	Left town with a large stock of goods for his store at Richmond. (Lower Gila)
SW	3/18/1882	Guthrie to carry mail Silver City-Clifton
SW	4/1/1882	Stage station at Guthrie's
SS	2/16/1884	Geo. Guthrie, of Richmond, arrived in town last Mon. and reports things in his section as brightening up materialy. He showed a piece of ore taken out of one of his mines at Steeple Rock, which is a marvel of beauty and richness.
E	2/22/1884	See Nealy, Frank
SS	2/23/1884	Geo. Guthrie, an old resident of Richmond, and a man held in highest esteem by his neighbors, was murdered at his home last Sun. night by Frank Nealy. (more, p.3)
E	2/29/1884	More on killing of Guthrie by Nealy p. 3
SS	3/1/1884	See Potter, A.S.; See Neighly, Frank
E	3/7/1884	See Potter, A.S.
SS	3/22/1884	Notice of mortgage sale of propety of Geo. Guthrie and Augusta B. Guthrie, by A.S. Potter, mortgage & attorney in fact.
SS	6/28/1884	See Mitchell mine (Guthrie estate)
SS	8/23/1884	See Neely, Frank

NEALY, FRANK (Neighley)

E 2/22/1884 Frank Nealy, man of unsavory character, charged with shooting a cow near Richmond, brought before J.P. Geo. Guthrie who fined him. Upon being released, Nealy turned around and shot Guthrie in the groin, a wound which may prove fatal.

E 2/29/1884 More on killing of Guthrie by Neighley, p. 3

SS 3/1/1884 Frank Neighly claims that the Guthrie killing was done in self-defense.

E 7/25/1884 Frank Nealy, slayer of Guthrie, walked through the streets playing an accordion in being transferred from the old jail to the new.

E 8/29/1884 Frank Neighley, murderer of Geo. Guthrie, released from jail on his own recognizance.

SS 9/20/1884 Short article from Clifton Clarion.

LYNCH, JOHN M.

H	12/2/1876	Partner of Wray at Georgetown.
H	2/10/1877	Game to Grant County in 1874 from Texas. At Georgetown 2/77
H	9/22/1877	Lynch, formerly with Mason in Blacksmith & Wagon shop, has accepted a job as blacksmith at the Longfellow in Clifton.
H	10/19/1878	Near fatal accident in Georgetown mine. (John H. (?)
SS	11/15/1884	J.M. Lynch selected as justice for Lower Gila precinct.
E	11/27/1885	Judge Lynch left for his home on the lower Gila on Mon.
E	1/29/1886	J.M. Lynch, a prosperous & level-headed ranchman from the lower Gila, is in town. He made a good crop last year for which he found a ready market.
E	5/14/1886	A most unfortunate & destructive fire occurred to J.M. Lynch, the owner of what was once known as the town known as Richmond, on the lower Gila. The old Guthrie house & contents, with but few exceptions, was destroyed entirely. (more)
E	9/10/1886	Paid by Grant County Comm. for burial of 3 pauper dead - $21.00
E	10/8/1886	See Julius Wagner

TROFFER, JOHN

E 8/8/1884 John Troffer among Lower Gila people summoned to attend court this week.

SS 8/23/1884 John Troffer, of Duncan, Arizona Territory, submitted for membership in SW Stock Assn.

SS 9/6/1884 J.B. Troffer on registration board for Lower Gila precinct.

SS 12/20/1884 Troffer Brothers middle and lower Gila ranches and cattle to be sold to the Hart Brothers.

E 11/5/1886 John Troffer, a well-known Grant county cattle man, who sold out the "24 circle" brand on the lower Gila to Hart Brothers, has just returned from South America, where he went to look for a better cattle country than southern New Mexico. He is satisfied that Grant County as a cattle country cannot be out done anywhere.

APPENDIX F

RADIOCARBON DATES

Dr. Betty Lou Brandau
Center For Applied Isotope Studies
The University of Georgia

CENTER FOR APPLIED ISOTOPE STUDIES

THE UNIVERSITY OF GEORGIA

RIVERBEND RESEARCH LABORATORY
110 RIVERBEND RD. ATHENS, GA. 30602
(404) 542-8579

August 30, 1979

Karl W. Laumbach
Cultural Resources Management Division
Department of Sociology and Anthropology
P. O. Box 5700
Las Cruces, N.M. 88003

Dear Karl:

The dates which we could do are:

UGa-2862	Crabtree Borrow Virden 3 Stain 1	1345 ± 220 B.P. AD 605
UGa-2864	Starkweather Hearth Area A, Sample A	1100 ± 95 B.P. AD 850

Red Rock 2 #1, and Starkweather Hearth Area B samples were too small. I am interested in your further comments.

Sincerely,

Betty Lee

Betty Lee Brandau
Associate Director

BLB:cm

enclosure

CENTER FOR APPLIED ISOTOPE STUDIES

THE UNIVERSITY OF GEORGIA

RIVERBEND RESEARCH LABORATORY
110 RIVERBEND RD. ATHENS, GA. 30602
(404) 542-5579

October 1, 1979

Dr. Karl W. Laumbach
Department of Sociology and Anthropology
Cultural Resources Management Division
Box 5700
Las Cruces, New Mexico 88003

Dear Karl:

Your last three dates are:

UGa-2939	S I, F, A Red Rock	1590 ± 155 360 AD
UGa-2940	S II, F, D Red Rock	1680 ± 110 270 AD
UGa-2941	S III, F, G Red River	550 ± 245 1400 AD

Let me know what you think of them.

Sincerely,

Betty Lee

Betty Lee Brandau
Associate Director

BLB/mwc

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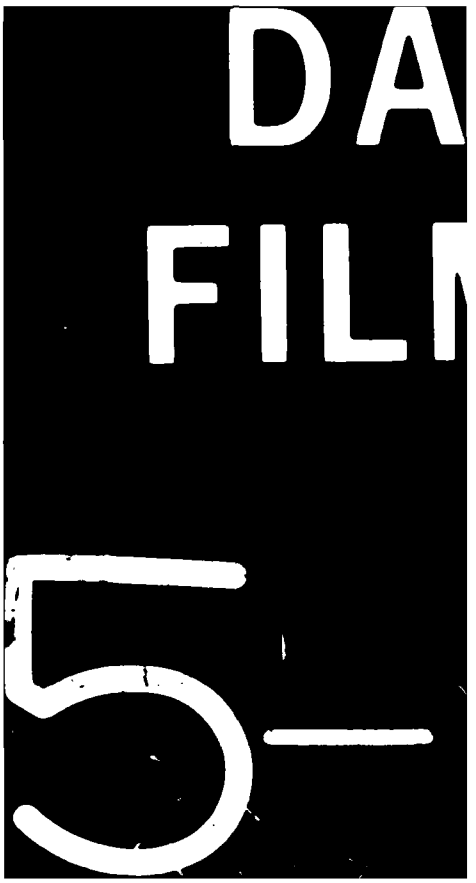
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