

# RECLAMATION

*Managing Water in the West*

## **Final Environmental Assessment Lone Pine Canal Salinity Control Project**

**Western Colorado Area Office  
Upper Colorado Region  
Durango, Colorado**



**U.S. Department of the Interior  
Bureau of Reclamation  
Western Colorado Area Office  
Durango, Colorado**

**December 2009**

## **Mission Statements**

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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## **Proposed Action:**

The Bureau of Reclamation (Reclamation) Western Colorado Area Office's (WCAO) approval of the use of federal funds for the proposed Lone Pine Canal Salinity Control Project in Montezuma County, Colorado.

## **Location of Proposed Action:**

The project would extend for approximately 5.9 miles along the existing Lone Pine Canal which is located approximately 3 miles northwest of Cortez, Colorado (Sections 7, 8, 17, and 18 Township 36 North Range 16 West; Sections 1 and 12 Township 26 North Range 17 West and Sections 35 and 36 Township 37 North Range 17 West). See Figure 1.1 Project Vicinity Map for the location of the proposed action.

## **Applicant:**

The applicant is the Montezuma Valley Irrigation Company (MVIC) through the Resource Division, Western Colorado Area Office, in Durango, Colorado.

## Chapter 1: Purpose and Need for the Proposed Action

### 1.1. Introduction

This final Environmental Assessment (EA) analyzes the potential effects of the Lone Pine Canal Salinity Control Project, located in Cortez, Colorado. The federal action being evaluated is whether the Bureau of Reclamation (Reclamation) should authorize the use of federal funds for the salinity control project on approximately 5.9 miles of the Lone Pine Canal.

The Colorado River provides water for more than 23 million people and irrigation for more than 4 million acres of land in the U.S., as well as water for about 2.3 million people and 500,000 irrigated acres in the Republic of Mexico. High salinity levels have adverse consequences for water users throughout the U.S. and Mexico. High salinity levels make it difficult to grow winter vegetables and fruits. In water systems, salt plugs and destroys municipal and household pipes and fixtures. Recent salinity concentrations in the lower portion of the Colorado River are typically 700mg/L, but in the future may range between 600 and 1,200 mg/L depending upon the amount of water in the river system. Salinity damages from the Colorado River Basin in the U.S. range between \$500 million to \$750 million per year and could exceed \$1.5 million per year if future increases in salinity are not controlled.

Controlling the salinity of the Colorado River remains one of the most important challenges facing Reclamation. In 1944, the U.S. and Mexico signed the International Boundary and Water Commission Treaty (IBWC). Minute No. 242 of the IBWC, approved in 1973, establishes a commitment by the U.S. to “adopt measures that ensure that the 1.36 million acre-ft of water delivered annually to Mexico upstream of Morelos Dam shall have an average salinity of no more than 115+30 parts per million over the annual average salinity of the Colorado River water arriving at Imperial Dam” ([www.usbr.gov/uc/progact/salinity/](http://www.usbr.gov/uc/progact/salinity/)). The Colorado River Basin Salinity Control Program was established to “protect the quality of water available in the Colorado River” ([www.usbr.gov/uc/progact/salinity/](http://www.usbr.gov/uc/progact/salinity/)).

The primary challenge to controlling salinity levels in the Colorado River is the high number of open channel irrigation canals located throughout the West. Open channel canals are one of the largest annual contributors of salt to the Colorado River. Water that seeps through these canals dissolves salt in the soils and through return flows eventually carries the salts to the Colorado River.

### 1.2. Purpose and Need for the Proposed Action

The purpose of the proposed action is to implement the standards set forth in Reclamation’s Colorado River Basin Salinity Control Program by reducing the salinity contribution from the Lone Pine Canal to the Colorado River Basin. The proposed action is needed to control seepage from the Lone Pine Canal that dissolves salts in the soils and eventually carries 953 tons of salt annually to the Colorado River Basin. Furthermore, the proposed improvements need to be cost effective, durable, and minimize yearly operating and maintenance costs.

### 1.3. Background

The project is located in southwestern Colorado in Montezuma County near the City of Cortez (Figure 1.1: Project Vicinity Map). The Lone Pine Canal, which is owned and operated by the Montezuma Valley Irrigation Company (MVIC), is fed from the Dolores River through McPhee Reservoir, approximately 15 miles north of Cortez. The Lone Pine Canal is a 17.4-mile long canal located in the San Juan Basin. The Lone Pine Canal provides irrigation water to an area northwest of Cortez. The Lone Pine canal flows west and south around the Narraguinnep Reservoir.

The proposed Project Area begins at an existing 30-inch concrete pipe (locally known as Bauer Drop) west of County Road 20 and extends to the end of the existing Lone Pine Canal, just north of County Road L and west of County Road 23 (Figure 1.1: Project Vicinity Map). The proposed project is approximately 31,155 ft in length.

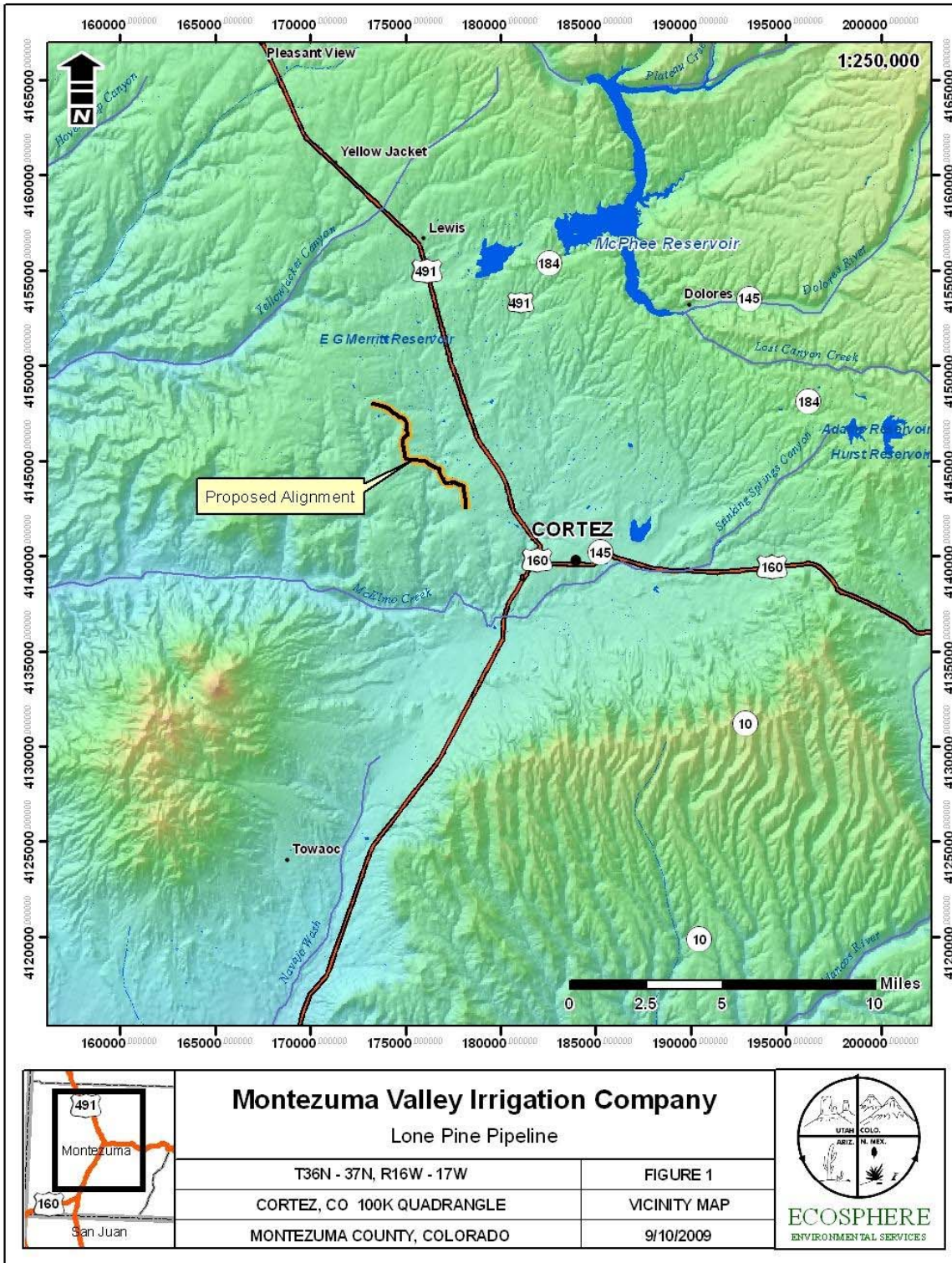
MVIC began seeking funding for the Lone Pine Canal improvements in late 2004. Specifically, they considered Basin wide salinity funding through the Bureau of Reclamation as a potential funding source. MVIC prepared and submitted a formal funding application for the basin wide salinity funds through the Bureau of Reclamation Funding Opportunity Announcement (FOA) 08-SF-40-2742 in May 2008. This application was a joint “on-farm” / “off-farm” application that included installation of on-farm sprinkler irrigation systems to assist in reducing deep percolation salt contributions to the Colorado River. This application was not funded by the Bureau of Reclamation.

