

United States Department of Energy



Environmental Assessment Of the Provision of a Water Supply System Gunnison, Colorado

Final

December 1991

Uranium Mill Tailings Remedial Action Project



ENVIRONMENTAL ASSESSMENT
OF THE PROVISION OF A WATER SUPPLY SYSTEM
AT GUNNISON, COLORADO

DECEMBER 1991

U.S. Department of Energy
UMTRA Project Office
Albuquerque, New Mexico

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1.0 NEED FOR ACTION

Domestic water wells located downgradient of the Gunnison, Colorado, Uranium Mill Tailings Remedial Action (UMTRA) Project site contain elevated levels of uranium (DOE, 1990a). To reduce the public health risk until a permanent solution could be developed and studied, the U.S. Department of Energy (DOE) began providing bottled water to all affected or potentially affected domestic well users in 1990. As required by the National Environmental Policy Act (NEPA), this document evaluates and documents the DOE's proposed permanent solution.

1.1 SETTING AND BACKGROUND

The Gunnison UMTRA Project site is in south-central Colorado, adjacent to the town of Gunnison and within Gunnison County. The site was identified in Public Law 95-604 as one of 24 sites in need of surface remediation to remove or stabilize in place uranium mill tailings and associated contaminated materials to protect public health. Evaluation and characterization studies of the Gunnison uranium mill tailings site and potential disposal sites have been in progress since 1980.

The results of domestic water well sampling during July and October of 1990 show that 22 domestic water wells downgradient of the processing site have elevated levels of uranium that exceed background levels (0.008 milligrams per liter (mg/l)), which are the maximum observed concentrations for the region. Figure 1.1 shows the extent of contamination based on the results of sampling domestic wells in August and October 1990. Other metals, including manganese, cadmium, and the uranium decay product lead-210, have also been detected at levels significantly above background. Thorium-230, radium-226, radon-222, and other uranium decay products have been detected at levels consistent with the regional background levels.

The affected wells are used by residents within the Dos Rios subdivision or along Goodwin Lane. Two wells supply water for commercial use (i.e., gravel company office well, campground well) (DOE, 1990b). Figure 1.2 shows the location of the affected areas. In August 1990, the DOE began providing bottled water from a water supplier in Gunnison approved by the Colorado Department of Health to all downgradient users, including the entire Dos Rios subdivision, as a public health measure. The bottled water was intended to provide emergency relief to those residents with contaminated water wells and to allow time for an evaluation of a permanent solution.

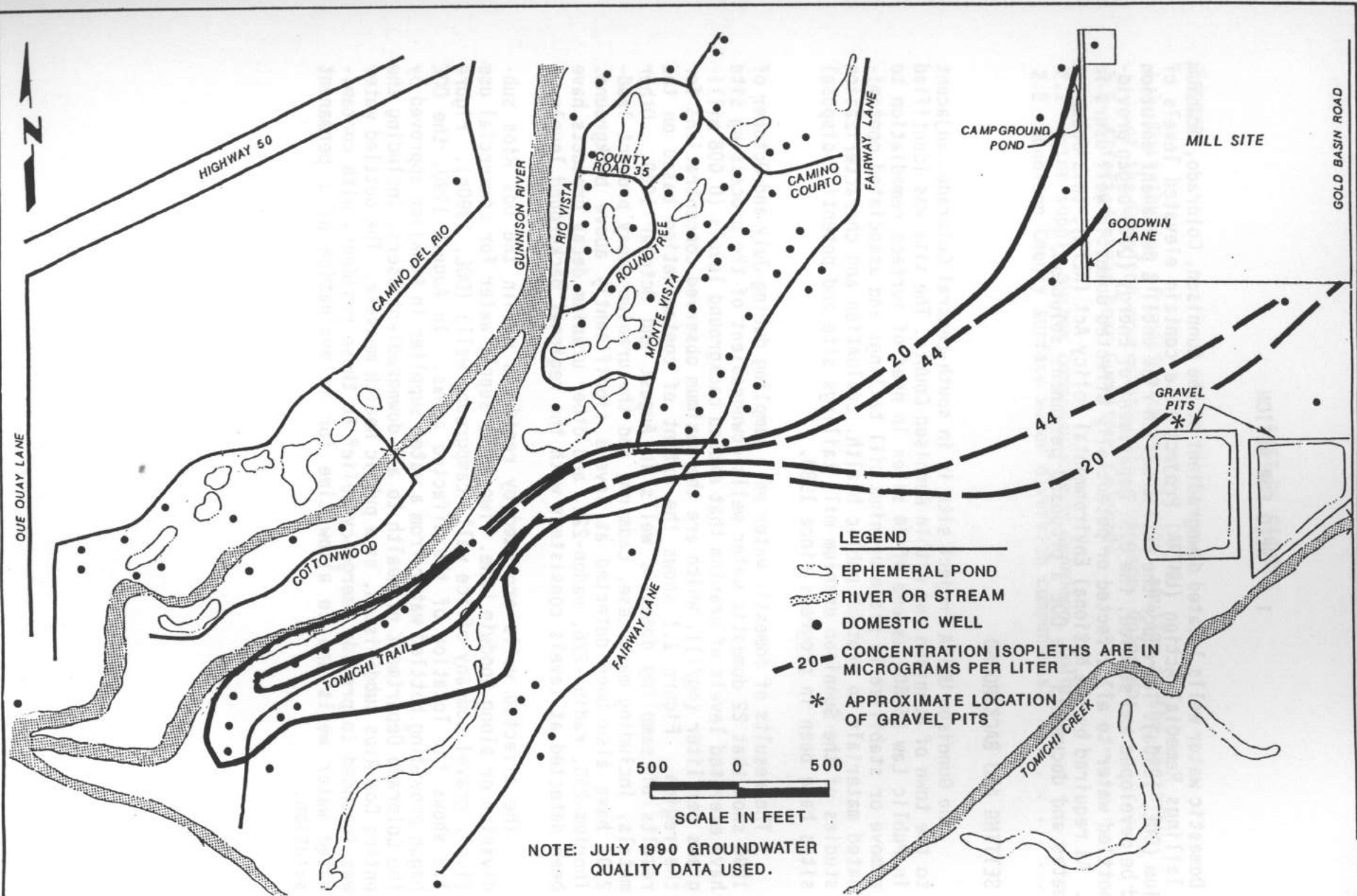


FIGURE 1.1
DISTRIBUTION OF URANIUM IN THE ALLUVIAL AQUIFER IN THE VICINITY
OF THE GUNNISON PROCESSING SITE, GUNNISON, COLORADO

