Environmental Assessment for Rehabilitation of Acequia del Barranco Rio Arriba County, New Mexico

FINAL

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ACRONYMS AND ABBREVIATIONS

BMP	Best Management Practice
CFR	Code of Federal Regulations
Corps	United States Army Corps of Engineers, Albuquerque District
CWA	Clean Water Act
dB	decibel
° F	degrees Fahrenheit
EA	Environmental Assessment
EO	Executive Order
ESA	Endangered Species Act
ITA	Indian Trust Asset
Leq	equivalent sound level
NEPA	National Environmental Policy Act
NMGF	New Mexico Department of Game and Fish
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OSE	Office of the State Engineer
P.L.	Public Law
U.S.	United States
U.S.C.	United States Code
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
WRDA	Water Resources Development Act

FINDING OF NO SIGNIFICANT IMPACT

1.0 NAME OF ACTION

Environmental Assessment for the Rehabilitation of Acequia del Barranco.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The Water Resources Development Act of 1986 (Public Law [P.L.] 99-662) authorized the restoration and rehabilitation of irrigation ditch systems and acequias in New Mexico. Due to the importance of acequias to the preservation of cultural and historic values in the state, the U.S. Army Corps of Engineers, Albuquerque District (Corps), is providing assistance to the Acequia del Barranco to improve the water control structures that manage the flows for the system. An Environmental Assessment (EA), required to evaluate the impacts of modifying the acequia, will be prepared for the following project.

2.1 Proposed Action

The Acequia del Barranco is located approximately 5 miles downstream from Chama, New Mexico, along the Rio Chama. Currently, irrigation water is diverted into the conveyance system by an uncontrolled push-up rock dike that frequently washes out during high water flows. Debris often enters the conveyance system and settles at the heading structure, reducing the pipe capacity and flows into the acequia system. The existing water control structure, consisting of a 30-inch diameter pipe and a short concrete outlet headwall, is located downstream from the heading where the Sawmill Arroyo enters the ditch system. Uncontrolled flows from the Sawmill Arroyo often overtop the water control structure, causing erosion that threatens the structure.

Under the Proposed Action, the intake structure or heading, approximately 60 feet downstream from the diversion dam, would be replaced by a new gabion and pipe structure with a debris deflector and a trash rack. At a second construction site near Sawmill Arroyo, two structures would be installed or modified affecting approximately 50 feet of the acequia channel, including a new Y-shaped irrigation control structure as well as a steel plate and gabion structure to protect the channel bank and direct flows into the existing concrete structure with a pipe that would be rehabilitated.

The use of federal funds to share the cost of the improvements would constitute a federal action that requires an EA.

2.2 No Action Alternative

Under the No Action alternative, rehabilitation of the existing heading and water control structures would not occur, and maintenance problems caused by flow blockage and erosion would continue. Consequently, efficiency of delivery of irrigation water would continue to decline.

3.0 ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

As required by the National Environmental Policy Act, this EA evaluates the potential environmental impacts associated with the proposed rehabilitation of the Acequia del Barranco. The findings for each resource area are described below.

Geology, Soils. Geology and soils would not be significantly affected under the Proposed Action alternative. Temporary surface disturbance would result from earthmoving to install the gabions and other related construction, but soil erosion would be minimized through the use of Best Management Practices (BMP) during construction. Native vegetation would be seeded in some areas after construction is completed. No Prime or Unique Farmlands would be affected. No significant impacts to soils would result from implementation of the Proposed Action.

Water Resources. There would be no negative impacts from implementation of the Proposed Action. Construction of the diversion and water control structures would be conducted during non-irrigation

periods with low flows that would be controlled through the installation of cofferdams in the acequia channel. This timing and the installation of BMPs during construction would minimize the potential for impacts to water resources.

Section 404 of the Clean Water Act provides for the protection of waters and wetlands of the United States (U.S.) from impacts associated with discharges of dredged or fill material into waters of the U.S. Certain discharges associated with the construction and maintenance of irrigation ditches are exempt from Section 404 permit requirements (33 Code of Federal Regulations [CFR] 323.4[a], Exemption No. 3). Therefore, no Section 404 permit is required for the planned action.

Wetlands and Floodplains. There are no wetlands or 100-year floodplains delineated by the Federal Emergency Management Agency along the acequia, so none would be affected by implementation of the Proposed Action.

Land Use. The Acequia del Barranco is used to irrigate 646 acres of hay and pasture for 16 irrigators. The construction would rehabilitate the existing diversion and would not negatively affect the land along the acequia. No negative impacts to land use would result from the Proposed Action.

Air Quality. Rio Arriba County is in attainment for air quality standards as set by the U.S. Environmental Protection Agency. While there would be the potential for minor temporary increases in emissions and dust during construction, these increases would not result in non-attainment of air quality standards. There would be no significant impacts to air quality under the Proposed Action.

Biological Resources. There would be no significant impact to vegetation, wildlife, and aquatic communities because there would be little change to the area as a result of the Proposed Action. Native vegetation would be reseeded in disturbed areas along the acequia once construction is completed.

Threatened and Endangered Species. No impacts to federal- or state-listed threatened and endangered species would result from the Proposed Action because none are found within the area immediately surrounding the Acequia del Barranco.

Cultural Resources. No prehistoric or historic archaeological sites were found or are known to occur within or immediately adjacent to this acequia. The Acequia del Barranco is listed on the National Register of Historic Places as part of the Los Brazos Historic District. Small portions of the acequia have been previously modified by structures, culverts, check dams, taps and flumes. The proposed protection of the diversion and construction and rehabilitation of the water control structures for the Acequia del Barranco would have no adverse effect on the acequia's designation as a historic property. Based on these findings, an archaeological clearance is recommended for this proposed rehabilitation project.

Indian Trust Assets. The construction or implementation of the proposed project is not anticipated to affect any Indian Trust Assets.

Aesthetics. No adverse effect on aesthetics would result from implementation of the Proposed Action. Exposed soil would be stabilized or reseeded with native vegetation.

Noise. No significant effects on noise levels would result from the Proposed Action. Noise would increase for the short time that construction equipment is working, but no long-term noise increases would occur.

Socioeconomics. There is the potential for positive impacts on the productivity of the irrigated land if water efficiency and delivery are improved, but these impacts would be slight. The irrigated land is used to feed livestock that could supplement landowners' incomes or ability to trade products, but the impact would be negligible and would be difficult to measure. There would be no negative impacts resulting from the Proposed Action.

4.0 CONCLUSION

The planned action has been fully coordinated with the federal and state agencies with jurisdiction over the biological and cultural resources of the project area. As a result of the EA and the coordination with these agencies, I have determined that the planned action to construct or rehabilitate three water control structures of the Acequia del Barranco will have no significant impact on the human environment. Therefore, an Environmental Impact Statement will not need to be prepared for this project.

for Dana R. Hurst
Lieutenant Colonel, US Army
District Engineer

11 Feb 2004
Date

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1.0 INTRODUCTION

1.1 BACKGROUND

The Acequia del Barranco is located just west of State Route 64/84, approximately 5 miles downstream from the community of Chama in Rio Arriba County, New Mexico (**Figure 1-1)**. The irrigation system consists of the main ditch and one lateral, with a total length of approximately 5 miles , which outlets into the Rio Chama (**Figure 1-2**). The acequia supplies water to approximately 646 acres serving 16 irrigators (Sanchez 2003).

To reduce maintenance of the acequia system below the diversion, the existing intake structure or heading, approximately 60 feet downstream from the diversion dam, would be replaced by a new gabion and pipe structure with a debris deflector and a trash rack. At a second construction site near Sawmill Arroyo, two structures would be installed or modified affecting approximately 50 feet of the acequia channel, including a new Y-shaped irrigation control structure as well as a steel plate and gabion structure to protect the channel bank and direct flows into the existing concrete and pipe structure that would be rehabilitated. The use of federal funds to share the cost of the improvements would constitute a federal action that requires an Environmental Assessment (EA).

The U.S. Army Corps of Engineers, Albuquerque District (Corps), at the request of the Acequia del Barranco and the New Mexico Office of the State Engineer (OSE), is planning reconstruction of the water control structures under the Water Resources Development Act (WRDA) of 1986 (Public Law [P.L.] 99-662). The WRDA authorized the Corps to conduct the restoration and rehabilitation of irrigation ditch systems and acequias in New Mexico. Under Section 1113 of the Act, Congress has found that New Mexico's acequias date from the eighteenth century and, due to their significance in the settlement and development of the western United States (U.S.), should be restored and preserved for their cultural and historic value to the region. The Secretary of the Army has been authorized and directed to undertake, without regard to economic analysis, such measures as are necessary to protect and restore New Mexico's acequias. The proposed improvements to this acequia satisfy the intent and purpose of this legislation. The non-federal financial responsibility of any work carried out under this section of WRDA is 25 percent.

The Corps is providing funding and is therefore the action agency for this project. Project design and inspection is the responsibility of the U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS). The State of New Mexico, through the OSE, is the project sponsor. The Corps has the authority for review and approval of the environmental impacts of the proposed project, as presented in this EA. Under the process for these acequia rehabilitation projects developed between the Corps, the State, and the NRCS under Section 215 of the Flood Control Act of 1968 (P.L. 90-483), as amended, the Acequia del Barranco would select a contractor and administer the construction contract. NRCS staff would inspect the project during construction to ensure compliance with all plans and specifications, including those written for environmental protection. The NRCS would also be responsible for certifying completion of the project according to those plans and specifications before funding would be provided. Upon successful completion of the project, funds would be made available by the Corps to the OSE to pay for rehabilitation of the structures.

