

Verde River Sheep Bridge (Red Point Sheep Bridge)
Tonto National Forest
Cave Creek Vicinity
Yavapai County
Arizona

HAER No. AZ-10

HAER
ARIZ,
13-CACR.V,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

Historic American Engineering Record
Western Regional Office
National Park Service
U. S. Department of the Interior
San Francisco, California 94102

HISTORIC AMERICAN ENGINEERING RECORD

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VERDE RIVER SHEEP BRIDGE
(Red Point Sheep Bridge)

HAER No. AZ-10

Location: Spanning the Verde River in Tonto National Forest, 5.5 miles north of the Yavapai County-Maricopa county Line, 21 air miles northeast of Cave Creek, Yavapai County, Arizona. Section 25, Township 9 North, Range 6 East, Gila and Salt River Base and Meridian.

UTM: 12.434750.3770820
Quad: Chalk Mountain, Arizona

Date of Construction: 1943; altered in 1944

Engineer: Cyril O. Gilliam

Builders: Frank Auza and George W. Smith

Present Owner: United States of America, acting through the U. S. Department of Agriculture, Forest Service, Tonto National Forest

Present Use: Barricaded; to be demolished in 1987

Significance: The Verde River Sheep Bridge is the last remaining suspension-type sheep bridge in Arizona. It is important in state history for its relation to the sheep-raising industry. The bridge was constructed largely by immigrant Basque shepherders with little technical assistance. It was listed on the National Register of Historic Places in 1978.

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INTRODUCTION

The Verde River Sheep Bridge (see HAER Photograph No. AZ-10-1), also known as the Red Point Sheep Bridge, was placed on the National Register of Historic Places on November 21, 1978.¹ Because of the structure's advanced deterioration, its demolition was recommended on June 13, 1984, by Richard L. Kasel, Bridge and Tramway Engineer, Region Two, Forest Service, U. S. Department of Agriculture.² Construction documents for a new bridge at the site, reminiscent of the old bridge, have been developed. Neither demolition of the existing bridge nor construction of a new bridge had been scheduled at the time of preparation of this document, although both actions were anticipated. Sheep are no longer grazed in the immediate area, and a new bridge would be used primarily by backpackers and hunters to gain access into the Mazatzal Wilderness.

Location of Bridge

The Verde River Sheep Bridge is located in Section 35, Township 9 North, Range 6 East, Gila and Salt River Base and Meridian (see HAER Drawing, Sheet 1). According to local legend, the general area, known as Bloody Basin, derived its name from numerous Indian fights that occurred there.³ The bridge site is in the Yavapai County portion of the Tonto National Forest and is 5.5 miles north of the Yavapai County-Maricopa County line and 21 air miles northeast of Cave Creek, Arizona. It is accessed by eastward travel on Cave Creek Road from Cave Creek, Arizona, to the beginning of Tonto Forest Route 24, then northward on Forest Route 24 to Forest Route 269, and then eastward on Forest Route 269 to the bridge. The site can also be reached by Forest Route 269 from Bloody Basin Road interchange on Interstate Highway 17, and by Forest Route 479 from Horseshoe Dam or from a river ford a few miles below the dam. (The Salt River Project controls vehicle passage over the dam.) All access roads are unpaved and are suitable for dry-weather use by pick-up truck only.

More specifically, the bridge is located at a point on the Verde River approximately 500 feet downstream from the combined mouths of Sycamore and Horse creeks, where the normal flow channel makes a pronounced Z bend (see HAER Photograph No. AZ-10-2 and HAER Drawing, Sheet 1). During periods of greater-than-normal flow, the Z configuration is obscured as the river rises. About 500 feet below the bridge, there is a normal-flow ford, and immediately below the ford, there is a rapid. The ford connects the east terminus of Forest Route 269 (on the west side of the river) with the north terminus of Forest Route 479 (on the east side of the river).

DESCRIPTION OF THE BRIDGE

The Verde River Sheep Bridge is a cable-stayed suspension bridge with a cable clear span of 568 feet between support towers. Overall length of the structure from cable anchorage to cable anchorage is 691 feet, and the length of the

Verde River Sheep Bridge
(Red Point Sheep Bridge)
HAER No. AZ-10
(Page 3)

cable-supported walkway, or deck, from abutment to abutment is 476 feet. The bridge runs in a general east-west alignment, with the east tower located on the left bank of the river and the west tower on the right bank (see HAER photograph No. AZ-10-3 and HAER Drawing, Sheet 2).

In the area of the bridge, the river banks are low, and there are a number of sand and gravel beaches during times of normal flow. The approaches to the bridge, the walkway (deck), the main suspension cable support towers, and the main suspension cable backstay anchorages are located well above the flood level of the river on prominent rock outcroppings, which rise precipitously from opposite shorelines (see HAER Photograph No. AZ-10-2). During periods of normal flow, the walkway is about 45 feet above the water level. Frank Auza (see HAER Photograph No. AZ-10-4), one of the Basque sheepmen who participated in the building of the bridge, recalled at least one flood when the river rose to within about 10 feet of the walkway.⁴

The west tower (see HAER Photographs No. AZ-10-5, AZ-10-6, AZ-10-7, and AZ-10-8 and HAER Drawing, Sheet 3), located on a low cliff rising from the right bank of the river, is 22 feet high and is sited 21 feet west of the deck abutment at the face of the cliff. The base of the tower is about 45 feet above river level at a typical dry-weather flow of 350 c.f.s. The anchorage for the west ends of the suspension cables is 109 feet west of the tower.

The east tower (see HAER Photographs No. AZ-10-9, AZ-10-10, AZ-10-11, and AZ-10-12 and HAER Drawing, Sheet 4), located on a rock outcrop on the left bank of the river, is 9 feet high and is sited 71 feet east of the deck abutment, which is at the face of the rock outcrop. Anchorage for the east ends of the suspension cables is 14 feet east of the tower. Although the east deck abutment is about 20 feet lower than the west deck abutment, the east tower cable saddles are about at the same elevation as the west tower cable saddles. The deck has a camber of about two feet.

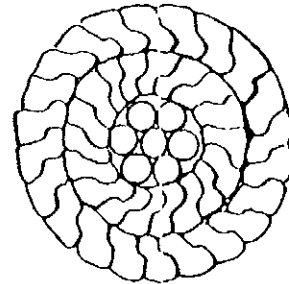
The anchorages for the ends of the main suspension cables are buried under rock cairns and can not be seen (see HAER Photographs No. AZ-10-12 and AZ-10-13). However, it is apparent that each cable is passed around a deadman, or bollard, and then clamped back to itself, forming a loop. The anchorage for the east ends of the suspension cables is itself anchored with a single strand of suspension cable looped around a rock outcrop. Frank Auza recalled, "The deadmen are made of concrete, about five or six feet around, with scrap iron [reinforcement]--they are set in holes dug in the ground."⁵

The bridge towers were originally constructed with nail-laminated lumber legs and solid timber cross braces (see HAER Photograph No. AZ-10-14). All member connections were made with through-bolts. In the later direction (90 degrees to the main suspension cables), the wood towers were stabilized with guy cables attached to the ends of the saddle beams and to eyebolts cast into concrete anchorages set into the rock (see HAER Drawings, Sheets 3 and 4). Soon after

the bridge was constructed, the wood towers were reinforced with concrete buttresses and the guy cables were removed. The guy cable connectors on the ends of the west tower saddle beams and on the south end of the east tower saddle beam remain (see HAER Photograph No. AZ-10-15). Also, the guy cable ground anchorages for the west tower are still in place. The guy cable anchorages for the east tower were not found. The original wood tower structures, although deteriorated, also remain in place. They are now, however, of little structural significance. The west wood tower, as it occurred prior to the placement of the concrete, is seen in HAER Photographs No. AZ-10-16 and AZ-10-17. The original wood structure was stiffened with wire rope tension tendons installed between the tower legs. These wire ropes remain in place and are now encased in the concrete, except where they are looped around the tower legs (see HAER Photograph No. AZ-10-14). The east wood tower, as it appeared prior to the placement of concrete, is seen in HAER Photograph No. AZ-10-18.

The main suspension cables are actually not cable but, rather, are 1-3/8-inch diameter full lock-coil spiral strand, (1+6)+18S+22Z construction. A cross section of the strand is shown in figure 1 below. Two strands, side by side, are used in both main cables.

The two pairs of strands are separated at intervals along the span by timber spacers (see HAER Photograph No. AZ-10-19). Each pair of strands shares a common steel saddle (see HAER Photograph No. AZ-10-20) at the point where it passes over each tower to common buried anchorages, one at each end of structure (see HAER Photographs No. AZ-10-12 and AZ-10-13). On both towers, the cables break over the saddles at approximately 12-degree angles from the horizontal in each direction. The saddles were expertly fabricated from steel plate but are too narrow for two strands installed side by side and too wide for two strands installed one over the other. Plans for the bridge, prepared by C. O. Gilliam, detail the saddles with a width of 1-1/4 inches for two 1-1/8-inch strands installed one over the other. Placed side by side, they do not seat properly in the saddles (see HAER Drawing, Sheet 2).