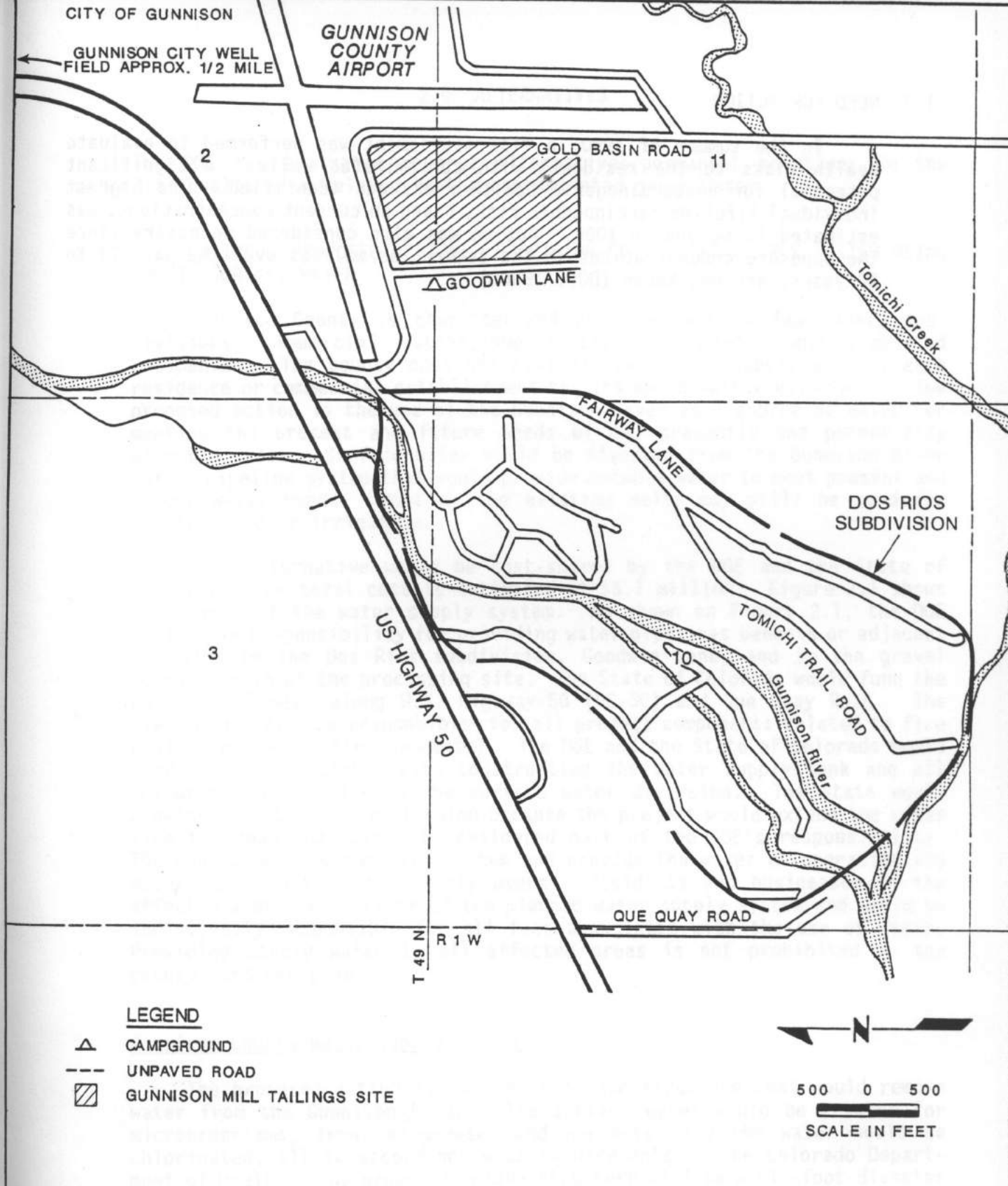


FIGURE 1.2
AFFECTED AREAS NEAR GUNNISON, COLORADO

1.2 NEED FOR ACTION

In the summer of 1990, a risk assessment was performed to evaluate health risks to the residents with contaminated wells. A significant potential for noncarcinogenic health risks was identified. The highest individual lifetime carcinogenic risk, based on current concentrations, was estimated to be one in 1000. Action was also considered necessary since the exposure concentrations in the future, as well as over the past 20 to 30 years, are not known (DOE, 1990b).

2.0 ALTERNATIVES

The DOE has evaluated several alternatives/permanent solutions to the potential health risk related to the contaminated groundwater.

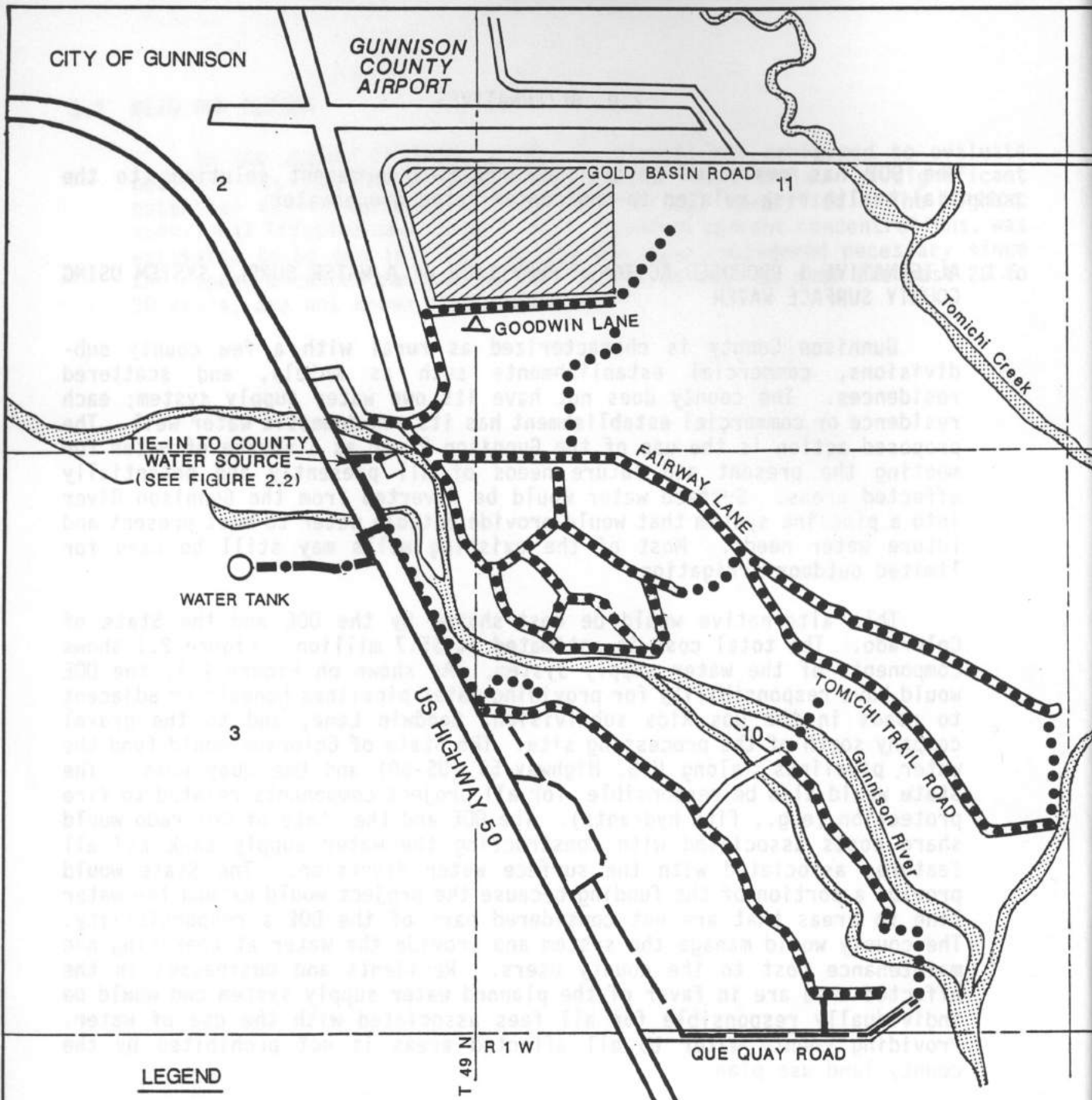
2.1 ALTERNATIVE 1 PROPOSED ACTION: PROVISION OF A WATER SUPPLY SYSTEM USING COUNTY SURFACE WATER

Gunnison County is characterized as rural with a few county subdivisions, commercial establishments such as motels, and scattered residences. The county does not have its own water supply system; each residence or commercial establishment has its own domestic water well. The proposed action is the use of the Gunnison River as a source of water for meeting the present and future needs of all presently and potentially affected areas. Surface water would be diverted from the Gunnison River into a pipeline system that would provide potable water to meet present and future water needs. Most of the existing wells may still be used for limited outdoor irrigation.

This alternative would be cost-shared by the DOE and the State of Colorado. The total cost is estimated at \$5.7 million. Figure 2.1 shows components of the water supply system. As shown on Figure 2.1, the DOE would have responsibility for providing water pipelines beneath or adjacent to roads in the Dos Rios subdivision, Goodwin Lane, and to the gravel company south of the processing site. The State of Colorado would fund the water pipelines along U.S. Highway-50 (US-50) and Que Quay Road. The State would also be responsible for all project components related to fire protection (e.g., fire hydrants). The DOE and the State of Colorado would share costs associated with constructing the water supply tank and all features associated with the surface water diversion. The State would provide a portion of the funding because the project would extend the water line to areas that are not considered part of the DOE's responsibility. The county would manage the system and provide the water at operating and maintenance cost to the county users. Residents and businesses in the affected area are in favor of the planned water supply system and would be individually responsible for all fees associated with the use of water. Providing county water to all affected areas is not prohibited by the county land use plan.