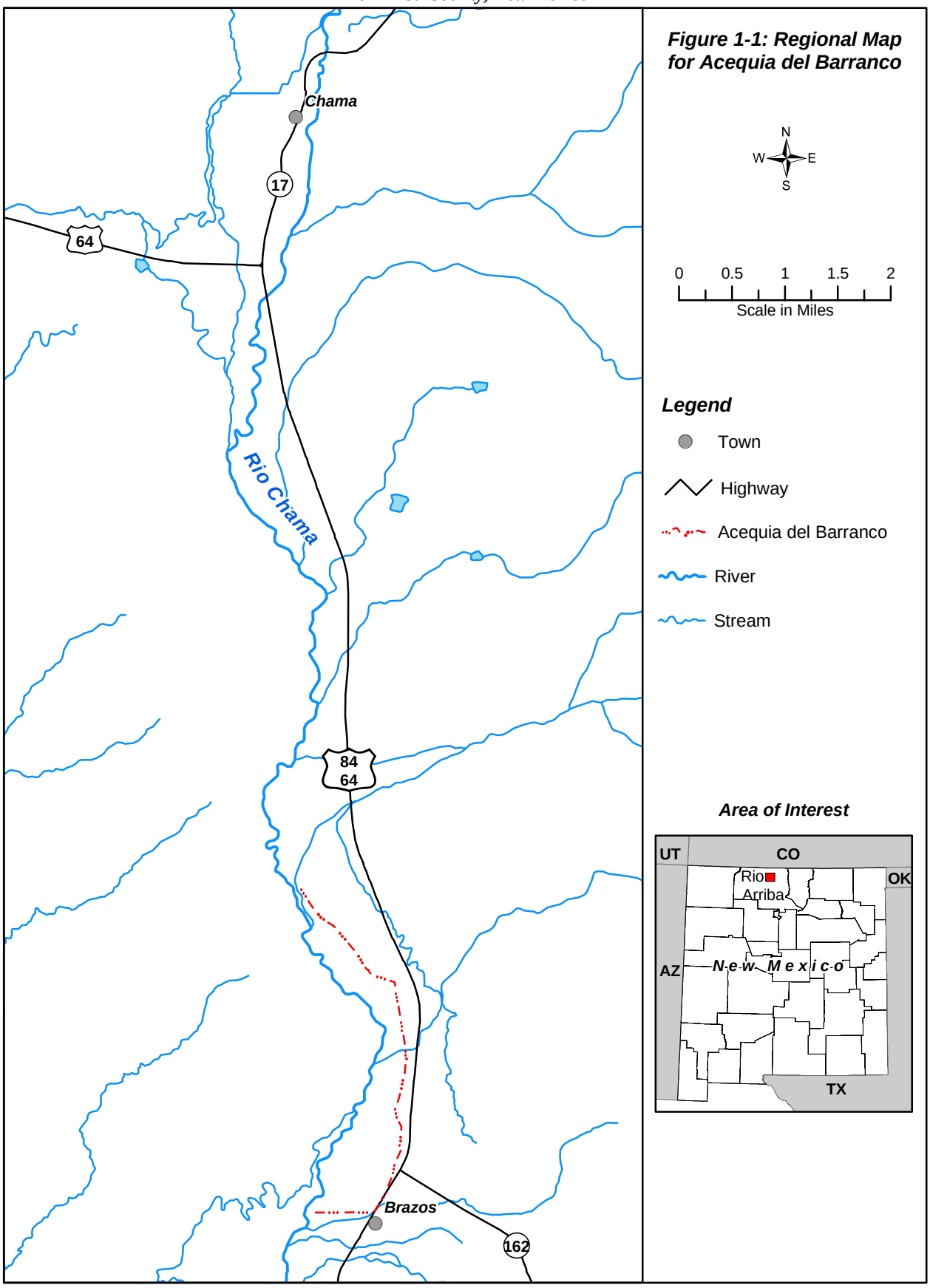

Figure 1-1: Regional Map for Acequia del Barranco

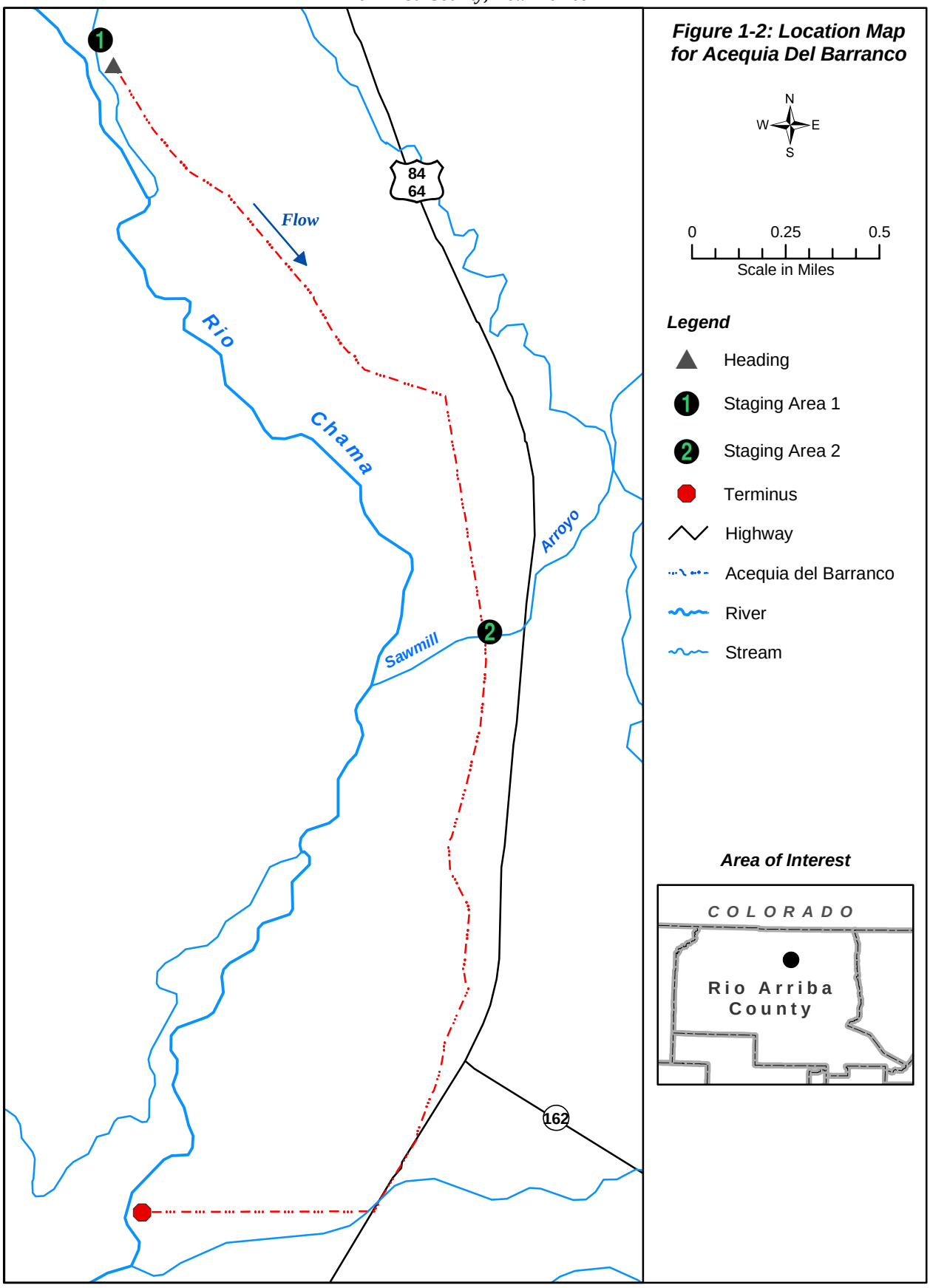
Figure 1-2: Location Map for Acequia Del Barranco
N
W
E
S
0
0.25
0.5
Scale in Miles
Legend
Heading
Staging Area 1
Staging Area 2
Terminus
Highway
Acequia del Barranco
River
Stream
Area of Interest
COLORADO
Rio Arriba County
Flow
Rio
Chama
Arroyo
Sawmill
84
64
162
1
2

1.2 PURPOSE AND NEED

Currently, irrigation water is diverted into the conveyance system by an uncontrolled push-up rock dike that frequently washes out during high water flows. Debris and trash often enter the conveyance system and settle at the heading structure that controls water flow to the acequia, resulting in a reduced capacity for supplying water to the system. Both the diversion and heading are in danger of failure when there are high flows in the river. Further deterioration of the water diversion and intake structures could cause the landowners served by the acequia to be without irrigation water.

An existing water control structure, consisting of a concrete headwall with a 30-inch diameter pipe and a short concrete outlet headwall, is located downstream from the heading toward the middle of the acequia where the Sawmill Arroyo enters the ditch system. Uncontrolled flows from Sawmill Arroyo often overtop the water control structure, causing erosion that threatens the structure.

There is a need for new water control structures to protect the intake to the acequia system from erosion and debris that affect irrigation water flows. A new heading structure that includes a gabion headwall with a headgate and pipe system, protected by a trash and debris deflector is proposed at the upper end of the system. A new Y-shaped irrigation control structure would be constructed approximately 50 feet upstream from the confluence of Sawmill Arroyo and the acequia (see Figure 1-2) to divert water into the lateral while controlling flows in the main ditch. It is proposed that the existing water control structure at Sawmill Arroyo be modified by installing plate steel material, grading, and rock riprap to reduce erosion. This rehabilitation would improve water delivery reliability and reduce maintenance costs.

1.3 REGULATORY COMPLIANCE

This EA was prepared for the Corps, in compliance with all applicable federal statutes, regulations and Executive Orders (EO) including, but not limited to the following:

- National Environmental Policy Act (NEPA) of 1969, as amended (42 United States Code [U.S.C.] 4321 *et seq.*)
- Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [CFR] 1500-1508)
- Clean Air Act of 1972 (42 U.S.C. 7401-7671, as amended)
- Clean Water Act (CWA) of 1977 (33 U.S.C. 1251 *et seq.*)
- Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1544, as amended)
- Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661 *et seq.*, as amended)
- Farmland Protection Policy Act, 1981 (7 U.S.C. 4201, as amended)
- National Historic Preservation Act of 1966 (16 U.S.C. 470)
- Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001-3013)
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470)
- Protection of Historic and Cultural Properties (36 CFR 800 *et seq.*)
- EO 11514, Protection and Enhancement of Environment Quality
- EO 11988, Floodplain Management
- EO 11990, Protection of Wetlands
- EO 12898, Environmental Justice
- EO 13007, Indian Sacred Sites
- EO 13084, Consultation and Coordination with Indian Tribal Governments
- EO 11593, Protection and Enhancement of the Cultural Environment

This EA is also in compliance with applicable State of New Mexico regulations and standards.

2.0 DESCRIPTION OF ALTERNATIVES AND PROPOSED ACTION

2.1 ALTERNATIVES

Two alternatives were considered to address the problems of the deterioration of the diversion dam and the potential for loss of irrigation water from Acequia del Barranco.

1. No Action Alternative: No rehabilitation work would be performed to address the existing problems. The existing push-up rock dike and water control structures would remain in place without protection or rehabilitation.
2. Proposed Action Alternative: The existing heading structure would be replaced by a gabion headwall with a headgate, new pipe, and a trash rack and debris deflector. A new Y-shaped irrigation control structure would be constructed approximately 50 feet upstream from the confluence of Sawmill Arroyo and the acequia. The current concrete pipe structure that controls flows where the acequia crosses the Sawmill Arroyo would be protected by steel plating and other erosion controls.

2.1.1 No Action Alternative

Under the No Action alternative, no rehabilitation work would be done. The existing push-up rock dike diversion dam and concrete water control structures would remain in place, requiring continual high maintenance.

2.1.2 Proposed Action Alternative

Figure 1-2 shows the location of the proposed construction under the Proposed Action. At the upper end of the acequia system, the intake structure or heading, which is located approximately 60 feet downstream (in the acequia channel) from the diversion at the Rio Chama, would be replaced by a new structure consisting of a concrete-capped gabion headwall with a headgate connected to a 20-foot long (57” by 38”) arch pipe. A debris deflector and a trash rack would be installed on the upstream side of the headwall. The channel at the outlet of the pipe would be stabilized with 6 to 12-inch cobbles, and any disturbed ditch banks would be graded to at least 1.5:1 slopes.

At the second construction site near Sawmill Arroyo, two structures would be constructed or modified affecting approximately 50 feet of the acequia channel. A new Y-shaped irrigation control structure would be constructed approximately 50 feet upstream from the confluence of Sawmill Arroyo and the acequia. This Y-shaped structure would consist of two steel slide gates installed in steel plate weirs, one that would cross the acequia and one that would cross the lateral. These pipes and headgates would control the amount of flow into the main channel and the lateral.

Downstream from the Y-shaped structure, a steel plate and gabion basket structure would be used to protect the bank and spread out the concentrated water flows from the Sawmill Arroyo, directing water into the existing concrete headwall with a pipe that outlets into the lower acequia channel.

The project area would be accessed from two staging areas located near the construction sites. The staging area for rehabilitation of the heading and protection of the diversion would be approximately 0.4 acre, located along the east bank of the acequia channel between the ditch and the river. The staging area for the irrigation structures downstream would be approximately 1.1 acres, located on the east bank of the ditch.

After completing the rehabilitation, the areas disturbed from construction would be re-seeded as directed by the NRCS and approved by the landowners.

2.2 ENVIRONMENTAL PROTECTION

Rehabilitation of the irrigation system would utilize appropriate BMPs, employed during and after construction to minimize soil erosion and sedimentation in waterways. Construction would occur during the non-irrigation season. Water diverted from the Rio Chama that may enter the acequia, even at low flows, would be blocked by the installation of cofferdams temporarily installed upstream from the heading structure. Cofferdams would be constructed from the fill piled along the acequia channel as a result of annual ditch cleanings and would be removed to its original location once construction is completed. Water behind the cofferdams would be pumped back into the river. Appropriate BMPs to be employed during construction include the use of the cofferdams, rock, and the proper grading of slopes. Damage to existing vegetation would be avoided as much as possible. NRCS staff would coordinate with the Corps to approve needed access routes, borrow sites, staging areas, other high use areas, or any changes to these areas, regardless of their ownership or distance, to ensure that natural and cultural resources would be protected. The State of New Mexico, being the project sponsor, would be responsible for assuring operation and maintenance of the project after completion.

