



**US Army Corps
of Engineers®**
Albuquerque District

Final
Environmental Assessment
and
Finding of No Significant Impact
for the

Ramah Valley Acequia Rehabilitation Project
McKinley County, New Mexico

Section 1113 of the Water Resources Development Act of 1986

Prepared by

U.S. ARMY CORPS OF ENGINEERS
ALBUQUERQUE DISTRICT
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109

September 2011

This page was intentionally left blank.

Finding of No Significant Impact
Ramah Valley Acequia Rehabilitation Project
McKinley County, New Mexico

The U.S. Army Corps of Engineers (Corps), Albuquerque District, in cooperation with and at the request of the New Mexico State Engineer's Office and the members of the Ramah Valley Acequia (Community Ditch) Association, is planning a project to rehabilitate the Ramah Valley Acequia, McKinley County, New Mexico. The project area is located along Cebolla Creek, a tributary of the Rio Pescado in the Zuni River Basin, in the community of Ramah. Ramah is located 50 miles west of Grants and 43 miles southeast of Gallup on NM highway 53.

The proposed rehabilitation work on the Ramah Valley Acequia would be conducted under Section 1113 of the Water Resources Development Act of 1986 (Public Law 99-662), as amended. Section 1113 authorizes the Acequia Rehabilitation Program for the restoration and rehabilitation of irrigation ditch systems (acequias) in New Mexico. This acequia rehabilitation project also qualifies under Section 215 of the Flood Control Act of 1968 (Public Law 90-483), as amended. Section 215 provides that the Secretary of the Army may enter into an agreement to credit or reimburse the costs of certain work accomplished by states or political subdivisions thereof, which later is incorporated into an authorized project.

Ramah Valley Acequia diverts water from Cebolla Creek at Ramah Reservoir above Ramah Dam. The dam was constructed beginning in about 1878 and is owned and operated by Ramah Land and Irrigation Company. The acequia, which has been in operation since about 1882, currently serves 72 members who irrigate about 1200 acres of cropland. The purposes of the acequia rehabilitation project are to improve water delivery efficiency by limiting seepage and leaks in the existing concrete pipes and to provide a pressurized pipeline for spray irrigation. The present system of concrete pipes conveys water inefficiently with numerous leaks that prevent the system from maintaining adequate pressure. The proposed action would not change or affect water rights, or the amount of flows diverted.

The Corps proposes to rehabilitate the Ramah Valley Acequia by replacing the existing 24-inch concrete pipe with 24-inch polyvinyl chloride (PVC) irrigation pipe. Project design and specifications have been provided by the Natural Resources Conservation Service. Components include 6572 feet of 24-inch diameter, 80 psi PVC plastic irrigation pipe and 223 feet of 10-inch diameter, 80 psi PVC pipe. Additional components include 3000 psi concrete thrust blocks, alfalfa valves, and inline valves as needed. The new pipeline would follow the alignment of the existing pipeline for most of its length. Project construction is scheduled during the non-irrigation season beginning in the fall of 2011 or early spring of 2012 with an expected duration of approximately 3 months. The acequia members would be responsible for assuring operation and maintenance of the acequia and pressurized pipeline upon project completion.

Other alternatives considered in this Environmental Assessment include taking no action (the No-Action Alternative), replacing one of the pipelines only, or replacing only portions of both pipelines. The partial replacement alternatives would not allow for pressurized water delivery and were therefore eliminated from further analysis.

The Ramah Valley Acequia is eligible for nomination to the National Register of Historic Places and the New Mexico State Register of Cultural Properties. The current rehabilitation project would change a small portion of the alignment (approximately 900 feet out of a total of more than 6,000 feet to be piped). The irrigation system to be impacted by the current project was already changed from its historic earthen ditch form by the addition of buried concrete pipe in 1982, and the current form therefore does not represent a contributing element to the system's eligibility. The Corps, therefore, has determined that the proposed Ramah Valley Acequia rehabilitation project would have no adverse effect to historic properties. The New Mexico State Historic Preservation Office (NMSHPO) has been consulted regarding this determination and concurred on March 16, 2011. Should previously undiscovered artifacts or features be unearthed during construction, work would be stopped in the immediate vicinity of the find, a determination of significance made, and a mitigation plan formulated in coordination with the NMSHPO and with Native American groups that may have concerns in the project area.

Tribes indicating an interest in activities in McKinley County were sent a scoping letter to assess if there were any potential tribal concerns with the project. To date, the Corps has received no indication of tribal concerns that would impact the project.

As required by the Endangered Species Act, the Corps has determined that the project would have no effect on any threatened or endangered species or designated or proposed critical habitat receiving protection under the Endangered Species Act.

The proposed action is the rehabilitation of an existing irrigation structure. Therefore, the project is exempt from the provisions of Sections 404 and 401 of the Clean Water Act (33 CFR 323.4). Wetlands exist within the project area, but there would be no impacts to these wetlands. Therefore, the project complies with Executive Order 11990, Protection of Wetlands.

Best Management Practices to protect the environment that would be implemented as part of this project include the following:

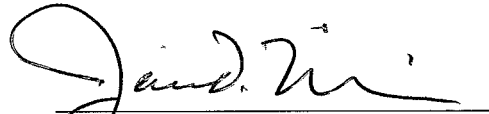
- The contractor would be required to have emission control devices on all equipment.
- To control dust and wind erosion, soils within the construction zone would be kept wet. Stockpiles of debris, soil, sand, or other materials that could produce dust would be watered or covered. Materials transported on- or off-site by truck would be covered. The contractor would be required to comply with local soil sedimentation and erosion-control regulations.
- All fuels and lubricants would be stored outside of the 100-year floodplain of Cebolla Creek and construction equipment would be inspected daily and monitored during operation to prevent leaking fuels or lubricants from entering surface water.
- A Storm-Water Pollution Prevention Plan is required. Aquatic habitat would be protected with silt fencing, geotextiles, or straw bales to prevent runoff of sediments from areas disturbed by construction. Orange construction fence would be placed in front of the silt fence to prevent construction workers from entering wetland and aquatic habitat.

- The least amount of trench possible would be left open overnight and escape ramps with a slope of less than 45 degrees would be provided every 300 feet (90 meters) to avoid entrapment of small animals.
- Any necessary vegetation clearing along the pipeline route would take place between September 15 and April 15, or a biologist would verify that there would be no significant impact to migratory birds as a result of the proposed work.
- All construction equipment would be cleaned with a high-pressure water jet before entering and upon leaving the project area to prevent introduction or spread of invasive plant species. Equipment that was previously used in a waterway or wetland would be disinfected to prevent spread of aquatic disease organisms such as chytrid fungus. Disinfection water shall be contained in a tank or approved off-site facility and shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. Waste water would be disposed following all federal, state, and local regulations.
- A valve would be added in proximity to the small pond near the top of the acequia so that water may be added as needed to maintain the pond and adjacent wetland habitat.
- Following construction, the soil would be stabilized and revegetated with appropriate native plant species or pasture grasses.

The proposed action would not change or affect water rights or the amount of water diverted. The proposed action would result in minor or temporary effects on soils, air quality, noise levels, vegetation, wetlands, floodplains, and wildlife species and habitat during construction. The following elements were analyzed, but would not be significantly affected by the proposed action: climate, physiography, geology, water quality, waters of the U.S., special status species, visual resources, human health and safety, aesthetics, land use, Indian Trust Assets, and environmental justice. Beneficial effects would occur to land use and socioeconomics with increased efficiency of the acequia.

The proposed action is being coordinated with Federal, state, and local agencies with jurisdiction over the biological and cultural resources of the proposed action area. Based upon these factors and others discussed in the following environmental assessment, the proposed action would not have significant effects on the human environment. Therefore, an environmental impact statement will not be prepared for the proposed rehabilitation work on Ramah Valley Acequia.

16 SEP 11
Date


Jason D. Williams
Lieutenant Colonel, U.S. Army
District Commander

This page was intentionally left blank.

TABLE OF CONTENTS

	<u>Page</u>
1 INTRODUCTION	1
1.1 Background and Location	1
1.2 Purpose and Need.....	2
1.3 Regulatory Compliance.....	6
2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES	6
2.1 Proposed Action	6
2.2 The No-Action Alternative.....	7
2.3 Alternatives Considered but Not Analyzed.....	7
3.0 EXISTING ENVIRONMENT AND FORESEEABLE EFFECTS.....	7
3.1 Physiography, Geology, and Soils	7
3.2 Climate and Climate Change.....	9
3.3 Water Resources.....	10
3.4 Floodplains and Wetlands	11
3.5 Air Quality, Noise, and Aesthetics.....	14
3.6 Vegetation Communities.....	15
3.7 Noxious Weeds and Invasive Species.....	19
3.8 Wildlife.....	20
3.9 Special Status Species	24
3.10 Cultural Resources.....	26
3.11 Socioeconomic Considerations and Land Use	27
3.12 Environmental Justice.....	27
3.13 Indian Trust Assets	28
3.14 Human Health and Safety.....	28
3.15 Hazardous, Toxic, and Radioactive Waste (HTRW)	29
3.16 Cumulative Impacts.....	29
4.0 CONCLUSIONS AND SUMMARY	30
5.0 PREPARATION, CONSULTATION AND COORDINATION.....	31
5.1 Preparation	31
5.2 Quality Control.....	31
5.3 Consultation and Coordination.....	31
5.4 Mailing List for Draft Environmental Assessment	33
5.5 Summary of Public Review Comments and Corps' Responses.....	36
6.0 REFERENCES	39

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

Figure 1. Aerial Photo of Proposed Project Area, McKinley County, New Mexico..... 3
Figure 2. Ramah Valley Acequia Topographic Map, Existing and Proposed Alignments. 4
Figure 3. Ramah Valley Acequia: Existing Conditions..... 5
Figure 4. Climate characteristics in Ramah, McKinley County, NM near project area. Graphs generated by City-data.com (2010)..... 9
Figure 5. Wetlands in vicinity of Ramah Valley Acequia. 13
Figure 6. Vegetation in the vicinity of the Ramah Valley Acequia..... 17

LIST OF TABLES

Table 1. List of plants observed at Ramah Valley Acequia..... 18
Table 2. Species of Greatest Conservation Need and sensitive species with potential to occur in the vicinity of Ramah Valley Acequia..... 22
Table 3. Federal and State Threatened, Endangered, and Candidate Species and Rare Plants in McKinley County, New Mexico with Potential to Occur in the Project Area. 25
Table 4. Summary of Effects of Proposed Action and No-Action Alternative 30
Table 5. Public Review Comments and Corps’ Responses 37

LIST OF APPENDICES

Appendix A: Cultural Resources Coordination

- Tribal Consultation Letter
- Response Letters from Tribes
- Cultural Resources Survey Report
- State Historic Preservation Office Correspondence

Appendix B: Summary of Clean Water Act Section 404 Irrigation Exemption

Appendix C: Wetland Delineation Forms

Appendix D: Public Review Letter, Notice of Availability and Affidavit of Publication

Appendix E: Agency Review Comment Letters

1 INTRODUCTION

1.1 Background and Location

The U.S. Army Corps of Engineers (Corps), Albuquerque District, in cooperation with and at the request of the New Mexico Office of the State Engineer and the members of the Ramah Valley Acequia Association, is planning a project that would rehabilitate the Ramah Valley Acequia, McKinley County, New Mexico. Ramah is located in south-eastern McKinley County, 50 miles west of Grants and 43 miles southeast of Gallup on New Mexico Highway 53. Cebolla Creek, which runs through part of the community, is a tributary of the Rio Pescado in the Zuni River basin. Ramah Dam, a mile north of the community of Ramah, impounds the waters of Cebolla Creek and the water in the reservoir behind the dam is the water source for the acequia (see Figures 1 and 2 for map and aerial photo of the proposed project area). The project area is located downstream from Ramah Reservoir and Dam.

The proposed rehabilitation work on the Ramah Valley Acequia would be conducted under Section 1113 of the Water Resources Development Act of 1986 (WRDA 1986; Public Law 99-662), as amended. Section 1113 authorizes the Acequia Rehabilitation Program for the restoration and rehabilitation of irrigation ditch systems (acequias) in New Mexico. The Ramah Valley Acequia rehabilitation project also qualifies under Section 215 of the Flood Control Act of 1968 (Public Law 90-483) as amended. Section 215 provides that the Secretary of the Army may enter into an agreement to credit or reimburse the costs of certain work accomplished by states or political subdivisions thereof, which later is incorporated into an authorized project. When he determine sit to be in the public interest, the Secretary of the Army, acting through the Chief of Engineers, may enter into agreements providing for reimbursement to States or political subdivisions thereof for work to be performed by non-federal public bodies at water resources development projects authorized for construction by the Secretary of the Army. Work must be completed under the supervision of the Chief of Engineers.