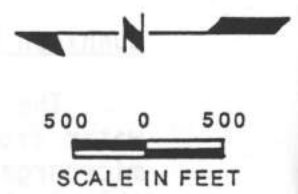
Gunnison County Water Supply Source

The proposed action is to use an intake structure that would remove water from the Gunnison River. The surface water would be treated for microorganisms, iron, manganese, and hardness, and the water would be chlorinated, all in accordance with requirements of the Colorado Department of Health. The proposed intake structure will be a six-foot-diameter manhole located ten feet from the stream channel. The proposed intake structure would require an excavation 10-12 feet deep adjacent to the river bank. Backfill would include variable sized rock materials which would increase in size to match existing rock size on the river bank. The excavation will hydraulically connect the intake structure to the river. A circular or rectangularly-shaped screened intake structure would be six feet in diameter with perforated sides. Using sideslope layback conditions



LEGEND

- LOCATION OF COUNTY SURFACE WATER DIVERSION FEATURES
- △ CAMPGROUND
- ▨ GUNNISON MILL TAILINGS SITE
- DOE-FUNDED PORTION OF WATER SUPPLY SYSTEM
- STATE OF COLORADO-FUNDED PORTION OF WATER SUPPLY SYSTEM
- JOINT FUNDING



NOTE: MAJORITY OF WATER SUPPLY SYSTEM IS ADJACENT TO ROAD

**FIGURE 2.1
WATER SUPPLY SYSTEM COMPONENTS
NEAR GUNNISON, COLORADO**

of 1:1, the excavation will temporarily disturb a 30-foot wide surface area. All disturbed surface and riverbank areas will be restored to their original conditions.

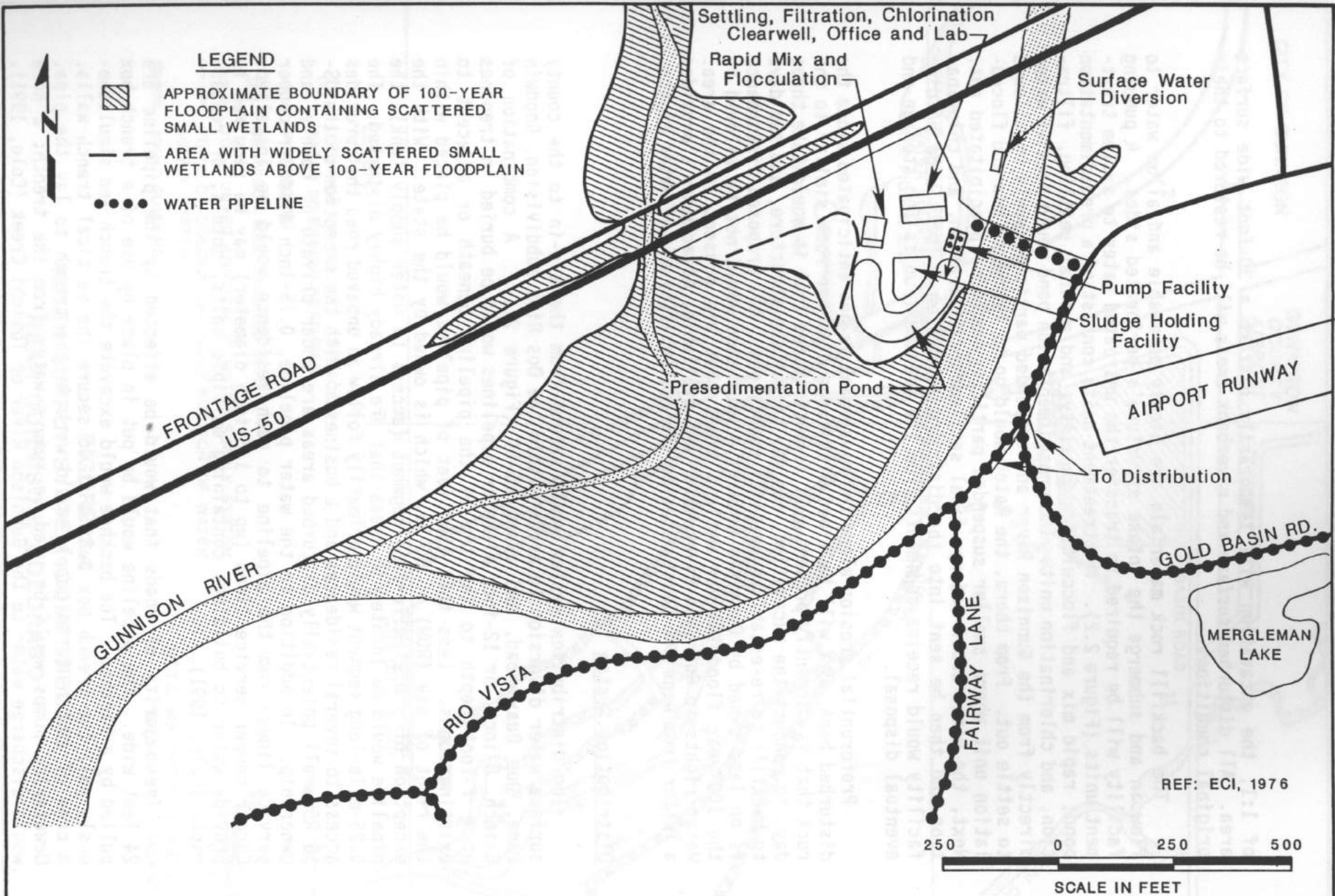
The backfill rock materials are highly permeable and allow water to flow in and submerge the intake structure's perforated sides. A pumping facility will be required to transfer the untreated water to system treatment units (Figure 2.2). The treatment units consist of a presedimentation pond; rapid mix and flocculation facility; and a final settling, filtration, and chlorination unit. The presedimentation pond would receive water directly from the Gunnison River and suspended particles would be allowed to settle out. From there, the water would go to the rapid mix and flocculation unit where smaller suspended particles would be precipitated out. Next, the water would undergo final settlement, filtration, and chlorination and then be sent into the distribution system. The sludge holding facility would receive sediments from the treatment units for storage and eventual disposal.

Preferential erosion along the river bank is not anticipated since the disturbed bank area will be lined with large diameter rock similar to the rock that is currently present. It is anticipated that it would take three days to conduct the excavation, one day to set the structure, and two days to backfill to re-establish original conditions. All proposed disturbance is on land owned by Gunnison County; disturbance would not be allowed in the 100-year floodplain or wetland areas that are present in the area. Water rights to Gunnison River water are available; Attachment 1 provides a letter from Gunnison County stating the availability of the water rights.

Distribution System

The distribution system would extend from the tie-in to the county surface water diversion to areas within the Dos Rios subdivision, Goodwin Lane, Que Quay Road, and along US-50 (Figure 2.1). A combination of 6-inch, 8-inch, or 12-inch diameter pipelines would be buried in trenches at a 7-foot depth to the top of the pipeline beneath or adjacent to existing roads. Less than 1500 feet of pipeline would be placed within the right of way (ROW) of US-50, which is owned by the state. With the exception of a 0.25-mile-long segment (access to water supply tank), the pipeline would be located in areas that are already highly disturbed. The 0.25-mile-long segment would primarily follow an unpaved road that provides access to several residences and a business. With the exception of the US-50 ROW, all potentially disturbed areas are under private or county land ownership. In addition to the water pipeline, 0.75-inch diameter copper service lines from the pipeline to each residence would be installed. Larger copper service lines (up to 1.5-inch diameter) may be required to provide water to buildings containing multiple units, motels, or restaurants (Cole, 1991).

The majority of roads that would be affected by the pipeline are 24 feet wide. The pipeline would be put in place by use of a trench box pulled by a backhoe. The backhoe would excavate the trench and simultaneously pull the trench box behind it to secure the vertical trench walls. A crew of two or three people would work in the trench to lay the pipe. Dewatering pumps would be used to remove water from the trench; a hose would discharge water to the Gunnison River or Tomichi Creek (Cole, 1991).



**FIGURE 2.2
GUNNISON COUNTY SURFACE WATER DIVERSION COMPONENTS**

The water will be treated for total suspended solids and discharged under a Colorado Discharge Permit System (CDPS) permit.

The use of the backhoe and trench box would require an average surface area width of 10 feet; maximum surface disturbance would occur over 18 feet. The length of open trench at any time would be between 150 and 200 feet. After each section is completed, the trench would be backfilled; surface asphalt, where removed, may be replaced at the end of each construction phase. Where work is in progress, traffic on the road would be slowed or stopped by flag persons; a 6- to 8-foot-wide pavement and/or shoulder surface would be available for traffic to pass. The pipeline would cross the Gunnison River four times. Each crossing may require a separate, temporary cofferdam constructed of clean on-site materials that would remain in place for about one week while the pipeline is installed and the channel is restored. All stream crossings would be scheduled during relatively low river flow to minimize disturbance (Cole, 1991). Construction of the intake structure may also require a temporary cofferdam.