To protect soils from wind and water erosion after completion of earthmoving, disturbed areas would be seeded with vegetation that is appropriate for the soil and site conditions, according to recommendations made by NRCS and approved by the landowners. Establishment of perennial grasses would minimize the growth of weeds in the disturbed soil.

All waste material would be disposed of properly at pre-approved or commercial disposal areas or landfills. Fuel, oil, hydraulic fluids, and other similar substances would be appropriately stored away from the ditch and must have a secondary containment system to prevent spills if the primary storage container leaks.

Prior to construction, all environmental protection measures as expressed by contract clauses, design drawings, or other means would be reviewed with the acequia members and the contractor at a pre-construction conference.

There are no other actions for the Acequia del Barranco known to be planned by other federal, state, county, or municipal agencies.

3.0 EXISTING ENVIRONMENT AND FORESEEABLE EFFECTS OF THE PROPOSED ACTION

3.1 CLIMATE

Average climatic statistics for the project area were determined using the closest weather station in Chama, New Mexico, which is approximately 5 miles upstream from the Acequia del Barranco. Average annual maximum temperature for the project area is estimated at 59 degrees Fahrenheit (°F), and the average annual minimum temperature is estimated at 26°F (WRCC 2003). Average annual precipitation in this region is 21 inches, occurring as both rain and snow (WRCC 2003). The rainiest months tend to be July and August; the most snow tends to fall in January and February. Moist air generated from the Gulf of Mexico acts as the source of rainfall in the summer months, while the Pacific Ocean affects climatic patterns for the winter months. The average growing season in the project area is approximately 120 days, from mid-May through mid-September (WRCC 2003).

3.2 PHYSIOGRAPHY, GEOLOGY, SOILS

This project is located in the Northern Rio Grande Basin Section of the Southern Rocky Mountain Physiographic Province, which is typified by valleys, lowlands, and elevated plains and hills (USFS 1996). In general, the deep structural basins of the Rio Grande rift valley separate the high ranges of the Rocky Mountain system. Local landforms include the San Juan Mountains to the east, and to the south, the Brazos Box, a dramatic 2,000-foot deep cliff-walled canyon (NMED 2003). Elevations range from 6,900 to 8,800 feet, with the elevation of Acequia del Barranco ranging between 7,400 and 7,600 feet above Mean Sea Level. Cenozoic sedimentary rocks characterize the surficial geology, along with some Tertiary volcanic rocks and basin fill of late Tertiary and Quaternary age. The Great Basin Conifer Woodland community is common to this area, which is dominated by juniper and piñon pine, with a mixed species grass understory (NRCS 1998).

The soil series on the project sites include Colomex, Doslomas, Dula, and Chamita. Dula loam, 0 to 2 percent slopes, is the soil map unit at the location of both the diversion dam and the heading. Dula loam and Colomax gravelly silt loam, 0 to 3 percent slopes, are found at the water control structure. Specific soil map units and some of their characteristics are shown in **Table 3-1**.

Table 3-1. Soils along Acequia del Barranco

Soil Map Unit	Permeability	Water Erosion Hazard	Wind Erosion Hazard
Colomex gravelly silt loam, 0-3 percent slopes	Moderate to rapid	Slight	Slight
Chamita loam, 0-2 percent slopes	Moderate	Slight	Slight
Doslomas loam, 0-3 percent slope	Moderately slow to very rapid	Slight	Slight
Dula loam, 0-2 percent slopes	Moderate to very rapid	Slight	Slight

Source: SCS 1982.

Hydric soils at the site include the Dula and Chamita series, but none would be affected by either alternative. None of the soils are classified as Prime or Unique Farmlands.

The Proposed Action alternative would minimize soil erosion and sedimentation in the channel and reduce diversion maintenance. The contractor would use BMPs to minimize erosion during construction under the Proposed Action. There would be no significant negative impacts to soils from the implementation of the Proposed Action.

Soil erosion at the confluence of the Sawmill Arroyo and the acequia would continue to occur under the No Action Alternative because no bank stabilization would be installed. There would be no significant impacts to soils from the No Action alternative, but ongoing erosion would continue.

3.3 WATER RESOURCES

The project site is located approximately along the Rio Chama in the upper Rio Chama watershed, a subwatershed of the Rio Grande. The watershed drains a mountainous area of 221 square miles and receives approximately 21 inches of precipitation annually (NMED 2003a).

Designated uses identified by the state (NMWQCC 2002) for the reach of the Rio Chama receiving the outflow from the Acequia del Barranco (Rio Brazos to Little Willow Creek) are livestock watering, domestic water supply, secondary contact, fish culture, high quality coldwater fishery, wildlife habitat, irrigation. In this reach, the high quality coldwater fishery use is not supported due to moderate problems with water temperature. The probable sources of this impairment are identified as removal of riparian vegetation, grazing (riparian and/or upland), municipal point sources, hydromodification and other habitat modification, flow regulation/modification, bank or shoreline modification/destabilization, and agriculture (NMED 2003b).

The water in the acequia is diverted from the Rio Chama and the system as a whole provides water to 16 irrigators on approximately 646 acres of cultivated land (Sanchez 2003). The Acequia del Barranco extends approximately 5 miles along the Rio Chama before it returns flows into the river.

Section 402(p) of the CWA specifies that stormwater discharge associated with construction activities disturbing one (1) or more total acres of land must be authorized by a National Pollutant Discharge Elimination System (NPDES) Permit. NPDES permit authorization may be required for the Proposed Action. BMPs would be used as necessary to minimize erosion and sedimentation wherever project construction activities occur.

Section 404 of the CWA provides for the protection of wetlands and waters of the U.S. from impacts associated with discharges of dredged or fill material. Certain discharges associated with the construction and maintenance of irrigation ditches is exempt from Section 404 permit requirements (33 CFR 323.4 [a], Exemption No. 3). Therefore, no Section 404 permit is required for the Proposed Action. No state water quality certification under Section 401 would be required because all construction would be in the acequia system, and would not occur in the Rio Chama.

The Proposed Action would reduce streambank erosion and water turbulence, resulting in a more stable area around the diversion dam, heading, and water control structures at the Sawmill Arroyo. This could positively affect water quality in the receiving waters. The No Action alternative would allow soil erosion and sedimentation to continue to enter the acequia system, which could negatively affect water quality and damage the water supply to irrigators.

3.4 WETLANDS AND FLOODPLAINS

Wetlands are protected from development under EO 11990 (Protection of Wetlands). Guidance from the Order requires federally funded activities associated with wetlands to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural beneficial values of wetlands.

EO 11988 (Floodplain Management) provides federal guidance for activities within floodplains of inland and coastal waters. Preservation of the natural values of floodplains is of critical importance to the nation and to the State of New Mexico. Federal agencies are required to “ensure that its planning programs and

budget requests reflect consideration of flood hazards and floodplain management." No additional development of the Rio Chama is likely to result from this project. Flood hazard zones (100-year floodplains), as delineated by the Federal Emergency Management Agency, are not present in the project area. As a result, neither of the alternatives would adversely affect wetlands or floodplains.

3.5 LAND USE

The Acequia del Barranco supplies irrigation water to 16 irrigators on a total of 646 acres (Sanchez 2003). Private lands irrigated from the acequia are cultivated for hay and pastures. Livestock grazing occurs on lands managed by the U.S. Forest Service, private landowners, and tribal lands in the vicinity.

Under the No Action alternative, the heading and other water control structure would continue to be damaged by high flows, potentially resulting in the loss of irrigation water and ongoing maintenance expenses. As a result, it is possible that, over time, the irrigated land would change from cropland to fallow or non-agricultural. Under the Proposed Action alternative, water delivery would be more reliable and the improved design of the diversion heading would allow for the continued productivity of the irrigated land.

3.6 AIR QUALITY

The project area is in attainment with National Ambient Air Quality Standards set by the U.S. Environmental Protection Agency (USEPA) (Ball 2003). Increased dust and emissions from earthmoving and construction equipment would potentially contribute to temporary elevations in particulate matter. Through the use of BMPs, increased dust would be kept to a minimum, so the Proposed Action alternative would not produce significant reductions in air quality. No impacts to air quality would result from the No Action Alternative.

3.7 BIOLOGICAL RESOURCES

3.7.1 Terrestrial Communities

According to Dick-Peddie (1993), the project area is characterized as urban, farmland, or montane coniferous forest. The staging areas for the rehabilitation construction would be located in a gravel area between the acequia and the Rio Chama (at the northern site) and in an existing pasture (at the southern site) adjacent to the Rio Chama. The riparian vegetation community associated with the Rio Chama in the immediate project area is reminiscent of a farmland environment (primarily hay-pasture land). Mature cottonwoods, willow species, sedges, and grasses are distributed along the bank of the Rio Chama. Native riparian vegetation is non-existent in the immediate area of the two construction sites.

Predominant vegetation found within the project area during an October 20, 2003, pedestrian field survey include willow species (*Salix* spp.), cottonwood species (*Populus* spp.), grama species (*Bouteloua* spp.), sedges (*Carex* spp.), broom snakeweed (*Xanthocephalum sarothrae*), juniper species *(Juniperus spp.)*, oak species (*Quercus spp.*), and speedwell species (*Veronica spp.)*. A mixture of hay, grasses, and alfalfa make up the adjacent pasturelands.

Common animals likely to occur in the proximity of the project area include, but are not limited to, elk (*Cervus elaphus nelsoni*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), woodrat (*Nestoma fuscipes*), deer mouse (*Peromysus maniculatus*), and pocket gopher (*Thomomys* spp.). Nuthatches (*Sitta* spp.), olive warblers (*Peucedramus taeniatus*), red-faced warblers (*Cardellina rubifrons*), hepatic tanagers (*Piranga flava*), and the mountain bluebird (*Sialia currucoides*) are avifauna likely to occur (Bailey 1995). During an October 20, 2003, pedestrian field survey, mule deer, prairie dogs (*Cynomys* spp.), black-billed magpies (*Pica hudsonia*), turkey vulture (*Piranga ludoviciana*), red-tailed hawk (*Turdus migratorius*), ravens (*Corvus spp.*), western meadow lark (*Sturnella neglecta*), common snipe (*Gallinago gallinago*), mallard duck (*Anas platyrhynchos*), and red-headed woodpecker (*Carduelis tristis*) were observed.

The acequia rehabilitation would not take place during the irrigation season. Construction would pose an insignificant threat to these terrestrial communities due to the localized area of impact and the timing of construction. Disturbed and backfilled ground would be reseeded. Neither alternative would have a significant impact on the terrestrial flora and fauna.

3.7.2 Aquatic Communities

The Rio Chama is classified as a cold water fishery, although this designated use is not supported in most of the river (NMED 2003b). Fish species occurring throughout the Rio Chama include, but are not limited to, brown (*Salmo trutta*) and rainbow (*Oncorhynchus mykiss*) trout, sucker species (*Catostomus* spp.), red shiner (*Cyprinella lutrensis*), fathead minnow (*Pimephales promelas*), and channel catfish (*Ictalurus punctatus*). Aquatic invertebrates of mayfly (*Ephemeroptera* spp.) and dragonfly (*Odonanta* spp.) species would likely support the prey base for many of the fish species listed above.

The Rio Chama supplies the Acequia del Barranco with irrigation water. Little water would be diverted to the acequia during construction in the non-irrigation season, minimizing stress to the Rio Chama aquatic communities. The construction would upgrade the existing diversion through material and delivery improvements; however, the improvements would not exacerbate the existing condition. Neither alternative would significantly affect the aquatic communities of the Rio Chama.

3.8 THREATENED AND ENDANGERED SPECIES

Conservation of threatened and endangered flora and fauna are primarily managed by U.S. Fish and Wildlife Service (USFWS) under the ESA, the New Mexico Department of Game and Fish (NMGF) under the Wildlife Conservation Act of 1974, and the New Mexico Energy, Minerals, and Natural Resources Department under the New Mexico Endangered Plant Species Act and Rule Number NMFRCD 91-1. Under the managing authorities, each agency maintains species lists for selected animals and plants deemed to be threatened and/or endangered. The federal and state protected species of Rio Arriba County, New Mexico are listed in **Table 3-2**.