The Ramah Dam (Figure 3) is an earthen dam located north of the community of Ramah at latitude 35°08'44" N, longitude 108°29'24" W. The dam includes the acequia's intake structure (Figure 3a). A conduit and outlet pipe convey water under the dam to the acequia pipeline. Below the dam, the acequia is divided into north and south pipelines (Figure 1). The north pipeline is approximately 2,579 feet long and the south pipeline is approximately 3,993 feet long according to the USDA Natural Resources Conservation Service (NRCS) design survey. The full length of both pipelines has been placed into concrete pipe in previous work (1982). The acequia was originally built in about 1878 by the Ramah Valley Land and Irrigation Company, which owns and operates the dam and acequia. The acequia has been in operation since about 1882, which is its priority date (when water rights were first established). It currently serves 72 shareholders to irrigate approximately 1200 acres of small orchards and crop land with a diversion of 13,500 acre-feet per year. Crops grown include corn, wheat, alfalfa, oats, barley, and pinto beans. The Ramah Valley Acequia delivers an irrigation water flow of approximately 22 cubic feet per second (cfs) from Ramah Reservoir.

The Corps proposes to rehabilitate the acequia by replacing approximately 6,572 feet of 24-inch diameter concrete pipe with 24-inch PVC plastic irrigation pipe. The objectives of the proposed

action are to improve water delivery efficiency by limiting water loss from leaks and seepage, to reduce the maintenance effort required to repair leaks, and to provide high pressure suitable for spray irrigation. The Ramah Valley Acequia Association members would be responsible for assuring operation and maintenance upon project completion.

The Corps would provide 75 percent of construction funding and is therefore the action agency for this project. The Office of the State Engineer is the project sponsor, and along with the local ditch association, would be responsible for the remaining 25 percent of construction costs. The Ramah Valley Acequia Association would be responsible for the construction contract. Project design and inspection would be undertaken by the NRCS.

Past rehabilitation and improvements to the acequia system included rebuilding the Ramah Dam in 1905 because it washed out in about 1903-04. The original earthen ditch was placed into concrete pipe in 1982. This project was completed by the Soil Conservation Service, the predecessor of the NRCS. The currently proposed project would rehabilitate and update the acequia to allow for modern spray irrigation using center-pivot systems. Acequia members have begun installing these systems but the water pressure is not sufficient for others to do so.

1.2 Purpose and Need

The primary objectives of the acequia rehabilitation project are to improve the efficiency of water delivery to the acequia members by minimizing leakage and seepage losses and to provide high pressure suitable for spray irrigation. A secondary benefit of the proposed action would be to reduce maintenance costs for the members of the acequia association. Currently, the old concrete pipelines experience water losses due to leakage at many joints and breaks in the line (Figure 3b). The acequia association members do not have sufficient water pressure to update their irrigation systems. Repairing leaks in the buried pipelines is difficult and costly and, without replacing the pipeline, such repairs are only temporary.

Figure 1. Aerial Photo of Proposed Project Area, McKinley County, New Mexico.

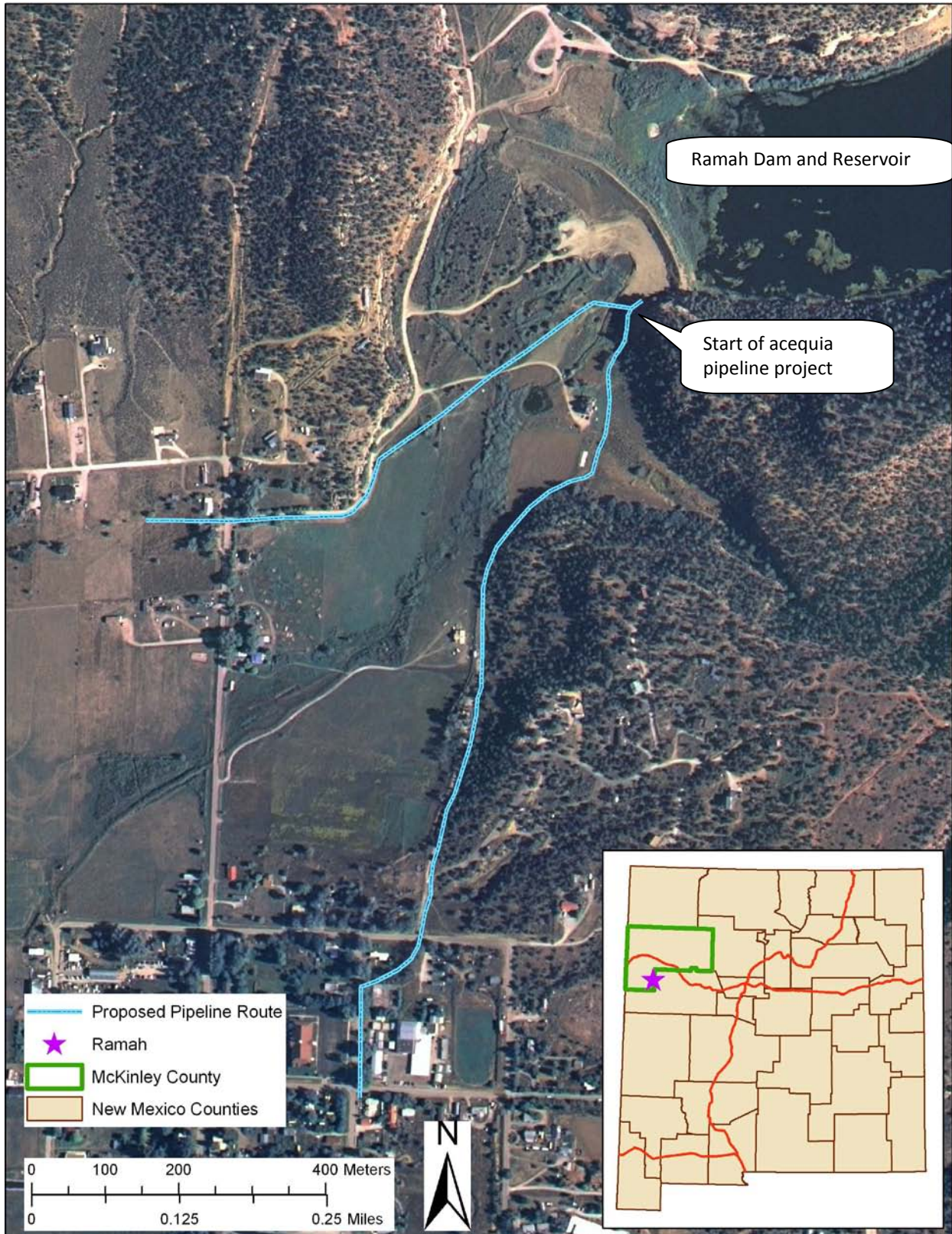


Figure 2. Ramah Valley Acequia Topographic Map, Existing and Proposed Alignments.

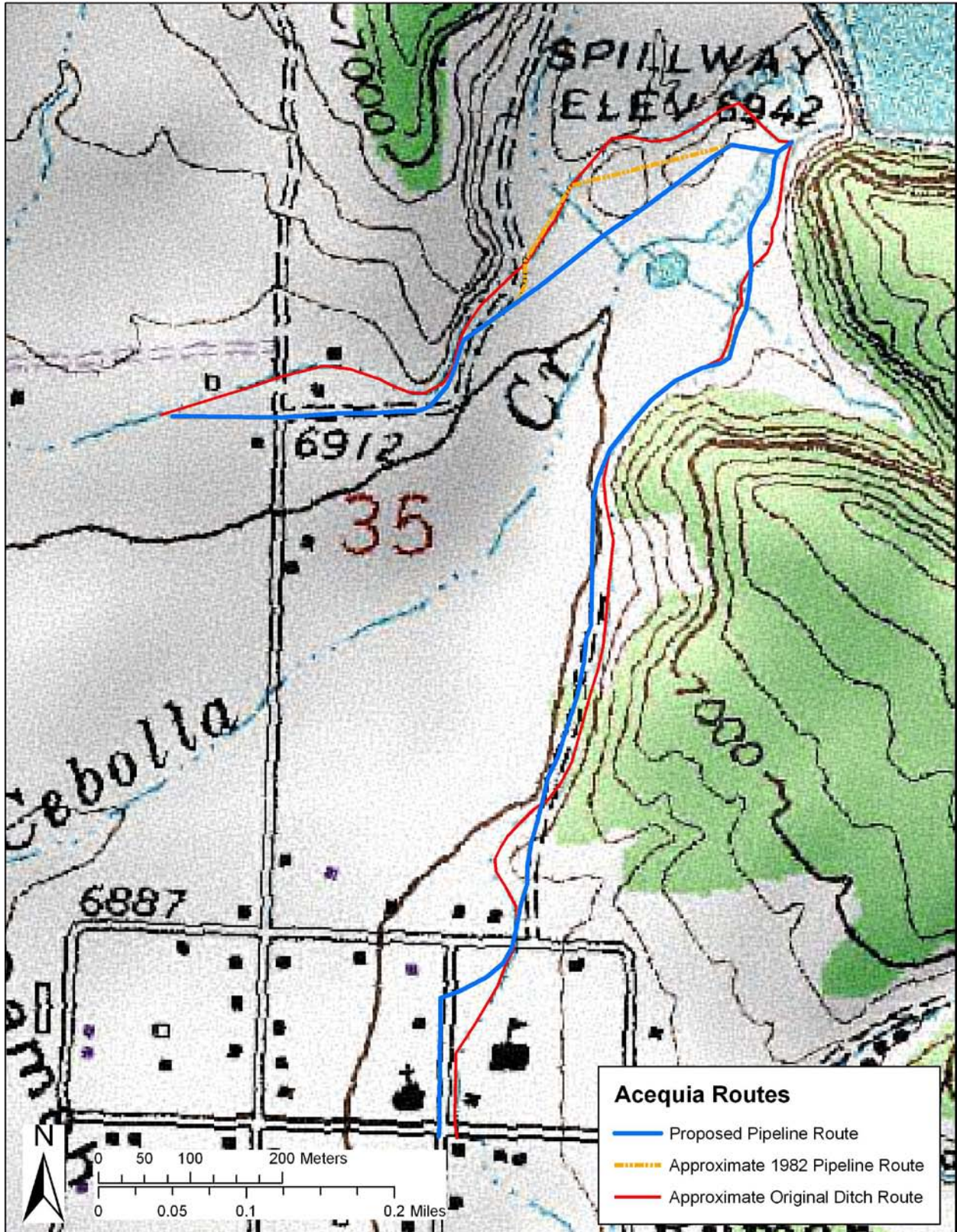


Figure 3. Ramah Valley Acequia: Existing Conditions.



a. Acequia intake structure on dam and reservoir



b. Leaking valve on north pipeline



c. Pond with emergent wetland vegetation



d. View across valley from upper south pipeline



e. View down valley from dam

1.3 Regulatory Compliance

This Environmental Assessment (EA) was prepared by the Corps, Albuquerque District, in compliance with all applicable Federal Statutes, Regulations, and Executive Orders, including the following:

- National Historic Preservation Act (16 U.S.C. 470 *et seq.*)
- Archaeological Resources Protection Act (16 U.S.C. 470 *et seq.*)
- Clean Water Act (33 U.S.C. 1251 *et seq.*)
- Clean Air Act (42 U.S.C. 7401 *et seq.*)
- Endangered Species Act (16 U.S.C. 1531 *et seq.*)
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations
- Occupational Safety and Health Act of 1970 (29 U.S.C. 651 *et seq.*)
- Executive Order 11988, Floodplain Management
- National Environmental Policy Act (42 U.S.C. 4321 *et seq.*)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500 *et seq.*)
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq.*)
- Executive Order 11593, Protection and Enhancement of the Cultural Environment
- Executive Order 11990, Protection of Wetlands
- U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR Part 230; ER 200-2-2)
- Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*)
- Executive Order 13112, Invasive Species
- Federal Noxious Weed Act (7 U.S.C. 2814)
- Migratory Bird Treaty Act (16 U.S.C. 703 *et seq.*)
- Fish and Wildlife Coordination Act (48 Stat. 401; 16 USC 661 *et seq.*)
- Section 438 of the Energy Independence and Security Act of 2007 (Public Law 110-140 Section 438, 121 Stat. 1492, 1620)
- Executive Order 13524, Federal Leadership in Environmental, Energy, and Economic Performance

This EA also reflects compliance with all applicable State and local regulations, statutes, policies, and standards for conserving the environment such as water and air quality, endangered plants and animals, and cultural resources.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 Proposed Action

The Corps proposes to rehabilitate the Ramah Valley Acequia by installing approximately 6,572 linear feet of 24-inch diameter PVC irrigation pipe to replace the leaking 24-inch concrete pipe that is currently in place. In addition to the 6,572 feet of irrigation pipe used for the north and south

main pipelines, a 223-foot spur of 10-inch diameter, 80 psi PVC pipe would be installed to connect to residential irrigators in the town of Ramah. At the end of the south pipeline project, a 24-inch diameter stub would be provided for future extension of the pipeline to fields south of Highway 53. Additional components would include 3000 psi concrete thrust blocks along with alfalfa valves, and inline valves as needed. The pipeline route would use the existing alignment except for one segment of the north ditch that would take a shorter route along a fence line (see Figure 2). After laying the pipe, the area would be reseeded with appropriate native plants or, in agricultural areas, with pasture grasses. Existing roads would be used for access to the area. Equipment staging and refueling would be confined to existing roads and bladed areas outside the floodplain of Cebolla Creek and outside wetland or riparian habitat. Project construction is scheduled beginning in Spring 2011 with an expected duration of approximately 3 months.

