

**ENVIRONMENTAL REPORT**  
**(for Environmental Assessments)**

For

Alto Lakes Water &  
Sanitation District 

September 9, 2008

DRAFT

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**Environmental Report**  
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# ENVIRONMENTAL REPORT

## (for Environmental Assessments)

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### 1.0 PURPOSE AND NEED OF PROJECT

#### 1.1 Project Description (Proposed Action or Proposed Project)

Approximately 40% of the homes in the District's service area are occupied by full-time residents with the remainder used as seasonal homes. Since the community is made up of both part time and full time residents, the number of people per household is not easy to determine. It is for this reason that the population is expressed in terms of water connections for this report. Approximately 1,214 of the 2,050 lots in the Alto Lakes community are occupied by homes. The remaining vacant lots are scattered throughout the community. The ALW&SD also serves domestic water to two areas outside of the District: the Kokopelli subdivision which includes about 10 lots currently (120 total obligation), and the Eagle Creek II subdivision which includes about 8 lots currently (25 total obligation). For purposes of this report, population is referred to in terms of meter connections since the full time population is hard to determine and it is greatly impacted by holidays and vacation periods.

There are currently 1,214 meters in the ALWS&D service area. Two of the meters are serve large commercial users and 22 are small commercial users. The remaining meters are residential. Build-out is estimated at 1800 lots/meters due to lot consolidations and some lots being located on exceedingly steep slopes. The meter growth from 1998 through 2007 has averaged 3.8% per year. At this rate, build out of the service area is expected to occur in 2018. An increased growth rate would allow the build out to happen sooner while a decrease would postpone the build out and the need for future facilities. While the number of connections is increasing, the water use, on a per meter basis, has been shown to be declining at a rate of approximately one percent per year. The reduction is due to a steeply rising conservation rate schedule and to strong water conservation restrictions

The purpose of this project is to implement methods to maintain an adequate water supply and water quality for the District presently and in the future. The proposed water distribution and water treatment projects address health and safety issues such as fire protection and iron, manganese and TDS concentrations that are above the National and State's secondary standards. The following is a list of the secondary maximum contaminant levels for drinking water set by national standards under title 40 of the Code of Federal Regulations (CFR):



**Table 1** Secondary Maximum Contaminant Levels.

Contaminant	Level
Iron .....	0.3 mg/l
Manganese .....	0.05 mg/l
Total dissolved solids (TDS) .....	500 mg/l

## 1.2 Purpose and Need for Project

As described below, the ALW&SD is challenged by both the State of New Mexico drinking water standards and Lincoln County fire protection requirements set for the area:

- Water Quality

The water quality of the ALW&SD wells was assessed through the use of existing data. The ground water contains high levels of total-dissolved-solids (TDS) which exceed the State of New Mexico secondary standards. Additionally, the ground water contains high levels of iron and manganese, which causes “red” and “black” water problems in the distribution system. Both iron and manganese levels exceed the State of New Mexico secondary standards.

- Fire Protection & Water Distribution

The water distribution system was evaluated through the use of a computerized hydraulic model. The majority of the system piping is 2 and 3-inch diameter pipe with some segments of 6-inch and 10-inch pipe. To meet the Lincoln County requirements for new development with respect to fire flows the water system must be upgraded to minimum 6-inch distribution piping. As a result of the water system modeling, there are areas which require 8-inch piping to meet the fire flow requirements. The water system has in excess of 25 pressure reducing stations in order to regulate the pressures in the system. Many of the stations need maintenance or replacement in order to provide protection against pipe failures due to over pressurization. Re-zoning the water system into pressure zones that supply between 50 and 80 psi will help to minimize areas of high and low pressure and provide a more consistent pressure to the customers.

Currently, there is inadequate fire protection as the result of small lines located throughout the system. According the 2004 Master Plan, the existing system will support a fire flow of only 250 gpm. Although the current modeling efforts did not confirm the rate of 250 gpm, it did indicate the system will not support the Lincoln County fire flow of 500

gpm without improvement. Lincoln County requires a maximum of 1,000 foot spacing of fire hydrants. The improvements presented identified in the Preliminary Engineering Report (PER) are based on the updated Lincoln County Subdivision Ordinance

Due to the location of Alto Lakes within the forested areas of the Sacramento mountains, the potential for fire during dry periods is high. Forest fires present a threat that may be larger than a system that meets Lincoln County fire protection standards can handle. The Lincoln County fire protection requirements are meant to guard against house fires contained to a single dwelling and not large scale forest fires. The 800 acre Kokopelli Fire, which started in Alto Lakes in March 2002, burned 22 homes in Alto Lakes and 6 in adjacent communities.



## 2.0 ALTERNATIVES TO THE PROPOSED ACTION

### Water Distribution

The water distribution projects identified in this report consist of three alternatives that provide different levels of fire protection along with the no action alternative. Each of the alternatives meets the pressure requirements of between 50 and 80 psi. In addition, the alternatives I-III will provide a hydrant located at the water tank site that is capable of flowing large amounts of water to fill the fire departments water tenders.

With the given pressure criteria of maintaining between 50 and 80 psi at the customers meter, the system is divided into approximately 10 pressure zones. Due to the spread out nature of the distribution system, multiple pressure reducing stations are needed for each of the zones. The pressure reducing stations were placed in the model in the areas where they were needed. The location and pressure settings were adjusted through multiple model runs to keep the nodes in the model within the pressure criteria.

- **Alternative 1 – Minimum Coverage**

This alternative would provide fire flows of 750 gpm along Deer Park and High Mesa as well as any areas that have 6-inch pipe. The pressure zones would be regulated between 50 and 80 psi with a minimum residual pressure of 20 psi during a fire flow event. This alternative provides some direct fire coverage but more importantly places higher capacity hydrants closer to all areas of Alto Lakes which the fire department can use to fill their water tenders or through the extension of hoses..

- **Alternative 2 – Moderate Coverage**

This alternative would provide 750 gpm of fire protection in the areas identified in alternative I and add hydrants on the smaller lines to achieve a minimum of 300 gpm of fire protection throughout the development. This alternative increases the amount of 6-inch line and 750 gpm hydrants from alternative I in order to achieve the 300 gpm with a minimum residual pressure of 20 psi in areas with smaller lines.

- **Alternative 3 – Full Coverage: (Preferred Alternative)**

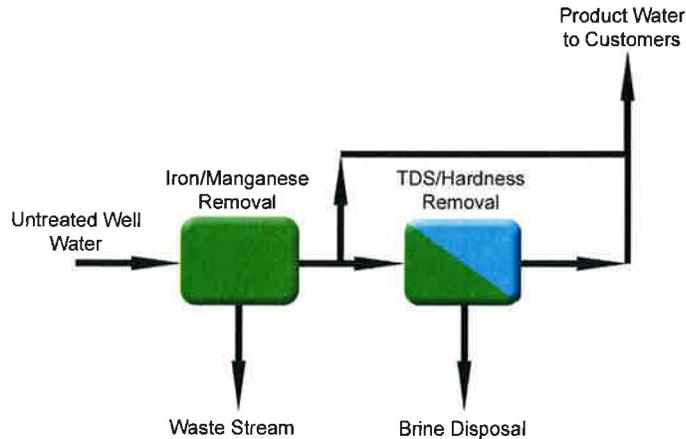
This alternative provides coverage of the entire service area with hydrants capable of 750 gpm of fire flow with a minimum residual pressure of 20 psi. In this alternative, most properties are within 500-600' of a hydrant and all properties are within 1,000 feet of a hydrant as measured along the

route of access. The normal system operating pressures would be between 50 and 80 psi.