Table 3-2. Federal and State Protected Species in Rio Arriba County, New Mexico

Species	Federal Status[1] (USFWS)	State Status[1]
Rio Grande Silvery Minnow (*Hybognathus amarus*)	E	–
Roundtail Chub (*Gila robusta*)	–	E
Jemez Mountain Salamander (*Plethodon neomexicanus*)	–	T
Western Boreal Toad (*Bufo boreas boreas*)	C	E
Bald Eagle (*Haliaeetus leucocephalus*)	T	T
American Peregrine Falcon *(Falco pergrinus anatum*)	–	T
White-Tailed Ptarmigan (*Lagopus leucurus altipetens*)	–	E
Whooping Crane (*Grus americana*)	E	E
Mountain Plover (*Charadrius montanus*)	PT	–
Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)	C	–
Mexican Spotted Owl (*Strix occidentalis lucida*)	T	–
Boreal Owl (*Aegolius funereus*)	–	T
Southwestern Willow Flycatcher (*Empidonax traillii extinus*)	E	E

Species	Federal Status[1] (USFWS)	State Status[1]
Interior Least Tern (*Sterns antillarum athalassos*)	E	E
Baird's Sparrow (*Ammodramus bairdii*)	–	T
New Mexican Jumping Mouse (*Zapus hudsonius luteus*)	–	T
Spotted Bat (*Euderma maculatum*)	–	T
Black-Footed Ferret (*Mustela nigripes*)	E	E
Canada Lynx (*Lynx Canadensis*)	T	–
American Marten (*Martes americana origenes*)	–	T
Arizona Willow (*Salix arizonica*)	–	E
Chama blazing star (*Mentzelia conspicua*)	–	E
Pagosa phlox (*Phlox caryophylla*)	–	E
Ripley's Milkvetch (*Astragalus Ripleyi*)	–	E

Sources: USFWS 2003; NMGF 2003, NMRPTC 1999

Notes: (1) E = Endangered, T = Threatened, PT = Proposed Threatened, C = Candidate.

Specialized habitat requirements such as vegetation type and cover, elevation, and geographic location for the species listed above comprise the preferred habitat regimes for these flora and fauna (NMGF 2002). Of the species listed in Table 3-2, the bald eagle is the only species that may potentially occur (NRCS 2002). There is no documentation of bald eagle nesting or winter roosting near the project area. Perennial water does exist, along with large perching trees, and there is evidence of a prey base suitable for bald eagles (SAIC 2003). If bald eagles are observed in the vicinity before or during construction, the following precautions would be observed to minimize direct disturbance:

- If a bald eagle were present within 0.5 mile (0.4 km) upstream or downstream of the active construction site in the morning before project activity starts, or if it were present following breaks in project activity, the contractor would be required to suspend all activity until the bird leaves of its own volition; or if a Corps biologist, in consultation with the USFWS, determines that the potential for harassment is minimal. However, if a bald eagle arrives during construction activities or if an eagle is greater than 0.5 mile away, construction need not be interrupted.
- If bald eagles were found in the immediate project area during the construction period, the Corps would contact the USFWS to determine whether formal consultation under the Endangered Species Act is necessary.

The proposed construction would occur in the acequia channel and would only involve land that has already been disturbed. Transient bald eagle occurrence may take place in the project area; however, these species would not be affected by the implementation of the Proposed Action or the No Action alternatives.

3.9 CULTURAL RESOURCES

3.9.1 Culture History

There is little information in the archaeological record concerning prehistoric occupation of the project area. There is also virtually no evidence to suggest that the project area was occupied by Tewa elements in the historic period during the seventeenth and eighteenth centuries (Schaafsma 2002). Rather, pueblos ancestral to modern Tewa pueblos appear to have been concentrated along the Rio Chama below Abiquiu.

There were few Spanish expeditions up the Rio Chama between 1598 and 1609 (Schaafsma 2002), so the occupants of this region remain largely unknown. Vintage accounts suggest that much of the Rio Chama was unoccupied or, perhaps, occupied on a seasonal basis (Schaafsma 2002). By 1630, Benavides' account indicates that Navajos were present along the Rio Chama upstream from Santa Clara Pueblo and extending as far upriver as the Piedra Lumbre valley (Schaafsma 2002). Their persistence across the project area is confirmed by the 1687 Peñalosa map (Schaafsma 2002).

A 1706 Álvarez report indicates that the region west of Santa Clara Pueblo—which almost certainly included the Rio Chama—was devoid of Spanish settlements (Schaafsma 2002). The Los Brazos area was visited by the Dominguez-Escalante expedition in 1776 (Wilson and Kammer 1989). By 1714, largely in response to a series of Spanish punitive expeditions along the Rio Chama, the Navajo largely abandoned the region (Schaafsma 2002).

Despite the gradual appearance of Spanish settlements during the 1700s (Wozniak et al. 1992), Jicarilla Apaches and Southern Utes continued to make use of the project area. Jicarilla Apaches remained in the area until their reservation was established in 1877. Similarly, the project area falls within traditional use areas of the Southern Utes, known to have been present in significant numbers prior to 1696 (Schaafsma 2002). Despite documentary evidence of their presence in the project area, there is little archaeological evidence of permanent Jicarilla or Ute settlements in the Los Brazos region.

The Acequia del Barranco is situated in the Tierra Amarilla land grant. According to Julyan (1996), this grant was awarded to Manuel Martinez in 1832 (see also Ebright 1994). Despite this relatively early date, it appears that the Tierra Amarilla grant was used primarily for summer pasture for many years and lacked permanent settlements for some years following its award. Los Brazos, the nearest hamlet to the acequia, was one of three of the earliest settlements within the boundary of the Tierra Amarilla grant (Julyan 1996), although a specific settlement date is not certain (Wilson and Kammer 1989). Local oral tradition suggests that Los Brazos—initially little more than a log stronghold to protect against Indian raids—was established in 1861 or 1862 (Wilson and Kammer 1989). The town subsequently developed into a linear settlement paralleling the alignment of the Acequia del Barranco.

The region became much more placid following the establishment in 1866 of Fort Lowell near Tierra Amarilla. The fort remained in operation until 1869, becoming largely unnecessary following establishment of the Uncompahgre Ute Reservation in 1868. The Acequia del Barranco was listed on the National Register of Historic Places in 1986 by itself, and as part of the Los Brazos Historic District in 1985 (NPS 2003).

It must be emphasized that the Acequia del Barranco is currently completing an adjudication process and the age of the acequia is as yet undetermined. The acequia was filed with the State Engineer Office (File No. 02566) and has been nominally estimated to date prior to 1907. According to Wilson and Kammer (1989), the Tierra Amarilla, Ensenada, and Parkview acequias—all constructed in 1862—are the oldest acequias in the Los Brazos area. It is reasonable to suggest that the Acequia del Barranco dates between 1832 (when the Tierra Amarilla grant was established) and ca. 1861 when the Martinez family first constructed the house that still stands today in Los Brazos. At the same time, the Acequia del Barranco as a named ditch does not appear in either Follett's (1898) or Yeo's (1910) reports on irrigation systems along the Rio Chama.

Wilson and Kammer (1989) indicate that the population of the Los Ojos-Los Brazos area varied between 150 and 656 people during the period 1870-1950; a peak population of 910 individuals was attained in 1910.

3.9.2 Methodology and Survey Results

The cultural resources survey of the proposed replacements on the Acequia del Barranco was preceded by a check of site files at NMCRIS in Santa Fe. Other than the Acequia del Barranco, there is only one

previously recorded archaeological site situated in the project area, the historic Cañones Community Ditch.

The Class III inventory consisted of an intensive pedestrian survey of the construction and staging areas (7.6 acres) for proposed repairs to the Acequia del Barranco. Additional documentation of the acequia included walking the alignment and recording the locations of water control structures (e.g., culverts, check structures, taps) in addition to an on-the-ground inspection of the entire acequia. Water was flowing through the acequia at the time of the inventory, so that detailed inspections of the sides and bottom of the acequia were limited.

No prehistoric or historic archaeological resources were found within or immediately adjacent to the Acequia del Barranco right-of-way. Similarly, no prehistoric or historic archaeological resources were found within the boundaries of the staging areas associated with the two proposed work areas.

The Acequia del Barranco is part of the Los Brazos Historic District that was placed on the National Register of Historic Places (NPS 2003) in 1985 (NR No. 85000827; SR No. 1114). The acequia was listed separately on the National Register as El Barranco Community Ditch in 1986 (NR No. 86002296; SR No. 1228). Documentary evidence indicates that the Acequia del Barranco was constructed sometime between 1832 and 1861.

According to the field survey of the Acequia del Barranco, approximately 630 feet (2.4 percent) of the entire acequia have been previously modified by structures, culverts, check dams, taps, and flumes. The proposed protection of the diversion, reconstruction of the acequia intake, and water control structure would increase the amount of the acequia disturbed to approximately 2.6 percent and would have no adverse effect on the acequia's current status as a National Register of Historic Places property. Based on these findings, an archaeological clearance is recommended for this proposed rehabilitation project.

3.10 INDIAN TRUST ASSETS

Indian Trust Assets (ITA) are legal interests in property held in trust by the U.S. for Indian tribes or individuals. Examples of trust assets include land, minerals, hunting and fishing rights, and water rights. The U.S. has an Indian Trust Responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statutes, executive orders, and rights further interpreted by the courts. This trust responsibility requires that all federal agencies take all actions reasonably necessary to protect such trust assets.

The construction or implementation of the Proposed Action or No Action alternatives are not anticipated to affect any ITAs.

3.11 AESTHETICS

The Acequia del Barranco, which meanders through pasture and residential lands for the majority of its route, has a rural aesthetic character. Construction would take place within the existing ditch; exposed soil would be re-seeded according to the recommended NRCS seed mixture. There would be no significant effect on aesthetic quality from either alternative.

3.12 NOISE

Current noise levels are typical for rural areas. Earthmoving equipment and trucks generate decibel (dB) levels 15 to 30 units higher (LHH 2001) than the prescribed Federal Highway Administration recommended levels for residential areas close to highways. Recommended levels of 67 dB are expressed as equivalent sound level (Leq), the constant average sound level, which contains the same amount of sound energy as the varying levels of the traffic noise (FHA 1999). To be considered significant, noise levels must be elevated over the long term. Construction during the acequia rehabilitation would temporarily elevate noise levels, but these levels would not persist. Neither alternative would significantly affect noise levels.

3.13 SOCIOECONOMICS

The project is located 5 miles from Chama in Rio Arriba County. In 2000, Chama had a population of 1,199 (U.S. Census Bureau 2002a). Population statistics for the town are compared to those of the county, state, and nation in **Table 3-3**. Statistics at the county level are assumed to reflect the urban concentration of people that is near the project area.

There are 646 acres cultivated by 16 irrigators using water from the irrigation ditch for which improvements are proposed. Typically, local farmers and ranchers supplement their income from the livestock grazed in the pastures irrigated by the acequia. The Proposed Action would make water delivery more reliable, potentially increasing or ensuring productivity on this land. While locally favorable for the affected families and those with whom they trade, the minor beneficial effects would not be significant.

The No Action alternative may result in the disruption of water delivery if the earthen diversion is damaged or if the flow into the acequia heading pipe is blocked by trash and debris until maintenance could be completed. This could adversely affect the families who irrigate from the acequia, but would not be a significant effect.

Table 3-3. Profile of Ethnic and Racial Demographic Characteristics, Year 2000

Geographic Area	Total Population	Race								Hispanic or Latino (of Any Race)
		One Race							Two or More Races	
		Total	White	Black or African American	American Indian	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race		
U.S.	281,421,906	274,595,678 (96%)	75%	12%	<1%	4%	<1%	6%	6,826,228 (4%)	35,305,818 (13%)
New Mexico	1,819,046	1,752,719 (97%)	67%	2%	10%	1%	<1%	17%	66,327 (4%)	765,386 (42%)
Rio Arriba County	41,190	39,837 (97%)	57%	<1%	14%	<1%	<1%	26%	1,353 (3%)	30,069 (73%)
Chama Village	1,199	1,163 (97%)	68%	2%	3%	<1%	0%	25%	36 (3%)	854 (71%)

Sources: U.S. Census Bureau 2003a,b,c.
Note: Totals may not equal 100% due to rounding.