The proposed design and specifications for this project have been provided by the National Resources Conservation Service (NRCS). During project analysis, the NRCS determined the proposed design to be the most effective. The design flow rate of 22 cfs was based on current water usage as well as the irrigation water needs of the community and the acequia's allocation.

2.2 The No-Action Alternative

Under the No-Action Alternative there would be no modification of the existing and deteriorating concrete pipes. The pipelines would continue to function poorly due to leaks and would be maintained by the acequia association as they have in the recent past. Typical maintenance of the acequia system in the project's area of influence would continue, including the need to periodically dig up and repair leaking sections of pipeline. Association members who have not converted to spray irrigation would be unable to make this improvement due to low water pressure. Failure of the pipelines would be possible and would leave downstream landowners without irrigation water, threatening their livelihood and that of the small historic agricultural community.

2.3 Alternatives Considered but Not Analyzed

Alternatives that were considered and eliminated from further analysis included replacing only portions of the existing pipelines, or replacing only one of the two pipelines. These alternatives would not have allowed for pressurized water delivery to all acequia association members and therefore they were eliminated from further consideration.

3.0 EXISTING ENVIRONMENT AND FORESEEABLE EFFECTS

3.1 Physiography, Geology, and Soils

The Ramah Valley lies within the Great Basin Conifer Woodland biotic province (Brown and Lowe 1977) in the Zuni River basin in northwest New Mexico. Elevations in the region vary from about 6,100 feet above sea level near the Zuni River to over 8,000 feet in the Zuni Mountains. .

The surface geology of the Ramah area includes primarily sandstones of Cretaceous age, with progressively older rocks lying northwards in the Zuni Mountains. In the immediate project area, surface geology in the Cebolla Creek valley is intertongued Mancos Shale and Dakota Sandstone. Above Ramah Reservoir are outcrops of red sandstones including Jurassic Zuni and Entrada Sandstones, and members of the Triassic Chinle Group. Higher in the Zuni Mountains are Permian sedimentary rocks and granite. Interesting geological features east of Ramah are the lava fields and cinder cones of El Malpais National Monument. These geologically recent (Quaternary age) flows date from 115,000 to 3,000 years before present (NMBGMR 2003).

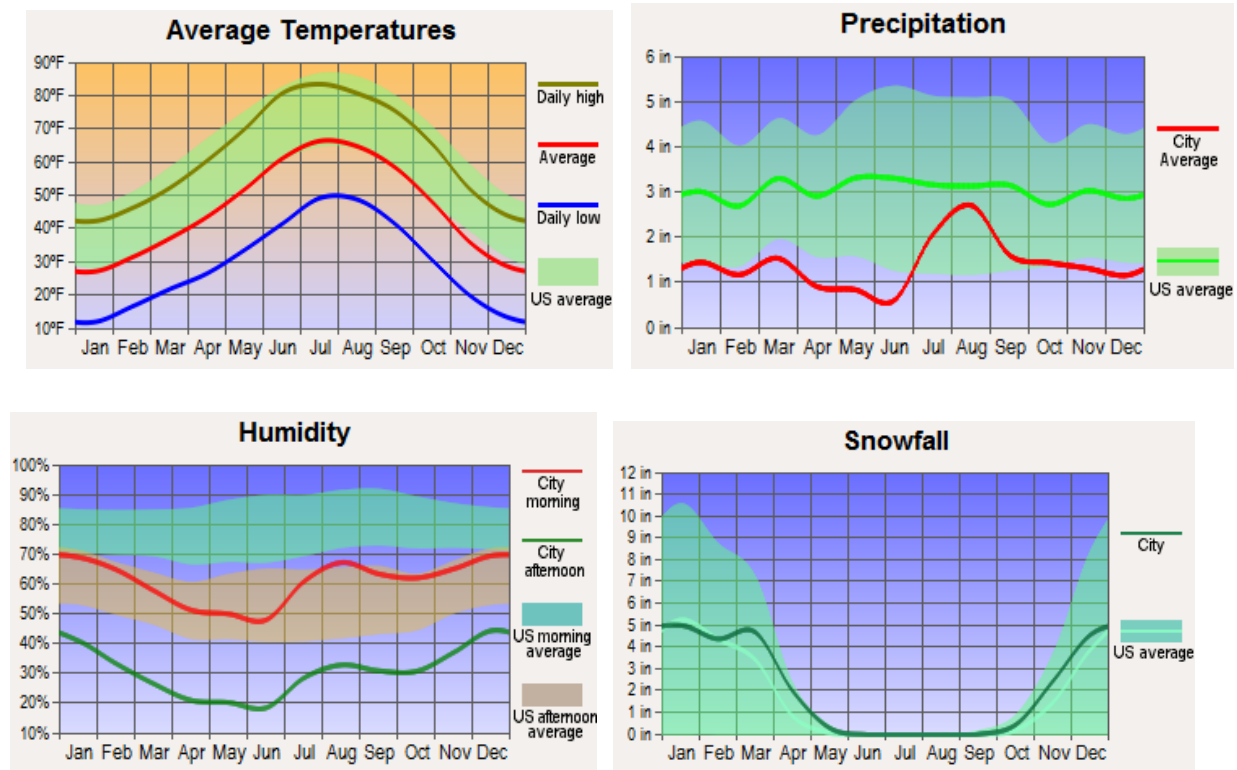
Soils within the project area are mapped in five units: Catman variant clay loam, Catman clay loam, Hickman sandy clay loam, Rock outcrop-Vessilla-Mion complex, and Pinitos-Ribera sandy loams (USDA NRCS 2010). The majority of the soils in the project area, including the entire valley bottom, are classified as **Catman variant clay loam**. This soil type occurs on floodplains and alluvial fans in areas with slopes of 1 to 3 percent. It is somewhat poorly drained and very slightly to moderately saline. Depth to water table for this soil type is 24 to 48 inches, which is shallow enough to support established riparian plants such as willows. **Catman clay loam** covers a small area near the downstream end of the north acequia pipeline. It is similar to Catman variant clay loam, but occurs in areas where the depth to water table is only about 4 inches. There is most likely a gradation of depth to water table between these two soil types. Catman clay loam is the only hydric soil type in the project area. **Hickman sandy clay loam** covers the alluvial fan of a tributary drainage on the east side of Cebolla Creek. This soil occurs on gently sloping (1-3 percent) surfaces in well drained areas where the depth to the water table is more than 80 inches. This soil is non-saline. **Rock outcrop-Vessilla-Mion complex** and **Pinitos-Ribera sandy loams** are found in the hills and footslopes alongside the acequia route at the edges of the valley. Rock outcrop-Vessilla-Mion soils occur on steeply sloping (3-55%) landscapes with shallow depths to bedrock. Pinitos-Ribera sandy loams occur on landforms with slopes of 1-10% and are also well drained with depths to water table greater than 80 inches.

The proposed action would have minor, temporary effects on these soils during construction. A trench approximately 10 feet wide at the top and 4.5 feet deep would be excavated in order to lay the pipe for the acequia. In order to maintain proper gradient, where the pipeline would cross a hill along 400 feet of its route, the trench would be up to 11.4 feet deep. After the pipe has been laid, the trench would be backfilled according to NRCS specifications. These actions would disturb the soil profile in an area 1.5 acre in size. Surface disturbance associated with construction vehicles would total approximately 3 acres. Standard Best Management Practices (BMPs) to prevent on- and off-site erosion would be incorporated in the contract specifications, and would include silt fences, straw bales, geotextiles, or similar measures. Following installation of the PVC irrigation pipe, the trench would be backfilled and surface soil would be stabilized and revegetated using appropriate native plant species or pasture grasses. Use of these BMPs would ensure that soils are only minimally affected by the proposed work. No other ground-disturbing projects beyond the ongoing agricultural activities are planned for the project area. Therefore, there would be no long-term and cumulative impacts to soils. The No-Action Alternative would also have no effect to soils.

3.2 Climate and Climate Change

McKinley County has a semiarid climate (Figure 4). However, local climate is highly varied because of the wide range in elevation and the uneven topography. Elevations in the county range from 6,100 feet near the Zuni River to over 8,000 feet in the Zuni Mountains. The elevation at the project site varies from 6,900 feet in the town of Ramah to 6,942 feet at Ramah Dam. Climate records are available from the weather station at Zuni, 20 miles west of Ramah at elevation 6,311 feet . The average winter temperature at Zuni is 33.7°F, with an average daily minimum of 18.2°F. Summer temperature averages 68.6°F, with average daily maximum of 86.6°F. Average annual precipitation ranges from about 8 to 18 inches within McKinley County and is 12.88 inches in Zuni. About 40 percent of the total precipitation falls during the frost-free season of May to September, with most of this falling as brief, generally heavy thunderstorms in the period from July through September (USDA NRCS 2010).

Figure 4. Climate characteristics in Ramah, McKinley County, NM near project area. Graphs generated by City-data.com (2010).



Global climate change related to emissions of greenhouse gases (*e.g.* carbon dioxide, methane, nitrous oxide, chlorofluorocarbons) is predicted to result in a drier Southwest with greater variation in precipitation (Backlund, Janetos, and Schimel 2008). In 2005, New Mexico Governor Bill Richardson signed Executive Order 05-33, which included development of recommendations for reducing greenhouse gas emissions in the State to year 2000 levels by 2012, 10 percent below 2000 levels by 2020, and 75 percent below 2000 levels by 2050. The

year 2000 reference level is 83 million metric tons of carbon dioxide equivalent gases (MMtCO_{2e}; New Mexico Climate Change Advisory Group 2006: 2-2).

The contribution of the proposed action to greenhouse gas emissions would be negligible. The construction phase of the proposed project would produce carbon emissions. However, it is likely that the reduced need for maintenance of the acequia would result in less vehicular travel to the project site over the longer term, producing a cumulative effect of correspondingly lower carbon emissions. Thus, neither the proposed action nor the No-Action Alternative would have a detectable effect on climate in the short or long term.

The potential effects to the proposed project resulting from climate change would be negligible. The underground location of the completed pipeline would keep it away from exposure to extreme events such as floods. Under the No-Action Alternative, the community of Ramah would experience greater vulnerability to climate change. If the leaking pipeline were not replaced, the acequia association would be less able to meet its members' water needs or to allow for efficient use of a more limited water supply during droughts.

3.3 Water Resources

Section 402 of the Clean Water Act (CWA; 33 U.S.C. 1251 *et seq.*), as amended, regulates point-source discharges of pollutants into waters of the United States and specifies that storm-water discharges associated with construction activities shall be conducted under the National Pollution Discharge Elimination System (NPDES) guidance. Construction activities characterized by clearing, grading, and excavation are associated with storm-water discharges, subjecting the underlying soils to erosion by storm-water flows. The EPA NPDES general permit guidance would apply to this project because the total construction area is more than one acre. Therefore, a Storm-Water Pollution Prevention Plan (SWPPP) is required. During construction of the proposed project, standard BMPs to prevent on- and off-site erosion and storm-water discharges, and to prevent sediment from entering Cebolla Creek, would be incorporated in contract specifications, as described in Section 3.1 above. Therefore, water quality impacts from storm-water and sedimentation due to the proposed work are expected to be negligible and short-term.

Construction waste water, including disinfection water (see Section 3.7), would be properly contained and would not be allowed to enter waterways or to be discharged prior to being treated to remove pollutants. Disinfection waste water shall be disposed of off-site at an approved facility in accordance with all federal, state, regional and local laws and regulations. Therefore, the proposed construction would have no long-term effect and no measurable cumulative impacts on water quality in Cebolla Creek, the Rio Pescado or the Zuni River. There would be no water quality impacts from the No-Action Alternative.

Section 404 of the CWA, as amended, provides for the protection of waters of the United States through regulation of the discharge of dredged or fill material. The proposed action is the rehabilitation of an existing irrigation structure. Therefore, the project is exempt from the provisions of Sections 404 and 401 of the Clean Water Act (33 CFR 323.4). See Appendix B for a summary of the Irrigation Exemption from the Regulatory Division, Albuquerque District Corps.

Under Section 303(d)(1) of the CWA, states are required to develop a list of waters within the state that do not support their designated uses as established in the state water quality standards (WQS). For each water body on this §303(d) list, states must establish a total maximum daily load (TMDL) for each pollutant that causes the waters to be “impaired.” A TMDL analysis is established to restore a water body and to ensure that WQS are maintained for that water body. The New Mexico Environment Department’s Surface Water Quality Bureau (NMED-SWQB) completed a water quality assessment for the Zuni watershed in 2004 (NMED-SWQB 2004). Water quality in the Zuni River watershed is relatively good. TMDL’s have not been developed for the Zuni River watershed.

The proposed pipe installation would not change the amount of water withdrawn from Cebolla Creek or used in agriculture. This work would result in conditions similar to those established in 1982, following the original piping of the acequia before the 1982 pipe became so leaky.