In May 2009, MVIC again applied for basin wide salinity funds through the Bureau of Reclamation as a part of the American Recovery and Reinvestment Act (ARRA) program for improvements to the Lone Pine Canal. This funding application was initially approved by Reclamation in June 2009 and formally approved for funding in August 2009. As a part of this project, MVIC representatives met with all of the property owners along the length of the Lone Pine Canal project limits in July 2009. The intent of making these contacts was to discuss the proposed project, address any questions the property owner might have related to the project, and to identify potential issues for each property owner. These discussions were subsequently used in conjunction with the environmental evaluation to identify the proposed pipeline alignment for the project. Formal letters requesting property access and discussing the project were also sent to each property owner from MVIC as a part of this application process.

### 1.4. Decisions to Be Made

A determination is needed on the significance of impacts of the proposal. If an action alternative is selected, Reclamation would authorize the use of Federal Salinity Control Program funds for the Lone Pine Canal Salinity Control Project.

Figure 1.1: Project Vicinity Map





## Chapter 2: Alternatives

### 2.1. Introduction

This section provides an overview of the alternatives examined in this EA. Alternatives were evaluated to determine the enhancement deemed most suitable for the canal under the present conditions that meets the purpose and need of the project.

### 2.2. No Action Alternative

Under the No Action Alternative, Reclamation would not authorize the piping of the Lone Pine Canal in the Dolores Project. Under the No Action Alternative, general operating and maintenance activities will continue on the Lone Pine Canal.

If Reclamation decides not to authorize piping of the Lone Pine Canal, seepage from canal would continue. The seepage leads to the dissolving of salts, which ultimately leads to an increase in salinity of the Colorado River Basin. Approximately 953 tons of salt from the seepage off of the Lone Pine Canal would continue to reach the Colorado River every year (Appendix A, Salinity Report). The inefficiency of the existing canal system also results in a far greater than necessary water use for agricultural, due to high amounts of water seeping from the canal.

### 2.3. Alternatives Eliminated from Detailed Analysis

Preliminary engineering for the proposed project considered four options for the Lone Pine Canal Salinity Control Project. Three alternatives were eliminated from further consideration and are summarized below:

**Option 1 Clay Earth Lining:** The Clay Earth Lining Option would consist of re-grading the existing canal, excavation, and placement and compaction of an earthen lining material, that primarily consisting of soils with heavy clay content. The clay lining is typically 2'-3' thick and covered with a protective layer of aggregate or other armoring cover. Maintenance on clay lined facilities (i.e. canal cleaning) can be significant due to potential damage to the liner from excavation equipment. Clay liners are also susceptible to damage from burrowing rodents and other wildlife in the area which minimize the life expectancy of the liner as a viable salt reduction alternative.

Clay earth lining has short life expectancy and lower seepage reduction effectiveness than other alternatives. Therefore, Option 1 does not fully meet the need of the project and was eliminated from further analysis.

**Option 2 Concrete Lining:** The Concrete Lining Option would consist of re-grading the existing canal, and the placement of concrete. Based on a 10-year canal lining demonstration completed by Reclamation in November 2002, concrete lining is projected to have a 40-60 year effective life expectancy. Reclamation's study calculated the estimated seepage reduction effectiveness for concrete lined canals to be 70%. Concrete lined canals are labor intensive requiring significant excavation to reform canal banks to meet appropriate side slopes and gradients.

Option 2 fails to fully meet the need of the project because it would only provide a 70% seepage reduction rate. Furthermore, the high cost of constructing the concrete liner makes this option cost-prohibitive.

**Option 3 Exposed Geomembrane Liner:** The exposed geomembrane liner option would consist of re-grading the existing canal, excavation of anchor trenches along the length of the canal and the placement of a 45 mil EPDM liner that is resistant to degradation from UV light. The measured seepage effectiveness for an exposed geomembrane liner is approximately 90%. The liner itself can be installed by hand and has the lowest initial cost of the identified alternatives. However, liners of this nature are highly susceptible to damage from livestock and wildlife that can easily puncture the liner when accessing the canal. Because of poor durability, the project life of the geomembrane liner is roughly 15 years.

Option 3 was eliminated from further evaluation because the short project life of the geomembrane liner significantly reduces the potential to provide long term salinity removal to meet the project's purpose and need.

## 2.4 Action Alternative

After preliminary engineering, one action alternative was deemed to fully meet the project's purpose and need. The action alternative that will be evaluated for potential environmental consequences is described below.

Under the Action Alternative, Reclamation would authorize the replacement of the earthen sections of the Lone Pine Canal located immediately downstream of the Bauer Drop with a concrete pipe. This action would reduce the amount of salt reaching the Colorado River by a total of 953 tons annually by reducing the amount of water lost through seepage. Piping the canal would also reduce the amount of debris that enters the open channel canal, thereby reducing the intensity and frequency of ongoing system maintenance. The Action Alternative would also provide a pressurized irrigation supply, which would be used by adjacent farms for more efficient on-farm irrigation.

In 1994, a portion of the Lone Pine Canal, downstream of the Bauer Drop, was lined with a clay liner as part of Reclamation's Dolores Project. This section has subsequently deteriorated and water seeps through the now porous liner. The remaining canal sections are an unlined earthen canal. Under the Proposed Action, 31,155 ft of the canal downstream of the Bauer Drop would be piped. The 31,155 ft of improvements include replacing approximately 4,043 linear ft of an existing "low head" concrete pipe, which currently comprises the Bauer Drop. This concrete pipe would be replaced with higher pressure rated High Density Polyethylene Pipe (HDPE) to provide hydraulic pressure to the system.

The Action Alternative also includes replacing approximately 1,600 linear ft of the existing Alkali Siphon pipeline. Alkali Siphon, a reinforced fiberglass siphon pipe, failed in July 2009 requiring emergency repairs by MVIC during peak irrigation times. The new Alkali Siphon pipe would be larger in diameter than the existing pipe and rated to meet high static pressures anticipated at the bottom of the Alkali Drainage.

Under the Action Alternative, the northern beach of the Narraguinnep Reservoir would be used as the location for the mitigation required through the Habitat Replacement Plan (HRP). Under the HRP, approximately 13 acres of the reservoir's existing northern beach would be excavated,

graded and converted to wetland habitat. This area will be impacted in the short term as the existing upland vegetation is converted to wetland habitat. Once established, the new wetland habitat is intended to provide long term positive impacts for a wide variety of species including migratory birds. No gain or loss of the storage capacity of Narraguinnep Reservoir will result from this action alternative as per state regulations. For further details about the HRP see Appendix B, Habitat Replacement Plan.

**Pipeline**

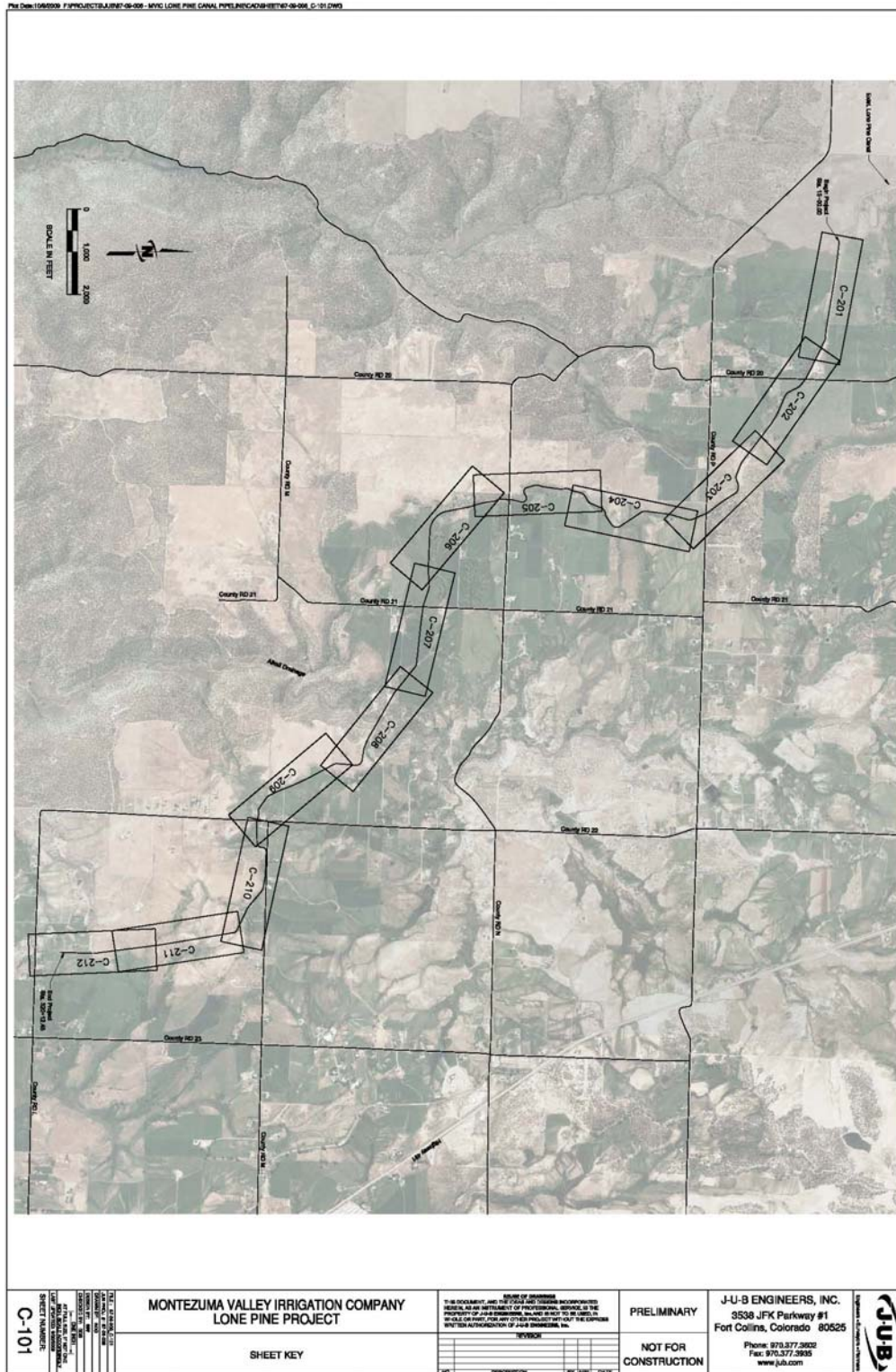
The pipeline would follow the existing Lone Pine Canal alignment for approximately 2.16 miles. The remaining 3.74 miles of pipe would deviate from the existing alignment. Figure 2.1, Proposed Alignment, shows the proposed alignment of the Lone Pine Canal under the Action Alternative.