3.14 ENVIRONMENTAL JUSTICE

EO 12898, Environmental Justice, and EO 13045, Protection of Children, requires that federal proponents assess how impacts of a Proposed Action may disproportionately affect minority and low-income persons or children under 18 years of age. Minority populations include all persons identified by the U.S. Bureau of the Census to be either of Hispanic race, regardless of country of origin, or all persons not of Hispanic origin other than White (i.e., Black, American Indian, Eskimo or Aleut, Asian or Pacific Islander, or other national origins). Low-income populations include all persons living below the poverty level, identified as a household income for a family of three of less than $12,802 in 1997 (U.S. Census Bureau 1997).

As shown in Table 3-3, Rio Arriba County and Chama Village have higher percentages of Hispanics or Latinos (approximately 73 percent and 71 percent, respectively) than do the state or nation (44 and 13 percent, respectively). American Indians and African Americans also comprise a small percentage of the local population. Other minority groups are under-represented at the local level.

According to the 2000 census, approximately 27 percent of the local population for Chama Village is under age 18. In New Mexico, 28 percent of the population is under age 18; in Rio Arriba County, 29 percent; and in the U.S., 26 percent (U.S. Census Bureau 2003a, c, d, e). The 1999 poverty estimates from the census for the village, county, state, and national level are shown in **Table 3-4**. The percentage of minors in Chama Village below the poverty level is more than three times the national percentage, though comparable to state and county percentages.

The Proposed Action alternative may have a beneficial impact on about 16 families. Assuming that these owners are comprised of a similar racial and ethic mix as the community as a whole, this could provide a positive effect for minorities. Any primary or supplemental income from trading would also be beneficial. The construction would not disrupt or displace any residential or commercial structures. The work has been reviewed for compliance with EO 12898 and it has been determined that the No Action and the Proposed Action alternatives would not adversely affect the health or environment of minority or low-income populations.

Table 3-4. Percent of Population Below Poverty, 1999 Estimate

	Chama Village	Rio Arriba County	New Mexico	U.S.
All Persons	18	20	18	14
Minors	29	23	25	9

Sources: U.S. Census Bureau 2002a,b.

3.15 CUMULATIVE EFFECTS OF THE PROJECT

No other foreseeable actions by federal, state, tribal, or local officials are known to be planned for the project area. According to the field survey of the Acequia del Barranco, approximately 630 feet (2.4 percent) of the entire acequia have been previously modified by structures, culverts, check dams, taps, and flumes. The Proposed Action would involve primarily reconstructing or protecting existing structures, with only a slight increase, to 2.6 percent, in the area of the acequia modified from its original configuration. Therefore, the potential impacts due to the implementation of the Proposed Action would not significantly affect natural, cultural, or socioeconomic resources.

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4.0 CONCLUSIONS

The No Action alternative was rejected because the present irrigation system is in need of improvement to preserve its function. This alternative would not meet the purpose and need of the project to reduce maintenance and improve the reliability of water delivery, nor would it preserve the cultural and historic values of this acequia to the region, as intended under Section 1113 of the WRDA.

The Proposed Action is the preferred alternative because it would be beneficial to the entire acequia and its users by protecting existing structures and constructing or rehabilitating water control structures that require high maintenance and are in danger of failure. It would also maintain the beneficial use of the acequia, a property listed on the National Register of Historic Places. It has the potential to result in positive impacts by improving reliable water delivery during the irrigation season. This alternative satisfies the purpose and need for the project and the intent of Section 1113 of WRDA.

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5.0 LIST OF PREPARERS, CONSULTATION, AND COORDINATION

5.1 LIST OF PREPARERS

- Gary Lopez, Corps, Program Manager for Acequia Rehabilitation Program
- Patricia Phillips, Corps, EA Project Manager
- Gregory Everhart, Corps, Archaeologist
- Robin Brandin, SAIC, QA/QC
- Ellen Dietrich, SAIC, Project Manager
- Neal Ackerly, Dos Rios Consultants, Inc., Archaeologist
- David Dean, SAIC, Biologist
- Heather Gordon, SAIC, Environmental Scientist/GIS Specialist
- Winifred Devlin, SAIC, Environmental Scientist

5.2 COORDINATION

Agencies, tribes, and entities contacted formally or informally in preparation of this Draft EA include:

- Acequia del Barranco, Medaddo Sanchez, Majordomo
- Comanche Indian Tribe
- Hopi Tribe
- Jicarilla Apache Nation
- Kiowa Tribe of Oklahoma
- Natural Resources Conservation Service
- Navajo Nation
- New Mexico Department of Energy, Minerals, and Natural Resources
- New Mexico Department of Game and Fish
- New Mexico Environment Department
- New Mexico Office of the State Engineer
- New Mexico State Historic Preservation Office
- Pueblo of Pojoaque
- Pueblo of San Ildefonso
- Pueblo of San Juan
- Pueblo of Santa Clara
- Pueblo of Taos
- Southern Ute Indian Tribe
- U.S. Fish and Wildlife Service
- Ute Mountain Ute Tribe

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APPENDIX A
CULTURAL RESOURCES SURVEY REPORT

1.0 ABSTRACT

On October 20, 2003, archaeologists from Dos Rios Consultants, Inc., subcontractor to SAIC under contract to the U.S. Army Corps of Engineers, Albuquerque District (Corps) conducted a cultural resources inventory of the proposed construction area along the Acequia del Barranco near the hamlet of Brazos in Rio Arriba County, New Mexico. A Class III field inspection of the project area consisted of 100 percent coverage using 15-meter transects. Approximately 7.6 acres were examined and recording activities conformed to all State of New Mexico and federal standards. The survey was conducted in anticipation of construction activities focusing on the reconstruction of the existing intake structure of the Acequia del Barranco, protection of the diversion, as well as construction and rehabilitation of water control structures located toward the center of the acequia system. Excluding the Acequia del Barranco itself (LA141536), only one archaeological site was found or is known in the immediate project area. The Acequia del Barranco was listed on the National Register of Historic Places in 1986 by itself, and as part of the Los Brazos Historic District in 1985 (NPS 2003). The proposed rehabilitation would have no effect on the alignment, form, or function of the acequia system. It is recommended, based on the proposed work and the findings of this cultural resources survey, that a clearance be provided for this proposed rehabilitation project. There would be "No Adverse Effect to Historic Properties" by the proposed rehabilitation project.

2.0 INTRODUCTION

The Corps, at the request of the New Mexico Office of the State Engineer (OSE) and the Acequia del Barranco, is planning a project that would rehabilitate the system's existing diversion and intake at its heading near the Rio Chama, as well as a water control structure located toward the middle of the acequia system at an arroyo. Work would be conducted under the Water Resources Development Act (WRDA) of 1986 (P.L. 99-662), which authorized the Corps to conduct the restoration and rehabilitation of irrigation ditch systems and acequias in New Mexico. Under Section 1113 of the Act, Congress found that New Mexico's acequias date from the eighteenth century and, due to their significance in the settlement and development of the western United States (U.S.), should be restored and preserved for their cultural and historic value to the region. The Secretary of the Army has been authorized and directed to undertake, without regard to economic analysis, such measures as are necessary to protect and restore New Mexico's acequias. The proposed improvements to this acequia satisfy the intent and purpose of this legislation.

3.0 DESCRIPTION

The Acequia del Barranco is located in Rio Arriba County between the settlements of Chama and Brazos, New Mexico **(Figure A-1)**. The acequia diverts water from the Rio Chama using an earthen push-up dam and is unlined throughout its entire length. The system as a whole provides water to 16 irrigators and approximately 646 acres of cultivated land (Sanchez, 2003). The primary crop consists of irrigated pasture and farm size averages 40.4 acres.

The Acequia del Barranco extends approximately 5.0 miles parallel to the east side (left bank looking downstream) of the Rio Chama, eventually returning tailwater to the river through a desagua located at the end of the system. The acequia consists of one main ditch (acequia madre) and a lateral branching just upstream from Sawmill Arroyo. While there are other branching laterals extending from this acequia, these are considered field laterals that are maintained by individual landowners. Lateral distribution channels are not part of the Acequia del Barranco as administratively defined.

The proposed project consists of two components. The first component would be replacement of the intake structure or heading **(Photograph A-1)**, which is approximately 60 feet downstream from the diversion dam in the acequia channel. The new structure would consist of a concrete-capped gabion headwall with a headgate connected to a 20-foot long (57" by 38") arch pipe. A debris deflector and a trash rack would be installed on the upstream side of the headwall. The channel at the outlet of the pipe would be stabilized with 4"- to 12"-inch cobbles and any disturbed ditch banks would be graded to at least 1.5:1 slopes.

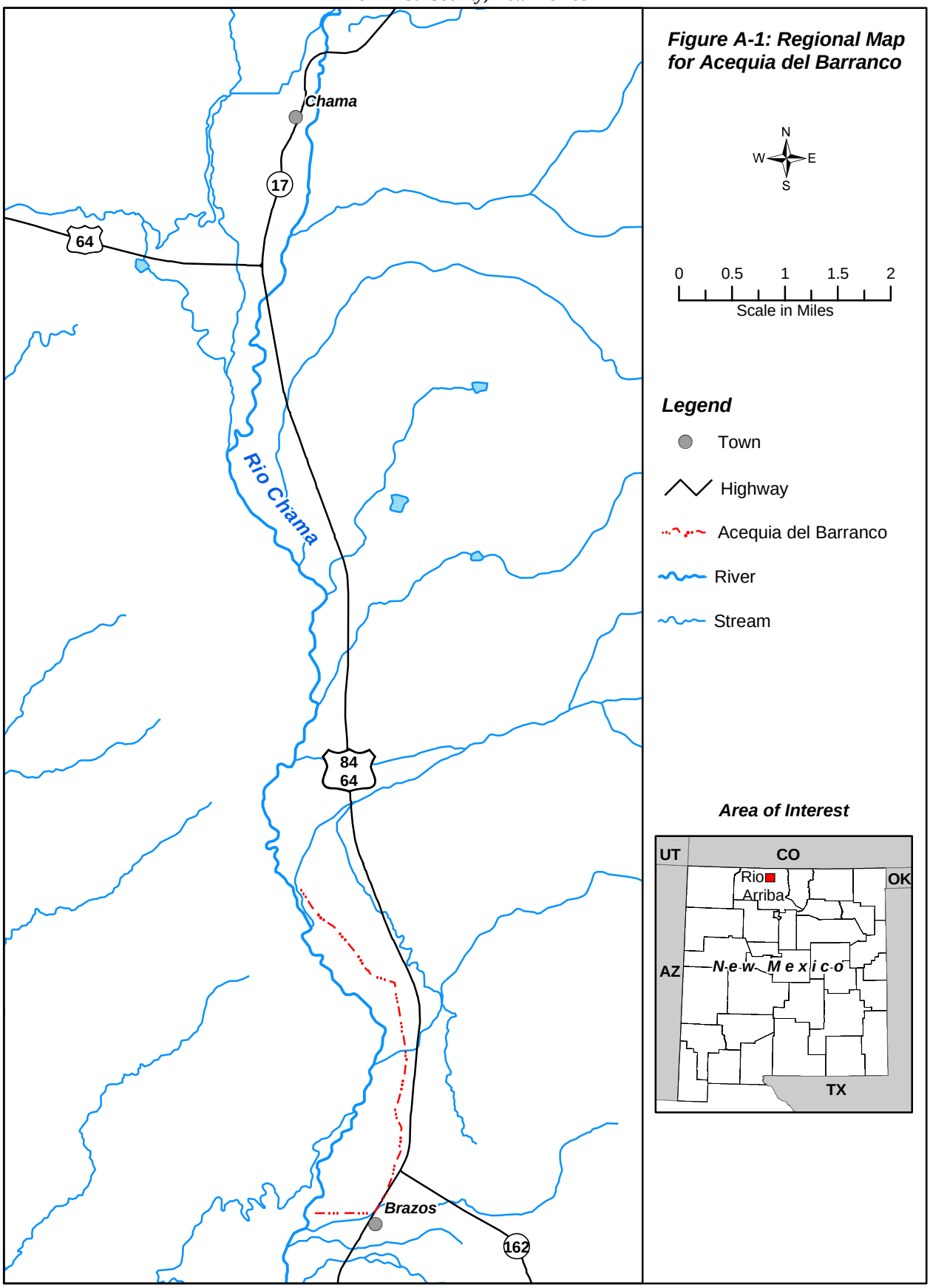


Figure A-1: Regional Map for Acequia del Barranco

Photograph A-1. Existing Heading and Intake of the Acequia del Barranco (Point #1 in Table A-1)

At the second primary construction site near Sawmill Arroyo, two structures would be installed affecting approximately 50 feet of the acequia channel. A new Y-shaped irrigation control structure would be constructed approximately 50 feet upstream from the confluence of Sawmill Arroyo and the acequia. This Y-shaped structure would consist of two steel slide gates installed in steel plate weirs, one that would cross the acequia and one that would cross the lateral just upstream from the Sawmill Arroyo. These structures would control the amount of flow into the main channel and the lateral.