3.4 Floodplains and Wetlands

Executive Order 11988 (Floodplain Management) requires federal agencies to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains. The Federal Emergency Management Agency’s flood risk map for the Ramah area shows that the upper end of the acequia and project area is located within the 100-year floodplain of Cebolla Creek. However, the majority of the acequia and the agricultural fields it supports are outside the floodplain. The nature of acequia systems inherently depends on the diversion structure or distribution system being located in the floodplain. However, no additional development would occur within the floodplain. Rehabilitating the acequia with its small water allocation would not contribute to additional development, but would allow present agricultural land uses to continue. Neither the proposed action nor the No-Action Alternative would result in any additional development in the Cebolla Creek, Rio Pescado, or the Zuni River floodplain. Therefore, there would be no adverse effect to these floodplains from the proposed action or the No-Action Alternative.

Executive Order 11990 (Protection of Wetlands) requires that Federal agencies take action to minimize the destruction, loss or degradation of wetlands. Agencies must avoid undertaking or providing assistance for new construction located in wetlands whenever there is a practicable alternative. The proposed project is considered to be a maintenance action, not new construction.

Initial site visits revealed areas of wetland vegetation, including willow, sedges and rushes, in the project area. In the Draft Environmental Assessment (DEA), the Corps reported possible indirect effects to the wetlands due to elimination of leakage from the acequia pipeline. As a result of comments received on the DEA, Corps biologists followed up with a wetland delineation and mapped the wetlands in the project area on May 11, 2011. On this date the acequia had not yet begun operating for the season and the state of New Mexico, including the Ramah area, was experiencing drought. Soil borings revealed hydric soils in two of the three test holes and indicators of wetland hydrology, including water marks and water-stained leaves, soil cracks, and presence of reduced iron, at all sampled sites (see Appendix C for field data forms).

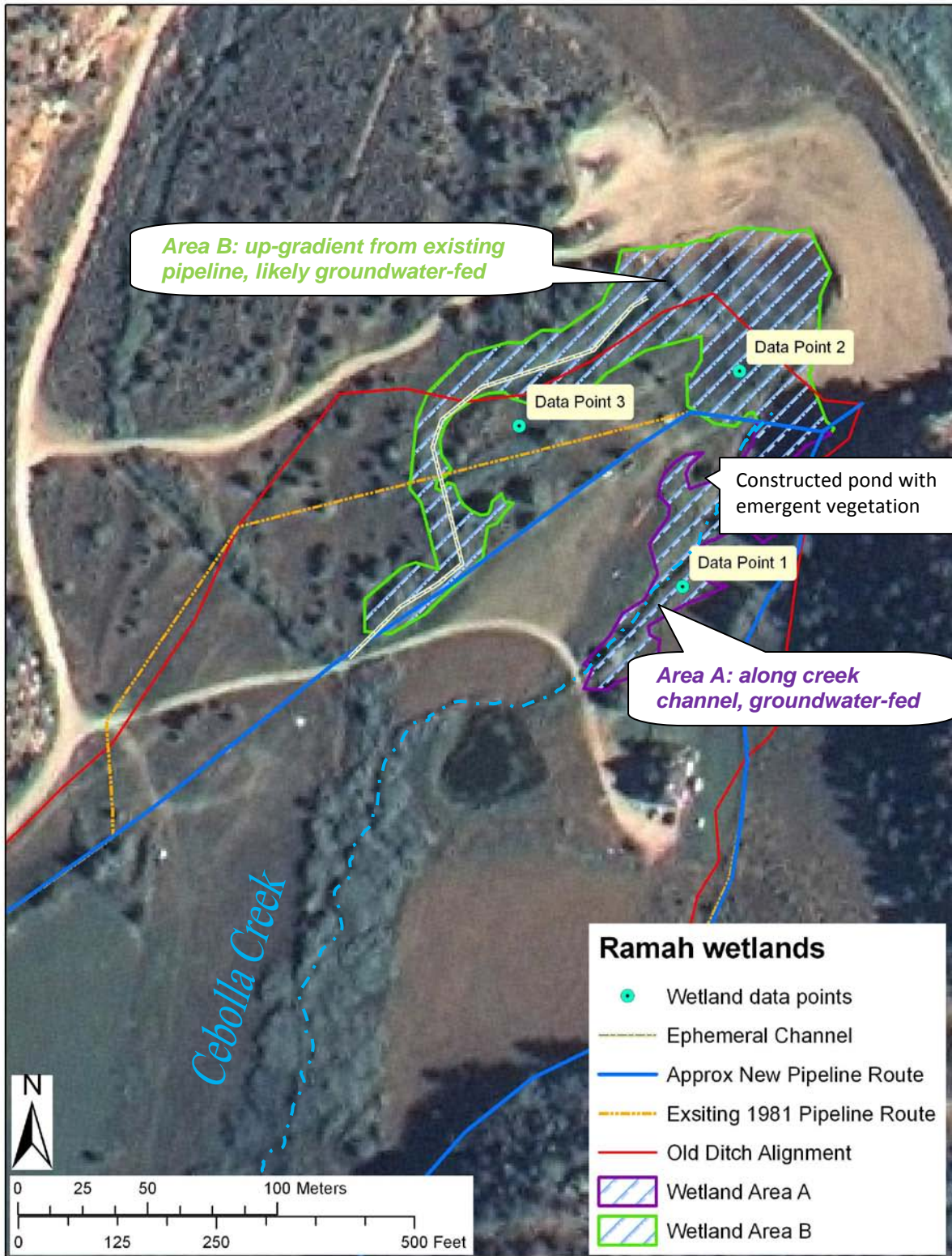
As a result of the field delineation, wetlands and riparian vegetation (willows, rushes and horsetails) of approximately three acres in size were mapped within the project area (see Figure 5). A wetland area 0.65 acre in size is located along the remnant Cebolla Creek channel below the south pipeline (Figure 5, Area A and wetland data point 1). The presence of saturated soil and wetland hydrologic indicators while the acequia was not operating indicate that this part of the wetland does not depend on pipeline leaks for its water supply. A small pond with emergent wetland vegetation is located below the north pipeline about 150 feet from point where the two pipelines diverge and is partly surrounded by area A. This pond is fed by groundwater in the non-growing season, and is actively filled by the landowner in summer using acequia water. This likely contributes to groundwater supporting wetland Area A during irrigation season. Other riparian and wetland areas exist farther downstream along the Cebolla Creek channel, but would not be affected by the proposed action. These areas are off-site and hydrologically connected to wetland Area A, which receives groundwater.

Approximately two acres of wetlands are located below the Ramah dam but up-gradient from (above) the existing north pipeline (Figure 5, Area B and wetland data point 2). According to a Corps hydrologist, this area is most likely fed by groundwater or seepage through the dam, and therefore would not be affected by the new pipeline. Another 0.35 acre of wetland exists below the existing north pipeline but above the proposed new pipeline, and is hydrologically connected to Area B. Although this area may be partly fed by pipeline leaks, its hydrologic connection to Area B indicates that this part of the wetlands would not be adversely affected by construction of the new pipeline.

A small area (Figure 5, wetland data point 3) had wetland vegetation but lacked wetland soils and was therefore excluded from the wetland boundary. This soil test hole was located in a depression with wetland and dead aquatic plants and had a deep water table (estimated 8-10 ft.). This area's proximity to the wetland area downslope and its topographic connection to an ephemeral channel suggest that it receives seasonal surface flow sufficient to maintain wetland vegetation, but is not part of the wetland.

Wetlands would be protected from construction traffic by orange construction fence. Surface hydrology of the area would not be changed, nor would the naturally occurring groundwater table be altered. Valves would be included in the pipeline to supply water to the small pond with emergent vegetation, contributing to groundwater in part of the wetland. Because indicators of wetland hydrology are present when the acequia is not operating, the Corps determined that eliminating pipeline leaks would not adversely affect wetland hydrology. Therefore, neither the proposed action nor the No-Action Alternative would have any adverse direct, indirect, or cumulative effect on wetlands. No mitigation or monitoring of the wetlands will take place.

Figure 5. Wetlands in vicinity of Ramah Valley Acequia.



3.5 Air Quality, Noise, and Aesthetics

Air quality in McKinley County is generally good and the county is classified as an air quality attainment area (USEPA 2008). The New Mexico Environment Department's Air Quality Bureau monitors air quality throughout the state in areas of state jurisdiction according to need. All air monitoring locations are sited in major population centers or near known pollution sources. McKinley County currently does not have an air-quality monitoring station because air quality standards were met in past monitoring and because of the absence of industries that would produce regulated pollutants. The nearest monitoring stations are in Bernalillo, Sandoval County, 130 miles east of the project area and San Juan County, 110 miles north of the project area.

Class I air quality areas are designated natural areas, including national parks, national monuments, and wilderness areas, where air quality is subject to maximum limits on degradation. The Class I air quality area closest to the project is Petrified Forest National Monument in Arizona, about 73 miles west of Ramah. The Class I air quality areas closest to the project in New Mexico are the Gila Wilderness to the south, Bosque del Apache National Wildlife Refuge to the southeast, and the San Pedro Parks Wilderness and Bandelier National Monument to the northeast (NMED-Air Quality Bureau 2010). These areas are all between 110-130 miles from Ramah.. Due to their distance from the proposed action and the limited scope and duration of the proposed work, Class I air quality areas would not be affected by the project or by the No-Action Alternative.

The proposed action would result in a temporary but negligible, localized increase in suspended dust (coarse particles) from construction activities. BMP's to be followed during construction to minimize dust include the following:

- Access roads and disturbed soil would be wetted.
- All vehicles involved in transporting fill material, rubble and spoil to or from the project site would be covered and would have required emission control equipment.
- Stockpiles of debris, soil, sand, or other materials that could produce dust would be watered or covered.

These practices would minimize dust and emissions-related air quality impacts during construction. Once construction is complete, the operation of the acequia would have no further long-term effects on air quality. Therefore, air quality in Ramah and in McKinley County would not be affected by the proposed project or by the No-Action Alternative.

Background noise levels in the proposed action area are low, as typical for an agricultural area. The Occupational Safety and Health Administration (OSHA) noise standards limit noise levels to 90 decibels (dBA) averaged over an eight-hour day (29CFR 1910.95). The Center for Hearing and Communication (2011) advises that noise levels above 85 dBA will harm hearing over time and noise levels above 140 dBA can cause damage to hearing after just one exposure. During construction, noise would temporarily increase in the vicinity during vehicle and equipment operation and may be audible from nearby residences. Noise levels in the immediate work area

would likely be comparable to that generated by a tractor (up to 90 dBA) during work hours, although noise would not be continuous. The increase in noise during construction would not be loud enough to harm hearing and would be temporary, ending when construction is complete.

Cumulative effects of noise increases were assessed using an approximately one-half mile radius from the project area, assuming that large equipment noise may be heard from that distance at times. The increase in noise generated by construction of the project would add to noise levels generated from occasional traffic to the reservoir and surrounding homes, resulting in a cumulative increase in noise levels during the period of construction.

To reduce temporary construction noise, construction contract BMPs would require that construction equipment and activities comply with state and local noise control ordinances. Therefore, the proposed action would have no significant affect on noise levels in the environment. The No-Action Alternative would not change the background noise levels in the project area.

Aesthetically, the project area is rural with minimal development and ample open space between residences and associated farm buildings. The Ramah Valley is scenic, with sandstone outcrops and cliffs above the reservoir, farm land in the valley bottom, and adjacent uplands in a relatively natural state. During construction, equipment would be temporarily present in the more developed valley near farm buildings where farm vehicles and equipment are already present. The short-term presence of vehicles and disturbed ground in the fields during construction would be the only apparent visual change and constitutes a minor adverse impact to the area. After project completion, the landscape would return to its pre-construction appearance. Aesthetic conditions would therefore not be affected in the long term by the proposed action or by the No-Action Alternative. As the project would not affect visual resources or land uses, there would be no adverse cumulative effects to land use and visual resources.

3.6 Vegetation Communities

The proposed project area lies within the Great Basin Woodland biotic community (Brown and Lowe 1977; Brown 1982). New Mexico's Comprehensive Wildlife Conservation Strategy (NMDGF 2006) places the Ramah area within a narrow band of the Arizona-New Mexico Mountains Ecoregion that is bordered by the Colorado Plateau Ecoregion. Corps personnel visited the site on June 10 and December 10, 2010 and May 11, 2011. A list of plants observed on the site visit is provided in Table 1. Photographs taken along the acequia route show the existing vegetation condition (Figure 6). The Ramah Valley from the reservoir down into the town of Ramah spans a variety of natural and anthropogenic vegetation types. The predominant vegetation on hill slopes and uplands is pinyon-juniper woodland, with ponderosa pines in cooler, moister microsites such as within the canyon adjacent to the reservoir. At lower elevations the woodland thins into a juniper savannah and shrublands. The gently sloped valley bottom has been converted to agricultural fields. Vegetation in the irrigated valley includes pasture grasses, alfalfa and annual crops. Cebolla Creek runs through the Ramah Valley. Although it does not have permanent flow, the creek channel supports a riparian community of willow, sedges, and rushes. The No-Action Alternative would result in no effects to this vegetation.