The new pipe would have drains at low spots to facilitate draining the system at the end of the season. The pipelines would be buried to provide approximately 3 ft of cover over the top of the pipe. The Action Alternative would include piping the 31,155 ft of the Lone Pine Canal with various lengths of pipe. Table 2.1: Pipeline Sizes and Lengths, summarizes the approximate length of each size of pipe that would be used under the Action Alternative.

**Table 2.1: Pipeline Sizes and Lengths**

| <b>Pipe Diameter</b> | <b>Approximate Length (ft)</b> |
|----------------------|--------------------------------|
| 42"                  | 12,750                         |
| 36"                  | 6,782                          |
| 36"                  | 594                            |
| 36"                  | 633                            |
| 34"                  | 412                            |
| 32"                  | 3,572                          |
| 30"                  | 1,528                          |
| 20"                  | 3,113                          |
| 16"                  | 1,128                          |
| 12"                  | 643                            |
|                      | <b>31,155</b>                  |

Figure 2.1, Proposed Alignment



## **Easements**

The proposed alignment would remain within the existing canal easements for 11,404 ft of the project. There will be approximately 14,108 ft of the proposed alignment outside of the existing canal alignment. In these areas, permanent easements would need to be established with the private property owners. In areas where the existing alignment is being abandoned the land will be returned to the property owners.

## **Turnouts, Drains, Services and Meters**

The project would install new services to adjacent water users to replace the existing turnout structures within the canal. A flow measurement instrument would be installed at each of the irrigation service locations. This would provide distribution and allocation of the delivered water for improvements of on-farm irrigation water management. Pressure reducing valves would be installed on the mainline pipe to regulate pressure drops and provide more consistent delivery pressures to on-farm systems.

Drains would be installed at the ends of the pipelines and at key locations to facilitate the draining of the system.

### **2.4.1. Pipeline Construction Procedures**

Construction of the pipeline would likely occur in the following sequence:

1. Flagging of the construction zone
2. Mobilization of the construction equipment
3. Delivery of pipe to the construction site
4. Excavation of the trench
5. Fusing of pipe
6. Placement of pipe within the trench
7. Backfill around pipe, and compaction backfill
8. Clean up and restoration of areas disturbed by construction
9. Planting and reseedling of disturbed areas for re-vegetation

### **Trench Excavation**

A trench approximately five to six feet wide would be excavated to provide for pipe installation. The trench would be deep enough to accommodate the pipe plus approximately three feet of cover over the top of the pipe. Excavation would be performed with the use of an appropriately-sized track hoe to minimize disturbance to the surrounding area. All excavated material would be stockpiled to the side of the trench, and be used as backfill once the pipe was installed. In critical areas, such as established agricultural lands, topsoil would be separated from other material in order to preserve it, so it can be placed as the last soil layer after construction is completed.

## **Pipe and Appurtenance Installation**

The pipe would be transported by truck from the manufacturer to the staging areas. From the staging areas it would either be transported by a loader to the work site, or fused into longer sections and drug with a track hoe to the work site. Existing county and access roads would be used to transport the pipe to the work site. Each section of pipe would be fused together with a pipe fuser and then placed in the prepared trench by trackhoe.

At various points, to be determined during design, construction would be required to install drain valves, air-vacuum valves, pressure-reducing valves, and air-release valves. These valves would be installed to facilitate filling and operation of the system, and to allow any excess water that is in the pipeline at the end of the irrigation season to drain from the pipe. The drains may be directed and day lighted into natural drainages or the wash. The air-vacuum valves are typically installed on top of the pipe, to vent air during pipe filling or allow air into the pipe while it drains.

After installing the pipe, backfill would be placed around the pipe. In established agricultural areas, the preserved top soil would be placed last, to minimize impacts and facilitate a speedy recovery. Backfill would be mechanically compacted with a vibratory compactor, wheel compactor or trackhoe attachment. Soil in work areas would be spread evenly, to blend with the natural topography and maintain local drainage patterns. Stockpiled topsoil would then be spread evenly over previously vegetated areas and reseeded with native vegetation species.

Abandoned canals would be filled and graded. In locations where there is an excess or a shortage of material, a slight swale or hump would be incorporated into the cross section.

## **Crossings**

Existing drainage crossings would be maintained during construction.

## **Quality Control Procedures**

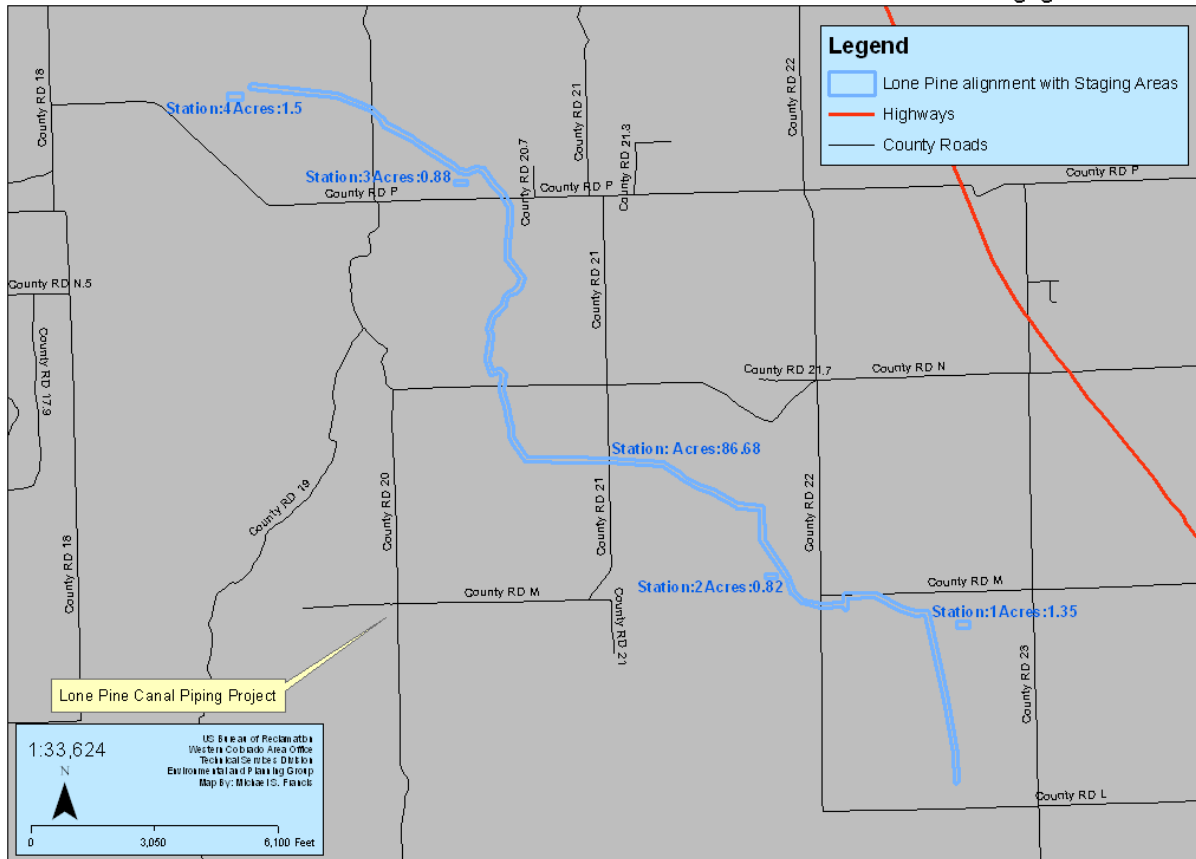
After backfilling and completion of construction work, the contractor's quality control would include a visual inspection and hydrostatic testing. Each segment of pipe would be filled with water and pressurized for hydrostatic testing through contractor-supplied pumps, to ensure that the system operates to design specifications. If the pipe leaks or breaks, it would be repaired and re-tested until it meets specifications. After testing a segment, the water would be pumped into the next segment for testing.