### **Water Treatment Plant**

Since the entire water supply for the ALW&SD service area comes from ground water sources, it contains several constituents in concentrations that exceed the State of New Mexico secondary standards. These constituents are iron, manganese, total dissolved solids (TDS). There is no single treatment technology capable of reliably treating the source water therefore a two step treatment is necessary. The first stage of treatment will provide removal of iron and manganese while the second stage will remove TDS and hardness. The schematic in Figure 1 shows the proposed treatment train to meet the ultimate goals of the ALW&SD. In addition to the process train shown in the figure there may be the need for chemical addition at various stages of the process in order to prevent clogging or fouling of the media.

Due to the difficulties in disposing of the brine stream produced by TDS removal, the treatment will be phased. Phase I will correct the iron and manganese problems. The TDS and hardness removal will be implemented in Phase II when more feasible brine disposal alternatives become available.



**Figure 1 Water Treatment Plant Schematic**

- **PHASE I – IRON/MANGANESE REMOVAL**

The recommended alternative for iron and manganese removal is the oxidizing filtration (manganese-green) media option. Oxidation followed by filtration is a simple process in which an oxidant chemically oxidizes the iron or manganese to form a particle which is then filtered out.

Before iron and manganese can be filtered, they need to be oxidized to a state in which they can form insoluble particles. Oxidation involves the transfer of electrons from the iron, manganese, or other chemicals being treated to the oxidizing agent. The most common chemical oxidant has a relatively high capacity for iron removal and can operate at high flow rates with moderate backwash requirements. Greensand is a processed material consisting of nodular grains of the zeolite mineral glauconite. The material is coated with manganese oxide. This treatment gives the media a catalytic effect in the chemical oxidation reduction reactions necessary for iron and manganese removal. This coating is maintained through regeneration with chlorine and backwashing of the filter. In this process, the backwash water can be put in a small tank where the iron and manganese settle out and the clean water from the tank is recycled to the front of the plant. With this process, very little water is wasted making this option sustainable where waste disposal is a concern.

- PHASE II – TDS and Hardness reduction

The process proposed to be added to the water treatment plan in Phase II is Reverse Osmosis (R.O.) which will address the TDS and hardness removal. Reverse Osmosis has been proven over time to be the most cost effective solution for removal of TDS.

The ALW&SD does not currently own a parcel of land large enough to implement the disposal method associated with an R.O. system. An evaporation pond has currently been sized that takes the natural water cycle of the area into account in order to determine the pond surface area needed to evaporate all of the brine. Alto receives an annual average of just over 22 inches of precipitation and evaporates 65 inches per year. This yields a net evaporation rate of just less than 43 inches per year. Considering these facts the surface area necessary to evaporate the amount of brine being produced is 11 acres.



### **3.0 AFFECTED ENVIRONMENT CONSEQUENCES**

The unincorporated community of Alto Lakes, NM is located in the Sacramento Mountains of Lincoln County, approximately five miles north of Ruidoso. The Alto Lakes Water and Sanitation District serves an area of approximately 3.8 square miles (1,689 acres). The service area spans 3.3 miles east to west and 2.3 miles north-south (see Figure 1). The service area ranges in elevation from 7,550 to 6,915 feet above sea level.

The study area consists of forested area that is interspersed with grassy meadows. The community includes both high and low density subdivisions, although low density predominates. There are not any wetlands or streams located within the study area and the area does not contain any flood plains. The majority of the project components will be contained in previously disturbed areas such as roadways and shoulders.

#### **3.1 Land Use/Important Farmland/Formally Classified Lands**

##### **3.1.1 Affected Environment**

###### Water Distribution

The construction of the water distribution system improvements under Alternatives I through III discussed in previous sections will be constructed in existing disturbed areas such as roadways, shoulders and utility easements. The area has a significant amount of rock and cobbles that may require the Contractor to import backfill in order to properly install the pipe. Driveways, paving, fences and other landscape features may be impacted as a result of the construction. It is anticipated that these features will be replaced as found prior to construction if they are disturbed provided the disturbance occurs on private property and not where the feature encroaches on the public right-of-way.

While the installation of the proposed facilities will be accomplished in previously disturbed areas, the following short term environmental impacts can be anticipated as a result of construction.

- Construction noise
- Detours and delays in traffic
- Dust (minimize through use of dust control)
- Water system outages when switching over to new pipe

The long term impacts include the use of non-renewable resources during the construction period and reduced water consumption by eliminating leaks in the existing system by replacing it with new pipe.

#### Water Treatment Plant

The water treatment plant site is partially forested and may require clearing of some trees. The forested area surrounding the proposed plant site will provide adequate habitat for any small animals and avian species that may be displaced by the clearing of the trees. No endangered species or critical habitats will be affected by the clearing of the water treatment plant site.

#### 3.1.2 Environmental Consequences

The proposed water treatment plant will be housed in a building that covers 2,000 square feet of the site.

The environmental impacts of treating the drinking water lie in the disposal of the waste stream generated by the treatment. If the treatment processes are phased as suggested herein the environmental impacts will be minimized since the removal of Iron and Manganese generates very little waste.

Implementing the R.O. process once the area has an area set aside for the evaporation pond for the waste stream will allow for the reduction in TDS and hardness in the water. A total surface area necessary to evaporate the amount of brine being produced was estimated to be 11 acres if evaporation enhancement is not used.

The high TDS and extreme hardness currently require the use of household water softeners. Softeners not only increase the salt content of household water but release a brine stream which contaminates household septic tanks but could potentially contaminate the ground water. Lincoln County has been designated a Critical Groundwater Management Area by NMED.

#### 3.1.3 Mitigation

There is currently no mitigation required for the proposed project. Pending the final location of the evaporation pond for the R.O. system, a mitigation plan might be necessary.

## **3.2 Floodplains**

According to the Flood Insurance Rate Map (FIRM), Number 3501220035A (effective March 28, 1978), issued by the Federal Emergency Management Agency (FEMA) for Lincoln County, New Mexico, there are no existing floodplains within the Alto Lakes Water and Sanitation District. A copy of the FIRM map showing the floodplains is included in Exhibit A.

### **3.2.1 Affected Environment**

The FEMA maps indicate there are no floodplain areas within the ALW&SD.

### **3.2.2 Environmental Consequences**

The construction of the proposed facilities will not impact any existing floodplains.