Under the proposed action, a small amount of vegetation (up to 3 acres) would be disturbed during trenching operations that are needed to lay the pipeline. However, with the exception of the segment to be re-aligned, the pipeline route has been previously disturbed by the installation of the 1982 pipeline. The vegetation that currently exists has recovered from the 1982 disturbance and would similarly recover from the currently proposed project. The acequia route crosses both native and agricultural vegetation and part lies along roads. Where the route currently has native vegetation, the native grasses and forbs are expected to return following construction and reseeding. Willows in the uppermost part of the project area would be disturbed by construction but would re-colonize from colonial growth of adjacent, undisturbed willows. On two site visits, June 2010 and May 2011, dead willows were also observed (Figure 6b) in wetland area B and the top of area A near the branch in the pipeline. The Corps was unable to determine whether the willows were dying due to drought, management actions by the landowner or acequia association, or the prior placement of fill piles. According to acequia members, the extent of willows has changed over the years, colonizing some areas and declining in others. The acequia association also clears vegetation in the dam area periodically for dam safety. In conclusion, during project construction there would be minimal and short-term effects to vegetation, which would be alleviated by reseeding.

At the downstream end of the acequia within the town of Ramah, trees along the acequia route may decline. In particular, the large old poplars in Ramah near the end of the south pipeline may receive less water after the leaking pipe has been replaced. Although these trees are non-native, they may be of local importance since the first poplars in Ramah were brought in wagons by the original settlers (Tietjen, 1980). The Corps would encourage the acequia members to care for and water these trees if they decline as a result of the reduced water supply, or replace any trees that die. In summary, there would be minimal short- and long-term adverse effects to vegetation by the proposed project by directly removing vegetation and indirectly reducing the water available to some trees in town. Cumulatively, this and other rehabilitation projects that reduce water loss from the acequia would likely result in a small decrease in tree cover along the acequia route.

Figure 6. Vegetation in the vicinity of the Ramah Valley Acequia.



a. View across valley from Ramah Dam, with pinyon-juniper woodlands on opposite slopes and willows below dam.



b. Ponderosa pines at foot of sandstone cliff; note dead willows at lower left.



c. Fields along south pipeline



c. North pipeline re-route along fence



d. Large poplars near end of south pipeline in Ramah

Table 1. List of plants observed at Ramah Valley Acequia.

Family	Genus-species	Common name
Anacardiaceae Sumac Family	<i>Rhus trilobata</i>	three-leaved sumac
Asclepiadaceae Milkweed Family	<i>Asclepias subverticellata</i>	whorled milkweed
Asteraceae Aster Family	<i>Achillea millefolium</i> <i>Aretmisia tridentata</i> <i>Artemisia dracunculus</i> <i>Artemisia ludoviciana</i> <i>Conyza canadensis</i> <i>Ericameria nauseosa</i> <i>Erigeron sp.</i> <i>Helianthus annuus</i> <i>Heterotheca villosa</i> <i>Solidago sp.</i> <i>Thelesperma megapotamicum</i>	yarrow big sagebrush tarragon white sage horseweed rabbitbrush fleabane daisy annual sunflower camphor-daisy goldenrod greenthread
Chenopodiaceae Goosefoot Family	<i>Bassia scoparia</i>	kochia
Convolvulaceae Morning-glory Family	<i>Convolvulus arvensis</i> *	bindweed
Cupressaceae Cypress Family	<i>Juniperus scopulorum</i> <i>Juniperus monosperma</i>	Rocky Mt. juniper one-seed juniper
Cyperaceae Sedge Family	<i>Carex sp.</i>	sedge
Equisetaceae Horsetail Family	<i>Equisetum hyemale</i>	rough horsetail
Fabaceae Legume Family	<i>Glycyrrhiza lepidota</i>	American licorice
Fagaceae Oak Family	<i>Quercus gambellii</i>	Gambel oak
Juncaceae Rush Family	<i>Juncus arcicus var. balticus</i>	Baltic rush
Malvaceae Mallow Family	<i>Sphaeralcea coccinea</i>	scarlet globemallow
Pinaceae Pine family	<i>Pinus edulis</i> <i>Pinus ponderosa</i>	pinyon pine ponderosa pine
Poaceae Grass Family	<i>Achnatherum hymenoides</i> <i>Agropyron cristatum</i> * <i>Bromus inermis</i> * <i>Bromus tectorum</i> * <i>Elymus canadensis</i>	Indian ricegrass crested wheatgrass smooth brome cheatgrass Canada wild-rye

Table 1: List of plants observed at Ramah Valley Acequia (continued)

Family	Genus-species	Common name
Poaceae Grass Family	<i>Elymus longifolius</i> <i>Elymus smithii</i> <i>Hesperostipa comata</i> <i>Muhlenbergia asperifolia</i> <i>Phleum pretense</i> * <i>Poa fendleriana</i> <i>Sporobolus airoides</i>	longleaf squirreltail western wheatgrass needle-and-thread grass alkalai muhly timothy muttongrass alkalai sacaton
Polemoniaceae Phlox Family	<i>Phlox longifolia</i>	long-leaf phlox
Rosaceae Rose Family	<i>Rosa woodsii</i>	wild rose
Salicaceae Willow Family	<i>Populus alba</i> * <i>Salix exigua</i>	silver poplar coyote willow
Scrophulariaceae Snapdragon family	<i>Castilleja sp.</i> <i>Penstemon sp.</i> <i>Verbascum thapsus</i> *	Indian paintbrush penstemon mullein
Typhaceae Cattail Family	<i>Typha latifolia</i>	cattail
Ulmaceae	<i>Ulmus pumila</i> *	Siberian elm

* indicates non-native species

3.7 Noxious Weeds and Invasive Species

Executive Order 13112 directs Federal agencies to prevent the introduction of invasive (exotic) species and to control and minimize the economic, ecological, and human health impacts that invasive species cause. In addition, the State of New Mexico, under administration of the New Mexico Department of Agriculture (NMDA), designates and lists certain weed species as being noxious (NMDA 2009). “Noxious” in this context means plants not native to New Mexico that may have a negative impact on the economy or environment and are targeted for management or control. In order to prevent new infestations of noxious weeds and invasive species, the Contractor would be required to clean all equipment before entering the project area and to ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. Following construction, native species or pasture grasses would be seeded, minimizing the opportunity for invasive species to colonize the area. No federal or state noxious weeds were identified during the site visits. To minimize the spread of invasive species that may have escaped detection, the contractor would also be required to clean equipment upon leaving the project area. Therefore, the proposed action is in compliance with the Federal Noxious Weed Act and Executive Order 13112.

Because the proposed project area contains wetland habitat, the contractor would also be required to take the following measures to prevent or reduce the spread of amphibian and other aquatic borne diseases:

- Crossing of streams or marsh areas with flowing or standing water will be avoided.
- If equipment that is to be used for the acequia project was previously working in another stream, river, lake, pond, or wetland within 10 days of initiating work, the vehicle would be cleaned as follows: all mud and debris shall be removed from equipment and the equipment shall be allowed to dry completely or will be sprayed with a 10% sodium hypochlorite (bleach) solution to kill any organisms. Pumps, hoses, tanks and other water storage devices will be cleaned and disinfected with a 10% bleach solution. Cleaning shall be done at an appropriate facility. Disinfection solution is not permitted to enter any surface water.
- Footwear and small equipment would be cleaned and all debris removed prior to entering the project area. Equipment shall be disinfected either by desiccation and exposure to 50-60°C heat for 30 minutes, or by scrubbing surfaces with one of the following solutions:
 - 1) 1 percent sodium hypochlorite (household bleach);
 - 2) 20-second exposure to 70 percent ethanol or 1 mg/ml benzalkonium chloride;
 - 3) 0.012 percent Path-X™ or 0.008 percent quaternary ammonium compound 128 (containing DDAC, didecyl dimethyl ammonium chloride as active ingredient).
- Disinfection water shall be contained in a tank or approved off-site facility and shall not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. Waste water would be disposed following all federal, state, and local regulations.

3.8 Wildlife

Mammals occurring in McKinley County and in the Great Basin Conifer Woodland biotic community typically include small mammals such as squirrels, mice, gophers, rats, rabbits, badgers, raccoon, and skunks as well as larger mammals such as gray, kit, and red foxes (*Urocyon cinereoargenteus*, *Vulpes macrotis*, *V. vulpes*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), and mule deer (*Odocoileus hemionus*). Mountain lion (*Puma concolor*) are unlikely to venture within the project area due to proximity to humans.

Resident and migratory birds expected in the area include Western Kingbird (*Tyrannus verticalis*), Northern Mockingbird (*Mimus polyglottos*), Broad-tailed and Rufous Hummingbirds (*Selasphorus platycercus*, *S. rufus*), Black-chinned Hummingbird (*Archilochus alexandri*), Red-headed Woodpecker (*Melanerpes erythrocephalus*), Northern Flicker (*Colaptes auratus*), Dark-eyed Junco (*Junco hyemalis*), Red-breasted, White-breasted and Pygmy Nuthatches (*Sitta canadensis*, *S. carolinensis*, *S. pygmaea*), Western Meadowlark (*Sturnella neglecta*), Pinyon Jay (*Gymnorhinus cyanocephalus*), Common Raven (*Corvus corax*), Great Horned Owl (*Bubo virginianus*), Red-tailed Hawk (*Buteo jamaicensis*), American Kestrel (*Falco sparverius*),

Northern Harrier (*Circus cyaneus*), Turkey Vulture (*Cathartes aura*), several species of warblers, vireos, wrens, swallows and sparrows, and numerous others.

Although waterfowl and shorebirds were not observed at Ramah Reservoir on the Corps' site visits, they may use the lake occasionally, such as during migration. Waterfowl that have been observed at the Zuni wetlands, 20 miles west of Ramah, include Mallard (*Anas platyrhynchos*), Shoveler (*Anas clypeata*), Cinnamon Teal (*A. cyanoptera*), Ruddy Duck (*Oxyura jamaicensis*), Canada Goose (*Branta canadensis*), American Coot (*Fulica americana*), and Great Blue Heron (*Ardea herodias*). Additionally, Bald Eagles (*Haliaeetus leucocephalus*) have been observed at the Zuni wetlands and may forage occasionally at Ramah Reservoir. However, because the proposed work would take place below the dam and downstream, these species would not be affected.

Reptiles and amphibians (herptiles) in the area may include northern leopard frog (*Rana pipiens*) and tiger salamander (*Ambystoma tigrinum*). Because these species are of conservation concern to the state, they are discussed with Species of Greatest Conservation Need below.

The wildlife Species of Greatest Conservation Need (SGCN) and sensitive species discussed below represent a partial list of species occurring in McKinley County, New Mexico, as listed by BISON-M (New Mexico Department of Game and Fish 2010) and SGCN listed in New Mexico's Comprehensive Wildlife Conservation Strategy (NMDGF 2006) for the Arizona-New Mexico Mountains and Colorado Plateau Ecoregions and the Zuni Watershed. The SGCN and sensitive species with potential to occur in the vicinity of the Ramah Valley (per NMDGF habitat models or BISON-M records) are listed below in Table 2.

The mammal SGCN and sensitive species that occur in McKinley County are not likely to be affected by the proposed acequia improvement work. Mule deer, red fox or spotted skunk would easily be able to move out of the immediate area during construction, and ample habitat into which these species could move exists in the vicinity. Gunnison's prairie dogs were not observed during site visits and any suitable habitat that may have once existed in the Ramah Valley has been converted to agriculture.

The two bat SGCN and four sensitive species may occur in the general area, but their preferred roosting habitat and access to water would not be affected by the proposed work. Occult Myotis bats roost in large ponderosa pine snags under the exfoliating bark and in vertical cracks. The other four Myotis species use a variety of habitats for foraging and use snags, trees crevices, caves, and buildings as roosting sites. Spotted bats roost in rocky cliffs and occupy ponderosa pine woodlands in the reproductive season. Permanent water sources such as streams, drainage ditches, or lakes are very important to all bat species. These bats would not be affected by the proposed project because there will still be permanent water sources (ponds and Ramah Reservoir) available to them. Also, no ponderosa pines would be removed or affected by the proposed construction. Therefore, there would be no effect to these bats.

Among the Bird SGCN that may occur in the Ramah area, raptors may use the cliffs above Ramah Reservoir for roosting or nesting, but would not be affected by construction below the dam. Eared Grebes are known to use reservoir habitat on the Zuni Reservation, but would not be

affected by work below Ramah Dam. Pinyon Jays may occur in surrounding woodlands, but their habitat would not be affected, as no pinyon trees would be removed by the proposed work. Mourning Doves are likely to occur in the area and use a variety of habitats, but generally prefer relatively mesic woodland habitats. The Gray Vireo, a State-threatened species, is known to occur on Pueblo of Zuni lands and prefers open juniper woodland habitat. Although the Ramah valley contains juniper and pinyon-juniper woodlands on the hillslopes, the acequia route does not pass through them. Due to the limited scope of work and location of the project primarily in an agricultural landscape, there would be no effect to these species from the proposed action.

Table 2. Species of Greatest Conservation Need and sensitive species with potential to occur in the vicinity of Ramah Valley Acequia.