Lock-coil strand is not usually used in this type of structure. Prior to its use on this bridge, the strands had been spliced with track cable couplings, using double thimbles and wedges (see HAER Photograph No. AZ-10-21). Several trestle saddle clips are also attached to the strand (see HAER Photograph No. AZ-10-22). The strands and the attached devices are commonly used in tramway

construction. Splices made during the construction of the bridge were accomplished by clamping lapped strands (see HAER Photograph No. AZ-10-21). Although the strands are rusted, and broken wires were noted, the cables still appear to be fairly sound. The cables obviously have not been maintained for many years. Frank Auza was dismayed to see his handiwork in disarray and recounted how he and the shepherders had protected the cables with axle grease every year.⁶

The superstructure consists of timber panels carried at each end on needle beams that are hung from the main suspension cables by steel cable suspenders (see HAER Photograph No. AZ-10-23). The suspenders, also called hangers, are 3/8-inch-galvanized wire rope and 1/2-inch-diameter bright (ungalvanized) wire rope. The rope size does not appear to follow a location pattern. The suspenders are simply single wrapped around the ends of the needle beams and double wrapped around both main cables. The loose ends of the suspenders are separately fastened to the live line sections with wire rope clamps, one at each end, or are fastened together with clamps. Cables are held in place by notches in the needle beams and by tie cables looped around the walkway side panel 4x4-inch posts, and twisted (both ends) around the hanger cables (see HAER Photograph No. AZ-10-24). Panels vary slightly in size, but most are approximately eight feet long. The walkway is approximately three feet wide and is supported by three 4x4-inch floor beams spanning between, and at right angles to, the 4x6-inch solid timber needle beams (see HAER Photograph AZ-10-25). The decking is 2x12-inch boards and runs parallel to the needle beams. Rigidity in the floor structure is provided by diagonal members crossing under the floor beams. The sides of the walkway are three feet high above the walkway deck and are capped with a continuous, flat 1x4-inch handrail. Filling the space between the deck and the top rail are seven horizontal 1x4-inch rails installed vertically. The rails are supported by 4x4-inch posts with knee braces at the needle beam and by a 1x4-inch stiffener located at midpoint between the 4x4-inch posts. The sides of each 8-foot-long walkway panel are trussed with two diagonal 1x4-inch members running from the tops of the 4x4-inch posts to the bottom of the vertical intermediate 1x4-inch stiffener in each panel (see HAER Photograph No. AZ-10-26). The walkway is further reinforced with a 4-inch-wide by 1/8-inch-thick steel strap square-hooked over the top rail at each 4x4-inch post and running the height of the post (see HAER Photographs No. AZ-10-7 and AZ-10-23). The strap is bolted into the top rail and through the side rails into the 4x4-inch post. The steel straps are not seen in early photographs of the bridge (see HAER Photograph No. AZ-10-27), but appear in subsequent pictures. The purpose of the straps is not entirely clear. However, the side rails are butt-jointed at each 4x4-inch post and the straps cover the joints, thereby securing the ends of the rails to the posts. Wind damage to the sides of the bridge occurred at an early date,⁷ probably resulting in the installation of the straps.

The general condition of all wood components is poor. Virtually all of the lumber is severely checked and many elements have lost to decay as much as 50 percent of their cross-sectional areas. Several members, including the nail-laminated saddle beam of the west tower, have lost more than 80 percent of their areas. The east tower saddle beam has virtually disappeared; only a small fragment of it remains (see HAER Photograph No. AZ-10-11). While the bridge was in use by sheepmen, Frank Auza and Joe Manterola kept the bridge in repair, replacing side and floor boards as they became broken.⁸

A variety of hardware items is found in the structure. Some items were custom-fabricated and others are standard manufactured items. In the former category are the main suspension cable saddles (see HAER Photographs No. AZ-10-11 and AZ-10-12), the top of tower guy cable connectors (HAER Photograph No. AZ-10-15), cable eyebolts (see HAER Photograph No. AZ-10-10, and walkway side panel straps. The saddles and guy cable connectors, fabricated of 3/8-inch-thick steel plate, show signs of acetylene torch cutting and grinding. The components of the saddles were arc-welded. All bolt holes were drilled or punched, rather than torch-burned, indicating the items were shop-fabricated. Auza recalled that the saddles and the guy cable connectors had been obtained in Phoenix by George W. Smith, the principal builder of the bridge.⁹ Cable clamps, bolts, nuts, and washers are standard commercial items (see HAER Photographs No. AZ-10-11 and AZ-10-14).

Wind bracing was first provided by randomly-placed cables connected to the superstructure's needle beams at one end and to the shore at the other end. Each anchorage to the shore was made by a concrete deadman with the cast-in eyebolt. Three cables were attached to the downstream side at the bridge; two of these cables ran to anchorages on the right bank and one to the left bank of the river. One cable ran from the upstream side of the bridge to the right bank of the river. Soon after the bridge was completed, this stabilizing system was improved by the addition of two cross-stream stay cables, one located on each side of the walkway, that are connected to anchorages on opposite shores. These cables are located about 30 feet from the bridge proper and at an elevation of about 10 feet below the elevation of the deck. Wire ropes run between the deck stringers and the stay cables, in a manner reminiscent of a child's "cat's cradle" (see HAER Photographs No. AZ-10-28 and AZ-10-29). The cables that originally ran between the needle beams and the shoreline were disconnected from the beams and reconnected to the shore-to-shore stay cables, further limiting motion in the walkway. Other cables designed to dampen movement of the main suspension cables and of the deck run between the main cable spacers and the abutments, and the deck and the abutments (see HAER Photographs No. AZ-10-10 and AZ-10-30 and HAER Drawing, Sheet 2). Although the shore-to-shore sway cables have not been tightened since 1979 and other cables in the stabilizing system are broken, the HAER investigators found the bridge to be surprisingly stable and experienced little motion when walking across it.

CONSTRUCTION OF THE BRIDGE

A number of long-standing questions concerning the bridge can now be answered. The construction date has variously been reported as 1940, 1941, 1942, and "early in the 1940s." The date erroneously provided in the National Register nomination is 1940. It has now been determined that the access road to the bridge site (on the west side of the river) was prepared in January 1943,¹⁰ construction of the bridge took place primarily during March, April, May, and June 1943,¹¹ and placement of concrete in the towers occurred in January 1944, as indicated by names and dates scratched in the fresh concrete (see HAER Photograph No. AZ-10-31).

A set of drawings prepared by C. C. Overstreet, engineer, titled "Suspension Sheep Bridge Across Verde River at Horseshoe Dam Site" and dated January 1939, was, at one time, assumed to represent the Verde River Sheep Bridge. There is little similarity between the drawings and the bridge. These drawings were furnished to Dr. R. O. Raymond, one of the sponsors of the Verde River Sheep Bridge, by the Forest Service only as an example of a suspension bridge.¹² They may have been used in the construction of the bridge at the Horseshoe Dam site. However, the Horseshoe Dam Site Bridge (see HAER Photographs No. AZ-10-32, AZ-10-33, and AZ-10-34), which was demolished in September or October 1944, differed from the bridge shown in the Overstreet plans in a number of ways, especially in the sides of the walkway. The Overstreet plans detail a walkway with vertical sides, while the Horseshoe Dam Site Bridge had sides that sloped outwardly from the deck to the top rail (see HAER Photograph No. AZ-10-35). On the other hand, there are some similarities between the drawings and the Horseshoe Dam Site Bridge, suggesting that the drawings may have had some connection with the bridge.

At Bartlett Dam, another suspension-type bridge was in existence in 1936, while the dam was under construction. The dam was completed in 1939, by which time the bridge had disappeared. This bridge is further discussed in the section titled "History of Sheep Ranching in Arizona."

A set of plans prepared by C. O. Gilliam, engineer, was thought to have been made after the Verde River Sheep Bridge had been completed, only to satisfy some bureaucratic whim of the Forest Service. However, they were prepared in time to have been the drawings referenced in Flagstaff Sheep Company's application to the War Production Board for authorization to obtain construction materials.¹³ Moreover, the Gilliam drawings are site-specific for the Verde River Sheep Bridge, and the original construction closely follows many of the Gilliam details. These plans were obviously utilized by the builders of the bridge, although they made changes as they saw fit to accommodate the available materials.

The origins of the bridge materials have now been largely determined. Horseshoe Dam Site Bridge was not dismantled until 1944, a year after the Verde River Sheep Bridge was completed, thus eliminating the possibility of the popular supposition that Horseshoe Dam Site Bridge materials were utilized in the construction of the Verde River Sheep Bridge. Furthermore, the application to the War Production Board indicates that the suspension cables were to be obtained from a mine. Additionally, Frank Auza stated with authority that he obtained the suspension cables from the Bluebell Mine near Mayer.¹⁴ This was verified by Harry E. Cordes, who assisted Auza in obtaining the cable and in trucking it to the bridge site.¹⁵ Auza also recalled that the Douglas fir lumber and bridge hardware were purchased by George W. Smith in Phoenix, and that the 1x4-inch rails for the bridge sides were obtained by Dr. Raymond in Flagstaff.¹⁶ According to Cordes, the guy cables were obtained from the Golden Turkey Mine.

Auza further related that construction of the bridge was largely directed by himself and George W. Smith (see HAER Photograph No. AZ-10-36).¹⁷ Smith, a carpenter by trade, was knowledgeable of suspension bridges, having performed maintenance and repaired on the Horseshoe Dam Site Bridge before the Verde River Sheep Bridge was constructed.¹⁸ Smith appears to have been the superintendent for the project, while Auza was the owner's representative. Auza's account book indicates much of the access road and bridge construction work was performed by six, or so, immigrant Spanish Basques, several immigrant French Basques, about twenty U. S. Hispanics, and a few Mexicans.¹⁹ With the exception of George W. Smith and his brother, John; Jeff Houston, a carpenter; and Tony A. Koch, a mason and carpenter, the builders were all shepherders and camp tenders by trade. George W. Smith apparently paid his brother, because only George's name appears in Auza's account book.

Auza, Smith, and several shepherders visited Blue Point Sheep Bridge, across the Salt River on the old Heber-Reno Sheep driveway (a few miles west of Stewart Mountain Lake), to gain additional knowledge in suspension bridge construction. As a result of this visit, J. T. M. Garcia, one of Auza's herders, said, "They have Blue Point Bridge, we'll call ours Red Point."²⁰ This name was scratched in large letters on the rock outcropping below the east tower by Garcia. Although Auza and others continued to use the name "Red Point Sheep Bridge," the Forest Service prefers the name "Verde River Sheep Bridge."

According to Auza, the bridge was constructed solely with hand tools--saws, braces and bits, wrenches, hammers, picks, shovels, rock drills, and sledgehammers. Dynamite was used for blasting rock. The main cables, delivered in coils by a flatbed truck to the west bank, were pulled across the river by a team of two mules to the east bank and connected to the backstay. After they were lifted into the tower saddles with a block and tackle, the cables were tensioned from the west bank by a block and tackle pulled by a pickup truck.²¹

After the main cables were in place, a ladder was placed across them, forming a one-man platform that could be slid along the cables (see HAER Photograph No. AZ-10-37). From this platform, the suspender cables were attached to the main cables. With the suspenders in place, the needle beams were installed, one after the other across the river, and the deck was constructed between them. Amazingly, these hazardous procedures were completed without a fatality or serious injury.²²

DESIGN CONSIDERATIONS

The remote location and the scarcity of materials required that the bridge be constructed with an economy of materials, and the flood potential of the river demanded that the structure span the channel without intermediate supports that could be washed away. Additionally, in times of flood, the river can rise thirty feet, so it was necessary that the walkway be located above the flood level. A suspension-type bridge was ideally suited for these parameters. Moreover, suspension bridges were, at the time of the bridge's construction, in vogue with the engineering profession. Furthermore, the principal component of a suspension bridge, cable, was readily available to the builder's without charge from an abandoned mine tramway.