The water supply tank would have a capacity of 750,000 gallons, have a depth of 16 to 20 feet, and be covered with at least two feet of cover materials comprised of the materials removed to bury the tank. The tank would be north of US-50 and the Gunnison River (see Figure 2.1 for location) (Cole, 1991).

River crossings are proposed to be done during late 1991 to take advantage of the low flow levels. The remainder of the project would be constructed in 1992.

This alternative eliminates the risks from all human exposure pathways including potential risks from showering or bathing in contaminated water. Additionally, it eliminates the need and expense for on-going, routine monitoring of domestic wells (Cole, 1991), and provides better overall water quality from local groundwater.

2.2 ALTERNATIVE 2: NO ACTION

The continuation of the present bottled water program was evaluated by the DOE as the least expensive and simplest solution to the contaminated groundwater problem. However, the use of bottled water does not address the potential risks associated with bathing in contaminated water, nor the inconvenience associated with using bottled water for everyday needs. Additional concerns include whether the homeowners would be able to sell their homes with the bottled water need and the on-going need to educate new residents of the associated risks, especially since drinking bottled water is entirely voluntary. The costs associated with the present bottled water program do not represent future costs related to yearly monitoring of the contaminated groundwater plume and the identification, risk education, and tracking of additional well users at risk. These expenses are likely to exceed \$200,000 per year, and may last for 10-20 years.

2.3 ALTERNATIVE 3: REVERSE OSMOSIS SYSTEM ON INDIVIDUAL WELLS

The installation of Reverse Osmosis (R/O) systems on individual kitchen faucets was evaluated by the DOE. The R/O system has been shown to be effective in removing hazardous constituents such as uranium. The use of the R/O system was dropped from further consideration because it requires scheduled maintenance and monitoring that the DOE would be required to support for an indefinite period of time, and because it does not normally supply enough water for everyday household use. Also, this alternative does not eliminate potential risks from bathing in contaminated water and would require on-going monitoring and tracking of the domestic wells.

2.4 ALTERNATIVE 4: PROVISION OF A WATER SUPPLY SYSTEM USING COUNTY GROUNDWATER WELLS AS A WATER SOURCE

This alternative consists of the county developing two to four groundwater wells on land owned by Gunnison County, constructing a treatment and pump facility as required, constructing a water storage tank, and distributing the water by pipeline to presently and potentially affected areas. This alternative would use groundwater production wells and a treatment plant to supply water for the Dos Rios area.

This alternative was dropped from consideration because: 1) the groundwater aquifer is not sufficiently thick to yield the required volume of water, and 2) continued pumping of the proposed supply wells would pull the contaminated groundwater plume under the river and into the proposed well field.

2.5 ALTERNATIVE 5: PROVISION OF A WATER SUPPLY SYSTEM USING A MUNICIPAL WATER SOURCE

This alternative consists of providing the same distribution system and water supply tank described under Alternative 1, but using wells owned by the City of Gunnison as the water source for the system. No treatment facility would need to be constructed.

This alternative would result in higher initial costs and potentially higher water rates to the Dos Rios residents than would Alternative 1. Therefore, it has been dropped from consideration due to unacceptably higher costs.

3.0 AFFECTED ENVIRONMENT

The Gunnison area is surrounded by mountains and is characterized as having a cold desert climate. Rainfall over the period from 1941 to 1970 averaged 11 inches per year. Temperatures range from an average of 10°F in January to 62°F during the months of July and August (DOE, 1990a).

The City of Gunnison had an estimated population of 6,000 in 1989, and the county had an estimated population of 12,000 in 1989. Gunnison is the county seat (DOE, 1990a). Gunnison is remote and rural from any major population centers; Denver is a 4-hour drive from Gunnison.

The proposed water pipeline would provide water to residents and businesses, and fire protection to areas immediately west of Gunnison. As shown on Figure 2.1, the majority of the proposed pipeline route is within the Dos Rios subdivision or adjacent to the western edge of the Gunnison processing site. The development of the Dos Rios subdivision began in the late 1960's. Today, approximately 60 percent (108 residences) of the available residential lots have been developed. The subdivision is along and between two forks of the Gunnison River, but is not within the 100-year floodplain of the Gunnison River. Within the subdivision, many undeveloped residential lots contain wetland areas. Ponds are also present (TAC, 1991).

No project components are within the 100-year floodplain of either the Gunnison River or Tomichi Creek, although a small segment of the pipeline would be buried beneath the 100-year floodplain (See Figure 2.2). The floodplain would not be disturbed where the pipeline is buried beneath it because a tunneling approach would be used and the surface would not be disturbed. Much of the proposed pipeline route parallels but would not impact wetland areas that contain shrub wetlands or wet meadows (Attachment 2, Wetlands Assessment). The remainder of the proposed route crosses or is adjacent to highly disturbed areas that contain a mix of residential and commercial developments.

Land ownership along the majority of the route is private; the US-50 portion of the route is under state jurisdiction. The proposed surface water diversion system would be on county-owned land. The proposed locations of the county-managed wells and treatment facility are on county-owned land. City wells would be constructed on land acquired by the city.

The Colorado State Historic Preservation Officer (SHPO) was contacted concerning the presence of cultural, historical, or archaeological resources. No known cultural resources were determined to be present (SHPO, 1991).

The Gunnison River is fished for trout or spawning kokanee salmon. Kokanee salmon spawning occurs during the months of August, September, October, and November. Approximately three million salmon eggs are collected each year for area hatchery use (Langlois, 1991). Informal written consultation with the U.S. Fish and Wildlife Service over the proposed remedial action determined that the bald eagle is the only threatened and endangered species that could inhabit potentially disturbed areas (see Attachment 3, Results of Informal Consultation with the U.S. Fish and Wildlife Service). The bald eagle is seen along the Gunnison River during the winter. None of the other species listed in Attachment 3 occur in the potentially disturbed areas.

4.0 IMPACTS FROM THE PROPOSED ACTION

Due to the suburban nature of the area and the temporary disturbance associated with the proposed action, impacts were found to be minor in nature and are summarized below.

- o There would be no anticipated deterioration of air quality during any of the construction activities. The use of a backhoe to excavate the trench would not generate significant amounts of dust because of the high water table (in fact, a pump would be needed to discharge the water during construction). Excavation of the area where the water supply tank would be placed may generate minor amounts of dust; if necessary, work areas would be sprayed with water to reduce dust levels.
- o Minimal noise impacts are anticipated. The small crew size and limited equipment use would likely create noise similar to that associated with any road construction project.
- o The SHPO determined that, based on the disturbed nature of the project area, there would be no impact on cultural resources. If previously unidentified archaeological resources are discovered during the course of the project, work would be interrupted until the resources are properly evaluated and a mitigation plan approved by the Colorado SHPO is developed (SHPO, 1991).
- o Construction activities on the river crossings are scheduled for late 1991. The majority of spawning salmon are generally past the Dos Rios subdivision by that time. The use of a cofferdam to divert water over one-half the river at a time would allow passage of the salmon to continue (Langlois, 1991). In addition, because the proposed action would not directly pull water from the Gunnison River, there would be no effect on spawning salmon.
- o Construction activities would not impact any threatened and endangered species. Construction activities would occur during the fall of 1991 and spring and summer of 1992, and would not impact wintering bald eagles. The whooping crane would not be impacted since none of the proposed water pipeline route or other facilities are located in areas where this species would stop during migration. Construction of the pipeline or the surface water diversion would not result in a net depletion of water from the upper Colorado River Basin.
- o The area was evaluated for the presence of floodplains and wetlands. The 100-year floodplains of the Gunnison River and Tomichi Creek would not be impacted by construction of the pipeline, water storage tank, surface water diversion, water treatment facilities, or other project components. Nor would 100-year floods cause damage to the water supply system once it was in place. Wetlands are present in the area, and a portion of the pipeline route would traverse wetland areas. It is estimated that approximately 0.46 acre of wetlands would be temporarily disturbed by construction of the pipeline. Attachment 2 provides a Wetlands Assessment.
- o It is anticipated that the proposed action would result in the temporary disturbance of 1.5 acres of county-owned land for construction of the

intake structure and other surface facilities needed for the proposed action. There would be no permanent change to area land uses along the distribution line since the pipeline and water supply tank would be buried. Such use of county or city land is consistent with the appropriate land use plan.