Common Name	Scientific Name	State of NM Status
Mammals		
Spotted Bat	<i>Euderma maculatum</i>	SGCN
Occult or Arizona Myotis Bat	<i>Myotis occultus</i>	SGCN
Small-footed Myotis	<i>Myotis ciliolabrum melanorhinus</i>	S
Long-legged Myotis	<i>Myotis volans interior</i>	S
Fringed Myotis	<i>Myotis thysanodes thysanodes</i>	S
Long-eared Myotis	<i>Myotis evotis evotis</i>	S
Red Fox	<i>Vulpes vulpes</i>	S
Gunnison's Prairie Dog	<i>Cynomys gunnisoni</i>	SGCN
Mule Deer	<i>Odocoileus hemionus</i>	SGCN
Western Spotted Skunk	<i>Spilogale gracilis</i>	SGCN
Amphibians		
Tiger Salamander	<i>Ambystoma tigrinum</i>	SGCN
Northern Leopard Frog	<i>Rana pipiens</i>	SGCN
Western chorus frog	<i>Pseudacris triseriata</i>	SGCN
Birds		
Eared Grebe	<i>Podiceps nigricollis</i>	SGCN
Osprey	<i>Pandion haliaetus</i>	SGCN
Ferruginous Hawk	<i>Buteo regalis</i>	SGCN
Northern Goshawk	<i>Accipiter gentilis</i>	SGCN
Golden Eagle	<i>Aquila chrysaetos</i>	SGCN
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SGCN
Peregrine Falcon	<i>Falco peregrines</i>	SGCN
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	SGCN
Loggerhead Shrike	<i>Lanius ludovicianus</i>	SGCN
Black Tern	<i>Chlidonias niger surinamensis</i>	S
Mourning Dove	<i>Zenaida macroura</i>	SGCN
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>	SGCN
Yellow Warbler	<i>Dendroica petechia</i>	SGCN
Black-Throated Gray Warbler	<i>Dendroica nigrescens</i>	SGCN
Gray Vireo	<i>Vireo vicinior</i>	SGCN, T

SGCN = Species of Greatest Conservation Need S = sensitive species

To protect migratory birds and their eggs and young, as required by the Migratory Bird Treaty Act, any vegetation disturbance or clearing that would take place during the nesting season from April 15 through September 15 would require a biological survey to verify that there would be no significant impact to nesting birds. Therefore, the work would comply with the Migratory Bird Treaty Act.

Reptiles and amphibians (herptiles) in the area may include Northern leopard frog, Western chorus frog and Tiger salamander. To prevent the spread of aquatic diseases such as chytrid fungus into the ponds and wetlands near the acequia, the cleaning and disinfection protocol described above in Section 3.7, Noxious Weeds and Invasive Species, would be observed. Construction would begin in early spring when herptiles are not active, but the construction period would extend into their period of activity. Trenches would be provided with escape ramps and would be left open the least possible amount of time to avoid entrapping small animals. Therefore, the proposed work would have no effect on herptiles.

Aquatic SGCN that are associated with the Zuni watershed would not be affected by the proposed acequia work because there would be no change in the quantity of water diverted or in water quality in the watershed. The federal candidate and state-endangered fish, Zuni bluehead sucker, does not occur in Cebolla Creek (NMDGF 2004). The creek does not have year-round flow to support fish. In recent surveys, the Zuni bluehead sucker has not been found in the Rio Pescado, into which Cebolla Creek flows. The acequia improvement project would not change the amount of water diverted or patterns of land use and has no potential to affect water quality or quantity in the Rio Pescado or Zuni River. Best management practices would be used to prevent sediment from entering the creek. Therefore, no fish or other aquatic species, including the Zuni bluehead sucker, would be affected by the proposed work.

The foreseeable effects of the proposed action on wildlife in the proposed construction area would be minor, of short duration, and temporary in nature, and would result in negligible disturbance. Water would still be available to wildlife from ponds fed by groundwater. As described above in Section 3.4, a valve would be installed to allow water to be provided to the wetland pond if needed to maintain its water level. Wildlife species in or near the proposed construction area generally have adapted to the existing human presence. There are no foreseeable effects from the No-Action Alternative other than those effects resulting from the existing human presence and the existing conditions along the irrigation ditch. Under the proposed action, some wildlife species would be temporarily displaced during construction, but are expected to return after construction is complete.

Entrapment of small vertebrates would be minimized by following USFWS and NMDGF recommendations for trenching operations. To avoid trapping wildlife, the least amount of trench possible would be left open overnight and trench sides would be sloped or escape ramps with a slope not greater than 45 degrees (100%) would be provided every 300 feet (90 meters). No direct negative impacts are expected occur to wildlife as a result of the proposed action or the No-Action Alternative.

3.9 Special Status Species

Three agencies have primary responsibility for protecting and conserving plant and animal species within the proposed action area. The United States Fish and Wildlife Service (USFWS), under the authority of the Endangered Species Act of 1973, has the responsibility for federally listed species. The New Mexico Department of Game and Fish (NMDGF) has the responsibility for state-listed wildlife species. The New Mexico State Forestry Division (Energy, Minerals, and Natural Resources Department) has the responsibility for state-listed plant species. Special status species that occur in McKinley County are listed below in Table 3 (USFWS 2010, NMDGF 2010).

None of the special status species listed in Table 3 have been detected in the project area during two site visits, nor is suitable habitat present along the acequia route. The Zuni bluehead sucker, Gunnison's prairie dog and Gray Vireo have been documented in the Zuni area and have been discussed above as SGCN. These species would not be affected by the proposed action due to the limited disturbance and the lack of preferred habitat in the project area.

The Forestry Division of the New Mexico Energy, Minerals, and Natural Resources Department has the responsibility for maintaining the state list of rare, threatened and endangered plant species. The New Mexico Rare Plants Technical Council list indicates that fifteen rare plant species may occur in McKinley County (New Mexico Rare Plants Technical Council 2010; Table 3). Although these plants occur in McKinley County, they are not known to exist within the project area, nor were these species or their habitats detected in site visits. Therefore, there would be no direct, indirect or cumulative effect to these rare plants by the proposed action or the No-Action Alternative.

Table 3. Federal and State Threatened, Endangered, and Candidate Species and Rare Plants in McKinley County, New Mexico with Potential to Occur in the Project Area.

Common Name	Scientific Name	Federal Status (USFWS)	State of New Mexico Status
Bald Eagle	<i>Haliaeetus leucocephalus</i>	DM	T
Black-footed Ferret	<i>Mustela nigripes</i>	E	---
Gunnison's prairie dog	<i>Cynomys gunnisoni</i>	C	S
Zuni Bluehead Sucker	<i>Catostomus discobolus yarrowi</i>	C	E
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	---	T
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	SOC	T
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	E
Least Tern (Inerior population)	<i>Sterna antillarum athalassos</i>	E	E
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	T	---
Costa's Hummingbird	<i>Calypte costae</i>	---	T
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	C	S
Gray Vireo	<i>Vireo vicinior</i>	---	T
Mountain plover	<i>Charadrius montanus</i>	P	S
Costa's hummingbird	<i>Calypte costae</i>	---	T
Zuni fleabane	<i>Erigeron rhizomatus</i>	T	E
Parish's alkali grass	<i>Puccinellia parishii</i>	SOC	E

Rare Plant Species in McKinley County, New Mexico

Common Name	Scientific Name
Chuska milkvetch	<i>Astragalus chuskanus</i>
Chuska milkvetch	<i>A. cliffordii</i>
Heil's milkvetch	<i>A. heilii</i>
Chaco milkvetch	<i>A. micromerius</i>
Zuni milkvetch	<i>Astragalus missouriensis</i> var. <i>accumbens</i>
Naturita milkvetch	<i>Astragalus naturitensis</i>
Acoma fleabane	<i>Erigeron acomanus</i>
Sivinski's fleabane	<i>Erigeron sivinskii</i>
Clipped wild buckwheat	<i>Eriogonum lachnogynum</i> var. <i>colobum</i>
Sarah's wild buckwheat	<i>Eriogonum lachnogynum</i> var. <i>sarahiae</i>
Navajo muhly	<i>Muhlenbergia arsenei</i>
Navajo bladderpod	<i>Physaria navajoensis</i>
Clifford's groundsel	<i>Senecio cliffordii</i>

E = Endangered

T = Threatened

C = Candidate

DM= Delisted with Monitoring

P = Proposed for listing

SOC = Species of concern

S = Sensitive (informal)

3.10 Cultural Resources

Ramah is an area rich in cultural resources. A search of the New Mexico Cultural Resource Information System showed two archaeological sites potentially intersecting the project area, and several other historic sites within a half mile of the project area. Corps archaeologists confirmed that none of these sites extend within the project area itself. No archaeological sites or other historic properties, aside from the Ramah Valley Acequia itself, occur within the project footprint.

Corps archaeologists conducted a 10.5-acre survey of the project area on December 10, 2010, supplementing an initial site visit on June 10, 2010 (see Appendix A). This survey included the alignment of the acequia in which pipe would be replaced, as well as the area of a short segment where the alignment would be altered slightly with the addition of new pipe. The survey identified a single historic property: the Ramah Valley Acequia itself.

The Ramah Valley Acequia, originally constructed in 1878, is a historic property considered eligible for listing on the National Register of Historic Places. The proposed project would alter only a single aspect of the irrigation system: it would change a small portion of the alignment (approximately 900-feet out of a total of more than 6,000 feet to be piped). All of the irrigation system to be impacted by the current project was already changed from its historic earthen ditch form by the addition of buried pipe in 1982. This recent piping is not itself a historic element, and has not achieved historic significance in its own right. In addition, portions of the ditch system lying outside the project area still maintain the historic open earthen ditch form, and would not be impacted or modified by the proposed project. The proposed project does not destroy, damage, or remove any currently-existing historic material or element; in addition, the ditch could be returned to its historic “open earthen ditch” form at a future time by removing the pipe.

Consistent with the Department of Defense’s American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and based on the State of New Mexico Indian Affairs Department’s American Indian Consultations List, American Indian tribes that have indicated they have concerns in McKinley County have been contacted regarding the proposed project (see Appendix A). To date, the Corps has received no indication of tribal concerns that would impact this project. No Traditional Cultural Properties are known by the Corps to occur in the project construction area.

The Corps is of the opinion that the proposed Ramah Valley Acequia Rehabilitation Project would have **no adverse effect to historic properties**. Should previously undiscovered artifacts or features be discovered during construction, work would stop in the immediate vicinity of the find, a determination of significance made, and consultation would take place with the State Historic Preservation Office (SHPO) and with Native American groups that may have concerns in the project area, to determine the best course of action. Documentation of SHPO consultation is presented in Appendix A.

3.11 Socioeconomic Considerations and Land Use

The population of McKinley County was 74,798 persons in 2000 (U.S. Census Bureau 2000). The July 2009 population estimate was 70,513, a decline of 5.7% since 2000 (U.S. Census Bureau 2009). Estimated median household income in McKinley County was \$30,366 in 2008, significantly lower than New Mexico as a whole (\$43,719). During 2009, 28.4% of the McKinley County population and 38.9% of the population under 18 was below the poverty level (U.S. Census Bureau 2010). Gallup is the county seat and the largest town in McKinley County. The local employers are primarily in retail trade, tourism (including lodging), and food services. Other local work includes health care, social assistance, construction and transportation, and public services such as education, utilities, and government. Ethnically, approximately 74% of McKinley County residents are Native American, 12% are Hispanic and 12% white non-Hispanic. However, Ramah was settled by Mormon pioneers and its population is 65% white with 26% being Native American and 8% Hispanic. Ramah had a population of 407 persons in 2000 and its population was estimated at 554 in 2005-2009 (U.S. Census Bureau, 2005-2009 American Community Survey).

In 2009, the annual average unemployment was 8.0% in McKinley County and 7.2% in New Mexico. The seasonally adjusted unemployment rate for McKinley County in November 2010 was 9.5%, whereas the statewide rate was 8.5% (New Mexico Department of Workforce Solutions 2011).

The proposed action area is rural with small farms and residential housing. Current land use centers on families farming small acreages of irrigated cropland and livestock grazing (cattle, sheep, goats, and horses). Recreational use of the proposed action area may include fishing in Ramah Reservoir, hiking, horseback riding, and nature appreciation.

The proposed action would have a minor beneficial effect on existing land uses and socioeconomic resources in the project area and would permit the traditional acequia culture to continue. All acequia members would benefit from the proposed action. Cumulatively, this and other rehabilitation projects on the acequia would benefit the agricultural community of the Ramah area. The No-Action Alternative, in contrast, would compromise the viability of Ramah Valley Acequia. Irrigated agriculture and the historic community of Ramah would stagnate or decline as maintenance of the acequia system would become increasingly difficult. Under the No-Action Alternative, the combination of increasing difficulty in acequia maintenance and a declining trend in the farming population would threaten the acequia's viability (Ackerly 1996). Therefore, the No-Action Alternative would have a direct adverse effect on socioeconomics and land use, diminishing the agricultural economic base of the community.

3.12 Environmental Justice

Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations; February 11, 1994) was designed to focus the attention of federal agencies on the human health and environmental conditions of minority and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations and proposed actions.

The 1995 EPA guidance document, “Environmental Justice Strategy: Executive Order 12898” defines the approaches by which the EPA will ensure that disproportionately high environmental and/or socioeconomic effects on minority and low-income communities are identified and addressed. Further, it establishes agency wide goals for all Native Americans with regard to Environmental Justice issues and concerns.