## **3.3 Wetlands**

The Alto Lakes area drains into the Pecos Valley. Watersheds in the upland mountain areas are characterized by rugged terrain with steep, incised canyons.

There are no perennial streams or water bodies in the project area, although some year round streams lie just outside the project area boundary.

### **3.3.1 Environmental Consequences**

There are not any wetlands or streams located within the study area. The majority of the project components will be contained in previously disturbed areas such as roadways and shoulders. A preliminary online map obtained through the US Fish & Wildlife website is included in Exhibit C.

## **3.4 Cultural Resources**

The cultural resource study for this project was prepared by Zia Environmental and is included in Exhibit D to this document.

### 3.5 Biological Resources

Alto Lakes is an unincorporated community in Lincoln County, New Mexico, United States. It is located in the Sacramento Mountains five miles (8 km) north of the village of Ruidoso, New Mexico.

This area of southern New Mexico varies from craggy limestone cliffs and desert canyons to rolling piñon hills, high mountain streams, and subalpine forests and meadows. This tremendous diversity of habitats is home to a rich assortment of native animals and plants. Over half of all the threatened or endangered plants in New Mexico and one quarter of all the rare or endemic animals in New Mexico are found in the nearby Lincoln Forest.

Over 300 species of wildlife, including almost 200 types of birds, are found in the area. Hawks, nuthatches, vireos jays, and many different owls are commonly heard or seen during even the shortest of forest visits. The abundance of deer, elk, bear, and turkey make the Lincoln one of the most popular hunting spots for hunters from New Mexico and west Texas.

Various grasses and shrubs are found in the Great Plains region. In the deserts of the south are cactus, mesquite, sagebrush, and, near watercourses, cottonwood and desert willow trees. On lower mountain slopes are desert grasses, creosote bush, juniper, and piñon pine. At higher elevations are forests of yellow, ponderosa, and bristlecone pine, as well as oak, maple, aspen, spruce, and birch.

The project area consists of rugged and densely forested mountains. Primary vegetation cover types are dry mixed conifer and ponderosa pine forest along with some scattered piñon juniper and oak woodlands.

The variety in climate and topography of the Forest, in conjunction with wide vegetation community differences, provides habitat opportunities for 383 species of amphibians, birds, fish, mammals and reptiles. Table 1 below shows the New Mexico Threatened and Endangered Species list, provided by the Biota Information System of New Mexico. It contains the federal and state endangered and threatened species of animals which inhabit Lincoln County. No endangered species were observed in the proposed project area.

<b>Table 2 - Threatened and Endangered Species of Lincoln County</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>State Status</b>	<b>Federal Status</b>
<b>Mammals</b>			
Western Small-footed Myotis Bat	<i>Myotis ciliolabrum melanorhinus</i>	Sensitive taxa (informal)	Not Listed
Yuma Myotis Bat	<i>Myotis yumanensis yumanensis</i>	Sensitive taxa (informal)	Not Listed
Occult Little Brown Myotis Bat	<i>Myotis lucifugus occultus</i>	Sensitive taxa (informal)	Not Listed
Cave Myotis Bat	<i>Myotis velifer</i>	Sensitive taxa (informal)	Not Listed
Long-legged Myotis Bat	<i>Myotis volans interior</i>	Sensitive taxa (informal)	Not Listed
Fringed Myotis Bat	<i>Myotis thysanodes thysanodes</i>	Sensitive taxa (informal)	Not Listed
Pale Townsend's Big-eared Bat	<i>Plecotus townsendii pallescens</i>	Sensitive taxa (informal)	FWS Species of Concern
Penasco Least Chipmunk	<i>Tamias minimus atristriatus</i>	Endangered	FWS Species of Concern
Organ Mountains Colorado Chipmunk	<i>Tamias quadrivittatus australis</i>		
Oscura Mountains Colorado Chipmunk	<i>Tamias quadrivittatus oscuraensis</i>		
Gray-footed Chipmunk	<i>Tamias canipes canipes</i>	Sensitive taxa (informal)	Not Listed
Rock Squirrel	<i>Spermophilus variegatus tularosae</i>		
Black-tailed Prairie Dog	<i>Cynomys ludovicianus ludovicianus</i>	Sensitive taxa (informal)	FWS Species of Concern
AZ Black-tailed Prairie Dog	<i>Cynomys ludovicianus arizonensis</i>	Sensitive taxa (informal)	FWS Species of Concern
Red Squirrel	<i>Tamiasciurus hudsonicus lychnuchus</i>	Sensitive taxa (informal)	Not Listed
Botta's Pocket Gopher	<i>Thomomys bottae actuosus</i>		
Botta's Pocket Gopher	<i>Thomomys bottae ruidosae</i>		
Desert Pocket Gopher	<i>Geomys arenarius brevirostris</i>	Sensitive taxa (informal)	FWS Species of Concern
White-throated Wood Rat	<i>Neotoma albigula melas</i>		

<b>Table 2 - Threatened and Endangered Species of Lincoln County</b>				
Mexican Wood Rat	<i>Neotoma mexicana atrata</i>			
Pecos River Muskrat	<i>Ondatra zibethicus ripensis</i>	Sensitive taxa (informal)		FWS Species of Concern
Ringtail	<i>Bassariscus astutus</i>	Sensitive taxa (informal)		Not Listed
Common Hog-nosed Skunk	<i>Conepatus mesoleucus</i>	Sensitive taxa (informal)		Not Listed
<b>Birds</b>				
Osprey	<i>Pandion haliaetus carolinensis</i>			
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened		Not Listed
Northern Goshawk	<i>Accipiter gentilis</i>	Sensitive taxa (informal)		FWS Species of Concern
Common Black-Hawk	<i>Buteogallus anthracinus anthracinus</i>	Threatened		FWS Species of Concern
Swainson's Hawk	<i>Buteo swainsoni</i>			
Zone-tailed Hawk	<i>Buteo albonotatus</i>			
Ferruginous Hawk	<i>Buteo regalis</i>			
American Peregrine Falcon	<i>Falco peregrinus antum</i>	Threatened		FWS Species of Concern
Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>			
Mountain Plover	<i>Charadrius montanus</i>			
Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	Sensitive taxa (informal)		FWS Species of Concern
Flammulated Owl	<i>Otus flammeolus</i>			
Burrowing Owl	<i>Athene cunicularia hypugaea</i>	Not Listed		FWS Species of Concern
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Sensitive taxa (informal)		Threatened, Critical Hab. Designated (NM)
Blue-throated Hummingbird	<i>Lampornis clemenciae bessophilus</i>			
Belted Kingfisher	<i>Ceryle alcyon</i>			
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Endangered		Endangered, Critical Hab. Designated (NM)