- o There would not be any permanent beneficial or negative impacts to socioeconomic patterns. The estimated small crew size of eight to ten workers would not disrupt or otherwise impact area services; their salaries and any local purchases would result in local spending that would be considered a positive although negligible benefit. Operation and maintenance of the county water supply system would be done at cost and using existing personnel. The provision of a potable water supply system supplied and managed by the county government would not be considered a growth-inducing benefit to the area. Employment opportunities in the area are related to a small state college, government, services, and agriculture. None of these are experiencing growth. Relocation to a subdivision from other rural locations because a water supply system is in place would not necessarily be considered more desirable. Relocation would involve higher development costs associated with constructing service lines and a well for irrigation. By comparison, other available areas that are not downgradient from a contaminated groundwater plume would require only a well.
- o Temporary impacts on highway users within the Dos Rios subdivision, along Goodwin Lane, along a small portion of Gold Basin Road, and along the access road to the water supply tank would occur. These impacts would consist of a short-term inconvenience to area residents while trenching activities are in progress along various stretches of the road.

5.0 SUMMARY

Provision of a water supply system would result in temporary, minor impacts that would extend over an estimated 6-month period; however, the positive benefits of providing potable water to the residents of Dos Rios would last indefinitely. Additional benefits relate to temporary employment for about ten workers and the positive effects of salaries and monies spent locally for supplies.

6.0 PERMITS

All required permits would be acquired by the engineering consultant for the State of Colorado. All permits would be obtained prior to any ground-disturbing activities. The following permits are anticipated to be required: a Nationwide Utility Permit for Pipelines, a Colorado State Department of Health Dewatering Permit, a Colorado Department of Highways right of way permit, a Colorado Discharge Permit System permit, a U.S. Army Corps of Engineers permit for stream crossings, and possibly a storm water discharge permit.

7.0 CONSULTATION, COORDINATION, AND PREPARERS

The following entities were consulted as part of the assessment process: City of Gunnison, Colorado Department of Health, Colorado Division of Wildlife, Colorado State Historic Preservation Officer, Gunnison County Planning Commission, U.S. Army Corps of Engineers, and U.S. Fish and Wildlife Service.

This document was prepared by the following Jacobs Engineering Group staff for the DOE:

Sandra Beranich:	Coordination and preparation of EA.
Chuck Burt:	Coordination and consultation on wildlife and wetland issues; preparation of wetlands assessment in Attachment 1 and U.S. Fish and Wildlife consultation, Attachment 2.
Jim Crain:	Coordination and consultation on floodplains.
Desiree Thalley:	Editorial revisions of EA.
Len Flowers:	Consultation related to risk assessment.
Mary Beth Leaf:	Consultation with the SHPO related to cultural, historical, and archaeological resources.
Kathy Monks:	Consultation related to groundwater contamination.
Rebecca de Neri Zagal:	Coordination of EA.
William Glover:	Coordination of EA.

REFERENCES

- Cole, Scott, 1991. Engineer with Rothberg, Tamburini, Winsor, personal communication with Sandra Beranich, Environmental Services, Jacobs Engineering Group, Inc., Albuquerque, New Mexico, various conversations March through July, 1991.
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- DOE (U.S. Department of Energy), 1990b. "Baseline Risk Assessment for Groundwater Contamination at the Uranium Mill Tailings Site, Gunnison, Colorado," DOE UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico, November 1990.
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- EPA (U.S. Environmental Protection Agency), 1989. "Draft Drinking Water Criteria Document for Uranium," Criteria and Standards Division, Office of Drinking Water, Washington, D.C.
- Langlois, Dave, 1991. Fisheries Biologist with the Colorado Division of Wildlife, Montrose, Colorado, personal communication with Sandra Beranich, Environmental Services, Jacobs Engineering Group Inc., Albuquerque, New Mexico, dated June 12, 1991.
- SHPO (State Historic Preservation Officer), 1991. Letter from the Colorado Historical Society, Susan M. Collins, Deputy State Historic Preservation Officer, Denver, Colorado, to Mark L. Matthews, Project Manager, Uranium Mill Tailings Remedial Action Project Office, Albuquerque, New Mexico, dated April 24, 1991.
- TAC (Technical Support Contractor), 1991. Unpublished field notes on Gunnison, Colorado, Municipal Supply Extension, prepared by TAC, Albuquerque, New Mexico, dated July 9, 1991.

COLORADO
DEPARTMENT OF
HEALTH

September 12, 1964
Denver, Colorado

Mr. J. H. ...
State Engineer
Denver, Colorado

JOHN K. ...
State Engineer

September 12, 1964

Mr. J. H. ...
State Engineer
1000 ...
Denver, Colorado

ATTACHMENT 1

GUNNISON COUNTY LETTERS
VERIFYING AVAILABILITY
OF WATER RIGHTS

Attorney General ...

Subject: ...

Dear Mr. ...

I am writing you to advise that ...
I have been advised that ...
I believe that the ...
I hope you will let me know ...
Sincerely,

I hope you will let me know ...
Sincerely,

Sincerely,

[Handwritten Signature]

John K. ...
State Engineer

RECEIVED ...

...



COLORADO
DEPARTMENT
OF HEALTH

4210 East 11th Avenue
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Main Building/Denver
(303) 322-9076

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Grand Junction Office
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ROY ROMER
Governor

JOEL KOHN
Interim Executive Director

September 30, 1991

Mr. Mark L. Matthews
Project Manager
U.S. Department of Energy
Uranium Mill Tailings Remedial Action Project Office
P.O. Box 5400
Albuquerque, New Mexico 87108

Attention: George Rael

Subject: Gunnison - Water Rights for Dos Rios Water System; File
GUN XIII-H-2

Dear Mr. Matthews:

I am writing this letter to confirm that the State of Colorado agrees with Gunnison County's evaluation of the water rights issues for the Dos Rios Water System, as conveyed to you in a letter dated September 6, 1991 from David Baumgarten. Mr. Baumgarten's assessment of the necessary steps and issues in acquiring water rights is accurate. Please note that although the details in his letter may leave the impression that the process is cumbersome, we believe that the necessary water rights can be obtained in the timeframe necessary to bring the water system on-line. Also, Mr. Baumgarten's letter highlights Gunnison County's commitment to obtain the rights for the project.

I hope that this letter satisfies your requirements for the Environmental Assessment. If you have any questions, or wish to discuss these items further, please contact me at (303) 331-4808 or Wendy Naugle at (303) 331-4842.

Sincerely,

Jeffrey Deckler
UMTRA Program Manager

HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION

cc: Gary Tomsic, Gunnison County

Gunnison County

C O L O R A D O

DAVID BAUMGARTEN • COUNTY ATTORNEY

September 6, 1991

Mark Matthews
Project Manager
U.S. Department of Energy
PO Box 5400
Albuquerque, NM 87108

RE: Gunnison County; Dos Rios System

Dear Mr. Matthews:

This memo provides a brief background regarding:

1. the amount of water required for the Dos Rios system;
2. the options available to obtain that amount of water;
3. the processes through which one must go to obtain water via each option.

Gunnison County is committed to obtain the water rights necessary to service the Dos Rios area assuming that the DOE and CDH will pay for the costs required for the acquisition including the costs of change of use and change of location proceedings.

Gunnison County recommends:

1. That the water rights obtained be sufficient in quantity to service existing and future growth in the service area (i.e. minimum of 200 acre ft./year);
2. That the water rights have sufficient seniority to protect the system (and its customers) from calls or depletion in dry years;

3. That water quality be an important factor in the acquisition; and
4. That the process to secure water rights begin immediately.

1. Amount of Water Required for Dos Rios System.

Using the population, geography and growth established by all parties, and assuming a consumptive use of 10% for domestic use and a consumptive use of 90% for irrigation use for approximately 10,000 square feet of land, the water required is 196 acre feet per year which calculates to a flow of .0272 c.f.s.

2. Options Available To Obtain Water.

The general options available to obtain that amount of water are:

- a. purchase and change of an existing water right;
- b. application for and proof of a new water right; and
- c. lease of an existing water right (either long term or until option a. or b. can be accomplished.