### **2.4.2. Construction Staging Areas**

Construction staging areas have been identified at sites adjacent to the canal (Figure 2.2: Staging Areas). The staging areas would be used to stockpile the pipe, equipment, and construction vehicles. The identified construction staging areas would be approximately 250 ft by 250 ft. Vegetation and soils in the construction staging areas are commensurate with the rest of the Project Area. Common vegetation includes grasses and thistles (detailed in Section 3.2.4) and the soil is mainly red Aeolian soil deposited over the Dakota Sandstone (detailed in Section 3.2.9).

Figure 2.2: Staging Areas

Lone Pine Canal Salinity Control Project



**2.4.3. Operation and Maintenance**

Operation of the canal would remain essentially unchanged, though maintenance would be reduced significantly as a result of the Action Alternative. Canal operation would occur annually between April 1 and October 15. Long-term maintenance requirements and needs would be addressed in the right-of-way permits and easements related to the project, and would be developed in such a way to minimize impacts to adjacent resources.

**2.4.4. Land Disturbance**

The proposed pipeline alignment, described in Section 2.4, would total approximately 5.9 miles in length. Construction activities would be confined to a 100-ft construction corridor running the length of the Project Area and the identified construction staging areas.

### **2.4.5. Transportation Requirements**

Transportation routes would utilize existing access roads. The routes were selected because they are currently used for vehicle access, are already disturbed, and are within the proposed pipeline alignment. Use of these routes would also minimize disturbance to the vegetation.

### **2.4.6. Standard Operating Procedures**

Standard Operating Procedures (SOPs) would be followed (except for unforeseen conditions that would require modifications) during construction, operation, and maintenance of the Action Alternative, to avoid or minimize adverse impacts on people and natural resources. A preconstruction meeting with Reclamation, the contractor, and MVIC's representative would be held prior to work commencing. Weekly meetings would be held to assess the construction progress. All construction vehicles and equipment would be washed prior to entering the construction site to reduce the spread of noxious weeds. The SOPs and features of the Action Alternative have been formulated to avoid or minimize adverse impacts. Chapter 3 presents the impact analysis for resources after SOPs have been successfully implemented.

Specifics of restoration would be outlined in the SOP and/or right-of-way easements. Specifics of restoration procedures include: the determination of what native vegetation is appropriate for the different construction zones, reseeding rates, landscaping, re-vegetation, and noxious weed removal. These documents would include success criteria for restoration of disturbed areas. These actions would ensure that disturbed areas are returned to a natural state.



## **Chapter 3: Affected Environment and Environmental Consequences**

### **3.1. Introduction**

The following resources are examined in detail in this chapter: air quality, water resources, water quality, upland vegetation resources, wetlands and riparian resources, fish and wildlife, special status species, cultural resources, paleontological resources, soil erosion and sedimentation, Indian Trust Assets, transportation, environmental justice, Wild and Scenic Rivers, public health and safety, noise, and visual resources. Section 3.2 describes the present condition and characteristics of each resource within the project. Section 3.3 evaluates the potential impacts to these resources from both the No Action and the Action Alternative.

### **3.2. Affected Environment**

#### **3.2.1. Air Quality**

Air Quality is regulated by the U.S. Environmental Protection Agency and the Colorado Department of Public Health & Environment (Air Pollution Control Division). The National Ambient Air Quality Standards (NAAQS) established by the EPA under the Clean Air Act (CAA) specify limits of air pollutants for carbon monoxide, particulate matter (PM 10 & PM 2.5), ozone, sulfur dioxide, lead, and nitrogen.

The Project Area is in attainment for all criteria pollutants and the air quality designation is not anticipated to change prior to the construction of the Action Alternative.

#### **3.2.2. Water Resources**

The Project Area is within the San Juan River Basin. This area is within the Middle and Upper McElmo Creek sub-watersheds, tributaries of the San Juan River. The San Juan River is a tributary to the Colorado River and enters Lake Powell at the uppermost portion of the reservoir. The Lone Pine Canal provides irrigation water northwest of Cortez.

The Lone Pine Canal is approximately 17.4 miles long and is fed by the McPhee Reservoir, an impoundment on the Dolores River at approximately 8 miles northeast of the project. The Lone Pine Canal flows at approximately 35 cubic-feet per second (cfs).

The Action Alternative crosses five ephemeral washes. Four of the washes join to form Alkali Canyon and the fifth flows to the east into Crow Canyon.

### 3.2.3. Water Quality

The Lone Pine Canal provides open channel irrigation for agricultural users. This open water conveyance system causes excess soil moisture, movement of water vertically downward, and horizontal movement of water down gradient to various points. Seepage into shallow aquifers is the source of many saline seeps. These seeps contribute an estimated 953 tons of salt annually to the Colorado River. This salt loading degrades the water quality of the basin and its tributaries.

### 3.2.4. Upland Vegetation Resources

Upland vegetation in the Project Area provides food, shelter and breeding grounds for wildlife, described in detail in Sections 3.3.6 and 3.3.7. Degradation or loss of upland vegetation resources may result in a decrease of animal populations, an increase in erosion and the rapid spread of non-native plant species. Upland vegetation resources “affect the spatial distribution of soil resources through processes such as nutrient uptake, litter depositions and control of overland water flow” (Southern Colorado Plateau Network Project Summary, 2007).

The native vegetation in the Project Area consists of a mix of pinon-juniper woodland, including pinon pine (*Pinus edulis*) and Utah juniper (*Juniperus osteosperma*). Other trees include narrow-leaf cottonwood (*Populus tremuloides*), willow (*Salix sp.*), and Russian olive (*Elaeagnus angustifolia*). Dominant understory vegetation includes big sagebrush (*Artemisia tridentata*), rubber rabbitbrush (*Ericameria nauseosa*), and Russian thistle (*Salsola tragus*). Common grasses and forbs present in the Project Area include western wheatgrass (*Pascopyrum smithi*), galleta grass (*Hilaria jamesii*), showy milkweed (*Asclepias speciosa*), and yellow sweetclover (*Melilotus officinalis*) (Appendix B, Biological Resource Survey).

Much of the land in the Project Area is comprised of human-altered vegetation, primarily for agricultural uses, or canal construction and maintenance. Agricultural activities have replaced much of the native upland vegetation with alfalfa and pasture grasses. Additional agricultural crops in the area include pinto beans, oats, and wheat. Non-agricultural vegetation in disturbed areas, such as along roads, is largely dominated by weedy and non-native species such as jointed goatgrass (*Aegilops cylindrical*), and bull thistle (*Cirsium vulgare*).