The site where the bridge is located is the most suitable site for a suspension bridge on this section of the Verde River. Frank Auza decided upon the location because "it was the only place that was narrow with high cliffs on both sides."²³ Auza apparently did a good job of choosing the site. Kasell stated in his 1984 report on the bridge, "Realizing the necessity for a crossing somewhere in the area of the existing bridge, I reviewed USGS maps to determine alternatives to the present site. Working north from Horse Shoe [sic] Reservoir to the next crossing, a trail ford at Red Creek approximately eight miles north of the present bridge site, it appears the old bridge (Verde River Sheep Bridge) is at the most desirable site."²⁴

Blue Point Bridge, Horseshoe Dam Site Bridge, Bartlett Dam Bridge, Cecil Overstreet's Horseshoe Dam Site Bridge plans, and the site-specific plans prepared by C. O. Gilliam all influenced the design of the Verde River Sheep Bridge. George W. Smith, the bridge contractor-carpenter, and Frank Auza visited the Horseshoe and Blue Point bridges. Auza had used the Horseshoe Bridge and was aware that it was too lightweight for crossing sheep.²⁵ Gilliam, who designed the Verde River Sheep Bridge, apparently had access to Overstreet's plans, as Tonto National Forest sent them to Dr. Raymond for information.²⁶

During World War II, certain construction materials were scarce, and their civilian use was controlled by the government. In order to receive authorization to obtain materials for the bridge, an application was submitted to the War Production Board on March 4, 1943. Authorization to purchase bolts, nails, lumber, cable clamps, and other materials requiring a priority rating

was returned on March 10, 1943. The authorization valued the rated materials at \$1,587. Non-rated materials (cement and second cable) were valued at \$535.²⁷ The total cost of the bridge, as reported by Auza, was \$7,277.

The main cables, which would have been difficult to obtain during the war if produced new, were listed on the War Production Board application as used. Frank Auza related that Henry Cordes found the cables for him at the tramway of the Bluebell Mine.²⁸ Henry Cordes stated with the knowledge of one who grew up in the area (Cordes, Arizona), "The cables were from an abandoned, three-mile-long, overhead tramway which went from the Bluebell Mine, about one mile west of Cordes, over to the railroad station two miles south of Mayer." He recalled that the tramway was probably built before 1910 and abandoned about 1930. According to Cordes, "In 1943, all the towers had been taken down, and the cable was abandoned on the ground." Auza, Cordes, and two Mexican shepherders gathered up two 900-foot-lengths, coiling each into a figure eight pattern on a 7x12-foot truck bed. Later, when it was decided to use two strands in each suspension cable, two additional 900-foot-lengths were salvaged from the tramway. There was no cost for the suspension cable, as it had been abandoned. Cordes obtained the guy cables from the Golden Turkey, a gold and silver mine located four miles south of Cordes. The owners donated this material to the sheepmen.²⁹

Each tower leg was built with five nail-laminated 2x10-inch boards instead of two 4x6-inch timbers as shown on the Gilliam plans. A letter from Dr. Raymond to George W. Smith dated May 11, 1943, indicates the difficulty he was experiencing in obtaining lumber and suggests why the legs were constructed with nail-laminated members rather than with the solid timbers detailed by Gilliam. The legs soon began to delaminate, explaining why the towers were reinforced with poured in-place concrete less than a year later. Auza related, "The first thing I see, they [the towers] weren't going to hold it. So another winter we put a form around them and we fill them up with concrete."³⁰

Auza and his herders maintained the bridge until about 1978, replacing the suspenders, stay cables, decking, and other components as needed to keep the structure in good repair.

HISTORY OF SHEEP RANCHING IN ARIZONA

Domestic sheep were first introduced into what is now Arizona in 1540 by Francisco Vasquez de Coronado, when his army drove them along as food during the search for the mythical Seven Cities of Cibola.³¹ However, there is no record that any of Coronado's sheep survived in Arizona or New Mexico after he returned to New Spain (New Mexico). In 1598, Juan de Onate, captain general and governor of a colonizing expedition to the lands explored by Coronado brought sheep to the Rio Grande valley. These animals thrived, and some were seized by Navajo raiders and driven into northeastern Arizona, where they flourished.³² By 1860, many Navajo were successfully raising sheep and had

developed large flocks descended from Oñate's animals. However, some warriors continued to raid nearby Anglo settlements, causing punitive action by the U. S. Army. In 1863, Colonel Christopher Carson defeated the Navajo in battle and forced them to make the "long walk" to Basque Redondo in New Mexico. Upon their return to northern Arizona in 1869, they were given 14,000 sheep and 1,000 goats by the United States Government. Subsequently, they again built up their flocks and became successful producers of wool, some of which has always been utilized by the now-famous Navajo weavers.³³

In the eighteenth century, Father Eusebio Francisco Kino brought sheep from New Spain to his Pimeria Alta (southern Arizona) missions. There, he taught the native people to grow crops and to raise domestic animals, including sheep. Soon after, Spanish settlers began raising sheep in what is now southern Arizona. Because of Apache raids, the Spaniards, and after 1821 the Mexicans and their livestock had a very tenuous existence, and by the end of the Mexican War in 1848, the Mexican flocks in Arizona had virtually disappeared.³⁴

Members of the Church of Jesus Christ of Latter-Day Saints (Mormons) were the first Anglos to consistently raise sheep in Arizona. In the 1860s, they brought sheep from Utah as far south as the Grand Canyon, occasionally even crossing the Colorado River.³⁵

In the last quarter of the 19th century, several events encouraged the sheep industry to develop in Arizona: the Navajo depredations ended, the California droughts of the 1870s occurred, mining and military activities in the Prescott area began, and the Atlantic and Pacific Railroad across northern Arizona was completed. The droughts of 1870, 1871, 1876, and 1877 forced California ranchers, who were raising sheep to feed the gold miners, to find new grazing grounds in Arizona, Nevada, and New Mexico.³⁶ The first Basque shepherders in Arizona came from California at that time.³⁷

In 1875, John Clark brought 3,000 sheep from California to the Williams and Flagstaff area of Arizona. He was followed the next year by William Ashurst and the Daggs brothers. The Daggs owned 50,000 sheep in the 1880s, many of which were leased to other sheepmen.³⁸

Mining activities and the presence of Fort Whipple in the Prescott area encouraged sheepmen to locate there. J. H. Lee, owner of the American Ranch near Prescott, brought sheep to his ranch in 1871 and, in 1872, Manuel Yrissari trailed 2,500 head from New Mexico to the Prescott area. By 1873, sheep were coming to the area from California, with W. A. Deering bringing a flock of 3,000 and Joseph Curtis a flock of 1,000.³⁹

The Atlantic and Pacific Railroad was completed across northern Arizona in 1883, providing sheepmen with ready access to markets.⁴⁰ In the early decades before the railroad, sheep were grown mainly for their wool, and

getting wool to market meant sending it by ox team to the nearest eastern railway connection in Colorado.⁴¹ In 1892, the U. S. Department of agriculture reported that there were 10,000 sheep in Arizona in 1876 (not including Navajo sheep), 76,524 in 1880, 698,404 in 1890, and 8000,000 in 1892.⁴² The large increase in the number of sheep from 1880 to 1890 indicates the importance of the railroad to the developing Arizona sheep industry.

Northern Arizona sheepmen have historically migrated annually from the mountains of the Colorado Plateau, where they spend the summer in pine forests, to the Phoenix area, where they pass the winter grazing their sheep on the deserts or on irrigated alfalfa fields. In 1883, an observer related, "In Yavapai, Coconino, and Apache counties the sheep are pastured during the spring, summer, and autumn in the glens and foothills of the San Francisco, Mogollon, and Sierra Blanca ranges, and on their outlying spurs and parallel ridges. The short, sweet pine grass of the mountain country is eagerly sought after by the sheep and they grow fat very rapidly upon it. Late in the fall, the flocks are driven to the valleys and mesas of the warmer regions further south."⁴³ Sharlot Hall, in 1908, describes this migration. "The bands of sheep increased and overflowed the mountain ranges into the deserts of the South. and then came the special fitness of Arizona for a sheep country. A sheep can go a week or more without water if he has green feed, watering places were too few in the desert for cattle, but in winter the 'filaree' stood rank and tall, and grass started in mid-winter. The sheep wandered for miles through the cactus-covered foothills and broad valleys, came into spring rolling fat, moved slowly north for shearing and lambing, and by mid-summer were up on the mountain-grass among the pines, to stay till snow-fall."⁴⁴

This early migration was a casual thing, with sheepmen going wherever there was grass to be found, and staying as long as the grass held out. There was no real destination--the developing sheep driveways (the trails linking the summer and the winter pastures) were the destinations in themselves. This caused several problems. The early flocks ate all the grass, leaving sparse pickings for those that followed. And cattlemen, who followed the sheepmen into northern Arizona after the railroad arrived, were upset, as the sheep encroached on land the cattlemen coveted.

For years cattlemen insisted that "cattle and sheep cannot live together on the same range. The latter not only eat down the grass so closely that nothing is left for the cattle, but they also leave an odor [from a gland in the foot] which is very offensive to the others [cattle] for at least two seasons afterward."⁴⁵ It was eventually found that the odor did not keep the cattle from grazing or drinking after sheep, but the myth was slow in dispelling. There was much misunderstanding between the two sides, and sheepmen and cattlemen alike called for a solution.

Sheep driveways were legally established during the period from 1896 to 1918, so herders could get their flocks between summer and winter pastures without

grazing on cattle land. These trails were marked at intervals with signs and rock cairns and varied in width from a little less than a mile to two and a half miles. When the first national forests (then called reserves) were set aside in 1896 in northern Arizona, there was debate as to whether grazing should be permitted. It was finally decided by President Theodore Roosevelt that regulated grazing would be allowed. In 1905, the shepherds of the Arizona Wool Growers Association worked with government officials to establish the driveway routes still used today.⁴⁶ Another result of the founding of the national forests was the establishment of a system for granting grazing permits on federal land to ranchers. These permits, called "allotments,"⁴⁷ stipulate the number and kind of animals allowed on a specified range and the period for which grazing is permitted.