<b>Table 2 - Threatened and Endangered Species of Lincoln County</b>			
Loggerhead Shrike	<i>Lanius ludovicianus</i>	Sensitive taxa (informal)	Not Listed
Gray Vireo	<i>Vireo vicinior</i>	Threatened	Not Listed
Baird's Sparrow	<i>Ammodramus bairdii</i>	Threatened	FWS Species of Concern
<b>Reptiles</b>			
Texas Horned Lizard	<i>Phrynosoma cornutum</i>		
Desert Kingsnake	<i>Lampropeltis getula splendida</i>		
<b>Fish</b>			
Rio Grande Chub	<i>Gila pandora</i>	Sensitive taxa (informal)	Not Listed
Sonora Sucker	<i>Catostomus insignis</i>		
Rio Grande Sucker	<i>Catostomus plebeius</i>		
White Sands Pupfish	<i>Cyprinodon tularosa</i>	Threatened	FWS Species of Concern
<b>Amphibians</b>			
Sacramento Mountain Salamander	<i>Aneides hardii</i>	Threatened	FWS Species of Concern
<b>Molluscs</b>			
Socorro Mountainsnail	<i>Oeohelix neomexicana</i>		
<b>Other Invertebrates</b>			
Bonita Diving Beetle	<i>Deronectes neomexicana</i>		

The U.S. Fish and Wildlife Service, designate critical habitat under the Endangered Species Act of 1973, as amended (Act), for the Mexican spotted owl (*Strix occidentalis lucida*).

### 3.6 Water Quality Issues

Water basins underlying Alto Lakes are the San Andres, Hondo, and the Yeso which are collectively call the Permian aquifer. The surrounding forest yields 123,000 acre feet of water per year from its watersheds. The aquifers in the area are recharged with a portion of this water.

Pollution of streams, ponds, and lakes is a concern. Sediment is the major pollutant and generally follows localized heavy storms. This generally occurs during the summer months when high intensity thunderstorms are frequent. Livestock grazing, off road vehicle use, and poorly located and/or maintained

roads are the more prevalent sources contributing to pollution. Numerous unstable channels throughout the area add to the sedimentation problem.

### **3.7 Coastal Resources**

Coastal resources were considered during this assessment, but do not apply in New Mexico.

### **3.8 Socio-Economic/Environmental Justice Issues**

#### **3.8.1 Affected Environment**

Alto Lakes is an unincorporated community in Lincoln County, New Mexico. It is located near the Lincoln National Forest, approximately five miles north of the Ruidoso, New Mexico. Alto was named after the Spanish word "high," due to its elevation.

The service area ranges in elevation from 7,550 to 6,915 feet above sea level.

The study area includes the area of Alto Lakes which is a planned, residential and recreational community located in the Sacramento Mountains. Alto Lakes was developed by Don Blaugrund in 1967. Today, Alto Lakes is the second largest residential community in Lincoln County.

The surrounding area is known for its artist community and is home for the Spencer Theater of Performing Arts. It is easy to commute to this region through the Sierra Blanca Regional Airport which is 7 miles west of Alto, NM.

According to the New Mexico Department of Labor (NMDOL), unemployment in Lincoln County in 2006 decreased from the previous year from 5.3% to 4.2%. The unemployment rate in Alto, NM is comparable to the County. The unemployment rate for Alto, NM was ranged from 4.0% to 4.3% those same years.

The affected area is not distinct in character from the surrounding areas. It is not anticipated that the proposed improvements will detract from any of the existing activities of the area. The proposed actions, the reduction of TDS, manganese, iron and the regulation of water pressure within the existing water distribution system, will benefit all served residents equally. Recent discussions with the Environmental Protection Agency (EPA) Region 6, suggests there has not been an Environmental Index (EI)

established for the area. The environmental index helps protect residents from disproportionate impacts of environmental hazards regardless of race, economic status, and residence. Should the New Mexico Department of Environment request such study be performed for the area, a request should be made to the designated EPA Region representative.

### 3.8.2 Environmental Consequences

The area of the proposed project is not distinct from the surrounding areas and its activities will not detract from any of the existing activities in the area. The proposed improvements, the improved water distribution system and the reduction of iron, manganese, TDS, and hardness for the ALW&SD, will benefit all served residents equally.

## **3.9 Miscellaneous Issues**

Air quality over the area is generally good. The largest source of air pollution in the area is smoke from fires and dust from unpaved roads.



## 4.0 SUMMARY OF MITIGATION

A Storm Water Pollution Prevention Plan would need to be completed prior to beginning any construction activities for the water distribution system and proposed water treatment plant. However, the construction and/or implementation of these plans would have no current or future, direct or indirect, positive or negative effect on the environment.

The ALW&SD does not currently own a parcel of land large enough to implement the disposal method associated with the R.O. system proposed to be added to the water treatment plant as a second phase. As discussed previously, the surface area necessary to evaporate the amount of brine being produced by the addition of the R.O. system is 11 acres unless some type of evaporation enhancement is used.

*The ALW&SD is currently investigating possible locations for the proposed evaporation pond. The District will obtain the necessary environmental clearances for the selected site before proceeding with the phase II water treatment project.*

In addition, NMED also makes several recommendations of mitigation activities to be followed during construction and operation of the new facilities.

- During construction activities, dust control measures should be taken to minimize the release of particulates. This action could be as simple as dust suppression by periodically applying water within the disturbed area.
- During construction activities, ALW&SD should implement a traffic control plan to provide detours and minimize delays in traffic.
- ALW&SD should notify residents about possible water system outages when switching over to new pipe as a result of the new water distribution system installed.

## 5.0 CORRESPONDENCE

Agency comments and correspondence will be included in the final EID. The following is a list of agencies contacted via mail/email:

Katherine Slick, Director  
New Mexico Office of Cultural Affairs-  
State Historic Preservation Division  
228 East Palace Avenue  
Santa Fe, NM 87503

Susan MacMullin, Field Supervisor  
U.S. Department of Interior-Fish and Wildlife Service  
New Mexico Ecological Services Field Office  
2105 Osuna, NE  
Albuquerque, NM 87113-1001

Daniel Malanchuk, Chief  
U.S. Army Corps of Engineers-Albuquerque District  
Regulatory Branch  
4101 Jefferson Plaza, NE  
Albuquerque, NM 87109-3435

Marcy Leavitt, Chief  
New Mexico Environment Department  
Surface Water Quality Bureau  
P.O. Box 26110  
Santa Fe, NM 87502

Mary Day, Chief  
New Mexico Environment Department  
Drinking Water Bureau  
525 Camino de Los Marquez, Suite #1  
Santa Fe, NM 87505

Federal Emergency Management Agency  
Region VI  
800 N. Loop 288  
Denton, TX 76209

**6.0 EXHIBITS/MAPS**

- A. FEMA Flood Insurance Rate Map
- B. Alto Lakes Special Zoning District Zone Map
- C. US Fish & Wildlife – Wetlands Online Mapper
- D. Zia Environmental Cultural Resource Study