3. Issues and Processes.

A. Issues.

The following checklist identifies the major issues to be considered in evaluating water rights for the Dos Rios system. The checklist is not intended to be a primer on Colorado water law, but it is hoped that it will provide guidance to the County, the State and DOE in determining what issues need further attention and research by counsel and other professionals (e.g. engineer).

i. Need for Water

In order to determine whether a particular water right has value for the Dos Rios system it is necessary to know how much water the system needs currently and in the future; when the water is needed and for what use. How the water will be put into service must also be determined; i.e., creation of a new private water company, a new water district or service agreement with an existing district or municipality. A hydrologist, engineer and/or a geologist should be consulted regarding the assumptions and calculations I made in 1. above.

ii. Type of Water and Water Right

Colorado has an assortment of types of water and water rights. For example, among surface water rights, there are direct stream diversions or shares in ditch

companies; shallow groundwater wells; non-tributary non-designated groundwater; designated groundwater; and developed water, such as non-tributary mine water. It is important to identify at the outset the type of water right available and most advantageous for the Dos Rios system.

All tributary water is governed by the doctrine of prior appropriation or "first in time, first in right". When planning a municipal supply, it is critical that the water and water rights obtained to supply a development's needs have sufficient seniority to provide a reliable year-in and year-out supply of water. The more junior the water right, the less reliable the supply. Non-tributary groundwater, on the other hand, since 1973, has been allocated for use according to land ownership principles.

iii. Physical Flow

A right that may look good on paper may be worthless in practice because the stream from which the water is to be taken has insufficient flow to support the decreed water right for its proposed use. This is especially true in the case of high mountain streams. Supply problems can sometimes be dealt with if a municipal system is well-designed and well-engineered. Nevertheless, physical flow is a critical factor which cannot be overlooked and for which appropriate hydrological expertise should be sought.

iv. Changes Required

It is also important to review whether the water or water right proposed for purchase is suitable in its current status for the use intended, such as for the domestic municipal water supply. Irrigation rights and ditch company shares decreed only for irrigation use may have to undergo a change in water right application process through the water courts before being used in a domestic municipal system. A change in water right proceeding is also necessary to change the time of use and the place of diversion. The major consideration in changes in water rights is cost--first in determining whether the buyer or the seller is going to

bear the cost of undergoing the transfer proceedings and, second, whether the buyer or seller is going to bear the gamble of success of such a proceeding.

v. Location

Another major factor in reviewing the value of a water right for use in a Dos Rios system is the water's location. Although it is frequently possible to utilize a water right in an exchange or augmentation program that would otherwise not be directly available for diversion and use where the water is needed, the feasibility of such a plan should be carefully examined by a competent hydrologist. It is also important

in evaluating that type of exchange to review its seniority and legal posture vis-a-vis other water users within the stream system to determine if such an exchange would injure an intervening water user.

vi. Quality

Very rarely do water sellers or brokers offer information about the quality associated with a particular right. It is possible to make inquiries through the Colorado Water Quality Control Division or the U.S. Geological Survey to determine if any water quality sampling has occurred.

vii. Title

Water and water rights in Colorado are considered real property and must be conveyed with the same formalities as other real property. The conveyance of water rights in Colorado has sometimes been sloppy and confusing. For example, although a water decree shows that John Doe was decreed a right to 5 c.f.s. (cubic feet per second) to irrigate his property, when John Doe sold his land, he may not have specified that he was selling the 5 c.f.s. of water and water right. He may have simply conveyed his property plus "all water and water rights appurtenant thereto." It is possible that the water and water rights were conveyed in part or totally separately before conveyance of the land.

This is also a problem when only a portion of the property was sold and it is unclear if all, a portion, or none of the water and water rights also were conveyed. Thus, from time to time the title search for water and water rights can be fairly complex and difficult. Title insurance companies generally will not provide title insurance against defects in title for water and water rights. Therefore, particularly when dealing with surface water, it is critically important that either the water seller provide complete evidence of chain of title or that an independent investigation be made prior to purchasing the water.

viii. Price

In evaluating the proper price for an offered water right, there are several factors to be reviewed. How solid is the water right? Is the water right one which has not been used for a period of time? Is it therefore vulnerable to attack for abandonment if subjected to a water court proceeding to change its type, time or place of use? Is the water and water right being offered as a gross diversion amount or as a transferable consumptive use? It is generally preferable that the price of the water reflect the consumptive use of the water rather than the gross diversions. In any event, it is important in comparing the price with other market data to compare the same expression of quantity. Water rights are not generic;

they are not created equal. Water values and purchase price vary according to several factors, including seniority.

ix. Miscellaneous

Other issues may affect not only the value and desirability of an offered water right but the entire strategy to be followed in developing the water supply for Dos Rios system needs. In some instances, the existence of federal reserved rights may require review and analysis. The impact of decreed minimum stream flows, particularly on rights which will require a change in point of diversion, should be assessed. Finally, construction of a diversion structure or reservoir will be necessary as part of the water supply plan, the implications of complying with § 404 of the federal Clean Water Act and related federal laws and regulations must be considered.

B. Processes

The "Water Right Determination and Administration Act of 1969", C.R.S. 37-92-101 to 37-92-602, provides the statutory framework. I omit in the following discussion most technical matters, e.g. time frames, deadlines, in that framework.

The district courts of the counties within a water division collectively acting through the water judge have exclusive jurisdiction of water matters within the division, and no judge other than the one designated as a water judge may act with respect to water matters in that division.

Any person or entity that desires a determination of a water right (and the amount and priority of the right), or a determination with respect to a change of a water right, or approval of a plan for augmentation, must file with the water clerk of the appropriate division a verified application, in quadruplicate, setting forth facts supporting the ruling sought. In the case of any application for a determination of a water right, the required information includes, among other things, a legal description of the proposed diversion, a description of the source of the water, the date of the initiation of the proposed diversion, the amount of water claimed, and the proposed use of the water. In the case of an application for approval of a change of water right or plan of augmentation, the required information includes a description of all water rights to be established or changed, a map showing the approximate location of historic use of the rights, and records or summaries of records of actual diversions of each right the applicant intends to rely on. The Colorado Supreme Court has reaffirmed that the statutorily required statement of use will be strictly construed. The court has voided those portions of a water right decreed for purposes not included in the original application because the resulting failure to provide notice to potential objectors resulted in a lack of substantial

compliance with the notice provisions of the Act. The filing of an application for determination of a water right carries with it the duty to prosecute the matter in due course without unusual or unreasonable delay.

Not later than the fifteenth day of each month, the water clerk prepares a resume of all applications in the water division that have been filed in the preceding month. The resume is published by the end of the month.

Any person or entity, including the state engineer, that wishes to oppose the application, may file with the water clerk, in quadruplicate, a verified statement of opposition setting forth facts as to why the application should not be granted or why it should be granted only in part or on certain conditions. Standard forms are available for both applications and statements of opposition.

After an application has been filed, the water judge refers it by order to his referee. The division referee, without conducting a formal hearing, must make such investigations as are necessary to determine whether or not the statements in the application and statements of opposition are true; the referee must consult with the appropriate division engineer or state engineer or both. A hearing is then held by the referee which, in some divisions, is more nearly like a trial according to the rules of evidence than an informal hearing.

The water referee must make his ruling; the ruling may disapprove the application in whole or in part in the discretion of the referee, even though no statement of opposition is filed. The ruling is filed with the water clerk, and copies are mailed to the applicant, the objectors and state water officials.

Within twenty days after the date the water clerk mails the ruling, any person who wishes to file pleadings protesting or supporting the ruling must file the pleadings with the water clerk. The protest must clearly identify the ruling being contested, and set forth the factual and legal grounds for the protest. The referee's ruling is not effective pending judicial review of the protest.

As to rulings which have been protested and matters which have been referred by the referee to the water judge, hearings are conducted in accordance with the Colorado Rules of Civil Procedure, except that no pleadings are required. The applicant has the burden of sustaining the application, whether it has been granted or denied by the ruling. The water judge's review is *de novo*.

A decision of the water judge with respect to a protested ruling of the referee shall either confirm, modify, reverse, or reverse and remand the ruling. In case of a modification of a ruling, the decision may grant a different priority, and may specify its own terms and conditions with respect to a change of water right or plan of

augmentation. A decision of the water judge in regard to a matter which has been referred by the referee shall fully dispose of the matter and may contain such provisions as the water judge deems appropriate. If no protest has been filed to the ruling of the referee, the water judge must confirm and approve the ruling by judgment and decree, except that the judge may reverse, or reverse and remand, any ruling which he deems to be contrary to law.