By 1918, an extensive network of sheep driveways in central Arizona linked summer ranges in the mountains of Prescott, Coconino, and Sitgreaves national forests with winter pastures in the valleys of the Salt, Gila, and Verde rivers. The main routes were Black Canyon and Heber-Reno driveways. Black Canyon Driveway and its branches ran between the Phoenix area and Prescott and Coconino national forests, and Heber-Reno ran from the Mesa-Tempe area to Sitgreaves National Forest and the Apache Reservation in the White Mountains. (The Apache granted grazing permits to Anglo sheep ranchers.) Heber-Reno Driveway crossed the Salt River on Blue Point Sheep (suspension) Bridge, a few miles west of Stewart Mountain Lake. The bridge was washed out in 1966 and never replaced. However, the Heber-Reno remains in use today and crosses the Salt River on a nearby county highway bridge.

Sheep driveways were also established in southeastern Arizona. They were, however, unrelated to the major driveway network located in central Arizona. No sheep bridges have been identified on the southern trails.

Blue Point Sheep Bridge was constructed and maintained by the Arizona Wool Growers Association, at a river crossing of a major driveway that passed through areas of Tonto National Forest reserved for cattle grazing. There were no allotments with a "sheep reference" in the area. Verde River Sheep Bridge, on the other hand, was located several miles from a main sheep driveway. It linked Tangle Creek Driveway with Chalk Mountain and with other nearby grazing allotments, rather than being a part of a major migration route. It also connected the Chalk Mountain pasture on the east side of the Verde River with the Chalk Mountain (ranch) headquarters on the west side. Moreover, unlike Blue Point Sheep Bridge, Verde River Sheep Bridge was considered to be part of an allotment and was "owned" by the Chalk Mountain Allotment permittee, who sold rights in the bridge to other nearby allotment holders.

In addition to the Verde River Sheep Bridge, two other permanent suspension-type bridges and two temporary bridges have been identified on the Verde River. A suspension bridge existed at Bartlett Dam in 1936, when the dam was under construction. This bridge may have been constructed by the dam contractor to

cross construction workers from one side of the river to the other. According to Frank Auza and Les Smith, the Bartlett Dam Bridge was moved to the Horseshoe Dam site⁴⁸ and was used there by sheep ranchers to reach allotments on the east side of the Verde River before Horseshoe Dam was constructed. Horseshoe Dam Site Bridge was demolished when the construction of Horseshoe Dam began in 1944. The HAER team was unable to document Auza's and Smith's belief that Bartlett Dam Bridge was moved to the Horseshoe dam site. The two bridges were visually dissimilar, but Horseshoe Dam Site Bridge could have utilized construction materials, such as cable, from Bartlett Dam Bridge. Horseshoe Dam contains a special walkway under the spillway which was designed to accommodate sheep crossing the river when water was being released over the dam. This walkway is no longer used by ranchers, because sheep raising is no longer conducted in the area. It is, however, used by hikers, hunters, and fishermen.

The two temporary bridges were used for only a few years before the Verde River Sheep Bridge was built in 1943. A pontoon-type bridge was located near the mouth of Red Creek, and a small suspension-type bridge was located a short distance downstream from the Verde River Sheep Bridge site. Both of the temporary bridges were erected each fall and then dismantled in the spring before the seasonal floods. After the Verde River Sheep Bridge was constructed, the temporary bridges were no longer needed.

The driveways also had numerous unbridged stream crossings. These crossings were in the high elevations where the water courses were shallow and narrow and could be forded by the flocks with little danger.

HISTORY OF SHEEP RANCHING IN BLOODY BASIN

At the end of the nineteenth century, some sheepmen began to pasture their flocks on the irrigated alfalfa fields around Phoenix in the winter. This provided additional income for the local farmers and allowed Arizona sheepmen to breed and to lam their ewes earlier than ranchers in other regions. Arizona ranchers had the first spring lambs available for market in the country and received top dollar for them, due to the large demand for Easter lamb. Before 1905 and after 1926, other sheepmen wintered their flocks in the low desert region of Bloody Basin, located in the Verde River valley. Sheep that wintered in Bloody Basin, where the Verde River Sheep Bridge is located, never saw an irrigated alfalfa field. Their winter forage was the grass and alfilaria of the desert, which sprouted with the winter rains. Alfilaria, a favorite of sheep, is still abundant in the vicinity of the bridge. Also called "filaree," this European plant was introduced to the southwest by the Spaniards. It became widespread in Arizona after its seeds were carried there on the wool of California sheep.⁴⁹ Activity in Bloody Basin quickened in the spring, when the grass and filaree on the desert was lush. Ewes were bred to give birth in February and March, so the lambs could begin feeding at the height of the desert spring growth in April.

Verde River Sheep Bridge
(Red Point Sheep Bridge)
HAER No. AZ-10
(Page 15)

In 1926, as a result of overgrazing by cattle, the terms of some allotments (permits) on Tonto National Forest were changed from year-long cattle preference to winter sheep preference.⁵⁰ Three of these allotments, Chalk Mountain, Red Hill, and Pete's Cabin, were located near the site of the future Verde River Sheep Bridge and entered prominently into the bridge's history.

Tangle Creek Driveway runs northeast from Cave Creek, along the west bank of the Verde River to Cordes. At Cordes, it connects with Black Canyon Driveway, which formerly headed south to Phoenix, and with Beaverhead Driveway, which still heads north to Flagstaff.⁵¹ Tangle Creek Driveway was developed after the Bloody Basin area began to be used by sheepmen in 1926.⁵²

The Verde River Sheep Bridge provided access to the Tangle Creek Driveway from nearby allotments on the east side of the river. Soon after Dr. R. O. Raymond, owner of the Flagstaff Sheep Company, acquired Chalk Mountain Allotment on the east side of the Verde river in 1942, he decided to build a bridge across the river. Frank Auza, Raymond's foreman, apparently was instrumental in causing the bridge to be constructed. Before the bridge was built, herders had difficulty getting their sheep safely across the river when the water level was high in the spring. They could swim the sheep across, losing some to the swift currents; use one of two nearby temporary bridges which had to be rebuilt each year; or cross on a suspension bridge at Horseshoe Dam site, 12 miles downstream.⁵³

Raymond was grazing 4,852 sheep on his Chalk Mountain Allotment in 1942. The need for a permanent bridge between the winter pastures on the east side of the river and the driveway on the west side leading to the summer ranges caused him to make application to the Forest Service for a permit to build a bridge⁵⁴ and to the War Production Board for construction material priority ratings. (During World War II, materials were scarce and difficult to obtain.) The application to the War Production Board gives further insight into the reasons for building the bridge. "Construction of this bridge will reduce losses for 6 sheep outfits in crossing Verde River during lambing time and will increase utilization of feed by allowing sheep to graze greater area than is now possible. Great losses have been experienced by these outfits during lambing time due to crossing the river from one side to the other during high water which usually occurs during lambing season."⁵⁵

Important events in a sheepman's year have always been the spring drive to the mountains for summer grazing, the breeding of ewes, the marketing of lambs (either in the spring or at the end of summer), and the fall drive to the winter grazing areas where lambing and shearing of ewes occurred. For companies that operated in the Bloody Basin area, the bridge became the hub around which the traditional winter activities took place.⁵⁶ It was used by ranchers on Chalk Mountain, Red Hill, and Pete's cabin allotments to cross sheep, burros, and supplies from one side of the river to the other. As many as eleven to twelve thousand sheep crossed the bridge at least four times per

year--in the fall when going to the winter pastures from summer grazing in the Flagstaff area, before and after shearing, and in the spring when returning to the summer ranges in the high country.⁵⁷ The bridge was also used on a day-to-day basis by the shepherders for crossing between the pastures on the east side and the ranch headquarters on the west side. Additionally, Red Hill and Chalk Mountain allotments included pastures on both sides of the river, and at times the herders would take sheep across the bridge to reach pastures on the opposite side of the river.⁵⁸

On the spring drive from Bloody Basin to the Flagstaff area, the shepherders would take the sheep across the bridge to Tangle Creek Driveway (see HAER Photograph No. AZ-10-29), then head northwest along the driveway to Cordes. At Cordes, they would pick up Beaverhead Driveway, following it all the way to Flagstaff. It went by way of Mayer, northeast through the Cherry Creek area, and on to the Verde River at the mouth of Oak Creek and continue on to Flagstaff by way of Rattlesnake Creek and Woods Canyon, over a route parallel with that of present-day Interstate 17. This drive, beginning around April 15 at the Verde River Sheep Bridge, took about 45 days.⁵⁹

For a drive, a flock was divided into bands of 1,600 to 2,000 sheep. The bands started out about two days apart, averaging two to five miles per day. Each band had a herder, a camp tender (who cooked meals, set up camp, and cared for the supplies), four or five pack burros (see HAER Photograph No. AZ-10-38), and, perhaps, several sheepdogs (not all herders used dogs).⁶⁰ The herders traveled on foot and reckoned if any sheep were missing by counting the black "marker" sheep and by listening to the bells placed on the sheep that tended to be leaders or stragglers. This seemingly chaotic system worked only because the herders knew their sheep well and because sheep generally do not wander off alone. The foreman rode between the bands, overseeing the drive and seeking sheep reported missing by the herders.⁶¹ Today, sheep are generally trucked between summer and winter pastures, although a few ranchers still conduct drives on a reduced scale, much in the manner of earlier days.

Bloody Basin ewes were bred on the summer allotments in the mountains, since infertility is high among sheep in hot climates.⁶² Rams were trucked from the winter range after the ewes had arrived at the summer pastures, so as to closely regulate the lambing time. The breeding season was carefully planned so lambing could coincide with the peak growth of spring grasses on the Bloody Basin allotments along the Verde River. Bloody Basin ewes were bred in September, several months later than the ewes that wintered in the Phoenix area alfalfa fields.