The proposed acequia rehabilitation project would be conducted under Section 1113 of the Water Resources Development Act of 1986 (Public Law 99-662; 33 U.S.C. 2201 *et. seq.*), as amended. The Section 1113 program is largely intended to provide needed technical and financial assistance to acequia and community ditch associations in which water resources are degrading and in need of improvement. Acequia associations find maintenance of these systems increasingly challenging. The proposed action would benefit all acequia members and the community as a whole by allowing the culturally and historically significant Ramah Valley Acequia to continue to function. All proposed work would be in a rural, agricultural area. The construction would not disrupt or displace any residential or commercial structures. There would be no disproportional affect on the health or environment of minority and low-income communities as a result of the proposed action. The proposed action would have a minor long-term beneficial effect on environmental justice. Under the No-Action Alternative, in contrast, the acequia members would likely face increasing difficulty in maintaining the acequia system. As McKinley County residents have relatively lower incomes than average and a greater percentage of minorities than the state of New Mexico, the No-Action Alternative would be likely to have a minor adverse effect on this low-income and minority area.

3.13 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in assets held in trust by the United States for Indian tribes or individuals. Examples of ITAs include land, minerals, hunting and fishing rights, water rights, titles and money. The Indian Trust Responsibility requires that all Federal agencies take all actions reasonably necessary to protect such trust assets. The Department of Defense’s American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and DOI’s Secretarial Order 3175 require that the Corps consult with tribes and assess the impacts of its projects on ITAs. American Indian tribes that have indicated they have concerns in McKinley County have been contacted regarding the proposed project, as described in Section 3.10 above. To date, the Corps has received no indication of concern regarding effects to ITAs from the proposed work. There would be no effect on Indian Trust Assets by the proposed action or the No-Action Alternative.

3.14 Human Health and Safety

There would be no effect from the proposed action on community services, such as law enforcement, fire protection, emergency medical care, or schools. Construction workers would abide by OSHA safety regulations. Neither the proposed action nor the No-Action Alternative would create long- or short- term adverse effects on human health or safety.

3.15 Hazardous, Toxic, and Radioactive Waste (HTRW)

Since the proposed action would be in a rural area and the water would be used exclusively for irrigation, there would be little risk of HTRW contamination. All work planned to construct the proposed features would be conducted in accordance with Federal, State, and local pollution control laws. Requirements would include the contractor's storage and use of fuels, herbicides, and other potential contaminants, and the implementation of the National Pollutant Discharge Elimination System (NPDES) permit for storm water pollution prevention from construction activities. Cleaning and disinfection of construction equipment and personal gear would take place off-site and disinfection solution would be disposed of according to all federal, state and local regulations. Therefore, there would be no adverse short- or long-term effects related to HTRW on either the proposed action or the No-Action Alternative.

3.16 Cumulative Impacts

NEPA defines cumulative effects as "...the impact on the environment which results from the incremental impact of the action when added to other, past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions."

Cumulative effects are analyzed individually for each resource area in Sections 3.1 through 3.15. These analyses address the cumulative impact of the direct and indirect effects of the proposed action when added to the aggregate effects of past, present, and reasonably foreseeable future actions. For all resources, the aggregate effect of past and present actions was considered to be represented by the current, existing condition of the resource. Therefore, the specific effects of individual past and present actions typically were not cataloged in the analysis. In order for direct or indirect effects to incrementally add to the effects of past, present, or reasonably foreseeable future actions, they must overlap with those effects in time or space.

The time frame for analysis of cumulative effects varied, depending on the duration of direct and indirect effects. For example, direct effects resulting from construction were expected to persist for relatively short periods of time (about four months). Conversely, indirect effects resulting from operation of the rehabilitated acequia system would persist for the life of the facility. Similarly, the geographic bounds for cumulative effects analysis varied with the resource under consideration, depending on zone of influence of the direct or indirect impact being analyzed.

The proposed action lies within a rural area in McKinley County (Figures 1 and 2). The proposed improvements to the acequia would not significantly impact the current conditions of the local environment and would help retain the farming practices of the community. For these reasons, the proposed project when combined with past, present, or future activities in the Ramah Valley Acequia area would not significantly add to or raise local cumulative adverse environmental impacts to a level of significance.

4.0 CONCLUSIONS AND SUMMARY

This Environmental Assessment addresses the potential effects of the rehabilitation of the Ramah Valley Acequia. The proposed location is in the community of Ramah approximately 50 miles west of Grants, New Mexico. Impacts to the environment would be non-significant and short-term. Long-term benefits to the acequia association members and to the historic character of the Ramah community would result from the project. The proposed project would not result in any moderate or significant, long-term, or cumulative adverse effects. Therefore, construction of the proposed project would not significantly affect the quality of the human environment and is recommended for implementation.

Table 4. Summary of Effects of Proposed Action and No-Action Alternative

Resource	Proposed Action		No-Action Alternative	
	Short-term effect	Long-term effect	Short-term effect	Long-term effect
Physiography, Geology, and Soils	Minor direct adverse effect to soil	No effect	No effect	No effect
Climate and Climate Change	No effect	No effect	No effect	No effect
Water Resources	No effect	No effect	No effect	No effect
Floodplains and Wetlands	No effect	No effect	No effect	No effect
Air Quality, Noise, and Aesthetics	Minor direct adverse effect	No effect	No effect	No effect
Vegetation Communities	Minor direct adverse effect	Minor indirect adverse effect	No effect	No effect
Noxious Weeds and Invasive Species	No effect	No effect	No effect	No effect
Wildlife	Minor direct adverse effect	No effect	No effect	No effect
Special Status Species	No effect	No effect	No effect	No effect
Cultural Resources	No effect	No effect	No effect	No effect
Socioeconomic Considerations and Land Use	Beneficial	Beneficial	Minor adverse effect	Adverse effect
Environmental Justice	Minor beneficial effect	Minor beneficial effect	Minor adverse effect	Minor adverse effect
Indian Trust Assets	No effect	No effect	No effect	No effect
Human Health and Safety	No effect	No effect	No effect	No effect
Hazardous, Toxic, and Radioactive Waste	No effect	No effect	No effect	No effect

5.0 PREPARATION, CONSULTATION AND COORDINATION

5.1 Preparation

This Environmental Assessment was prepared by the U.S. Army Corps of Engineers, Albuquerque District. Personnel primarily responsible for preparation include:

Dana M. Price	Botanist
Jonathan Van Hoose	Archaeologist
Grant Kolb	Hydrologist
Patricia Phillips	Project Manager

5.2 Quality Control

This EA has been reviewed for quality control purposes. Reviewers include:

Julie A. Alcon	Chief, Environmental Resources Section
Danielle Galloway	Biologist
Gregory Everhart	Archaeologist
Ariane Pinson	Technical Writer/Editor

5.3 Consultation and Coordination

Agencies and entities that were consulted in preparation of this Environmental Assessment include:

Mr. Dane Lambson
Watermaster, Ramah Valley Acequia

Mr. Olin Clawson
Ramah Valley Acequia

Mr. Wally Murphy, Supervisor
US Fish and Wildlife Service, New Mexico
Ecological Services Field Office

Mr. Robert Sivinski
NM Forestry Division, Energy, Minerals,
and Natural Resources Department

Ms. Nancy Wade
NRCS, Gallup Service Center

Mr. Fernando Morales
NRCS, Northwest Area Engineer

Honorable Ben Shelley
President, Navajo Nation

Mr. Alan Downer
Navajo Nation Historic Preservation Officer

Mr. Ron Maldonado
Navajo Nation Historic Preservation Department

Mr. Tony H. Joe, Jr.
Navajo Nation Traditional Cultural Program

Mr. Victor Sarracino
Pueblo of Laguna NAGPRA Committee
Chairman

Honorable Leroy Shingoitewa
Chairman, Hopi Tribal Council

Mr. Leigh Kuwonwosiwma
Director, Hopi Cultural Preservation Office

Honorable Michael Burgess
Chairman, Comanche Nation of Oklahoma

Mr. Jimmy Arterberry
Comanche Nation of Oklahoma
Tribal Historic Preservation Officer

Honorable Randall Vicente
Governor, Pueblo of Acoma

Ms. Theresa Pasqual
Pueblo of Acoma Historic Preservation Office

Honorable Frank E. Lujan
Governor, Pueblo of Isleta

Mr. Ben Lucero
Pueblo of Isleta Historic Preservation

Mr. Valentino Jaramijo
Pueblo of Isleta Cultural Affairs Office

Honorable Perry Martinez
Governor, Pueblo of San Ildefonso

Mr. Myron Gonzales
Pueblo of San Ildefonso
NAGPRA Representative

Honorable Malcolm Montoya
Governor, Pueblo of Sandia

Mr. Sam Montoya
Pueblo of Sandia
NAGPRA Representative

Honorable Arlen P. Quetawki, Sr.
Governor, Pueblo of Zuni

Mr. Jonathan Damp
Zuni Cultural Preservation Office

Honorable Ronnie Lupe
Chairman
White Mountain Apache Tribal Council

Mr. Mark Altaha
White Mountain Apache Tribe
Tribal Historic Preservation Officer

5.4 Mailing List for Draft Environmental Assessment

Mr. Wally Murphy
Field Supervisor
US Fish and Wildlife Service
New Mexico Ecological Services Field
Office
2105 Osuna Road NE
Albuquerque, NM 87113

Ms. Rhonda Smith
Office of Planning and Coordination
US Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Mr. Mike Hamman
Area Manager
Bureau of Reclamation
555 Broadway NE, Suite 100
Albuquerque, NM
87102-2352

Ms. Nancy Wade
Soil Conservation Technician
USDA NRCS
1658 South Second Street
Gallup, NM 87301

Mr. Fernando Morales
Northwest Area Engineer
USDA-NRCS
6200 Jefferson St. NE, Suite 345
Albuquerque, NM 87109-3734

Ms. Lesley McWhirter
Regulatory Division
U.S. Army Corps of Engineers
4104 Jefferson Plaza NE
Albuquerque, NM 87109

Mr. Robert Sivinski
NM Forestry and Resources Conservation
Division, Energy, Minerals, and Natural
Resources Department
P.O. Box 1948
Santa Fe, NM 87504-1948

Mr. Matt Wunder
NM Department of Game and Fish
Conservation Services Division
P.O. Box 25112
Santa Fe, NM 87504

Ms. Marcy Leavitt
Surface Water Quality Bureau, NMED
P.O. Box 5469
Santa Fe, NM 87502

Mr. John R. D'Antonio, Jr.
NM State Engineer
P.O. Box 25102
Santa Fe, NM 87504-5102

Mr. Estevan Lopez
NM Interstate Stream Commission
P.O. Box 25102
Santa Fe, NM 87504-5102

McKinley County Manager
Office of the County Manager
207 West Hill St.
Gallup, NM. 87301

Mr. Dane Lambson
Watermaster, Ramah Valley Acequia
Ramah Land and Irrigation Company
P.O. Box 117
Ramah, NM 87321

Mr. Olin Clawson
P.O. Box 381
Ramah, NM 87321

Ms. Stacey Zuzga
Adult Services Librarian
Octavia Fellin Public Library
115 West Hill
Gallup, NM 87301

Jae Luree King, Head Librarian
Mother Whiteside Memorial Library
525 West High Street
Grants, NM 87020

Zuni Public Library
P.O. Box 339
Zuni, NM 87327-0339

Honorable Ben Shelley
President, Navajo Nation
Post Office Box 9000
Window Rock, Arizona 86515

Mr. Alan Downer
Navajo Nation Historic Preservation Officer
Post Office Box 4950
Window Rock, Arizona 86515

Mr. Ron Maldonado
Navajo Nation Historic Preservation Department
PO Box 4950
Window Rock, Arizona 86515

Mr. Tony H. Joe, Jr.
Navajo Nation HPD, Traditional Cultural
Program
Post Office Box 4950
Window Rock, Arizona 86515

President Rodger Martinez
Ramah Navajo Chapter
HC 61, Box 13
Ramah, NM 87321

Honorable Leroy Shingoitewa
Chairman, Hopi Tribal Council
Post Office Box 123
Kykotsmovi, Arizona 86039

Mr. Leigh Kuwonwosiwma
Director, Hopi Cultural Preservation Office
Post Office Box 123
Kykotsmovi, Arizona 86039

Honorable Michael Burgess
Chairman, Comanche Nation of Oklahoma
Post Office Box 908
Lawton, Oklahoma 73502

Mr. Jimmy Arterberry
Comanche Nation of Oklahoma
Tribal Historic Preservation Officer
Post Office Box 908
Lawton, Oklahoma 73502

Honorable Randall Vicente
Governor, Pueblo of Acoma
Post Office Box 309
Pueblo of Acoma, New Mexico 87034

Ms. Theresa Pasqual
Pueblo of Acoma Historic Preservation Office
Post Office Box 309
Pueblo of Acoma, New Mexico 87034

Honorable Frank E. Lujan
Governor, Pueblo of Isleta
Post Office Box 1270
Isleta Pueblo, New Mexico 87022

Mr. Ben Lucero
Pueblo of Isleta Historic Preservation
1621A SR 314
Albuquerque, New Mexico 87105

Mr. Henry Walt
Cibola Research Consultants
508 Hermosa SE
Albuquerque, New Mexico 87108