# **EXHIBIT A**

**FEMA Flood Insurance Rate Map**



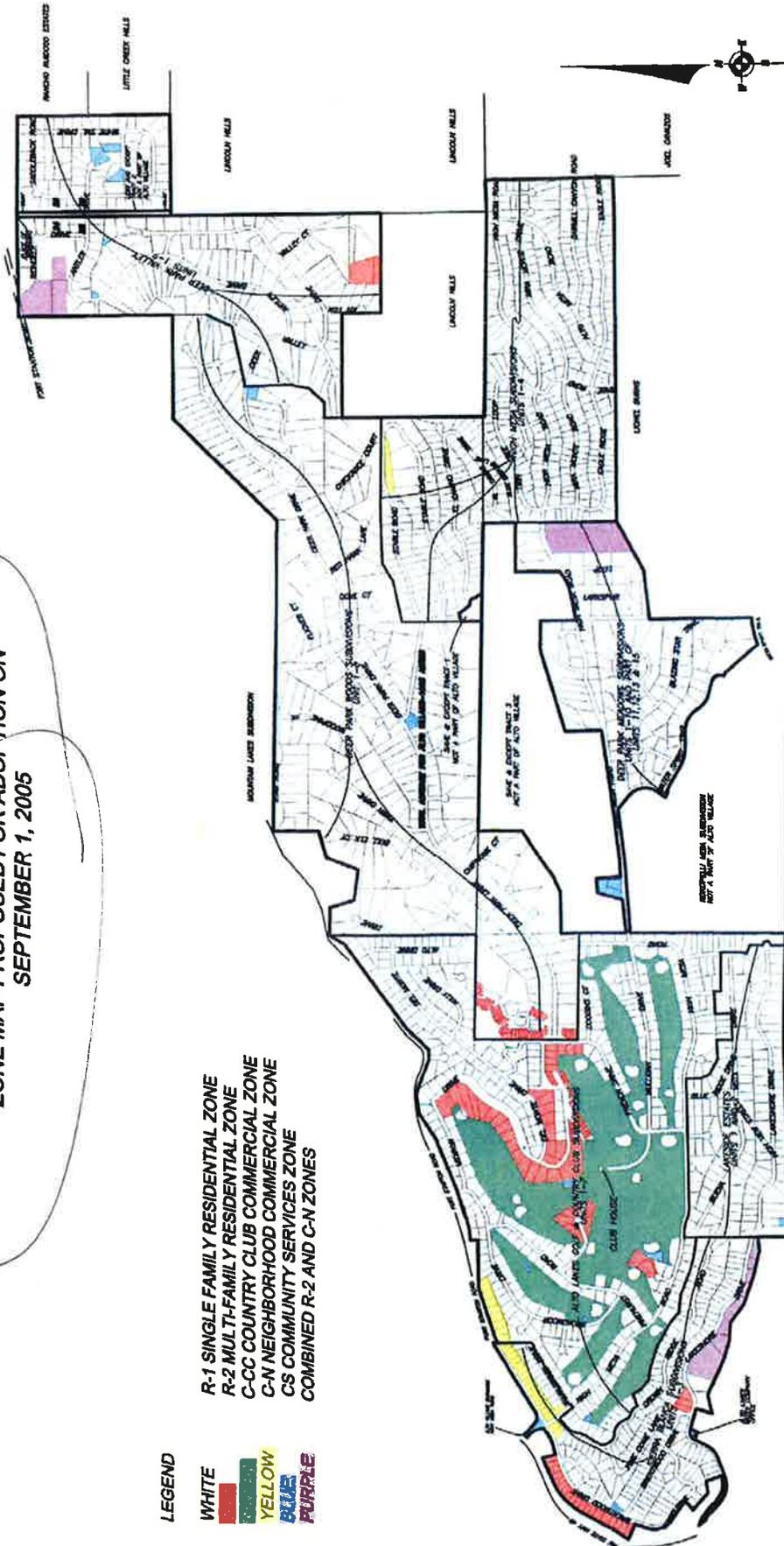
## **EXHIBIT B**

Alto Lakes Special Zoning District Zone Map

**ALTO LAKES SPECIAL ZONING DISTRICT  
LINCOLN COUNTY, NEW MEXICO  
COMPREHENSIVE ZONING AND LAND USE ORDINANCE  
ZONE MAP PROPOSED FOR ADOPTION ON  
SEPTEMBER 1, 2005**

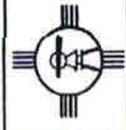
**LEGEND**

- WHITE R-1 SINGLE FAMILY RESIDENTIAL ZONE
- RED R-2 MULTI-FAMILY RESIDENTIAL ZONE
- GREEN C-CC COUNTRY CLUB COMMERCIAL ZONE
- YELLOW C-N NEIGHBORHOOD COMMERCIAL ZONE
- BLUE CS COMMUNITY SERVICES ZONE
- PURPLE COMBINED R-2 AND C-N ZONES



BLADE OF ARROW

SCALE: ONE INCH = 100 FEET



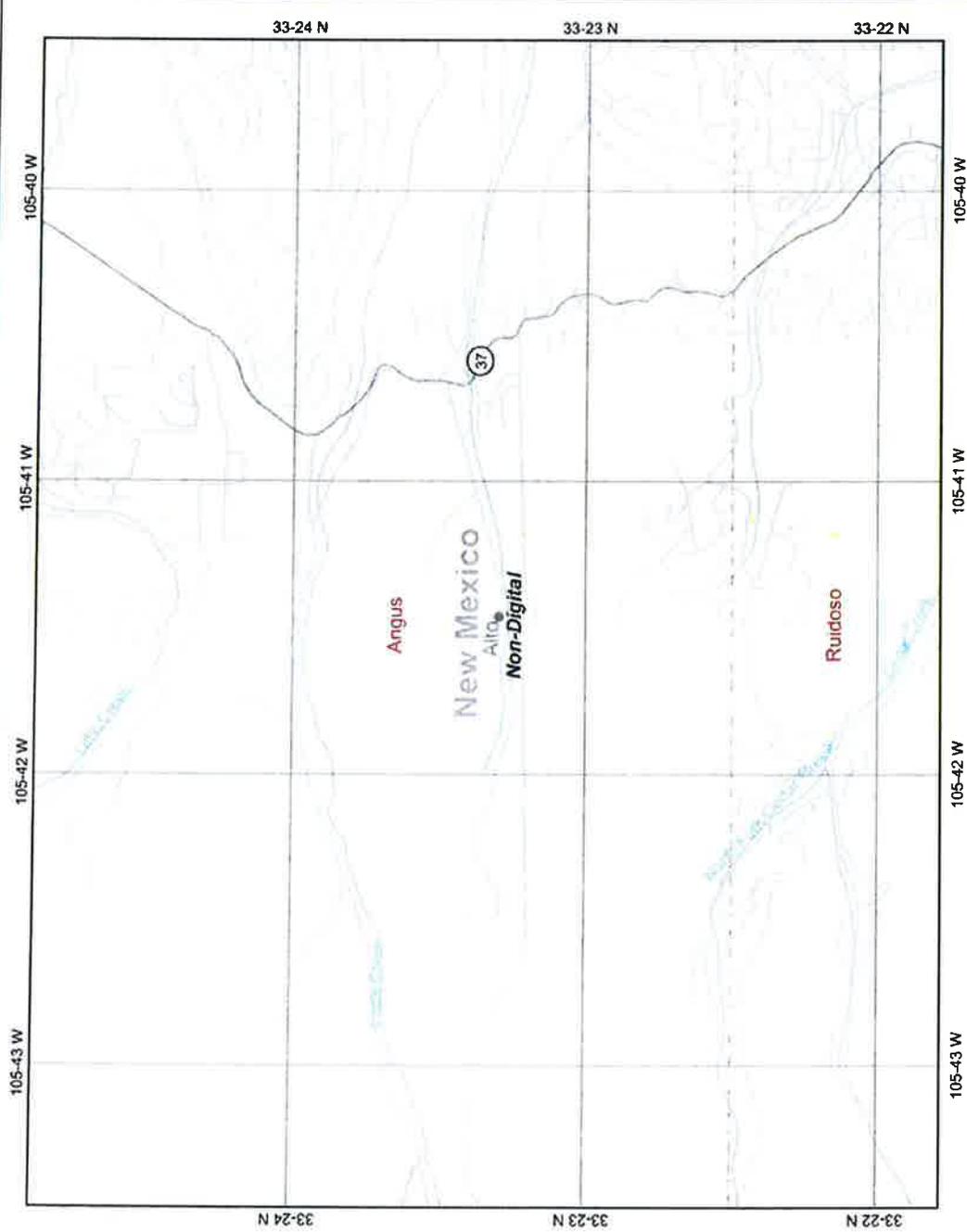
**D.T. COLLINS & ASSOCIATES P.C.**  
SURVEYING, MAPPING  
1042 MECHEM DR. 505-258-5272  
PLS NO. 4971  
RUIDOSO, LINCOLN COUNTY, NEW MEXICO