Bloody Basin lambs were sold to market from Flagstaff, so they could fatten on the rich grass of the high country. They were marketed at the end of June, with the "cut backs" (those not big or fat enough) sold in September. Sheep that grazed during the winter on the lush alfalfa fields on the Phoenix area, were marketed in March to April from Phoenix, much as they are today.⁶³

The fall drives back to the Bloody Basin allotments started the first of October, so that the flocks would arrive at Chalk Mountain about November 15. A flock returning in the fall was about half the size it was going to Flagstaff in the spring, as the lambs had been sold in Flagstaff.⁶⁴ The majority of the returning ewes were pregnant, and the sheepmen felt that the gradual acclimation to change in altitude and temperature was beneficial to them.⁶⁵

Lambing in Bloody Basin took place during February. This was the most active time of the year around the bridge, as more men were hired to care for the ewes and their lambs. Frank Auza, foreman of Chalk Mountain operations, hired two extra "top" herders who specialized in lambing ewes, in addition to extra herders, camp tenders, and trappers of predators. For the first month or two after the lambs were born, the ewes and lambs were formed into small bands of about five hundred, for protection against coyotes and other predators. Before and after the lambing season, most of the original bridge construction and subsequent annual maintenance work was accomplished, extra men being available for these activities when they were not needed to help with the lambs.⁶⁶

Shearing of the sheep took place in mid-March on the west side of the river, so the wool could be trucked to market (there were no roads on the east side at that time). Sheep kept on range on the east side of the river had to cross the river before and after shearing. This was readily accomplished after the bridge was built (see HAER Photograph No. AZ-10-39). An open shearing shed and fenced corrals were located southwest of the barn (on the west side of the river), where a concrete slab remains today. Sheep from the three nearby allotments were sheared there. The first year the bridge was in use, eleven thousand sheep were sheared and produced one hundred thousand pounds of wool.⁶⁷

Shearing a sheep with electric shears (powered by a portable generator) took three to five minutes (see HAER Photograph No. AZ-10-40). Each fleece weighed eight to ten pounds. The fleeces were packed into six by two-foot gunny sacks and taken by pickup truck to a semi-trailer truck waiting at LX Ranch, near the junction of Seven Springs and Cordes roads (see HAER Photograph No. AZ-10-41). After the ewes were sheared, their physical condition were checked (condition of teeth indicates age) to determine whether or not to keep the dry ewes another year or to sell them.⁶⁸ The sheep were then marked with a paint brand on their rumps to identify the flock they were in. Ear notches provided further permanent identification.⁶⁹

The suspension bridge was a vast improvement over the early methods of crossing the river. However, the first few animals of a flock had to be pushed to get them started across. There could be 142 sheep in single file on the bridge; at times there were twice that number.⁷⁰ In 1978 an observer related, "Basque herders walked the bridge, checking for loose boards. Then the

tinkling of the lead goat's bell grew louder, as it moved in their direction. In a few moments, the river of white animals was funneled across the bridge and spread like liquid fingers over the rugged terrain.; One of the herders stood at the base of the bridge and took a head count as the animals arrived on the west bank."⁷¹

CONCLUSION

In 1917, the number of sheep in Arizona peaked at 1,420,000. Although the sheep industry remained vigorous into the post-World War II era, the number of sheep was decreasing, and by 1987 only 283,000 sheep remained in Arizona.⁷²

The decline in the industry and the subsequent abandonment of Chalk Mountain Allotment and the Verde River Sheep Bridge by the Manterola family in 1984 are largely attributed to the shortage of young Basque shepherders, the importation of lamb and mutton from New Zealand and Australia, and the development of synthetic fibers that have replaced wool.

In 1984, the Chalk Mountain Allotment was awarded to a cattleman, and maintenance on the bridge was no longer required of the permittee by the Forest Service. On April 18, 1984, the bridge was barricaded and closure notices were posted.

Created almost entirely with hand tools, mule power, and a pickup truck by itinerant shepherders and a few skilled builders from available materials in a wilderness environment, the Verde River sheep Bridge demonstrates a remarkable level of resourcefulness. And the fact that the primitive structure has withstood the test of time for almost half a century further evidences the ingenuity of its builders. Although the bridge has outlived the need for it, it manifests the pioneer spirit of its builders and a way of ranching that has virtually disappeared.

The sheepmen who built and used the bridge and their families have special remembrances of it. Frank Auza recalled, "After we built it, Dr. Raymond used to come to see it. He gets in the middle of it, he look back and say, 'Oh, my God!'" Josie Gonzalo reminisced about her husband Tony's feelings about the bridge, "He never enjoyed a thing so much in his life as that cable bridge." Elsie Auza fondly remembered, "I think we all were impressed, it was like seeing the Golden Gate [Bridge], you know."

PERSONAGES INVOLVED WITH THE BRIDGE

Dr. Ralph Oliver (R. O.) Raymond, a physician and sheepman, was the principal patron of the Verde River Sheep Bridge. Raymond was born on September 5, 1876, graduated from medical school in St. Louis in 1899, and moved to Arizona for his health in 1904. He practiced medicine in Flagstaff and, before World War I, entered the sheep business. Raymond owned Flagstaff

Sheep Company and was a partner of Ramon Aso until 1944 in Howard Sheep Company. In 1942, he acquired Chalk Mountain Allotment and, in December of that year, made application to Tonto National Forest for a permit to build a bridge across the Verde River on his allotment. He paid most of the construction costs for the bridge. Raymond donated land for Flagstaff Community Hospital, Raymond Antelope and Buffalo Refuge, and the old Flagstaff Armory. Additionally, he gave Lindberg Springs to the state and founded the Flagstaff (now Raymond) Educational Foundation. Raymond died July 5, 1959.⁷³

Frank Auza was foreman of Flagstaff Sheep Company and Howard Sheep Company from 1933 to 1945. He oversaw the companies' Bloody Basin sheep operations in the winter months and moved with the sheep to the Flagstaff area pastures during the summer months. He and Dr. Raymond were the principal motivators behind the construction of the bridge. Auza work on the construction of the bridge, when he was not busy with the sheep, and organized and paid the road and bridge laborers (see HAER Photograph No. AZ-10-42). He kept the bridge in repair until 1979. Additionally, he was foreman for Manterola Sheep Company from 1945 to 1961. In 1959, he purchased his own sheep and had feeder lambs in Tacna, Arizona, in 1987. Auza is a Spanish Basque and arrived in the United States from Spain in 1915, when he was ten years old. He married Elsie Barreros of Flagstaff, who was born in Magdalena, New Mexico. They had eight children, seven of whom are in the sheep business or are married to sheep ranchers.⁷⁴

Ramon Aso was sole owner of Howard Sheep Company after 1944 and agent for Flagstaff Sheep Company while the bridge was being built. He signed the application to the War Production Board for the bridge materials. Aso was a Spanish Basque and arrived in the United States in 1903 from Spain.; He was a camp tender for Lockett Sheep Company in 1904 and, by the 1920s, had his own sheep. In 1927, he purchased Howard Sheep Company, in partnership with Dr. Raymond. Aso died on August 5, 1960.⁷⁵

Cyril O. Gilliam prepared drawings for the Verde River Sheep Bridge on January 7-9, 1943. His plans accompanied the Flagstaff Sheep Company's application to the War Production Board dated March 4, 1943. He was apparently employed by Dr. Raymond to design the bridge. Gilliam was an architect and engineer, working in Phoenix at the time he designed the bridge. Gilliam died on December 9, 1966.⁷⁶

George W. Smith of Cave Creek was the principal builder of the bridge. According to Frank Auza, he went with Auza to look at Blue Point Sheep Bridge over the Salt River, apparently before the plans were drawn by Gilliam. He was paid \$1,300 by Auza for work on the bridge. Smith was born in Arkansas in 1888 and moved to Arizona in 1918. He worked on bridges for the Apache Railroad in 1918 and made major repairs to the Horseshoe Dam Site Bridge in 1939.⁷⁷

Jose Antonio (Tony) Manterola bought Flagstaff Sheep Company in 1945 from Dr. Raymond. Manterola wintered sheep on Chalk Mountain Allotment in Bloody Basin and in Casa Grande. He used the Verde River Sheep Bridge to cross sheep, supplies, and men from the west side of the Verde, where he had shearing corrals, a barn, horse corrals, a three-room cabin, a caretaker's cabin, a wood shed, and a chicken coop, to the east side of the river, where the winter pastures were located. Manterola died November 23, 1956, but the Manterola family kept the Chalk Mountain Allotment and continued to maintain the bridge. The Manterolas used the bridge for sheep until 1979. After 1979, and until they relinquished the allotment in 1984, only burros were wintered on Chalk Mountain Allotment. Manterola was a Spanish Basque and arrived in the United States in 1907 from Spain.⁷⁸

Tony Gonzalo held Pete's Cabin Allotment and used the bridge until 1950, when the allotment was acquired by the Manterolas. Gonzalo arrived in California in 1919 from Spain and moved to Arizona in 1920. He was not a Basque. Gonzalo died on June 15, 1981.⁷⁹

W. B. Spurlock held Red Hill Allotment when the bridge was built and, according to Auza, used the bridge to cross his sheep to the east-side pastures.

Jose Echenique held Red Hill Allotment in 1945. He used the bridge for a few years until the allotment was acquired by John W. Hennessy. Echenique was a Spanish Basque and arrived in the United States in 1907 or 1908.⁸⁰

John W. Hennessy held Red Hill Allotment in 1949 and used the bridge, which is listed as a range improvement on grazing permits issued to him by the Tonto National Forest in 1949 and 1952. Hennessy was born in Flagstaff in 1902. He died February 21, 1958.⁸¹

M. O. Best held Red Hill Allotment after Hennessy. The Arizona Wool Growers Association "trail expenses" show Hennessy's last year on Tangle Creek Driveway to be 1953, and M. O. Best's first use of Tangle Creek Driveway to be in 1955. According to Levi Reed and Frank Auza, Best used the bridge for crossing sheep.⁸²

Levi Reed held Red Hill Allotment from 1956 or 1957 until 1963 or 1964. Reed stated that he "bought" the allotment from M. O. Best, in order to get the summer grazing allotment at the old Hennessy ranch at Marshall Lake, in the Flagstaff area north of Lake Mary. His "purchase" of Red Hill Allotment included 4,000 head of sheep, which were grazing on the west side of the river. He took these sheep directly to Flagstaff, without crossing the bridge. Nevertheless, he was part owner of the structure. Levi stated he "sold" Red Hill Allotment (and presumably the bridge) to Glendale cattleman, Emil M. Rovey in 1963 or 1964.⁸³

Emil M. Rovey held Red Hill Allotment from about 1963 to 1977. He ran cattle on the allotment and used the bridge to cross the river with pack animals.⁸⁴

SHEEP RAISING COMPANIES ASSOCIATED WITH THE BRIDGE

Flagstaff Sheep Company was owned by Dr. R. O. Raymond. It built the bridge in 1943 to access its winter pastures on the east side of the Verde River. In 1945, Raymond sold the bridge to Jose Manterola.