Any decision of the water judge dealing with a change of water rights is subject to reconsideration by the water judge on the question of injury to other users for a period to be determined by the water judge. The period may be set from one to twenty years or more.

All decisions of the water judge become a judgment and decree, and are appealable upon entry, notwithstanding retention of jurisdiction to reconsider the question of injury. Appeal lies to the Colorado Supreme Court, not to the Court of Appeals. No appellate review is allowed, however, with respect to that part of the judgment or decree which confirms a ruling with respect to which no protest was filed.

Mark, despite the apparent number of issues and complexity of process, the Colorado system of water rights has worked for a century and half. I am quite confident we can timely locate and obtain a water right, at a reasonable cost, that will meet all of our needs!

Truly yours,



David Baumgarten
Gunnison County Attorney

ATTACHMENT 2
WETLANDS ASSESSMENT

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1.0 INTRODUCTION

In 1979, the U.S. Department of Energy (DOE) established regulations (10 CFR 1022) to comply with floodplain/wetlands environmental review requirements. These regulations provide for compliance with Executive Order 11988 -- Floodplain Management, and Executive Order 11990 -- Protection of Wetlands. These regulations are designed to be coordinated with the environmental review requirements of the National Environmental Policy Act (NEPA). The importance of floodplains and wetlands is acknowledged in the regulations in that part of the purpose of the regulations is to "restore and preserve natural and beneficial values served by floodplains" (10 CFR 10.22.3(a)(3)) and to "preserve and enhance the natural and beneficial values of wetlands" (10 CFR 10.22.3(a)(6)). A Federal Register Notice for Floodplain and Wetlands Involvement was published in the Federal Register on July 26, 1991 (56 FR 34190).

The purpose of this Wetlands Assessment is to provide an evaluation of the effects that may be associated with the construction of a water pipeline, water supply tank, and treatment facility.

2.0 PROJECT DESCRIPTION

The DOE proposes to provide a water supply system to all currently and potentially affected areas in the Dos Rios subdivision and adjacent areas. The source for the water would be the Gunnison River. Project components include a treatment facility, a pipeline approximately 5 miles in length, and a water storage tank to provide additional storage capacity to meet water and fire needs.

A detailed description is found in Section 2.1 of the environmental assessment (EA).

3.0 WETLAND EFFECTS

3.1 AFFECTED ENVIRONMENT

A field survey of all potentially disturbed areas was conducted in July of 1991 (TAC, 1991). Wetlands were found to be present throughout the area. The most common wetland type was wet meadow dominated by grass, with sedges (Carex sp.) and rushes (Juncus sp.) also common. Shrub-dominated wetlands were also present and often contained willow (Salix sp.) and immature cottonwood (Populus angustifolia).

3.2 IMPACTS ON WETLANDS

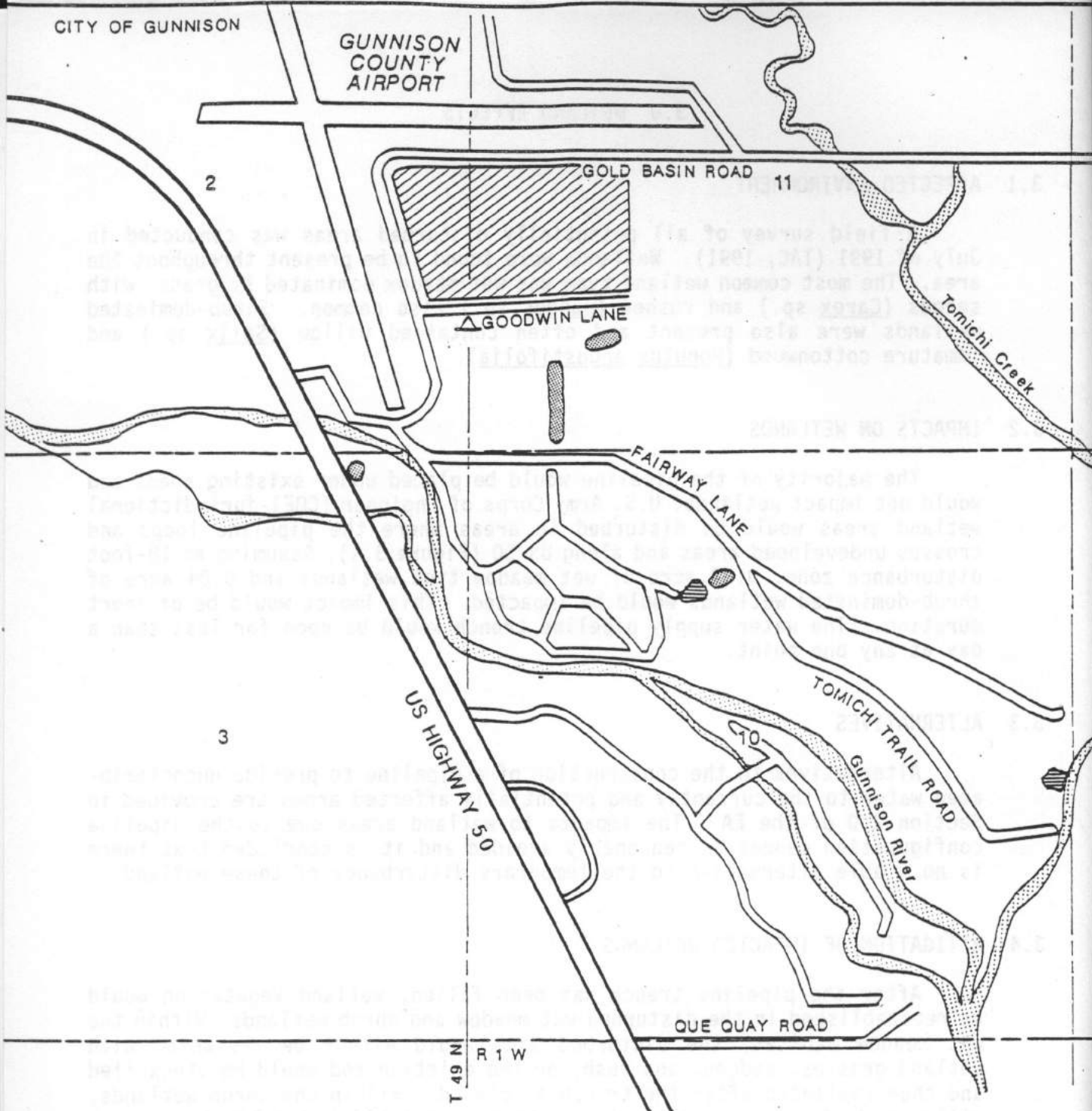
The majority of the pipeline would be placed under existing roads and would not impact wetlands. U.S. Army Corps of Engineer (COE)-jurisdictional wetland areas would be disturbed in areas where the pipeline loops and crosses undeveloped areas and along US-50 (Figure 3.1). Assuming an 18-foot disturbance zone, 0.42 acre of wet meadow type wetlands and 0.04 acre of shrub-dominated wetlands would be impacted. This impact would be of short duration. The water supply pipeline trench would be open for less than a day at any one point.

3.3 ALTERNATIVES





Alternatives to the construction of a pipeline to provide uncontaminated water to the currently and potentially affected areas are provided in Section 2.0 of the EA. The impacts to wetland areas due to the pipeline configuration cannot be reasonably avoided and it is concluded that there is no viable alternative to the temporary disturbance of these wetlands.

3.4 MITIGATION OF IMPACTED WETLANDS

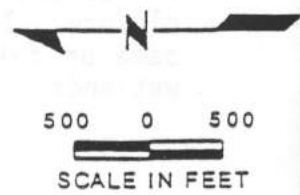
After the pipeline trench has been filled, wetland vegetation would be reestablished in the disturbed wet meadow and shrub wetlands. Within the wet meadow habitat, the disturbed area would either be replanted with wetland grasses, sedges, and rush, or the existing sod would be stockpiled and then replanted after the trench is closed. Within the shrub wetlands, willow and other wetland shrubs would be reestablished following trench closure. It is expected that these areas would be revegetated within the same or following growing season and that there would be no net loss of wetlands.