SCALE: \_\_\_\_\_  
DATE: 8-5-2006  
DRAWN BY: DER  
CHECKED BY: DTC  
JOB NO: 05-930  
SHEET: 1 OF 1

## **EXHIBIT C**

US Fish & Wildlife – Wetlands Online Mapper

# US Fish & Wildlife - Wetlands Online Mapper



**Legend**

- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Ound Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scen
- NHD Streams
- Counties 100K
- States 100K
- South America
- North America

Scale: 1:40,000

Map center: 33° 23' 20" N, 105° 41' 29" W

This map is a user-generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

## **EXHIBIT D**

Zia Environmental Cultural Resource Study

## NMCRIS INVESTIGATION ABSTRACT FORM (NIAF)

<b>1. NMCRIS Activity No.:</b> 109745	<b>2a. Lead (Sponsoring) Agency:</b> New Mexico Finance Authority	<b>2b. Other Permitting Agency(ies):</b>	<b>3. Lead Agency Report No.:</b>																		
<b>4. Title of Report:</b> A Cultural Resources Survey of 36 Acres for Water Improvements in Alto, Lincoln County, New Mexico. <b>Author(s)</b> Victor Gibbs		<b>5. Type of Report</b> <input checked="" type="checkbox"/> Negative <input type="checkbox"/> Positive																			
<b>6. Investigation Type</b> <input type="checkbox"/> Research Design <input checked="" type="checkbox"/> Survey/Inventory <input type="checkbox"/> Test Excavation <input type="checkbox"/> Excavation <input type="checkbox"/> Collections/Non-Field Study <input type="checkbox"/> Overview/Lit Review <input type="checkbox"/> Monitoring <input type="checkbox"/> Ethnographic study <input type="checkbox"/> Site specific visit <input type="checkbox"/> Other																					
<b>7. Description of Undertaking (what does the project entail?):</b> Approximately 15 miles of waterline will be installed within existing streets of Alto, Lincoln County, New Mexico for the Alto Lakes Water and Sanitation District. In addition, a water treatment plant will be installed within undisturbed ground.		<b>8. Dates of Investigation: (from: 4/2/2008 to: 4/2/08)</b>																			
<b>10. Performing Agency/Consultant:</b> Zia Engineering & Environmental Consultants, LLC <b>Principal Investigator:</b> Victor Gibbs <b>Field Supervisor:</b> Victor Gibbs <b>Field Personnel Names:</b> Lee Winkelspecht		<b>9. Report Date:</b> 4/7/08																			
<b>11. Performing Agency/Consultant Report No.:</b> LCS-08-027		<b>12. Applicable Cultural Resource Permit No(s):</b> NM-08-155-S																			
<b>13. Client/Customer (project proponent):</b> Parkhill, Smith, and Cooper (PSC), Inc. <b>Contact:</b> Keith Rutherford <b>Address:</b> 810 E. Yandell, El Paso, TX 79902 <b>Phone:</b> (915) 533-6811		<b>14. Client/Customer Project No.:</b>																			
<b>15. Land Ownership Status (<i>Must be indicated on project map</i>):</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 60%;">Land Owner</th> <th style="width: 20%;">Acres Surveyed</th> <th style="width: 20%;">Acres in APE</th> </tr> </thead> <tbody> <tr> <td>Lincoln County</td> <td style="text-align: center;">36</td> <td style="text-align: center;">36</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td><b>TOTALS</b></td> <td style="text-align: center;"><b>36</b></td> <td style="text-align: center;"><b>36</b></td> </tr> </tbody> </table>				Land Owner	Acres Surveyed	Acres in APE	Lincoln County	36	36										<b>TOTALS</b>	<b>36</b>	<b>36</b>
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Lincoln County	36	36																			
<b>TOTALS</b>	<b>36</b>	<b>36</b>																			
<b>16. Records Search(es):</b> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 40%;">Date(s) of ARMS File Review 3/31/08</td> <td>Name of Reviewer(s) Victor Gibbs</td> </tr> <tr> <td>Date(s) of NR/SR File Review 3/31/08</td> <td>Name of Reviewer(s) Victor Gibbs</td> </tr> <tr> <td>Date(s) of Other Agency File Review</td> <td>Name of Reviewer(s) Agency</td> </tr> </table>				Date(s) of ARMS File Review 3/31/08	Name of Reviewer(s) Victor Gibbs	Date(s) of NR/SR File Review 3/31/08	Name of Reviewer(s) Victor Gibbs	Date(s) of Other Agency File Review	Name of Reviewer(s) Agency												
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Date(s) of Other Agency File Review	Name of Reviewer(s) Agency																				
<b>17. Survey Data:</b> <p>a. Source Graphics   <input checked="" type="checkbox"/> NAD 27   <input type="checkbox"/> NAD 83  <input checked="" type="checkbox"/> USGS 7.5' (1:24,000) Topographic map   <input type="checkbox"/> Other Topographic map, Scale:  <input checked="" type="checkbox"/> GPS Unit   Accuracy   <input type="checkbox"/> &lt;1.0m   <input checked="" type="checkbox"/> 1-10m   <input type="checkbox"/> 10-100m   <input type="checkbox"/> &gt;100m</p> <p>b.</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 60%;">USGS 7.5' Topographic Map Name</th> <th style="width: 40%;">USGS Quad Code</th> </tr> </thead> <tbody> <tr> <td>Angus</td> <td style="text-align: center;">33105-D6</td> </tr> <tr> <td> </td> <td> </td> </tr> </tbody> </table> <p>c. County(ies): Lincoln</p>				USGS 7.5' Topographic Map Name	USGS Quad Code	Angus	33105-D6														
USGS 7.5' Topographic Map Name	USGS Quad Code																				
Angus	33105-D6																				