Manterola Sheep Company was established by Jose Manterola's family after his death in 1956. The company continued to use the Chalk Mountain winter pastures and the bridge for sheep until 1979.

Mud Lake Livestock Company was owned by Tony Gonzalo. (Tony's brother, Rogue, was a partner in the company for a few years.) Gonzalo wintered sheep on Pete's Cabin Allotment on the east side of the Verde River near the bridge and used the bridge for going to and from Tangle Creek Driveway and the shearing shed on the west side of the river until 1950, when Jose Manterola bought the allotment.

Howard Sheep Company was owned by Ramon Aso and Dr. Raymond until February 1944, when Dr. Raymond sold his interest in the company to Aso. The company's grazing allotment was on the west side of the Verde River between Bartlett Dam and the Horseshoe dam site and, therefore, the company had no need to use the bridge, even though it operated in the area.

GRAZING ALLOTMENTS ASSOCIATED WITH THE BRIDGE

Chalk Mountain Allotment was located on the east side of the Verde River between the sheep bridge and Horseshoe Dam. This allotment was held by Dr. Raymond at the time the bridge was built. From 1945 to 1984, it was held by the Manterola family. The allotment included a small parcel on the west side of the river, where the shearing shed, barn, and other buildings were located.

Red Hill Allotment was located on the east and west sides of the Verde River, immediately north of Chalk Mountain Allotment. Red Hill Allotment had six different permittees from 1943 to 1977. They were W. B. Spurlock, Jose Echenique, John W. Hennessy, M. O. Best, Levi Reed, and Emil M. Rovey. Reed did not use the bridge, and Rovey, a cattleman, used it for pack animals only.

Pete's Cabin Allotment was located on the east side of the Verde River, immediately north of Red Hill Allotment. It was held by Tony and Roque Gonzalo of Mud Lake Livestock Company until 1950, when it was acquired by Jose and Marianne Manterola. Tony Gonzalo used the sheep bridge to take his sheep to the west side of the river to be sheared and to get them to summer pastures in the Mormon Lake area.

CHRONOLOGY OF IMPORTANT EVENTS RELATING TO THE BRIDGE

December 8, 1942. Dr. R. O. Raymond submits application to Tonto National Forest to construct a sheet bridge across the Verde River. (This application has not been found, but its existence is inferred by the following letter.)

December 28, 1942. Tonto National Forest acknowledges receipt of Raymond's December 8, 1942, application to build "a suspension bridge to move sheep back and forth across the Verde River." See Field Record Item 1.

January 7-9, 1943. C. O. Gilliam prepares drawings for a suspension bridge across the Verde River at the location of the subject bridge.

January 11, 1943. Forest Service agrees to furnish road equipment and operator to assist in the construction of a wagon road to the bridge site. Raymond agrees to pay for the gas and oil. Effective period of agreement is January 15, 1943 to February 1, 1943. See Field Record Item 2.

January 12, 1943. Forest Service issues Special Use Permit to Dr. Raymond for right-of-way for two miles of wagon trail to bridge site. See Field Record Item 3.

January 22, 1943. Frank Auza pays Jose M. Perez \$45 for 15 days work on the road, starting January 7. See Field Record Item 4.

January 28, 1943. Auza pays Margarito Romero \$78 for 26 days road work, starting January 1. See Field Record Item 4.

January 30, 1943. Auza pays Juan Yruega \$35 for 12 days road work in January. See Field Record Item 4.

January 31, 1943. Auza pays Ramon Rodriguez \$114 for 38 days road work, starting December 24. See Field Record Item 4.

February 22, 1943. Auza pays Agustin DeArmond \$82.50 for bridge labor, 13 days in January and 12 days in February. See Field Record Item 4.

February 27, 1943. Auza pays George W. Smith \$100. See Field Record Item 4.

March 4, 1943. Application made by Flagstaff Sheep company, Ramon Aso, agent, to War Production Board for priority ratings for construction materials required for the sheep bridge. Application states that bridge is new construction and that used cables, eyebolts, and other materials have been purchased from an abandoned mine. Blueprints accompanies application. Date of application corresponds with date of Gilliam plans. See Field Record Item 5.

Verde River Sheep Bridge
(Red Point Sheep Bridge)
HAER No. AZ-10
(Page 23)

March 10, 1943. War Production Board assigns priority ratings for bridge materials. See Field Record Item 5.

March 18, 1943. War Production Board provides serial number and preference rating order for construction of bridge across Verde River in Section 36, T 9N R 6E. See Field Record Item 6.

March 23, 1943. Department of Agriculture transmits "approved papers for the construction of your suspension bridge" to Aso. See Field Record Item 7.

March 27, 1943. Auza pays George W. Smith \$50. See Field Record Item 4.

April 9, 1943. Auza pays George W. Smith \$200. (Other amounts paid Smith, with no dates, totaled \$950.) See Field Record Item 4.

May 5, 1943. Auza pays Simon Torrez \$201 for road and bridge work, 4 days in January, 28 days in February, 31 days in March, and 4 days in May. See Field Record Item 4.

May 5, 1943. Auza pays Jesus Cedillo \$201 for road and bridge work in January, February, March, and May. See Field Record Item 4.

May 11, 1943. In a letter to George W. Smith, Raymond reports the bridge is unfinished and urges Smith to complete the work. See Field Record Item 8.

August 17, 1943. In a letter to Aso, the Secretary of the Wool Growers Association states that 75 feet of the side of the bridge has blown off and that George W. Smith wants to know if he should do anything about it. See Field Record Item 9.

February 14, 1944. Raymond has disposed of his interest in Howard Sheep Company. Flagstaff Sheep Company's preference now is for 4,852 sheep for five months on Tonto National Forest. See Field Record Item 10.

March 24, 1944. Auza pays Julian Romero \$144.33 for 51 days work on the bridge and \$28.30 for 10 days work on road repair. See Field Record Item 4.

March 27, 1944. Auza pays Joe Landeta \$625 for 125 days of bridge labor (10 days in November 1943, 31 days in December 1943, 31 days in January 1944, 29 days in February 1944, and 24 days in March 1944) at \$5 per day. See Field Record Item 4.

June 25, 1944. Auza pays Guillermo "Willie" Gonzalez \$32 extra for work on the bridge sometime during the period of January to June 1944. See Field Record Item 4.

June 29, 1944. Auza pays Trinidad (JTM) Garcia \$28.30 for road repair work done sometime from November to June 1944. See Field Record Item 4.

January 20, 1945. In a letter to Raymond, Auza writes, "Have not been able to get Jose [Echenique] and Tony [Gonzalo] together yet to settle up about the bridge but think we can get together pretty soon." See Field Record Item 11.

September 1, 1945. Jose Antonio Manterola pays Raymond \$7,200 for "Puente Del Rio Berde [sic]." Manterola receives from Antonio Gonzalo \$1,416 and from Jose Echenique \$2,490 for use of the bridge. See Field Record Item 12.

November 22, 1945. Manterola has purchased Flagstaff Sheep Company from Raymond. See Field Record Item 13.

March 12, 1947. Special Use Permit is issued to Jose and Marianne Manterola, Jose Echenique, and Mud Lake Livestock Company (Tony Gonzalo) to use one acre of national forest land in Section 36, T 9N R 6E, for maintaining a sheep bridge across the Verde River. See Field Record Item 14.

September 6, 1949. Grazing permit is issued to John W. Hennessy for Red Hill and Brooklyn allotments for 6,250 sheep for five months from November 15 to April 15. Permit lists the Verde River Sheep Bridge as a range improvement privately owned with Jose Manterola and Mud Lake Livestock Company. See Field Record Item 15.

October 23, 1950. Grazing permit is issued to Jose and Marianne Manterola for 6,367 sheep for five-month winter season, from November 15 to April 15. Permit also transfers Pete's Cabin Allotment to them and lists the bridge as privately owned with John Hennessy. See Field Record Item 16.

July 11, 1952. Grazing permit is issued to John W. Hennessy for Red Hill Allotment for 4,200 sheep for five months from November 15 to April 15. Permit lists the Verde River Sheep Bridge as a range improvement privately owned with Manterola. See Field Record Item 17.

1958. Average number of sheep which crossed the Verde River Sheep Bridge was 6,500. The number that crossed in 1957 was 12,500. See Field Record Item 18.

January 30, 1974. General instructions from Forest Service to Manterolas for the 1974 grazing season states maintenance is needed on the buildings and corrals at the sheep bridge. The main cabin had been burned down by vandals in summer of 1973.

September 29, 1975. In a letter to Manterola Sheep Company, Tonto National Forest requests company to review its files for information concerning the legal ownership of the sheep bridge. Noted is Special Warranty Deed dated January 1, 1968, which gave Manterola Sheep Company "the right to use the

Verde River Sheep Bridge
(Red Point Sheep Bridge)
HAER No. AZ-10
(Page 25)

bridge and shearing corral as set forth and contained in deed recorded on February 2, 1944, in Book 182 of Deeds, page 175-176, of the records of Yavapai County." Tonto National Forest further states that the last deed gave "the right to use in connection with the Howard Sheep Company the present bridge across the Verde River near the JS Ranch without cost" The letter further states that "any structure built on National Forest land is normally the property of the United States Government, even though the permittee pays for it in full, and maintains it." See Field Record Item 20.

November 21, 1978. The Verde River Sheep Bridge is entered on National Register of Historic Places.

March 16, 1979. Tonto National Forest requests funds to share the cost of maintenance and repair of the sheep bridge with the grazing permittee. Bridge had been damaged by a flood. See Field Record Item 21.