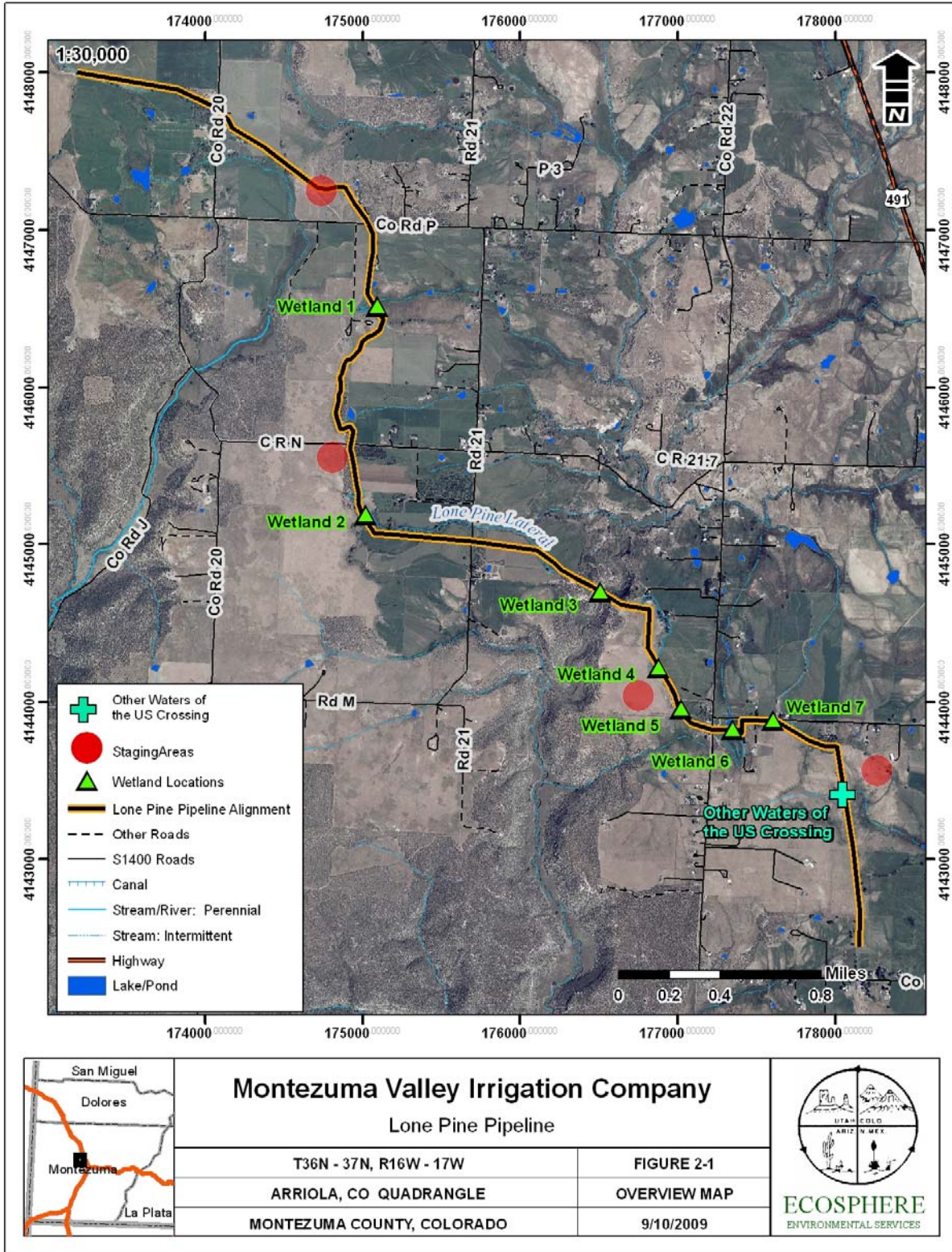
### 3.2.5. Wetlands and Riparian Resources

A wetland survey report conducted in August 2009 determined that seven jurisdictional wetland areas and one Waters of the U.S. are located within the Project Area (Appendix C, Wetland Survey). Figure 3.1: Wetland Resources within the Project Area details the location of each wetland area in relation to the Action Alternative. Wetland areas in the Project Area are primarily palustrine scrub-shrub wetlands consisting of coyote willow (*Salix exigua*) and salt cedar (*Tamarix ramosissima*). Soils in the wetland area vary from sandy to clay and hydric indicators include oxidized root channels, sand redox, and low chroma soils (Appendix C, Wetland Survey). Table 3.1 Wetlands in the Project Area, details information about each wetland location within the Project Area.

**Table 3.1: Wetlands in the Project Area**

| Wetland            | NWI Classification | General Description  |
|--------------------|--------------------|--|
| Wetland 1          | N/A                | Patchy wetland fed by feeder ditch on the west side.   |
| Wetland 2          | N/A                | Wetland fed by feeder ditch.   |
| Wetland 3          | N/A                | Alkali Creek Crossing. Significantly disturbed.  |
| Wetland 4          | N/A                | Wetland fed by feeder ditch.   |
| Wetland 5          | N/A                | Wetland fed by feeder ditch.   |
| Wetland 6          | PEMC               | Irrigated pasture. Strong irrigation influence.  |
| Wetland 7          | N/A                | Alkali Creek Crossing. Significantly disturbed. Hydrology likely from adjacent irrigation canal. |
| Waters of the U.S. | N/A                | Irrigation accumulation in swale. Very shallow channel. Low Quality.                             |

Figure 3.1: Wetlands in the Project Area



### 3.2.6. Fish and Wildlife Resources

The Project Area provides habitat for a variety of wildlife. A biological survey of the Project Area identified habitat for wildlife species including coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), American badger (*Taxidea taxus*), and prairie dogs (*Cynomys sp.*). Other species known to periodically use the Project Area include desert cottontail (*Sylvilagus audubonii*), deer mice (*Peromyscus maniculatus*), woodrats (*Neotoma sp.*), pocket mice (*Perognathus sp.*) and numerous species of birds including the red-tailed hawk (*Buteo jamaicensis*) and great blue heron (*Ardea Herodias*). For a full list of known species in the Project Area please refer to Appendix B, Biological Resource Survey. No aquatic animals or fish species were identified in the canal or the perennial washes in the vicinity of the Project Area.

### 3.2.7. Special Status Species

#### 3.2.7.1. Federally Listed Species

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1543) protects federally listed endangered, threatened, and candidate plant and animal species and their critical habitats. Candidate species are those that the U.S. Fish and Wildlife Service (USFWS) has sufficient data to list as threatened or endangered, but for which proposed rules have not yet been issued. Threatened species are those that are likely to become endangered in the foreseeable future, throughout all or a significant portion of their range.

According to information obtained from the USFWS in August 2009, there are 12 threatened, endangered, or candidate species that have a potential to occur in Montezuma County (Appendix B, Biological Resource Survey). The federally listed species with potential to occur in the Project Area are described in detail below:

#### Mammals

##### Black-footed Ferret (*Mustela nigripes*)

The black-footed ferret is 18 to 24 inches long, and weighs 1.5 to 2.5 pounds, with males slightly larger than females. It is a slender, wiry animal with a black face mask, black feet, and a black-tipped tail. It has short legs with large front paws and claws developed for digging (USFWS Species Profile, July 2009). The black-footed ferret is known to inhabit prairie dog towns or complexes. The species was listed as Endangered on March 11, 1967.

##### Canada Lynx (*Lynx canadensis*)

Canada lynx are medium-sized cats, generally measuring 30 to 35 inches long and weighing 18 to 23 pounds. They have large feet adapted for walking on snow, long legs, tufts on the ears, and black-tipped tails. Canada lynx are highly adapted for hunting snowshoe hare in deep snows; and in North America, the distribution of the species is nearly coincident with that of the snowshoe hare (Bittner and Rongstad 1982). The species is usually found in boreal and montane regions dominated by coniferous or mixed forest with thick undergrowth; but may also be found in open forest, rocky areas, and tundra. The Canada lynx breed during the late winter to early spring. The species was listed as Threatened on March 24, 2000 (NatureServe Comprehensive Species Report, 2009).

New Mexico Meadow Jumping Mouse (*Zapus hudsonius luteus*)

The New Mexico meadow jumping mouse is endemic to New Mexico, Arizona, and a small area of Southern Colorado. The jumping mouse has a grayish-brown back, yellowish sides, and a white underbelly. The species generally measures 7 to 10 inches long, with an extremely long, bicolored tail which can measure up to 5 inches long. The species nests in dry soils, but uses moist, streamside, dense riparian vegetation up to an elevation of 8,000 ft for foraging. The jumping mouse hibernates nine months out of the year and is active only during the growing season of grasses and forbs. The jumping mouse was listed as a Candidate species on December 10, 2008 (USFWS Species Profile, September 2009).

**Birds**

Mexican Spotted Owl (*Strix occidentalis lucida*)

The Mexican spotted owl is a large, dark-eyed, round-headed, brown owl with whitish spotting on the head, back, and underparts. Hatching generally occurs in early to mid-May with clutch sizes ranging from 2 to 4 eggs. The owls are largely nonmigratory, with some vertical migration at higher elevations. The owls prefer cliffs, conifer and hardwood forests, and riparian habitats. This species was listed as Threatened on March 16, 1993 (NatureServe Comprehensive Species Report, 2009).

Yellow-billed Cuckoo (*Coccyzus americanus*)

The yellow-billed cuckoo has a yellow lower mandible, rufous wings, grayish-brown wing coverts and upper parts, and white underparts. It is a neo-tropical migrant that winters in South America. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars or other large insects. Its incubation period is the shortest of any known bird because it is one of the last neo-tropical migrants to arrive in North America. Yellow-billed cuckoos are considered a riparian obligate and are usually found in large tracts of cottonwood-willow habitats with dense sub-canopies. The yellow-billed cuckoo is a Candidate species (NatureServe Comprehensive Species Report, 2009).

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

The southwestern willow flycatcher is usually less than 6 inches in length, with light-colored wing bars and an overall brownish-olive to gray-green head. The flycatcher is a neo-tropical migrant that winters in Central America. The species arrives on breeding grounds in the U.S. in late April to early May. The typical clutch size is 3 to 4 eggs. The flycatcher's primary habitat is dense riparian zones. Human disturbance at nesting sites may result in nest abandonment. The southwestern willow flycatcher was listed as Endangered on February 27, 1995 (NatureServe Comprehensive Species Report, 2009).