17. Survey Data (continued):

d. Nearest City or Town: Alto, New Mexico

e. Legal Description:

Township (N/S)	Range (E/W)	Section	¼	¼	¼
10S	13E	33	All, SE, NE.		
10S	13E	33	SE, NE, NE.		
10S	13E	34	All, All, NW.		
10S	13E	34	All, All, NE.		
10S	13E	34	All, N1/2, SE.		
10S	13E	34	N1/2, NE, SE.		
10S	13E	34	All, SE, SE.		
10S	13E	35	All, All, NW.		
10S	13E	35	All, All, NE.		
10S	13E	35	All, All, SW.		
10S	13E	35	All, All, SE.		
10S	13E	26	All, All, SE.		
10S	13E	26	All, E1/2, SW.		
10S	13E	26	All, SW, SW.		
10S	13E	25	All, All, SW.		
10S	13E	25	All, SE, NW.		
10S	13E	25	All, E1/2, NE.		
10S	13E	25	All, SW, NE.		
10S	13E	24	All, SE, SE.		
10S	14E	19	S1/2, SW, SW.		
10S	14E	30	All, NW, NW.		

Projected legal description? Yes [ ], No [X] Unplatted [ ]

f. Other Description (e.g. well pad footages, mile markers, plats, land grant name, etc.):

18. Survey Field Methods:

Intensity:  100% coverage  <100% coverage

Configuration:  block survey units  linear survey units (l x w): 15 miles x 20 ft  other survey units (specify):

Scope:  non-selective (all sites recorded)  selective/thematic (selected sites recorded)

Coverage Method:  systematic pedestrian coverage  other method (describe) Windshield survey in paved road areas.

Survey Interval (m): 15 Crew Size: 2 Fieldwork Dates: 4/02/08

Survey Person Hours: 6 Recording Person Hours: 0 Total Hours: 6

Additional Narrative: All but approximately 1 mile of the project area consist of paved streets within a developed golf course community. The edges of the paved streets are also developed with landscaping and/or curb/gutters. All of the roads within the community scheduled for pipeline installation were driven to look for unpaved or undeveloped areas. The remaining mile was improved and graveled road with undisturbed edges; this mile was surveyed on foot. As the Alto community was developed in the late 1970s-present, no historic age buildings were present.

19. Environmental Setting (NRCS soil designation; vegetative community; elevation; etc.): Soils consist of a large number of types, primarily Galivan Loam and Galivan Very Gravelly Loam, Monjeau-Docdee Complex, Noltan Loam, and Tortugas Rock Outcrop association. Vegetation consists of ponderosa pine, grasses, and ornamental plants of the subdivision. Elevation ranges from 6,900 to 7,450 feet ASL.

20. a. Percent Ground Visibility: 0 b. Condition of Survey Area (grazed, bladed, undisturbed, etc.): The entire project area has been disturbed. Most of the project area is covered by 20 foot wide paved roads, and the remainder is covered by improved gravel roads. Edges of most of the roads are landscaped with rocks or grass. Many areas have small runoff ditches.

21. CULTURAL RESOURCE FINDINGS  Yes, See Page 3  No, Discuss Why: The entire project area has been disturbed by the installation of paved or improved gravel streets, where the pipeline installation will occur. As the Alto area was developed in the 1970s through the present, no historic structures were identified in the project area as well. Within the relatively undisturbed 2.5 acre survey area for the proposed water treatment plant, no cultural resources were identified.

22. Required Attachments (check all appropriate boxes):

- USGS 7.5 Topographic Map with sites, isolates, and survey area clearly drawn
- Copy of NMCRIS Mapserver Map Check
- LA Site Forms - new sites (with sketch map & topographic map)
- LA Site Forms (update) - previously recorded & un-relocated sites (first 2 pages minimum)
- Historic Cultural Property Inventory Forms
- List and Description of isolates, if applicable
- List and Description of Collections, if applicable

23. Other Attachments:

- Photographs and Log
- Other Attachments

(Describe):

24. I certify the information provided above is correct and accurate and meets all applicable agency standards.

Principal Investigator/Responsible Archaeologist: Victor Gibbs

Signature 

Date 4/7/08 Title (if not PI):

25. Reviewing Agency:  
Reviewer's Name/Date  
Accepted ( ) Rejected ( )  
Tribal Consultation (if applicable):  Yes  No

26. SHPO  
Reviewer's Name/Date:  
HPD Log #:  
SHPO File Location:  
Date sent to ARMS:

### CULTURAL RESOURCE FINDINGS

*[fill in appropriate section(s)]*

1. NMCRIS Activity No.:  
109745

2. Lead (Sponsoring) Agency:  
New Mexico Finance Authority

3. Lead Agency Report No.:

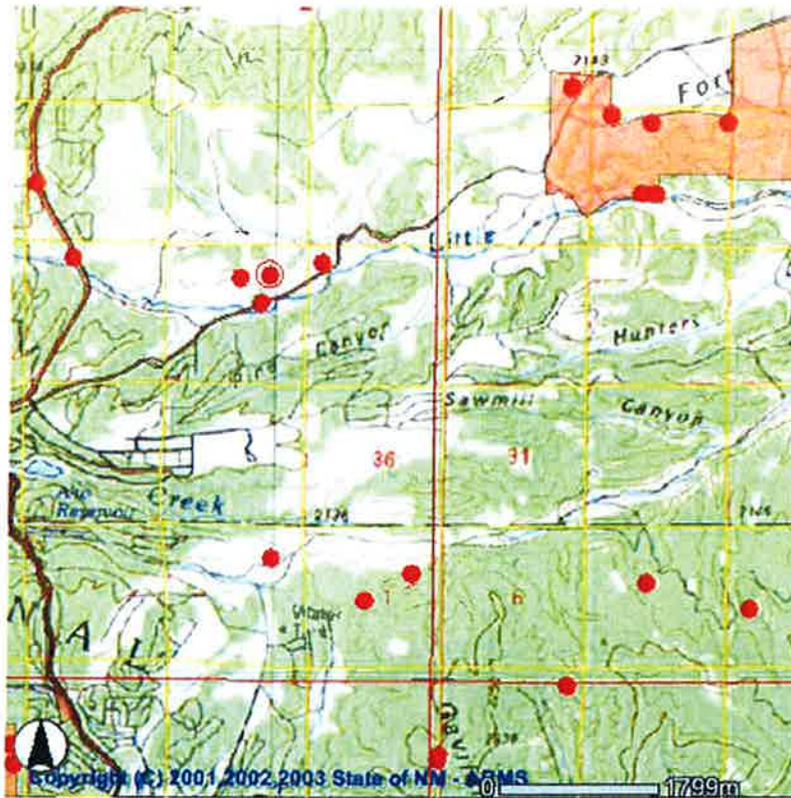
#### SURVEY RESULTS:

Sites discovered and registered: 0  
Sites discovered and NOT registered: 0  
Previously recorded sites revisited (site update form required): 0  
Previously recorded sites not relocated (site update form required): 0  
TOTAL SITES VISITED: 0  
Total isolates recorded: 0 Non-selective isolate recording?   
Total structures recorded (new and previously recorded, including acequias): 0

**MANAGEMENT SUMMARY:** On April 2, 2008, a cultural resources survey was conducted for proposed water improvements in Alto, Lincoln County, New Mexico for the Alto Lakes Water and Sanitation District. Approximately 15 miles of waterline is proposed to be installed within the existing streets of Alto, Lincoln County, New Mexico. In addition, a water treatment plant will be installed within undisturbed ground. Approximately 14 miles of the project area are paved with landscaped shoulders and/or curb-gutter, making the detection of cultural resources impossible. The remaining mile was improved gravel with natural shoulders. The entire proposed corridor was examined for cultural resources, though only the improved gravel road portion was subjected to pedestrian survey. In addition, a pedestrian survey was conducted for a proposed 2.5 acre water treatment plant, located in the central portion of Alto. As a result of the survey, no cultural resources were identified. As Alto was established in the 1970s to the present, no historic buildings were identified. The project is recommended to proceed with no effect to cultural resources.

**IF REPORT IS NEGATIVE YOU ARE DONE AT THIS POINT.**

ARMS Search Map April 1, 2008



Typical Project Area Street in Alto, New Mexico



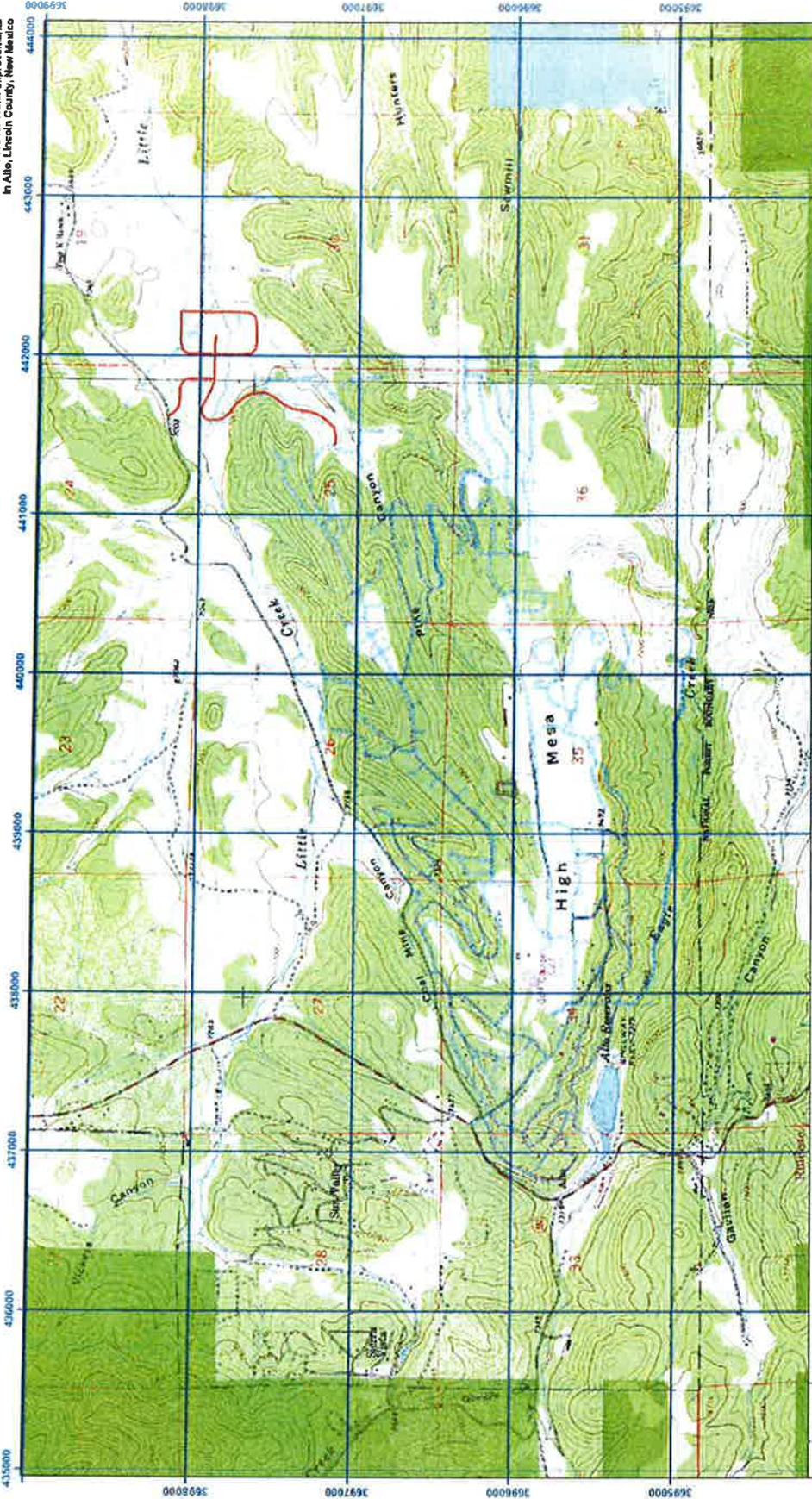
Typical Improved Gravel Road



Proposed Water Treatment Facility



**A Cultural Resources Survey  
of 36 Acres for Water Improvements  
in Alto, Lincoln County, New Mexico**



Based on 7.5' USGS Quadrangles  
http://seamless.usgs.gov/background

UTM Zone 13  
NAD 1983  
124,000

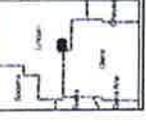
University of Oklahoma Libraries  
Department of Geography & Planning  
100 East 17th Street  
EO 12812 and EO 12818

-  Dirt Road
-  Road
-  Water Treatment Facility
-  Forest Service Land
-  Private Land
-  State Trust Land



Date: 6-1-2008  
Project No.: LCS-08-027  
NMCRIS No.: 109745  
Figure No.: 1

A Cultural Resources Survey  
of 36 Acres for Water Improvements  
in Alto, Lincoln County, New Mexico



Based on USGS QuickResponse  
map/imagery.usgs.gov background

UTM Zone 13  
NAD 1983  
1:24,000

University of Pennsylvania, Tom and  
Mary Gates Center for Digital  
Earth Data and Research

- Dirt Road
- Road
- Water Treatment Facility



Date: 4-1-2008  
Project No.: LCS-08-027  
NAACRS No.: 100745  
Figure No.: 2