March 22, 1979. In a letter to the District Ranger at Cave Creek, the Forest Supervisor states that the grazing permittee, Manterola Sheep Company, is responsible for general maintenance of the bridge and that the Forest Service will share the cost of repairing flood damage. See Field Record Item 22.

April 18, 1984. In a letter dated October 26, 1984, supervisor of Tonto National Forest states the bridge was closed to the public on April 18 by Special Order #12-53.

June 8, 1984. A new grazing permit for Chalk Mountain Allotment is issued to a cattleman named Johnson, and the bridge is deleted from the new permittee's maintenance agreement. See Field Record Item 23.

June 13, 1984. Richard L. Kasel, Structural Engineer, finds the bridge to be structurally unsafe and recommends that it be removed and replaced with another suspension bridge.⁸⁵

January 12, 1985. U. S. Senator Dennis DeConcini initiates a request for funding the construction of a replica of the Verde River Sheep Bridge. See Field Record Item 24.

December 19, 1985. Bill #HJREF 465 is signed by President Ronald Reagan. This appropriation bill includes \$400,000 for replacement of the Verde River Sheep Bridge.

August 6, 1986. Tonto National Forest receives letter of intent from Department of the Army, Corps of Engineers, to construct new Verde River Sheep Bridge. See Field Record Item 25.

NOTES

1. *Federal Register, National Register of Historic Places, Annual Listing of Historic Properties, Tuesday, February 6, 1979, Book 2.*
2. Richard L. Kasel, Bridge and Tramway Engineer, Region Two, Lakewood, Colorado (Forest Service, United States Department of Agriculture), inspected the bridge on April 26, 1984. His unpublished report (hereinafter cited as Kasel report) was transmitted by his supervisor, Donald D. Loff, Director of Engineering, to the Forest Supervisor, Tonto National Forest, on June 13, 1984. The document is on file in the headquarters of Tonto National Forest, Phoenix, Arizona. A copy of the document is contained in the HAER field notes.
3. Will C. Barnes, *Arizona Place Names*, (Tucson: University of Arizona, 1979), p. 335.
4. Frank Auza was interviewed at the bridge on February 22, 1987, by the HAER team (hereinafter cited as Auza interview February 22, 1987). A copy of the interview transcript is contained in the HAER field notes. At the time of the interview, Auza was 82 years old, but his memory of events was very good. However, his recollection of dates was sometimes in error by a year or two. Auza continually recalled names and events which, when investigated, were proved to be accurate.
5. Auza interview February 22, 1987.
6. Auza interview February 22, 1987.
7. Letter dated August 17, 1943, to Ramon Aso from Arizona Wool Growers Association, located in Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 40. Appendix Document 9.
8. Telephone interview with Joe Auza on March 4, 1987 (hereinafter cited as Joe Auza interview). Joe Auza is the son of Frank Auza. He was foreman of the Manterola Sheep Company in the 1960s and early 1970s. He married Carmen Manterola, daughter of José "Tony" Manterola, and remains in the sheep business in Casa Grande. Also see telephone interview with Joe Manterola on March 2, 1987 (hereinafter cited as Joe Manterola interview March 2, 1987). Joe Manterola is the son of José "Tony" Manterola. He manages the family sheep company (Manterola Sheep Company), which pastures its sheep in Casa Grande in the winter and in Flagstaff in the summer. In the spring, the Manterola sheep are trucked to Cordes and then driven along Beaverhead Driveway to the Flagstaff area. In the fall, they are returned to Casa Grande by the same

way. Both interviews were by Carol Ayraud Newberry. Copies of the interview transcripts are contained in the HAER field notes.

9. Frank Auza was interviewed on January 29, 1987, by Carol Ayraud Newberry (hereinafter cited as Auza interview January 29, 1987). A copy of the interview transcript is contained in the HAER field notes.

10. Memorandum of Verbal Agreement, located in Frank Auza's personal files. Appendix Document 2.

11. Frank Auza's account book (hereinafter cited as Auza's account book), located in Frank Auza's personal files. Appendix Document 4.

12. Letter to Dr. Raymond from Tonto National Forest dated December 28, 1942 (hereinafter cited as Raymond letter December 28, 1942), located in Frank Auza's personal files. Appendix Document 1.

13. War Production Board Application, 1943, located in Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 40 (hereinafter cited as War Production Board Application, 1943). Appendix Document 5.

14. Frank Auza was interviewed on March 25, 1987, by Carol Ayraud Newberry (hereinafter cited as Auza interview March 25, 1987). A copy of the interview transcript is contained in the HAER field notes.

15. Henry E. Cordes was interviewed by telephone on March 31, 1987, by Carol Ayraud Newberry (hereinafter cited as Cordes interview March 31, 1987). Cordes is the grandson of the founder of Cordes, Arizona. The community is located on a sheep driveway, and Henry befriended many sheepmen. A copy of the interview transcript is contained in the HAER field notes.

16. Auza interview February 22, 1987.

17. Auza interview January 29, 1987.

18. Smith interview January 27, 1987.

19. Auza's account book.

20. Auza interview January 29, 1987.

21. Auza interviews February 22, and March 25, 1987.

22. Auza interviews January 29, and March 25, 1987.
23. Frank Auza was interviewed on March 31, 1987, by Carol Ayraud Newberry (hereinafter cited Auza interview March 31, 1987). A copy of the interview transcript is contained in the HAER field notes.
24. Kasel report, p. 10.
25. Auza interview January 29, 1987.
26. Raymond letter December 28, 1942.
27. War Production Board Application, 1943.
28. Auza interview March 25, 1987.
29. Cordes interview March 31, 1987.
30. Auza interview January 29, 1987.
31. Herbert Eugene Bolton, *Coronado, Knight of Pueblos and Plains* (New York: Whittlesey House; and Albuquerque: University of New Mexico Press, 1949), p. 56.
32. Bert Haskett, "History of the Sheep Industry in Arizona" (hereinafter cited as Haskett, "History of the Sheep Industry"), *Arizona Historical Review* 7 (July 1936), pp. 4-10.
33. Jay J. Wagoner, *Early Arizona: Prehistory to Civil War*, (Tucson: University of Arizona Press, 1975), pp. 432-434. Also see Edward Norris Wentworth, *Arizona's Sheep Trails* (hereinafter cited as Wentworth, *America's Sheep Trails*), (Ames: Iowa State College Press, 1948), p. 242.
34. Haskett, "History of the Sheep Industry."
35. Wentworth, *America's Sheep Trails*, p. 242.
36. Haskett, "History of the Sheep," pp. 20-22.
37. Sharlot Hall, "Old Range Days and New in Arizona" (hereinafter cited as Hall, "Old Range Days"), *Out West* 28 (March 1908), p. 199.
38. Haskett, "History of the Sheep," p. 21.
39. Wentworth, *America's Sheep Trails*, pp. 246-248.
40. Wentworth, *America's Sheep Trails*, p. 251.

41. Haskett, "History of the Sheep," p. 23.
42. U. S. Department of Agriculture, Bureau of Animal Industry, *Special Report on the History and Present Condition of the Sheep Industry of the United States* (hereinafter cited USDA, *Special Report*), Part of the U. S. Congress, House, Misc. Doc. #105, Washington, O. C.: Government Printing Office, 1892, pp. 935 & 945.
43. USDA, *Special Report*, p. 940.
44. Hall, "Old Range Days," pp. 199-200.
45. National Live Stock Association, *Prose and Poetry of the Live Stock Industry*, (New York: Antiquarian Press), 1959, pp. 651 & 655.
46. Haskett, "History of the Sheep," pp. 40-43. Also see E. C. LaRue, *Map of Arizona Stock Driveways*, 1918 (hereinafter cited as LaRue map), located in State of Arizona Department of Library, Archives and Public Records. A copy of the document is contained in the HAER field notes.
47. An "allotment" is a parcel of Federal land upon which livestock grazing is authorized through the issuance of a "grazing permit." It is usually associated with a parcel of patented (privately-owned) land. Sheep ranchers formerly had one allotment in northern Arizona for summer use and another in central Arizona for winter use. Today most ranchers winter their flocks on patented alfalfa fields in the Phoenix area. A grazing permit (Field Record Item 16) establishes the boundaries of an allotment and identifies the kind of livestock ("preference") that can be grazed and the period grazing is allowed. The terms of the permit are designed to protect the ranges from over-grazing.
48. B. L. (Les) Smith of Lakeside, Arizona, and Louise Smith Bruce of Phoenix, Arizona, son and daughter of George W. Smith were interviewed in Mrs. Bruce's home by Carol Ayraud Newberry on January 27, 1987 (hereinafter cited as Smith interview January 27, 1987). A copy of the interview transcript is contained in the HAER field notes.
49. USDA, *Special Report*, pp. 938-939. Also see Natt N. Dodge, *Flowers of the Southwest Deserts*, (Tucson: Southwest Parks and Monuments Association, 1985), p. 112.
50. Letter to Ramon Aso from Tonto National Forest, dated July 29, 1943, from Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series

2, Box 2, Folder 2 (hereinafter cited as Aso letter). A copy of the document is contained in the HAER field notes.

51. Tonto National Forest Grazing Map, 1960, on file in headquarters of Tonto National Forest, Phoenix, Arizona. Also see letter to Frances Aleman, President of the Arizona Wool Growers Women's Auxiliary from Harry B. Embach, dated March 4, 1970, located in Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 6, Box 3, Folder 2. A copy of these documents are contained in the HAER field notes. In 1987, Maricopa County Parks and Recreation Department and the Bureau of Land Management created an equestrian and hiking trail on a narrow strip of the abandoned Black Canyon Driveway.

52. Auza interview January 29, 1987.

53. Auza interviews January 29, February 22, and March 31, 1987. Also see Raymond letter December 28, 1942.

54. Raymond letter December 28, 1942, and Auza interview March 25, 1987. Also see the "History of Chalk Mountain Allotment" located in Tonto National Forest files and Auza interview March 25, 1987. A copy of the allotment document is contained in the HAER field notes.

55. War Production Board Application, 1943.

56. Frank Auza was interviewed on March 24, 1987, by Carol Ayraud Newberry (hereinafter cited Auza interview March 24, 1987). A copy of the interview transcript is contained in the HAER field notes.