**Fish**

Colorado Pikeminnow (*Ptychocheilus lucius*)

The Colorado pikeminnow is a large freshwater minnow that may reach a length of 6 feet. Adults are highly mobile and prefer medium to large rivers. Young prefer small, quiet backwaters. The species migrates extensively for spawning (up to 200 km. one way) in late spring. Their habitat is generally restricted to large rivers within the Colorado River Basin. The Colorado pikeminnow was added to the Endangered Species List on March 11, 1967 (NatureServe Comprehensive Species Report, 2009).

Greenback Cutthroat Trout (*Oncorhynchus clarki stomias*)

The greenback cutthroat trout is a freshwater fish with numerous large spots and a green back. The species is found in clear, swift-flowing mountain streams with overhanging banks and vegetative cover. Juveniles tend to shelter in shallow backwaters and lakes. Spawning occurs in spring, or in some high-elevation sites, during the early summer. The greenback cutthroat trout has been listed as Threatened since March 11, 1967 (NatureServe Comprehensive Species Report, 2009).

Razorback Sucker (*Xyrauchen texanus*)

The razorback sucker is a freshwater sucker fish with a large sharp keel on the nape. The species is usually found swimming in schools. Spawning occurs in later winter to early spring and in groups of hundreds of individuals. Habitat includes backwaters and eddies of medium to large rivers, and flood lowlands, which serve as breeding areas. The species population is restricted to the Colorado River Basin. The razorback sucker was listed as Endangered on October 23, 1991 (NatureServe Comprehensive Species Report, 2009).

## Plants

Mancos Milkvetch (*Astragalus humillimus*)

The Mancos milkvetch is a perennial herb that grows in low, tufted mats, 3 to 4.5 centimeters in diameter. Flowering occurs in late April to early May, and produces a lavender flower with white veins that have a pungent sweet smell. The Mancos milkvetch is found on sandstone ledges or mesa tops, often in cracks in the sandstone substrate or in shallow pockets of sandy soil. The Mancos milkvetch has been listed as Endangered since June 27, 1985 (NatureServe Comprehensive Species Report, 2009).

Mesa Verde Cactus (*Sclerocactus mesae-verdae*)

The Mesa Verde cactus is a spiny succulent with a globose stem, usually 3.807 centimeters tall. Flowers usually occur in late April, and are a yellow to cream 2.5 to 3.1 centimeters bloom. The cactus' fruit opens in a circular pattern at, below, or above the middle common. This species is found in dry low exposed hills and mesas, in full sun, and in Mancos or Fruitland clays in the desert. Cracks in the soil where the seeds fall and germinate are the most important component of the plant's microhabitat. This species was added to the Threatened species list on November 29, 1979 (NatureServe Comprehensive Species Report, 2009).

Sleeping Ute Milkvetch (*Astragalus tortipes*)

The Sleeping Ute milkvetch is a robust perennial herb, 3 to 8 centimeters tall, with 1 to 6 sparsely leafy, ascending stems. The plants are ashy-gray and white-hairy throughout, with yellow blooms that appear in early April. The milkvetch is found in scattered colonies on the lower slopes of ridges and knolls of Cretaceous Mancos Shale, which separates the foothills from the desert, and in mixed desert scrub with Mancos Shale overlain with gravel. The sleeping Ute milkvetch is a Candidate species (NatureServe Comprehensive Species Report, 2009).

The project biologist conducted an on-site pedestrian survey on August 11, 2009. All plant and wildlife species and signs observed in the area were recorded and digital photos were taken. Binoculars were used to survey for raptors and potential nest habitat. Adjacent land within 0.5-mile of the proposed project was also considered for potential habitat for federally listed species.

The biological survey concluded that due to the absence of suitable habitat within the Project Area, 11 of the 12 federally listed species are unlikely to occur within the Project Area. These species have therefore been eliminated from further analysis within this EA. The list of threatened, endangered or candidate species which have been eliminated from further evaluation are listed in Table 3.2.

**Table 3.2: Federally Listed Species with Potential to Occur in Montezuma County but Eliminated from Detailed Evaluation for the Action Alternative.**

| Species   | Status     | Habitat Description and Season of Use   | Reason for Elimination from Consideration   |
|---|------------|---|---|
| <b>Mammals</b>  |            |   |   |
| Black-footed ferret ( <i>Mustela nigripes</i> )                   | Endangered | Open grasslands with prairie dog colonies at least 200 acres in size with > 8 burrows/acre. | No large prairie dogs colonies occur in the Project Area or vicinity.                           |
| Canada lynx ( <i>Lynx canadensis</i> )                            | Threatened | Early and late-successional mixed conifer forest types.                                     | No mixed conifer in the Project Area or vicinity.   |
| New Mexico meadow jumping mouse ( <i>Zapus hudsonius luteus</i> ) | Candidate  | Prefers mesic meadows and/or contained permanent streams with dense, diverse vegetation.    | Although potential habitat exists, known populations only occur in Las Animas County, Colorado. |
| <b>Birds</b>  |            |   |   |
| Mexican spotted owl ( <i>Strix occidentalis lucida</i> )          | Threatened | Mature ponderosa pine/mixed conifer in canyon/cliff habitat.                                | No mature ponderosa pine or mixed conifer habitat in the Project Area or vicinity.              |
| Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )               | Candidate  | Associated with large tracts (>17 ha) of mature broadleaf riparian forests.                 | No potential habitat in the Project Area due to lack of large riparian areas.                   |
| <b>Fish</b>   |            |   |   |
| Colorado pikeminnow ( <i>Ptychocheilus lucius</i> )               | Endangered | Large rivers with strong current, deep pools, eddies, and quiet backwaters.                 | No perennial rivers or streams in the Project Area or vicinity.                                 |
| Greenback cutthroat trout ( <i>Oncorhynchus clarki stomias</i> )  | Threatened | Cold, clear, gravely headwater streams and mountain lakes.                                  | No streams or lakes occur in the Project Area or vicinity.                                      |
| Razorback sucker ( <i>Xyrauchen texanus</i> )                     | Endangered | Rivers with strong, steady currents over sandy bottoms.                                     | No perennial rivers or streams in the Project Area or vicinity.                                 |



**Table 3.2: Federally Listed Species with Potential to Occur in Montezuma County but Eliminated from Detailed Evaluation for the Action Alternative (continued).**

| Plants  |            |  |   |
|---|------------|--|---|
| Mancos milkvetch<br>( <i>Astragalus humillimus</i> )      | Endangered | Grows in cracks of Point Lookout Sandstone of the Mesa Verde Group.                                | Point Lookout Sandstone does not occur in the Project Area or vicinity.     |
| Mesa Verde cactus<br>( <i>Sclerocactus mesae-verdae</i> ) | Threatened | Salt desert scrub communities on the Fruitland and Mancos Shale formations.                        | Project area geology does not include Fruitland or Mancos Shale formations. |
| Sleeping Ute milkvetch<br>( <i>Astragalus tortipes</i> )  | Candidate  | Mixed desert scrub communities on lower slopes of ridges and knolls of the Mancos Shale formation. | Project area geology does not include the Mancos Shale formation.           |

The biological survey concluded that the southwestern willow flycatcher (*Empidonax traillii extimus*) has the potential to occur within the Project Area or vicinity. The Project Area is within the Upper Colorado Recovery Unit for the southwestern willow flycatcher (USFWS, 2002). Two areas of dense riparian habitat may provide potential nesting habitat and smaller, less dense riparian habitats occur throughout the Project Area that may provide habitat for migrant birds. No nests or individuals were observed within 0.5-mile of the Project Area (Appendix B, Biological Resource Survey).

**3.2.7.2. Migratory Bird Treaty Act**

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-711, as amended) authorizes USFWS to regulate the taking, either intentionally or unintentionally, of migratory birds. Birds protected under the act include: all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves, pigeons, swifts, martins, swallows, and other species, including their body parts, nests and eggs. Take is defined as “to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities.” A take does not include habitat destruction or alteration, as long as there is no direct taking of birds, nests, eggs, or parts thereof.

The biological survey identified 27 migratory bird species that are likely to occur in the Project Area (Appendix B, Biological Resource Survey). Furthermore, the survey identified an active red-tailed hawk nest that occurs in the southern portion of the proposed Project Area. WCAO protocol requires that devegetation activities take place between August 15 and April 1. If devegetation activities take place outside of this timeframe a preconstruction survey must be completed a week prior to construction to determine whether or not there are migratory birds within the Project Area.

**3.2.7.3. Bald and Golden Eagle Protection Act**

The Bald Eagle was de-listed by the Fish and Wildlife Service in 2007. The Bald and Golden Eagle Protection Act of 1940 prohibits unregulated “takes” of both species. Bald eagles generally nest near coastlines, rivers, large lakes, or streams that support an adequate food supply.