LEGEND

-  CAMPGROUND
-  GUNNISON MILL TAILINGS SITE
-  WET MEADOW
-  SHRUB WETLANDS

NOTE: ALL IMPACTED WETLANDS ARE COE-JURISDICTIONAL WETLANDS



**FIGURE 3.1
LOCATION OF WETLANDS THAT WOULD BE
IMPACTED BY THE WATER SUPPLY SYSTEM
GUNNISON, COLORADO**

REFERENCE

TAC (Technical Assistance Contractor), 1991. "Unpublished Field Notes, Gunnison, Colorado, Municipal Water Supply Extension," prepared by the TAC, dated July 9, 1991, available in the Project Document Control Center, UMTRA Project Office, Albuquerque, New Mexico.

Faint, illegible text at the top of the page, possibly bleed-through from the reverse side.

ATTACHMENT 3

RESULTS OF CONSULTATION WITH THE U.S. FISH AND WILDLIFE SERVICE



This attachment is comprised of letters received from the U.S. Fish and Wildlife Service during informal consultation about remedial action at the Gunnison UMTRA Project site. The species listed in the letters were considered during the preparation of the environmental assessment. A biological assessment was not prepared because the construction of the extension of the Gunnison municipal water supply system would not impact threatened or endangered species.

Miss. ...
Environ. ...
Dept. ...
P.O. ...
A...

This ...
American ...
Committee

We ...
...
...
...

We ...
confidential

cc: FWS/FWE, Golden
FWS/FWE, Salt Lake City



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

FISH AND WILDLIFE ENHANCEMENT

Western Colorado Sub-Office
529 25½ Road, Suite B-113
Grand Junction, CO 81505-6199



FTS 332-0351

FAX: (303) 245-6933

PHONE: (303) 243-2778

REPLY REFER TO:

FWE/CO:DOE:UMTRA
MS 65412 GJ

September 6, 1991

Mark L. Matthews, P.E., Project Manager
Uranium Mill Tailings Remedial Action Project Office
Department of Energy
P.O. Box 5400
Albuquerque, NM 87115

Dear Mr. Matthews:

This responds to your August 19, 1991, letter forwarding the revised Biological Assessment for the Uranium Mill Tailings Remedial Action Project at Gunnison, Colorado.

We have reviewed the assessment and its attachments. We agree with the changes you have incorporated into the Biological Assessment and your proposal to include pertinent Fish and Wildlife Service correspondence as attachments to this document. We have no other specific comments.

We appreciate the Department of Energy's attention to the federally listed and candidate species associated with this activity.

Sincerely,

Keith L. Rose
Acting Colorado State Supervisor

cc: FWS/FWE, Golden
FWS/FWE, Salt Lake City



United States Department of the Interior

FISH AND WILDLIFE SERVICE
COLORADO FIELD OFFICE
730 SIMMS STREET
ROOM 292
GOLDEN, COLORADO 80401

IN REPLY REFER TO:

(FWE)

December 28, 1988

Charles J. Burt
Environmental Specialist
Jacobs Engineering Group, Inc.
5301 Central Avenue N.E. Suite 1700
Albuquerque, New Mexico 87108

Dear Mr. Burt:

This responds to your November 21, 1988, letter requesting an update of Federally listed species that may be associated with the proposed Uranium Mill-tailings Remedial Action Projects at Slickrock, Naturita, Gunnison and Maybell, Colorado.

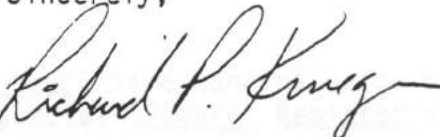
We have reviewed the lists provided to Jacobs Engineering, Inc. in 1986 and 1988. The following changes should be made:

- 1) Naturita site - Delete the Grand Junction milkvetch.
- 2) Maybell site - Delete the White River penstemon. Add the bonytail chub.
- 3) Gunnison site - Add the Colorado squawfish, humpback chub, and bonytail chub.

The list for the Slickrock site needs no changes.

We appreciate the opportunity to update the species lists for these actions. Please contact Bob Leachman of our Grand Junction office at (303) 243-2773 if there are any questions.

Sincerely,


Acting for LeRoy W. Carlson
Acting State Supervisor

cc: FWS/FWE, Salt Lake City
Official File
Reading File





United States Department of the Interior



FISH AND WILDLIFE SERVICE FISH AND WILDLIFE ENHANCEMENT COLORADO STATE OFFICE

529 25½ Road, Suite B-113
GRAND JUNCTION, COLORADO 81505
(303) 243-2778

IN REPLY REFER TO:

(FWE)

April 12, 1988

Mr. Bill Glover, Manager
Environmental Services Group
Jacobs Engineering Inc.
5301 Central Avenue N.E. Suite 1700
Albuquerque, NM 87108

Dear Mr. Glover:

We received your letter dated March 17, 1988, requesting a list of threatened or endangered species that may be present in new alternate disposal sites and a new borrow area being reviewed for remedial action of the Gunnison, Colorado uranium tailings. We are furnishing you the following list of species which may be present in the concerned area:

Listed Species

Bald eagle
Black-footed ferret

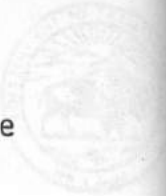
Haliaeetus leucocephalus
Mustela nigripes

Bald eagles are common winter visitors in the Gunnison Basin. Bald eagles are known to fly up to 18 miles from night roosts to feeding areas and it is likely that even greater distances are traveled searching for food. The species may therefore occur in the project area.

Historically, the black-footed ferret may have occurred in portions of the Gunnison Basin area. Literature documents a close association between prairie dogs and black-footed ferrets. Your pre-construction surveys should determine whether your activities will disturb prairie dog colonies. If so, black-footed ferret surveys may be required.

The skiff milkvetch (Astragalus microcymbus) is a candidate for official listing as a threatened or endangered species (Federal Register Vol. 50, No. 188, September 27, 1985). While this species presently has no legal protection under the Endangered Species Act, it is within the spirit of the Act to consider project impacts to this potentially sensitive candidate species.

The Service does not have any site specific wetland information for the project area. However, we are aware of wetlands in the vicinity of the current uranium mill tailings site. Therefore, we request that all sites proposed for disturbance (current tailings site, proposed borrow sites, and proposed disposal sites) be inventoried for wetlands. Wetlands should be defined according to "Classification of Wetlands and Deepwater Habitats of the United



States" (Cowardin, et al, 1977). We recommend project planning incorporate avoidance of wetland impacts.

The Fish and Wildlife Service can enter into formal Section 7 consultation only with another Federal agency or its designee. State, county, or other governmental or private organizations can participate in the consultation process, help prepare information such as the biological assessment, participate in meetings, etc.

Should you require additional information, the Fish and Wildlife Service, contact for study is John Anderson.

Thank you for your interest in conserving endangered species.

Sincerely,

Richard P. Krueger
FOR Jeffrey D. Opdycke
State Supervisor

cc: FWS/FWE: SLC
Official file
Reading file

JANDERSON:cjharris
Gunu



United States Department of the Interior

FISH AND WILDLIFE SERVICE
ENDANGERED SPECIES OFFICE
1406 FEDERAL BUILDING
125 SOUTH STATE STREET
SALT LAKE CITY, UTAH 84138-1197
July 24, 1984

IN REPLY REFER TO:

Mr. Dave Lechel, Manager
Environmental Services
Jacobs Engineering Group INC.
5301 Central Avenue N.E. Suite 1700
Albuquerque, NM 87108

Dear Mr. Lechel:

We received your letter dated July 3, 1984, requesting a list of threatened or endangered species that may be present in areas being reviewed for remedial action of the Gunnison, Colorado uranium tailings. We are furnishing you the following list of species which may be present in the concerned area:

Listed Species

bald eagle

Haliaeetus leucocephalus

Candidate Species

skiff milkvetch

Astragalus microsymbus

We wish to make clear that the lead Federal agency has no legal requirement to protect candidate species, but it is within the spirit of the Endangered Species Act to consider these species in your project planning. Also, consideration of these species may reduce the likelihood that your project will be delayed unnecessarily if one or more candidate or proposed species is suddenly listed. However, our primary purpose for informing you of the possible presence of candidate species is to allow you to take conservation measures if you so desire.

Should you require additional information, the Fish and Wildlife Service contact for this study is Bob Leachman of our Grand Junction office (telephone: (303) 243-2778).

Thank you for your interest in conserving endangered species.

Sincerely,

Robert Benton

for Fred L. Bolwahn
Field Supervisor