Downstream from the Y-shaped structure, a steel plate and gabion basket structure would be used to protect the bank and spread out the concentrated water flows from the Sawmill Arroyo and direct some water into an existing concrete structure with a pipe through the center that outlets into the lower acequia channel **(Photograph A-2)**.

Each of the two project components has an associated staging area. The staging area for the diversion-intake component at the head of the acequia is located immediately upstream from the existing intake **(Photograph A-3)**. It is situated in active gravels along the margin of the Rio Chama and encompasses approximately 0.4 acres. The staging area for the Y-shaped water division structure is located immediately to the north (upslope) of the proposed construction area and totals approximately 1.1 acres **(Photograph A-4)**.

Photograph A-2. Existing Water Control Structure at Sawmill Arroyo Proposed for Rehabilitation (Point #16 in Table A-1)

Photograph A-3. Staging Area for Work Near Barranco Intake

Photograph A-4. Staging Area for Structures Near Sawmill Arroyo

4.0 CULTURE HISTORY

There is little information on prehistoric occupations of the area and virtually no evidence to suggest that the project area was occupied by Tewa elements during the seventeenth and eighteenth centuries (Schaafsma 2002:200-207). Rather, pueblos ancestral to modern Tewa pueblos appear to have been concentrated along the Rio Chama below Abiquiu.

There were few Spanish expeditions up the Rio Chama between 1598 and 1609 (Schaafsma 2002:221), so that the occupants of this region remain largely unknown. Vintage accounts suggest that much of the Rio Chama was unoccupied or, perhaps, occupied on a seasonal basis (Schaafsma 2002:234). By 1630, Benavides' account indicates that Navajos were present along the Rio Chama upstream from Santa Clara Pueblo and extending as far upriver as the Piedra Lumbre valley (Schaafsma 2002:241). Their persistence across the project area is confirmed by the 1687 Peñalosa map (Schaafsma 2002:259).

A 1706 Álvarez report, following closely on the heels of the 1680 Pueblo Revolt, indicates that the region west of Santa Clara Pueblo - which almost certainly included the Rio Chama - was devoid of Spanish settlements (Schaafsma 2002:299-300). The Brazos area was visited by the Dominguez-Escalante expedition in 1776 (Wilson and Kammer 1989:1). Near Los Ojos-Brazos, Escalante observed (Wilson and Kammer 1989:1):

> The river's [Rio Chama] meadow is about a league [2.5 miles] long from north to south, good land for farming with help of irrigation, it produces a great deal of good flax and abundant pasturage. There are also the other prospects which a settlement requires for its founding and maintenance. Here it has a good grove of white poplar.

By 1714, largely in response to a series of Spanish punitive expeditions along the Rio Chama, the Navajo largely abandoned the region (Schaafsma 2002:303).

Despite the gradual appearance of Spanish settlements during the 1700s (Wozniak et al. 1992:61), Jicarilla Apaches and Southern Utes continued to make use of the project area. Jicarilla Apaches remained in the area until their reservation was established in 1877. Similarly, the project area falls within traditional use areas of the Southern Utes, known to have been present in significant numbers prior to 1696 (Schaafsma 2002:301). Despite documentary evidence of their presence in the project area, there is little archaeological evidence of permanent Jicarilla or Ute settlements in the Brazos region.

The Acequia del Barranco is situated in the Tierra Amarilla land grant. According to Julyan (1996:353), this grant was awarded to Manuel Martinez in 1832 (see also Ebright 1994:73). Despite this relatively early date, it appears that the Tierra Amarilla grant was used primarily for summer pasture for many years and lacked permanent settlements for some years following its award. Brazos, the nearest hamlet to the acequia, was one of three of the earliest settlements within the boundary of the Tierra Amarilla grant (Julyan 1996:208), although a specific settlement date is not certain (Wilson and Kammer 1989:7). Local oral tradition suggests that Brazos – initially little more than a log stronghold to protect against Indian raids – was established in 1861 or 1862 (Wilson and Kammer 1989:4). The town subsequently developed into a linear settlement paralleling the alignment of the Acequia del Barranco.

The region became much more placid following the establishment in 1866 of Fort Lowell near Tierra Amarilla. The fort remained in operation until 1869, becoming largely unnecessary following establishment of the Uncompahgre Ute Reservation in 1868. The Los Brazos Historic District, including the Acequia del Barranco, was placed on the National Register of Historic Places in 1986.

It must be emphasized that the Acequia del Barranco is currently completing an adjudication process and the age of the acequia is as yet undetermined. The acequia was filed with the State Engineer Office (File No. 02566) and has been nominally estimated to date prior to 1907. According to Wilson and Kammer (1989:113-116), the Tierra Amarilla, Ensenada, and Parkview acequias – all constructed in 1862 – are the oldest acequias in the Brazos area. For purposes of this report, it is reasonable to suggest that the Acequia del Barranco dates between 1832 (when the Tierra Amarilla grant was established) and ca. 1861 when the Martinez family first constructed the house that still stands today in Brazos. At the same time, the Acequia del Barranco as a named ditch does not appear in either Follett's (1898) or Yeo's (1910) reports on irrigation systems along the Rio Chama.

Wilson and Kammer (1989:3) indicate that the population of the Los Ojos-Brazos area varied between 150 and 656 people during the period 1870–1950 **(Figure A-2)**. A peak population of 910 individuals was attained in 1910.

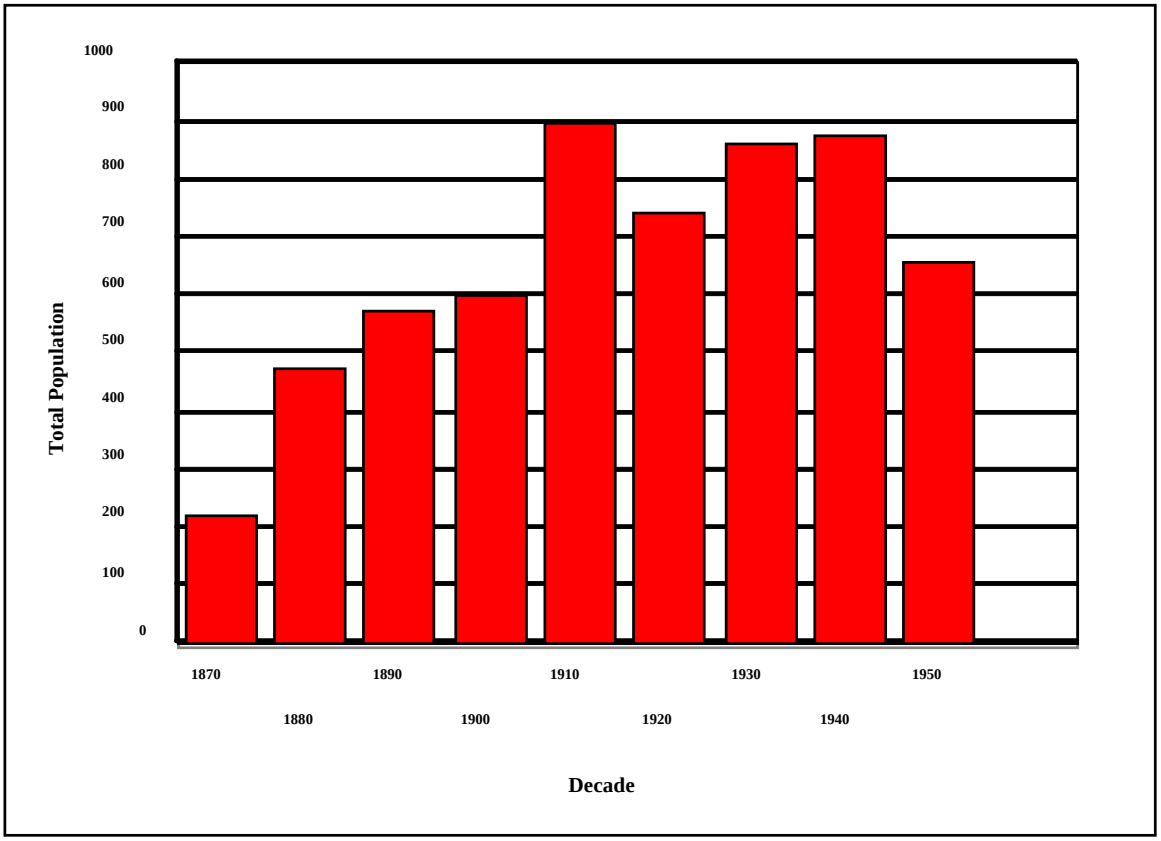


Figure A-2. Population Size in Los Ojos-Brazos: 1870-1950.

5.0 METHODOLOGY AND SURVEY RESULTS

5.1 Methodology

The cultural resources survey of the proposed replacements on the Acequia del Barranco was preceded by a check of site files at NMCRIS in Santa Fe. Other than the Acequia del Barranco, there is only one previously recorded archaeological site (LA100771) situated in the project area, the historic Cañones Community Ditch.

The Class III inventory consisted of an intensive pedestrian survey of the construction and staging areas (7.6 acres) for proposed repairs to the Acequia del Barranco. Additional documentation of the acequia included walking the alignment and recording the locations of water control structures (e.g., culverts, check structures, taps) in addition to an on-the-ground inspection of the entire acequia.