There are no perennial water sources within the Project Area to support an adequate food supply in the analysis area; however, the proposed Project Area is located within a bald eagle winter range as designated by the CDOW (CDOW 2008). Additionally, bald eagle winter concentrations occur less than 0.5 miles from the Project Area and known roost sites are located 2.8 miles to the east. Two active bald eagle nests are located within 5 miles of the Project Area. The closest is located approximately 1.18 miles to the east. WCAO protocol requires that if any eagles are observed within .25 miles of the Project Area, construction activities must cease until the birds leave the area. There is potential for incidental foraging for small prey or carrion in the Project Area.

### **3.2.8. Cultural and Paleontological Resources**

#### **3.2.8.1 Cultural Resources**

Cultural resources are defined as the expressions of human culture and history in the physical environment, including culturally-significant landscapes, historic and archaeological sites, Native American and other sacred places, and artifacts and documents of cultural and historical significance. Historic properties are defined as historic or prehistoric sites, structures, buildings, districts or objects that are listed in, or are eligible for, the National Register of Historic Places (NRHP). Potential effects of the described alternatives on historic properties are the primary focus of this analysis.

The affected environment for cultural resources is identified as the APE (area of potential effects), in compliance with the National Historic Preservation Act (36 CFR 800.16). The APE is defined as the geographic area within which federal actions may directly or indirectly cause alterations in the character or use of historic properties. The APE for this Action Alternative is limited to the proposed pipeline corridor, access roads, and staging areas.

A cultural resource survey conducted in September 2009 identified eleven cultural sites within the Project Area that may be eligible for protection under the National Historic Preservation Act. Further analysis and consideration determined that one of the sites is not eligible, Site 5MT19472. These sites are identified in Table 3.3: Cultural Sites within the Project Area.

**Table 3.3: Cultural Sites within the Project Area**

| <b>Site Number</b> | <b>Description</b>   | <b>Cultural Affiliation</b>  | <b>Eligibility</b> |
|--------------------|--|--|--------------------|
| 5MT5181.3          | Irrigation ditch and siphon  | Historic: AD 1890 – present  | Eligible           |
| 5MT11555           | Lithic and ceramic scatter with architectural features/habitation    | Anasazi Pueblo I and II: AD 750 -1100                                | Eligible           |
| 5MT19467           | Lithic and ceramic scatter with nonarchitectural feature/field house | Archaic and Anasazi Pueblo II: BC 5000-AD 500 and AD 750-1100        | Eligible           |
| 5MT09131           | Rubble mound/habitation  | Anasazi Basketmaker III and Pueblo II: AD 500 – 750 and AD 900 -1100 | Eligible           |

**Table 3.3: Cultural Sites within the Project Area (continued)**

| Site Number | Description  | Cultural Affiliation  | Eligibility                        |
|-------------|--|---|------------------------------------|
| 5MT09405    | Lithic and ceramic scatter with features/habitation                  | Anasazi Pueblo II: AD 900 – 1100                              | Need date to determine eligibility |
| 5MT09406    | Lithic and ceramic scatter with features/habitation                  | Anasazi Pueblo II: AD 900 – 1100                              | Eligible                           |
| 5MT19467    | Lithic and ceramic scatter with nonarchitectural feature/field house | Archaic and Anasazi Pueblo II: BC 5000-AD 500 and AD 750-1100 | Eligible                           |
| 5MT19468    | Lithic and ceramic scatter/limited activity area                     | Anasazi Pueblo II: AD 900 – 1100                              | Need date to determine eligibility |
| 5MT19470    | Lithic, rubble, and ceramic scatter/habitation                       | Anasazi Pueblo II: AD 900 – 1100                              | Eligible                           |
| 5MT19471    | Lithic and ceramic scatter with architectural features/habitation    | Anasazi Pueblo II: AD 900 – 1100                              | Eligible                           |
| 5MT19472    | Historic farm/homestead  | Historic: AD 1911 – present                                   | Not Eligible                       |

**3.2.8.2 Paleontological Resources**

Paleontological resources are defined as the fossilized remains of vertebrate and invertebrate organisms, fossil tracks and track ways, and plant fossils. A paleontological file search of the Colorado Historical Society’s GIS files was conducted on June 30, 2009. The search concluded that there are no known paleontological resources within the Project Area.

**3.2.9. Soil Sedimentation and Erosion**

The soils in the Project Area were mapped by the Natural Resource Conservation Service (NRCS) in 2001 (Soil Survey, 2001). The Project Area lies within the Colorado Plateau physiographic province, and is comprised primarily of a gently sloping plain known locally as the Dolores Plateau. The most significant bedrock formation within the Project Area is the Dakota Sandstone, which is exposed throughout much of the Dolores Plateau, extending generally from the northwest to the southeast. Soil erosion within the Project Area is generally not a problem given the gentle slope of the land. Soil erosion, however, is locally common in areas surrounding ditches from storm water and irrigation runoff.

Much of the land within the Project Area is human-altered, irrigated agricultural land. Most of the irrigated soils are comprised of red Aeolian soil deposited over the Dakota Sandstone. The depth of soil varies from 3 to 20 ft over the sandstone bedrock, and tends to be red to reddish brown in color with a sub angular blocky structure ranging from loam to clay loam. The Project Area contains other soils that comprise a small percentage of the area, and have a range of

properties form coarse-grained alluvial soils to fine-textured residual soils. Soils in several areas are highly saline (Soil Survey, 2001).

### **3.2.10. Indian Trust Assets**

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for federally-recognized Indian tribes or individual tribal members. Trust assets may include: lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. The United States, including all of its bureaus and agencies, has a fiduciary responsibility to protect and maintain those rights reserved by or granted to Indian tribes or individual tribal members by treaties, statutes, and Executive Orders, which are sometimes further interpreted through court decisions and regulations. This trust responsibility requires that all Federal agencies take all actions necessary to protect trust assets, within reason. Reclamation carries out its activities in a manner which protects these assets and avoids adverse impacts when possible.

Impacts to Indian Trust Assets (ITAs) are evaluated by assessing how the action affects the use and quality of ITAs. Any action that adversely affects the use, value, quality or enjoyment of an ITA is considered to have an adverse impact to the resources.

The Ute Mountain Ute Indian Reservation lies southwest of the proposed project, and is held in trust by the U.S. government. There are no known Indian Trust Assets within the Project Area.

### **3.2.11. Environmental Justice**

Executive Order 12898 established environmental justice as a Federal agency priority to ensure that minority and low income populations are not disproportionately impacted by Federal actions. The information obtained from the U.S. Census indicates that a minority population does exist in the Project Area. According to 2000 U.S. Census data, Cortez has a total population of 7,977 residents. Of these residents, 6,111 (76.6%) are White, while 0.3% are Black or African American, 805 (10.1%) are American Indian, and 1,061 (13.3%) are identified as Hispanic or Latino. Montezuma County, in comparison, has a total population of 25,384 (U.S. Census Bureau, 2008), with a 76% White population, 0.5% Black population, 13.8% American Indian, and 9.7% Hispanic population. The median household income for Cortez is \$28,766 well below the median household income for Montezuma County (\$41,425), and the median household income for the State of Colorado (\$55,517). Therefore the census data suggests that an ethnic minority population and a low-income minority population may be located within the Project Area.

### **3.2.12. Public Health, Safety, Access, and Transportation**

Significant transportation resources in the area include U.S. Highway 491, which links the county seat of Cortez with points north and south, including the towns of Towaoc, Arriola, Lewis, Yellow Jacket, Pleasant View, and points north in Dolores County. Montezuma County Road G is the main east/west road in the Project Area, and runs between the Canyon of the Ancients National Monument and the Ute Mountain Ute Indian Reservation connecting Cortez with areas west in San Juan County, Utah. U.S. Highway 160 runs east from Cortez and connects with the city of Mancos and areas east in La Plata County. The Project Area is served by County Roads

20, 21, 22, M, N and P. Roads M, N, and P are paved with asphalt while roads 20, 21, and 22 are compacted road base material (gravel).

### **3.2.13. Wild and Scenic Rivers**

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1272 et seq.) to preserve rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.

There are no Wild Scenic Rivers within the Project Area or the vicinity.

### **3.2.14. Visual Resources**

The visual resources within the Project Area are generally related to the area's population and to adjacent topographic features. The proposed Project Area is within an elevation of approximately 6,000 to 6,575 feet above sea level. Most of the Project Area has been previously disturbed and converted to agricultural uses. The topography surrounding the Project Area is characterized by steep canyons and mesas. The Project Area traverses Alkali Canyon. Narraguinne Canyon, Crow Canyon, and McElmo Creek Canyon are adjacent to the Project Area.

### **3.2.15. Hazardous Materials**

Issues of potential concern associated with hazardous materials include the spread of existing soil or groundwater contamination through construction activities, increased construction costs, and the health and safety of construction workers and the public. An environmental search and field investigation was conducted to identify and describe the occurrence of known or potential hazardous waste sites in the Project Area and vicinity. A review of the Colorado Hazardous Materials and Waste Management Division Site Locator Database in September 2009 showed no hazardous waste sites with the Project Area or vicinity.

### **3.2.16 Recreation**

The proposed Project Area is located exclusively on private lands with easements held by MVIC and Reclamation. These easements state that the land is not for recreational use. Therefore, there are no public lands or opportunities for public recreation in the impacted Project Area.