57. Interview with Marianne and Sylvia Manterola on February 18, 1987, by Carol Ayraud Newberry (hereinafter cited Manterola interview February 18, 1987). A copy of the interview transcript is contained in the HAER field notes.

58. Tonto National Forest Grazing Map, 1960. Also see Manterola interview February 18, 1987 and Auza interviews January 29 and March 31, 1987.

59. LaRue map. Also see Auza interview March 31, 1987.

60. Carol Osman Brown, "Old-Time Sheep Drive" (hereinafter cited as Brown, "Old-Time Sheep Drive"), *Phoenix Magazine* 13 (November 1978), p. 79.

61. Interview with Dewey Perkins on January 18, 1987, by Carol Ayraud Newberry. Also see interview with Frank Auza on April 23, 1987, by Carol Ayraud Newberry. Copies of the interview transcripts are contained in the HAER field notes.
62. Brown, "Old-Time Sheep Drive," p. 77.
63. Auza interview March 31, 1987.
64. Auza interview March 31, 1987. Also see Manterola interview February 18, 1987.
65. Sue Peterson, "Shepherd of the Open Range," *Arizona Highways* 54 (August 1978).
66. Auza interview March 31, 1987.
67. Auza interview January 29, 1987.
68. Interview with Joe Manterola during sheep shearing on January 24, 1987, by Carol Ayraud Newberry. A copy of the interview transcript is contained in the HAER field notes.
69. Joe Manterola interview March 2, 1987.
70. Auza interview January 29, 1987.
71. Brown, "Old-Time Sheep Drive," p. 79.
72. University of Arizona, College of Agriculture, Department of Agricultural Economics, Arizona Crop and Livestock Reporting; and U. S. Department of Agriculture, Statistical Reporting Service, Field Operations Division, *Arizona Agricultural Statistics, 1967 to 1965*, (Tucson: University of Arizona, February 1966).
73. *Arizona Republic*, July 7, 1959; *Flagstaff Daily Sun*, obituary; and "Raymond Park Dedication Monday" article. Copies of the documents are contained in the HAER field notes.
74. Auza interviews January 29, and March 24, 1987. Also see Manterola interview February 18, 1987.
75. Telephone interview with Tom Allison on February 17, 1987, by Carol Ayraud Newberry. Tom, the son of Ramon Aso, changed his name from Aso to Allison. Also see *Phoenix Gazette*, August 8, 1960. A copy of the interview transcript and the *Phoenix Gazette* article are contained in the HAER field notes.
76. *Arizona Republic*, December 11, 1966. A copy of the document is contained in the HAER field notes.

77. Smith interview January 27, 1987. Also see *Phoenix Gazette*, April 25, 1951. A copy of the *Phoenix Gazette* article is contained in the HAER field notes.

78. Sylvia Manterola, "History of: José Antonio Manterola and Family -- Arizona Sheep," unpublished, located in Manterola family files. A copy of the document is contained in the HAER field notes.

79. Interview with Josie Gonzalo on February 24, 1987, and an interview with Lilly (Gonzalo) Hamilton on April 21, 1987, both interviews by Carol Ayraud Newberry. Josie Gonzalo was married to Tony Gonzalo and Lilly is their daughter. Also see *Arizona Republic*, June 17, 1981. Copies of the interview transcripts are contained in the HAER field notes.

80. Telephone interview with Frank Echenique on April 6, 1987, by Carol Ayraud Newberry. A copy of the interview transcript is contained in the HAER field notes. Frank's father and José Echenique were first cousins and both were in the sheep business in Arizona. José had no children.

81. *Arizona Republic*, February 23, 1958. A copy of the *Arizona Republic* article is contained in the HAER field notes.

82. Arizona Wool Growers Association "trail expenses" from 1953 and 1955, located in Arizona Wool Producers Association's files, Phoenix, Arizona. A copy of the document is contained in the HAER field notes.

83. Interview with Levi Reed on March 4, 1987, by Carol Ayraud Newberry. A copy of the interview transcript is contained in the HAER field notes.

84. Interview with Emil M. Rovey on March 4, 1987, by Carol Ayraud Newberry. A copy of the interview transcript is contained in the HAER field notes.

85. Kasei report.

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VERDE RIVER SHEEP BRIDGE
(Red Point Sheep Bridge)
HAER No. AZ-10
Page 36

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FIELD RECORDS
TABLE OF CONTENTS

The following documents and typescripts of interviews are referenced in the text and the notes. Copies of these items are located in the Field Records.

1. Letter to Dr. Raymond from Forest Supervisor, Tonto National Forest, dated December 28, 1942. Frank Auza's personal files, Tacna, Arizona.
2. Memorandum of Verbal Agreement between Dr. Raymond and Assistant Forest Supervisor, Tonto National Forest, dated January 11, 1943. Frank Auza's personal files, Tacna, Arizona.
3. Special Use Permit granted to Dr. Raymond from Acting Forest Supervisor, Tonto National Forest, dated January 12, 1943. Frank Auza's personal files, Tacna, Arizona.
4. Frank Auza's account book, selected pages. Frank Auza's personal files, Tacna, Arizona.
5. War Production Board Application for priority assistance, dated March 4, 1943. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 40.
6. War Production Board Preference Rating, dated March 18, 1943. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 40.
7. Letter to Ramon Aso from U. S. Department of Agriculture approving construction of bridge, dated March 23, 1943. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 40.
8. Letter to George W. Smith from Dr. Raymond, dated May 11, 1943. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 18.
9. Letter to Ramon Aso from J. W. L., dated August 17, 1943. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 1, Folder 40.

10. Tonto National Forest memorandum from Acting Forest Supervisor to Regional Forester concerning Lockett Sheep Company, Phoenix, Arizona, dated February 14, 1944. Headquarters of Tonto National Forest, Phoenix, Arizona.
11. Letter to Dr. Raymond from Frank Auza concerning José Echenique, dated January 20, 1945. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 18.
12. Excerpt from José Manterola's account book, dated September 1, 1945. Manterola family files, Casa Grande, Arizona.
13. Letter to Byron F. Hunter concerning Manterola insurance policy, dated October 22, 1945. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 3, Folder 17.
14. Special Use Permit granted to José and Marianne Manterola, dated March 12, 1947. Manterola family files.
15. Grazing Permit issued to John F. Hennessy, dated September 6, 1949. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 37.
16. Letter to José Manterola from Forest Supervisor, Tonto National Forest, dated October 23, 1950, and Grazing permit issued to José and Marianne Manterola, dated October 23, 1950, for Chalk Mountain Allotment. Manterola family files.
17. Grazing Permit issued to John F. Hennessy, dated July 11, 1952. Arizona Wool Growers Association Collection, Northern Arizona University, Special Collections Library, Series 1, Box 2, Folder 37.
18. Allotment use sheet of 1958. Headquarters of Tonto National Forest, Phoenix, Arizona.
19. Letter to Manterola Sheep Company and General Instructions for Chalk Mountain Allotment, dated January 30, 1974. Manterola family files.
20. Letter to Manterola Sheep Company from Cave Creek District Ranger, dated September 29, 1975. Headquarters of Tonto National Forest, Phoenix, Arizona.
21. Letter to Supervisor of Tonto National Forest from Cave Creek District Ranger, dated March 16, 1979. Headquarters of Tonto National Forest, Phoenix, Arizona.

22. Letter to Cave Creek District Ranger from Supervisor of Tonto National Forest, dated March 22, 1979. Headquarters of Tonto National Forest, Phoenix, Arizona.
23. Letter to R-3 Regional Forester from Supervisor of Tonto National Forest, dated October 26, 1984. Headquarters of Tonto National Forest, Phoenix, Arizona.
24. Letter to John R. Mayfield from U. S. Senator Dennis DeConcini, dated August 12, 1985, and Senate Conference notes on the Forest Service. John R. Mayfield's personal files, Phoenix, Arizona.
25. Letter to James L. Kimball and Rodney Mendenhall, both of Tonto National Forest, from Lieutenant Colonel Michael K. Collmeyer, Corps of Engineers, U.S.A., dated August 6, 1986. Headquarters of Tonto National Forest, Phoenix, Arizona.
26. Kasel, Richard L. Report of inspection of the Verde River Sheep Bridge. April 26, 1984.
27. Auza, Frank. Interviews by Carol Ayraud Newberry. January 29, February 22, and March 24, 1987.
28. Auza, Frank. Telephone interviews by Carol Ayraud Newberry. March 25, March 31, and April 23, 1987.
29. Auza, Joe. Telephone interview by Carol Ayraud Newberry. March 4, 1987.
30. Manterola, Joe. Interview by Carol Ayraud Newberry. January 24, 1987. Telephone interviews by Carol Ayraud Newberry. January 22, February 9, and March 2, 1987.
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32. Cordes, Henry E. Telephone interview by Carol Ayraud Newberry. March 31, 1987.
33. LaRue, E. C. Map of Arizona Stock Driveways. 1918.
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35. Embach, Harry B. Letter to Frances Aleman. March 4, 1970.
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37. Manterola, Marianne, and Sylvia. Interview by Carol Ayraud Newberry. February 18, 1987. Telephone interviews with Sylvia Manterola by Carol Ayraud Newberry. January 6, February 8, and March 2, 1987.
38. Perkins, Dewey. Interview by Carol Ayraud Newberry. January 18, 1987.
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46. *Arizona Republic*. February 23, 1958.
47. Arizona Wool Growers Association. Trail expenses from 1953 and 1955.
48. Reed, Levi H., and Emily M. Rovey. Telephone interviews by Carol Ayraud Newberry. March 4, 1987.
49. National Register of Historic Places. Nomination for the Verde River Sheep Bridge. July 22, 1975.
50. Miscellaneous interviews by Carol Ayraud Newberry. Hal Ashcroft, Tonto National Forest. John Mayfield. Henry Giclas. John Aleman. Kathy Aleman. Bob Veazey. Janice Willis. C. Paul Overstreet. Gunner Thude family.

VERDE RIVER SHEEP BRIDGE
(Red Point Sheep Bridge)
HAER No. AZ-10
Page 41

51. Drawings For "Suspension bridge to be built over the Verde River in the Tonto National Forest" by C. O. Gilliam, 3 sheets dated January 1943.
52. Two views of Bartlett Dam under construction; one view shows Bartlett Dam Bridge. Salt River Project archives, Phoenix, Arizona.