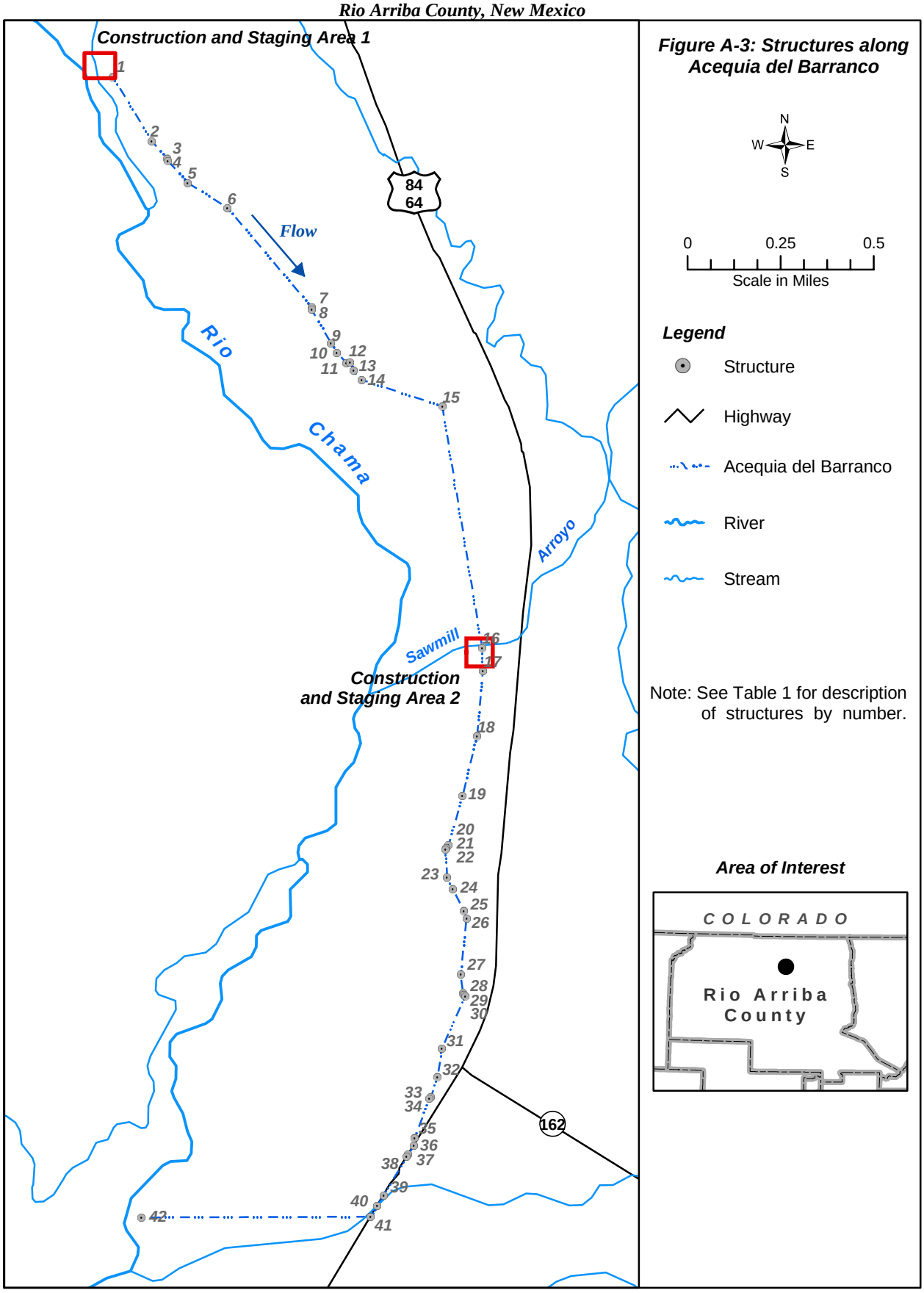
Water was flowing through the acequia at the time of the inventory, so that detailed inspections of the sides and bottom of the acequia were limited. **Table A-1** lists the locations and attributes of water control and related structures along the acequia alignment, shown in **Figure A-3.** Representative examples of water control structures are presented in **Photographs A-5 to A-11**.

Table A-1. Locations of Water Control Structures in the Acequia del Barranco

Point #	UTM		Structure	Point #	UTM		Structure
	Easting	Northing			Easting	Northing	
1	359402	4073343	Intake	22	360842	4069996	Footbridge
2	359572	4073064	Culvert	23	360847	4069877	Culvert
3	359636	4072989	Check	24	360871	4069826	Footbridge
4	359640	4072980	Abandoned Check	25	360921	4069732	Culvert
5	359728	4072883	Check	26	360931	4069699	Check
6	359899	4072774	Footbridge	27	360906	4069456	Culvert/ Check
7	360262	4072345	Culvert	28	360916	4069375	Rock Drop
8	360262	4072334	Flume	29	360920	4069369	Check
9	360346	4072189	Culvert	30	360926	4069363	Culvert
10	360372	4072149	Footbridge	31	360825	4069135	Culvert
11	360413	4072103	Footbridge	32	360807	4069014	Culvert
12	360429	4072106	Footbridge	33	360777	4068925	Check/Tap
13	360443	4072071	Culvert	34	360772	4068919	Culvert
14	360481	4072030	Culvert	35	360707	4068748	Culvert
15	360827	4071917	Tail Confluence	36	360703	4068715	Check/Tap
16	360999	4070871	Culvert	37	360680	4068677	Culvert
17	361002	4070771	Culvert	38	360674	4068668	Culvert
18	360977	4070489	Culvert	39	360573	4068499	Check
19	360915	4070230	Tap	40	360545	4068455	Culvert
20	360854	4070016	Footbridge	41	360518	4068407	Flume
21	360845	4070003	Footbridge	42	359525	4068404	Terminus

Notes: UTM - Universal Transverse Mercator

Coordinates are in UTM Zone 13, North American Datum of 1927, collected using a Global Positioning System with ± 3 to 5 meter accuracy.


Construction and Staging Area 1
Flow
84
64
Rio
Chama
Arroyo
Sawmill
Construction
and Staging Area 2
162
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
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26
27
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34
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36
37
38
39
40
41
42
Figure A-3: Structures along
Acequia del Barranco
N
W
E
S
0
0.25
0.5
Scale in Miles
Legend
Structure
Highway
Acequia del Barranco
River
Stream
Note: See Table 1 for description
of structures by number.
Area of Interest
COLORADO
Rio Arriba
County

Photograph A-5. New Metal Modular Check/Tap Structure

Photograph A-6. Older Concrete Check with Wooden Gate

Photograph A-7. Full-round Metal Flume Spanning Small Arroyo

Photograph A-8. Footbridge with New Modular Metal Tap

Photograph A-9. Older Wooden Check below a Crossover Flume

Photograph A-10. Rock Drop Structure at Change in Acequia Gradient

Photograph A-11. Boxed Wooden Flume Toward End of Acequia

5.2 Survey Results

No prehistoric or historic archaeological resources were found within or immediately adjacent to the Acequia del Barranco right-of-way. Similarly, no prehistoric or historic archaeological resources were found within the boundaries of the staging areas associated with the two proposed work areas. There are no known Traditional Cultural Properties in the project area.

6.0 CONCLUSIONS

The Acequia del Barranco is part of the Los Brazos Historic District that was placed on the National Register of Historic Places (NPS 2003) in 1985 (NR No. 85000827; SR No. 1114). The acequia was listed separately on the National Register as El Barranco Community Ditch in 1986 (NR No. 86002296; SR No. 1228). For purposes of this report, a Laboratory of Anthropology site number, LA141536, was assigned to this acequia. Documentary evidence indicates that the Acequia del Barranco was constructed sometime between 1832 and 1861.

It is likely that the Acequia del Barranco was successively modified many times during its more than 142 years of operation. If each structure noted in Table 1 averages 15 feet along the acequia, this would total 630 feet currently modified by structures. After adding in the 50 feet of new construction to install the Y-shaped water control structure, there would be approximately 2.6 percent of the entire acequia that would be modified by structures. Today, the Acequia del Barranco obtains water from the Rio Chama and the system as a whole provides water for 16 irrigators cultivating approximately 646 acres of pasture. Despite likely changes in its character, it remains pivotal to the economy and cultural characteristics of the Brazos area.

The proposed protection of the diversion, reconstruction of the acequia intake, and water control structure would have no adverse effect on the acequia's current status as a National Register of Historic Places property. Based on these findings, an archaeological clearance is recommended for this proposed rehabilitation project.

7.0 REFERENCES

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APPENDIX B
AGENCY COMMENTS
ON DRAFT ENVIRONMENTAL ASSESSMENT

State of New Mexico
ENVIRONMENT DEPARTMENT
Office of the Secretary
Harold Runnels Building
1190 St. Francis Drive, P.O. Box 26110
Santa Fe, New Mexico 87502-6110
Telephone (505) 827-2855

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

January 15, 2004

Ellen Dietrich
SAIC Project Manager
Science Application International Corp.
2109 Air Park Road SE
Albuquerque, NM 87106

Dear Ms. Dietrich:

RE: DRAFT ENVIRONMENTAL ASSESSMENT FOR REHABILITATION OF ACEQUIA DEL BARRANCO

This transmits New Mexico Environment Department (NMED) staff comments concerning the above-referenced Draft Environmental Assessment (EA).

The U.S. Environmental Protection Agency (EPA) requires National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) coverage for storm water discharges from construction projects (common plans of development) that will result in the disturbance (or re-disturbance) of one or more acres, including expansions, of total land area. As correctly pointed out in Section 3.1.2 in the Draft Environmental Assessment, because this project appears to exceed one acre, it will require appropriate NPDES permit coverage prior to beginning construction (small, one - five acre, construction projects may be able to qualify for a waiver in lieu of permit coverage - see Appendix D).

Among other things, this permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared for the site and that appropriate Best Management Practices (BMPs) be installed and maintained both during and after construction to prevent, to the extent practicable, pollutants (primarily sediment, oil & grease and construction materials from construction sites) in storm water runoff from entering waters of the U.S. This permit also requires that permanent stabilization measures (revegetation, paving, etc.), and permanent storm water management measures (storm water detention/retention structures, velocity dissipation devices, etc.) be implemented post construction to minimize, in the long term, pollutants in storm water runoff from entering these waters. In addition, permittees must ensure that there is no increase in sediment yield and flow

velocity from the construction site (both during and after construction) compared to pre-construction, undisturbed conditions (see Subpart 9.C.1)

You should also be aware that EPA requires that all "operators" (see Appendix A) obtain NPDES permit coverage for construction projects. Generally, this means that at least two parties will require permit coverage. The owner/developer of this construction project who has operational control over project specifications (probably the Puerto de Luna East Side Acequia Association in this case), the general contractor who has day-to-day operational control of those activities at the site, which are necessary to ensure compliance with the storm water pollution plan and other permit conditions, and possibly other "operators" will require appropriate NPDES permit coverage for this project.

The CGP was re-issued effective July 1, 2003 (see **Federal Register/Vol. 68, No. 126/Tuesday, July 1, 2003** pg. 39087). The CGP, Notice of Intent (NOI), Fact Sheet, and Federal Register notice can be downloaded at: http://cfpub.epa.gov/npdes/stormwater/cgp.cfm

We appreciate the opportunity to comment on this project.

Sincerely,

Gedl Cibas, Ph.D.
Environmental Impact Review Coordinator

NMED File No. 1817ER

GOVERNOR
Bill Richardson

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH

One Wildlife Way
PO Box 25112
Santa Fe, NM 87504

Visit our website at www.gmfsh.state.nm.us
For basic information or to order free publications: 1-800-862-9310.

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Guy Riordan
Albuquerque, NM

Leo Sims
Hobbs, NM

January 22, 2004

Ms. Ellen Dietrich, SAIC Project Manager
2109 Air Park Road SE
Albuquerque, NM 87106

Re: Environmental Assessment for Rehabilitation of Acequia del Barranco Rio Arriba County, New Mexico. NMGF Doc. #9118.

Dear Ms. Dietrich:

In response to your letter dated December 19, 2003 regarding the above referenced project, the Department of Game and Fish (Department) does not anticipate significant impacts to wildlife or sensitive habitats. For your information, we have enclosed a list of sensitive, threatened and endangered species which occur in Rio Arriba County.

Thank you for the opportunity to review and comment on your project. If you have any questions, I can be contacted at (505) 476-8114 or jaward@state.nm.us .