Mr. Valentino Jaramijo
Pueblo of Isleta
Cultural Affairs Office
Post Office Box 1270
Isleta Pueblo, New Mexico 87022

Honorable Richard B. Luarkie
Governor, Pueblo of Laguna
Post Office Box 194
Laguna, New Mexico 87026

Mr. Victor Sarracino
Pueblo of Laguna
NAGPRA Committee Chairman
Post Office Box 194
Laguna, New Mexico 87026

Mr. Henry Walt
Pueblo of Sandia
Cibola Research Consultants
508 Hermosa SE
Albuquerque, New Mexico 87108

Honorable Perry Martinez
Governor, Pueblo of San Ildefonso
Route 5, Box 315-A
Santa Fe, New Mexico 87506

Mr. Sam Montoya
Pueblo of Sandia
NAGPRA Representative

Mr. Myron Gonzales
Pueblo of San Ildefonso
NAGPRA Representative
Route 5, Box 315-A
Santa Fe, New Mexico 87506

Honorable Arlen P. Quetawki, Sr.
Governor, Pueblo of Zuni
Post Office Box 339
Zuni, New Mexico 87327

Mr. Jonathan Damp
Zuni Cultural Preservation Office
Post Office Box 1149
Zuni, New Mexico 87327

Honorable Ronnie Lupe
Chairman
White Mountain Apache Tribal Council
Post Office Box 700
Whiteriver, Arizona 85941

Mr. Mark Altaha
White Mountain Apache Tribal Council
Tribal Historic Preservation Officer
Post Office Box 700
Whiteriver, Arizona 85941

Honorable Malcolm Montoya
Governor, Pueblo of Sandia
481 Sandia Loop
Bernalillo, New Mexico 87004

5.5. Summary of public review comments and Corps' responses

The Draft Environmental Assessment (DEA) was available for public review and comment from February 28 to March 29, 2011. A Notice of Availability was published in the Independent, a newspaper published in the city of Gallup, McKinley County, New Mexico on February 28, 2011 (Appendix C). The Notice of Availability was also published in the Beacon, a newspaper published in Grants, Cibola County, New Mexico. The DEA was available on the Corps' website and at the following libraries: Octavia Fellin Public Library, Gallup, NM; Mother Whiteside Memorial Library, Grants, NM; Zuni Public Library, Zuni, NM.

A summary of the public and agency comments with the Corps' responses is provided below in Table 5. Agency comment letters are included in Appendix D. Comments were received from the Regulatory Division, U.S. Army Corps of Engineers, Albuquerque District (memorandum dated March 2, 2011); the New Mexico Department of Game and Fish (letter dated March 7, 2011); and the U.S. Fish and Wildlife Service (letter dated April 1, 2011). Tribal consultation response letters are included in Appendix A. The Hopi Tribe (letter dated February 7, 2011) determined that no significant historical properties of concern to the Tribe would be affected. The Pueblo of Laguna (letter dated February 14, 2011) identified no significant impacts but requested that they be informed of any new archaeological discoveries. Two other tribes to whom letters were inadvertently sent, Ysleta del Sur Pueblo and the Pawnee Nation of Oklahoma, responded that the area was not of concern to them. No other comments were received.

Table 5. Public Review Comments and Corps' Responses

ID	Comment	Response
Regulatory Division, Corps	<p>The project is exempt from Section 404 of the Clean Water Act permitting, provided that conditions set out in the Irrigation Exemption are met.</p>	<p>Concur. We have reviewed the conditions in the Irrigation Exemption; this project satisfies those conditions.</p>
NMDGF	<p>A list of New Mexico wildlife species of concern in McKinley County has been provided for conservation planning purposes.</p> <p>To avoid entrapment of small animals during trenching operations, keep trenching and back-filling crews close together, trench during cooler months, and provide escape ramps at least every 90 meters with slope of less than 45 degrees (100%).</p> <p>Wetlands should be mapped and monitored during and after construction with rewatering of these areas incorporated into the design of the new pipeline.</p> <p>With implementation of these recommendations during construction, the Department believes that effects of the proposed action on wildlife would be minor, of short duration, and temporary in nature.</p>	<p>Species of concern have been addressed in the Wildlife section (3.8). Sensitive species that were omitted from the draft EA have been added to the final EA.</p> <p>Construction would take place during the non-irrigation season (cooler months). The recommendations for leaving minimal amounts of trench open and for escape ramps have been incorporated into required Best Management Practices listed in the FONSI.</p> <p>Wetlands were delineated and mapped on May 11, 2011 (See p. 12 of this EA). Presence of saturated soil and indicators of wetland hydrology during this period of drought and before acequia operation had begun suggests that wetland vegetation exists because of shallow groundwater and is not dependent on leakage from the acequia. Valves through which water may be released to the ponds that are adjacent to the wetland areas would be included in the pipeline. The owner of the property on which the ponds are located has informed the Corps that he intends to maintain water level in the ponds, contributing to ground water availability in the wetlands. Therefore, wetlands would not be adversely affected and mitigation and monitoring is not needed.</p>

Table 5. Public Review Comments and Corps' Responses (continued)

<p>USFWS</p>	<p>Incorporate conservation measures identified into the work plan.</p> <p>Conserve species in list provided by NMDGF</p> <p>Conduct vegetation clearing activities outside of migratory bird nesting season</p> <p>Provide a detailed plan for groundwater monitoring and vegetation success. After first year of wetland monitoring, develop a 5-year monitoring and action plan and mitigate any losses at 2:1 ratio. Mitigation should cover any indirect loss of wetlands due to a lowering of the water table.</p> <p>Mitigate for any loss of areas of willow at 2:1 ratio in a location where adequate water is available to ensure that mitigation is successful</p> <p>Work with Ramah Valley Acequia Association on an agreement to support a 5-year plan to monitor groundwater levels and plant survival.</p> <p>Mitigate for loss of tree cover and mature trees at 2:1 ratio by replanting native trees</p> <p>Restore area disturbed by trenching by replanting with native grasses and forbs</p>	<p>Best Management practices have been added to the EA and FONSI and provided to the NRCS project engineer and the Acequia Association, who will construct the project.</p> <p>These species have been addressed in Section 3.8, Wildlife.</p> <p>Construction would take place between September 15 and April 15, outside the nesting season for migratory birds.</p> <p>Wetland delineation conducted on May 11, 2011 revealed that saturated soils and indicators of wetland hydrology were present even during a time of drought and non-operation of the acequia. The Corps has concluded that project impacts to wetlands or willows would not occur. Therefore, mitigation or monitoring vegetation is not required.</p> <p>Valves through which water may be released to the ponds adjacent to the wetland would be included in the pipeline. The owner of the property on which the ponds are located has informed the Corps that he intends to maintain water level in the ponds, contributing to the availability of groundwater for the wetlands and minimizing any potential impacts.</p> <p>The trees that may be lost due to the indirect and long-term effect of eliminating pipeline leaks are not native and are located in town on private property. The property owners would be responsible for caring for or replacing these trees.</p> <p>The area disturbed by trenching would be seeded with native or non-native grasses and forbs depending on adjacent land use. Where the acequia passes alongside cultivated land or through pasture, the landowner may prefer cultivated pasture grasses.</p>
---------------------	---	--

6.0 REFERENCES

- Ackerly, Neal W. 1996. A review of the historic significance and management recommendations for preserving New Mexico's acequia systems. Report prepared by Dos Rios Consultants, Inc. for the New Mexico Historic Preservation Division, Santa Fe.
http://www.nmacequiacommission.state.nm.us/Publications/nackerly_aceq_rpt96.pdf .
- Backlund, Peter, Anthony Janetos, and David Schimel. 2008. The effects of climate change on agriculture, land resources, water resources, and biodiversity in the United States. Final Report of the U.S. Climate Change Science Program Subcommittee on Global Change Research. <http://www.climatechange.gov/Library/sap/sap4-3/final-report/default.htm>
- Brown, David E. 1982. Desert Plants: Biotic Communities of the American Southwest-United States and Mexico. University of Arizona, Superior, Arizona.
- Brown, David E. and C.H. Lowe. 1977. Biotic Communities of the Southwest Map. USDA Forest Service, Ft. Collins, Colorado.
- Center for Hearing and Communication. 2011. Noise levels in our environment fact sheet.
<http://www.chchearing.org/noise-center-home/facts-noise/common-environmental-noise-levels> (Accessed: 14 February 2011).
- City-data.com 2010. Profiles- New Mexico Very Small, Towns, and Villages (fewer than 1000 residents). <http://www.city-data.com/city/Ramah-New-Mexico.html> (accessed: 21 October 2010)
- [NMBGMR] New Mexico Bureau of Geology and Mineral Resources. 2003. Geologic Map of New Mexico, 2003, Scale 1:500,000. Available at:
<http://geoinfo.nmt.edu/publications/maps/geologic/state/home.cfm#download>
- New Mexico Climate Change Advisory Group. 2006. *Final Report, December 2006*. New Mexico Environment Department, Santa Fe, New Mexico.
- [NMDA] New Mexico Department of Agriculture. 2009. New Mexico Noxious Weed List (Updated April 2009). Available: <http://www.nmda.nmsu.edu/animal-and-plant-protection/noxious-weeds>.
- [NMDGF] New Mexico Department of Game and Fish. 2004. Zuni bluehead sucker (*Catostomus discobolus yarrowi*) recovery plan. NMDGF Conservation Services Division, Santa Fe, New Mexico, USA.
<http://www.wildlife.state.nm.us/conservation/documents/ZuniBlueheadSuckerRecoveryPlan.pdf>
- [NMDGF] New Mexico Department of Game and Fish. 2006. Comprehensive Wildlife Conservation Strategy for New Mexico. New Mexico Department of Game and Fish.

- Santa Fe, New Mexico. 526 pp + appendices. Available: http://fws-nmcfwru.nmsu.edu/cwcs/New_Mexico_CWCS.htm
- [NMDGF] New Mexico Department of Game and Fish. 2010. New Mexico Species List/Species Account – BISON-M. <http://www.bisonm.org> (Accessed: 22 December 2010).
- New Mexico Department of Workforce Solutions. 2011. Economic Research and Analysis. Table A: Civilian Labor Force, Employment, Unemployment and Unemployment rate. <http://www.dws.state.nm.us/LMI/dws-data.html#TA> (Accessed: 7 January 2011).
- [NMED AQB] New Mexico Environment Department Air Quality Bureau. 2010. New Mexico Air Quality Bureau Air Dispersion Modeling Guidelines, Revised April 2010. Available: http://www.nmenv.state.nm.us/aqb/modeling/documents/NM_AirDispersionModelingGuidelines_Apr082010.pdf (Accessed: 25 February 2011).
- [NMED SWQB] New Mexico Environment Department Surface Water Quality Bureau. 2004. Water quality survey summary of the Rio Nutria and Rio Pescado watersheds above and within Zuni Pueblo, April – November 2004. Santa Fe, NM. Available: <ftp://ftp.nmenv.state.nm.us/www/swqb/MAS/Surveys/ZuniSurveySummary2004.pdf> (Accessed: 6 January 2011)
- [NMED SWQB] New Mexico Environment Department Surface Water Quality Bureau. 2010. 2010-12 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report. <http://www.nmenv.state.nm.us/swqb/303d-305b/2010-2012/> (accessed: 6 January, 2011)
- New Mexico Rare Plants Technical Council. 2010. New Mexico Rare Plants Home Page. Albuquerque, NM. <http://nmrareplants.unm.edu> (Latest update: 6 December 2010)
- Tietjen, Gary. 1980. Mormon pioneers in New Mexico: A History of Ramah, Fruitland, Luna, Beulah, Bluewater, Virden, and Carson. Los Alamos, New Mexico: Gary Tietjen.
- U.S. Census Bureau. 2000. Profile of General Demographic Characteristics: 2000 Census of Population and Housing: New Mexico. <http://www.census.gov/prod/cen2000/dp1/2kh35.pdf> (Accessed: 6 January, 2011).
- U.S. Census Bureau. 2005-2009 American Community Survey Fact Finder: http://factfinder.census.gov/home/saff/main.html?_lang=en (Accessed: 6 January, 2011)
- U.S. Census Bureau. 2009. USA Counties General Profile: McKinley County, New Mexico. <http://censtats.census.gov/usa/usa.shtml> (Accessed: 6 January, 2011)
- U.S. Census Bureau. 2010. Small Area Income and Poverty Estimates for New Mexico Counties, 2009. <http://www.census.gov/hhes/www/saipe/county.html> (Page Last Revised: December 08, 2010; Accessed: 6 January, 2011).

[USDA NRCS] U.S. Department of Agriculture Natural Resources Conservation Service. 2010. Online Soil Survey for McKinley County. <http://websoilsurvey.nrcs.usda.gov/app/> (Accessed: 9 December 2010).

[US EPA] U.S. Environmental Protection Agency. 2008. *Air data by geographic area: State of New Mexico*. <http://www.epa.gov/air/data/repst.html?st~NM~New%20Mexico> (page last updated 2008; Accessed: 6 January, 2011).

[USFWS] U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office. 2010. *New Mexico Listed and Sensitive Species Lists and recommendations for project proposals*. http://www.fws.gov/southwest/es/NewMexico/SBC_intro.cfm (Accessed: 22 December 2010).