Sincerely,

Janell Ward, Assistant Chief
Conservation Services Division

JW/mr
xc: Joy Nicholopolous, New Mexico Ecological Services, USFWS
Steve Anderson, Northwest Area Habitat Specialist NMDGF

New Mexico Species of Concern - Rio Arriba County

Common Name	SCIENTIFIC NAME	FWS.. ESA	NM... WCA	FS. R3	BLM.. NM	NM... Sen	FWS. SOC
Rio Grande Cutthroat Trout	Oncorhynchus clarki virginalis	-	-	s	-	s m	s
Rio Grande Chub	Gila pandora	-	-	-	-	s	-
Roundtail Chub	Gila robusta	-	E	s	s	-	s
Flathead Chub	Platygobio gracilis	-	-	-	s	-	-
Rio Grande Sucker	Catostomus plebeius	-	-	s	-	-	s
Jemez Mountains Salamander	Plethodon neomexicanus	g m	T	s	s	n	s
Western Boreal Toad	Bufo boreas boreas	C m	E	s	-	-	-
Northern Leopard Frog	Rana pipiens	-	-	s	-	-	-
White Sands Prairie Lizard	Sceloporus undulatus cowlesi	-	-	-	-	s n	-
Clark's Grebe	Aechmophorus clarkii	-	-	s	-	-	-
American Bittern	Botaurus lentiginosus	-	-	s	-	-	-
Least Bittern	Ixobrychus exilis exilis	-	-	s	-	-	-
Snowy Egret	Egretta thula brewsteri	-	-	s	-	-	-
Black-crowned Night-Heron	Nycticorax nycticorax hoactli	-	-	s	-	-	-
White-faced Ibis	Plegadis chihi	-	-	s	s	-	-
Osprey	Pandion haliaetus carolinensis	-	-	s	-	-	-
Bald Eagle	Haliaeetus leucocephalus	AD,T mg	T	s	-	-	-
Northern Goshawk	Accipiter gentilis	-	-	s	s	s	s
Swainson's Hawk	Buteo swainsoni	-	-	s	-	-	-
Zone-tailed Hawk	Buteo albonotatus	-	-	s	-	-	-
Ferruginous Hawk	Buteo regalis	-	-	s	s	-	-
American Peregrine Falcon	Falco peregrinus anatum	DM m	T	s	-	-	s
White-tailed Ptarmigan	Lagopus leucurus altipetens	-	E	s	-	-	-
Sora	Porzana carolina	-	-	s	-	-	-
Whooping Crane	Grus americana	EXPN,E mg	E	s	-	-	-
Mountain Plover	Charadrius montanus	PT	-	s	-	s	-
Upland Sandpiper	Bartramia longicauda	-	-	s	-	-	-
Long-billed Curlew	Numenius americanus americanus	-	-	s	-	-	-
Interior Least Tern	Sterna antillarum athalassos	E mg	E	s	-	-	-
Black Tern	Chlidonias niger surinamensis	-	-	-	s	-	s
Yellow-billed Cuckoo	Coccyzus americanus occidentalis	C	-	s	-	s	-
Flammulated Owl	Otus flammeolus	-	-	s	-	-	-
Burrowing Owl	Athene cunicularia hypugaea	-	-	-	s	-	s
Mexican Spotted Owl	Strix occidentalis lucida	T hmg	-	s	-	s	-
Boreal Owl	Aegolius funereus	-	T	s	-	-	-
Belted Kingfisher	Ceryle alcyon	-	-	s	-	-	-
Southwestern Willow Flycatcher	Empidonax traillii extimus	E h	E	s	-	-	-
Loggerhead Shrike	Lanius ludovicianus	-	-	-	s	s	-
Gray Catbird	Dumetella carolinensis ruficrissa	-	-	s	-	-	-
Baird's Sparrow	Ammodramus bairdii	-	T	s	s	-	s
Western Small-footed Myotis Bat	Myotis ciliolabrum melanorhinus	-	-	-	s	s	-
Yuma Myotis Bat	Myotis yumanensis yumanensis	-	-	-	s	s	-
Long-legged Myotis Bat	Myotis volans interior	-	-	-	s	s	-
Long-eared Myotis Bat	Myotis evotis evotis	-	-	-	s	s	-
Spotted Bat	Euderma maculatum	-	T	s	s	-	-
Pale Townsend's Big-eared Bat	Plecotus townsendii pallescens	-	-	s	s	s	s
Big Free-tailed Bat	Nyctinomops macrotis	-	-	-	s	s	-
Goat Peak Pika	Ochotona princeps nigrescens	-	-	s	s	s n	s
White-tailed Jack Rabbit	Lepus townsendii campanius	-	-	-	-	s	-
Yellow-bellied Marmot	Marmota flaviventris	-	-	-	-	s	-

New Mexico Species of Concern - Rio Arriba County

Common Name	SCIENTIFIC NAME	FWS.. ESA	NM... WCA	FS. R3	BLM.. NM	NM... Sen	FWS. SOC
Gunnison's Prairie Dog	Cynomys gunnisoni	-	-	-	-	s	-
Heather Vole	Phenacomys intermedius intermedius	-	-	-	-	s	-
New Mexican Jumping Mouse	Zapus hudsonius luteus	-	T	s	s	-	s
Red Fox	Vulpes vulpes	-	-	-	-	s	-
Ringtail	Bassariscus astutus	-	-	s	-	s	-
American Marten	Martes americana origenes	-	T	s	-	-	-
Western Spotted Skunk	Spilogale gracilis	-	-	-	-	s	-
Rocky Mountain Bighorn Sheep	Ovis canadensis canadensis	-	-	s	-	m	-
Socorro Mountainsnail	Oreohelix neomexicana	-	-	-	-	s n	-
False Ameletus Mayfly	Ameletus falsus	-	-	s	-	-	s
Pearly Checkerspot Butterfly	Charidryas acastus acastus	-	-	-	-	-	s

NATIVE SPECIES APPARENTLY NO LONGER OCCURRING IN RIO ARRIBA COUNTY

Colorado River Cutthroat Trout	Oncorhynchus clarki pleuriticus	
Rio Grande Silvery Minnow	Hybognathus amarus	
Rio Grande Shiner	Notropis jemezanus	
Rio Grande Bluntnose Shiner	Notropis simus simus	(extinct)
Colorado Pikeminnow (Squawfish)	Ptychocheilus lucius	
Gunnison Sage-Grouse	Centrocercus minimus	(extirpated from NM)
Gray Wolf	Canis lupus	
Grizzly Bear	Ursus arctos	(extirpated from NM)
Black-footed Ferret	Mustela nigripes	(extirpated from NM)
Mink	Mustela vison energumenos	(extirpated from NM)
Southwestern River Otter	Lutra canadensis sonorae	(extirpated from NM)
Lynx	Lynx lynx	(no specimens or verified records)
Wolverine	Gulo gulo	(no specimens or verified records)

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APPENDIX C
CONSULTATION WITH STATE HISTORIC PRESERVATION OFFICE AND TRIBAL CONSULTATION LETTER

069799

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA NE
ALBUQUERQUE NM 87109-3435

December 19, 2003

Engineering and Construction Division
Environmental Resources Branch

Rec'd 1-2-2004
GDE

Ms. Katherine Slick
State Historic Preservation Officer
New Mexico Historic Preservation Division
228 East Palace Avenue, Room 320
Santa Fe, New Mexico 87501
Dear Ms. Slick:

Pursuant to 36 CFR Part 800, the U.S. Army Corps of Engineers (Corps), Albuquerque District, is seeking your concurrence in our determination of "No Adverse Effect to Historic Properties" for a proposed acequia project involving the rehabilitation of two Acequia del Barranco water control structures. The Corps, at the request of the New Mexico State Engineer and the Barranco Acequia Association, is planning the rehabilitation project under the Water Resources Development Act of 1986 (Public Law 99-662; 33 U.S.C. 2201 *et. seq.*), as amended. The project area is located west of U.S. Highway 64, south of Chama and north of the village of Los Brazos, in Rio Arriba County, New Mexico.

The proposed project will replace the existing, inefficient corrugated pipe intake/heading structure with a concrete-capped gabion structure that includes a debris deflector, trash rack, and modern water flow-control gate. This first construction site is located about 60 feet downstream from the acequia's Rio Chama diversion point. At the second construction site, an existing, inefficient concrete structure will be rehabilitated with two gabion structures. The location is continually threatened by intermittent high flows from Sawmill Arroyo. Immediately upstream of where the acequia ditch crosses the arroyo, a new wye-shaped gabion structure that includes steel plating and modern water flow-control gates would be constructed to more efficiently control irrigation water flows to the acequia madre and to a primary lateral. In addition, the existing concrete structure would receive gabion baskets and steel plating to protect the structure and manage arroyo flows. The maintenance of these structures is expensive and labor

intensive, posing an economic burden on acequia members. Failure of the structures would leave acequia members without irrigation water during critical irrigation periods and would economically threaten the livelihood of acequia members. The project is a Natural Resources Conservation Service (NRCS) design. Construction is planned to occur during the non-irrigating season.

On October 20, 2003, Dos Rios Consultants, Inc., conducted the cultural resources survey and prepared the enclosed report entitled, **Cultural Resources Survey Report for the Acequia del Barranco, Rio Arriba County, New Mexico** (NMCRIS No. 85634). The survey covered 100 percent of the proposed construction and staging areas covering approximately 7.6 acres. No artifacts or cultural manifestations were observed during the survey other than the Acequia del Barranco; identified as LA141536. The acequia measures approximately 5 miles in total length.

Prior to the archaeological survey Dos Rios searched the Archaeological Records Management Sections database. Other than the Acequia del Barranco, also known as El Barranco Community Ditch, only one other historic property is known to occur in the project area, the historic Cañones Community Ditch (LA100771) that is located on the east side of Highway 64 and would not be affected by this project. No other archaeological sites or historic properties are known to occur in the immediate area of the project. No traditional cultural properties are known to occur in the project area.

The State Engineer recognizes Acequia del Barranco water rights that have been estimated to date prior to 1907; however, the ditch most likely has been in use since the 1860s. Acequia del Barranco contributes to the Los Brazos Historic District that was placed on the National Register of Historic Places in 1985 (NR No. 85000827; SR No. 1114). The El Barranco Community Ditch, itself was listed on the National Register in 1986 (NR No. 86002296; SR No. 1228).

The proposed project would affect a negligible amount of the earthen ditch, the majority of which has been previously disturbed by construction of the existing structures. The project would not affect the acequia's intended function, form, or alignment and therefore, would have no adverse effect on the ditch's status as a National Register property. No other significant construction projects have previously affected the ditch.

Based on the information provided in the enclosed survey report, the Corps is of the opinion that the proposed Acequia del Barranco rehabilitation project would have "No Adverse Effect to Historic Properties."

Pursuant to 36 C.F.R. 800.11, should previously unknown artifacts or cultural resource manifestations be encountered during construction, work would cease in the immediate vicinity of the resource, a determination of significance made and a mitigation plan formulated in consultation with your office and any Native American groups that may have interest or concerns in the project area.

If you have any questions or require additional information, please contact Mr. Gregory Everhart, Archaeologist, at (505) 342-3352 or Mr. John Schelberg, Archaeologist, at (505) 342-3359.

Sincerely,

Julie A. Hall
Chief, Environmental Resources
Section

12/29/03
Date

I CONCUR P. G. Young
for KATHERINE SLICK
NEW MEXICO STATE HISTORIC
PRESERVATION OFFICER

Enclosures
Copy Furnished: (w/o enclosures)
Mr. Don Klima, Director
Advisory Council on Historic Preservation
Office of Planning and Review
12136 W. Bayaud Ave., #330
Lakewood, Colorado 80228-2115

SHPO comments: Please provide a LA Investigation Record form for the survey, NMCRIS 85634. A LA site record for LA 147536 should also be provided.

THE HOPI TRIBE

Wayne Taylor, Jr.
CHAIRMAN

Caleb Johnson
VICE-CHAIRMAN

January 5, 2004

Dana R. Hurst, Lieutenant Colonel, U.S. Army District Engineer
Attention: Gregory Everhart, John Schelberg, Archaeologists
Department of the Army, Albuquerque District, Corps of Engineers
4101 Jefferson Plaza, NE
Albuquerque, New Mexico 87109-3435

Dear Lieutenant Colonel Hurst,

Thank you for your letter to Chairman Taylor and the Hopi Cultural Preservation Office dated December 23, 2003, regarding the rehabilitation of two Acequia del Barranco water control structures in Rio Arriba County, New Mexico. The Hopi Tribe claims cultural affiliation prehistoric cultural groups in New Mexico, and therefore we appreciate the Corp's solicitation of our input and your efforts to address our concerns.

The Hopi Cultural Preservation Office supports the identification and avoidance of prehistoric archaeological sites. We understand a cultural resources inventory of the project area identified no prehistoric archaeological sites. We are not aware of any Hopi Traditional Cultural Properties in this project area. Therefore, the Hopi Cultural Preservation Office has determined that this proposed undertaking is unlikely to affect objects, sites, or locations of traditional cultural importance to the Hopi Tribe.

If you have any questions or need additional information, please contact the Hopi Cultural Preservation Office. Thank you again for your consideration.

Respectfully,

Leigh J. Kuwanwisiwma, Director
Hopi Cultural Preservation Office

xc: New Mexico State Historic Preservation Office
Office of the Chairman

P.O. BOX 123 — KYKOTSMOVI, AZ. — 86039 — (928) 734-3000