### **3.2.17 Noise**

In general, the dominant sounds in the proposed Project Area originate from existing roadways, agricultural activities and natural sources such as water, wind, and wildlife. Localized traffic noise is generated along County Roads

### **3.3. Environmental Consequences**

This environmental consequences section discusses potential impacts from the No Action and the Action Alternative to the resources that were identified within the Project Area.

#### **3.3.1. Air Quality**

##### **No Action Alternative**

Under the No Action Alternative there would be no adverse effects on air quality.

##### **Action Alternative**

Under the Action Alternative, there would be no long term impact to local air quality, since no new sources of air pollution would be created. There is a potential for direct, short-term fugitive dust generation from construction activities, which could have a temporary adverse effect on the air quality in the Project Area. The fugitive dust could be generated by excavation activities and the movement of construction equipment on unpaved roads. Best Management Practices (described in detail in Chapter 4) to minimize fugitive dust will be implemented (i.e. watering for dust control). Impacts due to construction activities would be temporary and would cease once the project was completed.

#### **3.3.2. Water Resources**

##### **No Action Alternative**

Under the No Action Alternative, water from the Lone Pine Canal would continue to seep into the soil and carry salt loads to the Colorado River Basin. MVIC would continue operation and maintenance activities to maintain water delivery. Operation and maintenance activities would have no effect on reducing salinity. The continued salinity loading of the Colorado River Basin would have detrimental impacts to water resources in the Colorado River and could prevent the U.S. from being able to satisfy the conditions established under the 1944 IWBC Treaty. Increased salinity also decreases the ability of water resources to serve as suitable habitat for aquatic species, including federally listed Colorado River fish species.

##### **Action Alternative**

The Action Alternative would reduce seepage from the Lone Pine Canal and would improve the efficiency of the irrigation system.

#### **3.3.3. Water Quality**

##### **No Action Alternative**

Under the No Action Alternative, the Colorado River Basin would continue to receive concentrated salt loads from deep percolation return flows and seepage from the Lone Pine Canal. MVIC would continue operation and maintenance activities to maintain water delivery. Operation and maintenance activities would have no effect on reducing salinity or improving

water quality in the basin. There would be long term minor to moderate adverse impacts to the water quality of the Colorado River Basin under the No Action Alternative.

#### **Action Alternative**

The Action Alternative would reduce seepage from the Lone Pine Canal. By eliminating this seepage, approximately 953 tons of salt would be prevented from reaching the Colorado River annually. This would result in minor long term reduced salinity in the Colorado River, which would improve the long term water quality.

### **3.3.4. Upland Vegetation Resources**

#### **No Action Alternative**

Under the No Action Alternative, routine maintenance and operations of the ditch would have minor impacts to the upland vegetation in the Project Area. Minor impacts would come from the clearing of vegetation and the use of maintenance vehicles in the Project Area. These communities would likely remain in their general current condition, and are not anticipated to experience sizeable gains or losses from canal maintenance activities.

#### **Action Alternative**

Under the Action Alternative, much of the area disturbed by construction activities will be in upland and agricultural areas. Most of the areas where construction would take place are already altered from their natural states. Construction would occur outside the growing season, between October and May, and would occur within a 100-foot wide construction easement. Upland areas would experience short term vegetation losses. Brush and grasses would be impacted during the duration of construction. This would be caused by construction equipment, excavation, and staging of materials. All areas disturbed by construction activities would be recontoured. Upon completion of recontouring, relatively small/*de minimis* amount of acres native habitat would be permanently lost. Upland vegetation communities would likely be reestablished, and some previously disturbed areas may see an increase in native species compositions after reseeding. Areas that are disturbed may be more vulnerable to non-native species and noxious weed infestation. These non-native species typically recover more quickly than native species after a disturbance. To minimize impact to native vegetation, previously disturbed areas would be used during construction, where possible. Agricultural areas would be re-seeded with a seed mix indicative of agricultural cover as per landowner specifications.

Best Management Practices (described in Chapter 4) would be followed to reduce impacts, including placing staging areas and material sources outside of sensitive areas. Construction materials and equipment would be washed to remove dirt and weed seeds, and reduce the possibility of infestation. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive species.

### **3.3.5. Wetlands and Riparian Resources**

#### **No Action Alternative**

Riparian habitat would remain in its current condition, experiencing minor increases and decreases in quantity and quality varying with naturally occurring precipitation patterns. These areas would likely see an increase in the composition and infestation of noxious and non-native species due to their ability to thrive in disturbed areas. Though periodically removed within the ditch during maintenance, these plant species would likely increase their dominance within the Project Area resulting in degradation of habitat quality.

#### **Action Alternative**

The Action Alternative would permanently impact approximately 1.3 acres of wetlands within the Project Area. According to the USACE Colorado Regulatory Office, the replacement of the open channel irrigation canal with a pipe is considered an irrigation exemption under RGL No. 07-02 Exemption for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches under Section 404 of the Clean Water Act (Appendix D, USACE Letter). Under this exemption, no Nationwide Wetland Permit is required. Section 3.36 discusses wetland areas that serve as habitat that will be replaced under the Habitat Replacement Plan (HRP) (see Appendix E, Habitat Replacement Plan).

In addition to wetland areas, riparian habitat would also be impacted by the Action Alternative. The piping will result in a total loss of ditch-induced riparian habitat (This loss of riparian habitat is discussed in Appendix E, Habitat Replacement Plan). These areas may see increases in non-native species, including tamarisk and Russian olive. These two species may be able to out-compete native species for limited water supplies when irrigation flows cease.

To minimize impact to native riparian vegetation, previously disturbed areas would be used during construction, where possible. Best Management Practices would be followed to reduce construction impacts (Chapter 4). Construction materials and equipment would be washed to remove dirt and weed seeds and reduce the possibility of infestation. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive riparian species.

The Narraguinnep Reservoir has been selected as the site for the Habitat Replacement Plan (HRP) mitigation. The Narraguinnep Reservoir is part of the Colorado State Wildlife Area system. This reservoir is used primarily for fishing. Under the HRP, approximately 13 acres of the reservoir's existing northern beach will be graded and converted to wetland habitat. This area will be impacted in the short term as the existing upland vegetation is converted to wetland habitat. Once established, the new wetland habitat is intended to provide long term positive impacts for a wide variety of species including migratory birds. For further details about the HRP see Appendix E, Habitat Replacement Plan.

### **3.3.6. Fish and Wildlife Resources**

#### **No Action Alternative**

Under the No Action Alternative, terrestrial wildlife and habitat would remain in their current condition. Normal canal maintenance and operation activities would continue to temporarily



disturb wildlife and habitat in the Project Area. Salinity loading of the Colorado River drainage would continue at current rates, which may affect water quality within the drainage, and thereby may impact the wildlife using the area.

### **Action Alternative**

The upland wildlife habitat impacted by the Action Alternative would likely result in minor impacts to all wildlife species present in the Project Area. There would be some upland habitat, approximately 70 acres, temporarily disturbed due to pipeline construction, but similar habitat is available in surrounding areas. Additionally, the area will be recontoured, replanted, and reseeded. Best Management Practices would be followed to minimize impacts (described in Chapter 4). After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of weedy species. This would include seeding mixtures of desirable native and agricultural species. During the construction period or when maintenance of the pipeline is necessary, there could be an impact of short term displacement of animals who would normally occupy the immediate Project Area (for approximately three to six months during construction of the pipeline). All construction activities would occur within a 100-foot wide area along the Proposed Alignment. Generally, animals would move and find alternative areas for forage and cover during construction, and may return after construction and maintenance operations have been completed.

Impacts to small mammals, especially burrowing animals, could include direct mortality and displacement during construction activities. Most small mammal species would likely experience reduced populations in direct proportion to the amount of disturbed habitat. These species and habitats are relatively common in the area, so the loss would be minor. Impacts to big game would include short term disturbance and displacement during the construction period. It is anticipated, due to the minor amount of habitat disturbance, that minor to no impact to wintering big game populations would occur. Impacts to raptors and other avian species would include minor short term disturbance and displacement, with no long term impacts.

Those species, including avian and amphibian species, which are dependent on wetland and riparian habitats would experience a long term loss of habitat (greater than five years). The total habitat value that would be lost long term would be replaced through the HRP. Under the HRP, wildlife habitat lost due to the Action Alternative would be replaced at 1 to 1 ratio, except where indicated for federally listed species in which case habitat would be replaced at 2 to 1 ratio (Appendix E, Habitat Replacement Plan). The HRP would be completed within a year of final construction of the Action Alternative. The Action Alternative would result in a decrease in the salinity loading of the Colorado River Basin which would increase water quality and potentially benefit fish within the Colorado River System.

The Narraquinnep Reservoir has been selected as the site for the HRP mitigation. Under the HRP, approximately 13 acres of the reservoir's existing northern beach will be graded and converted to wetland habitat. This area will be impacted in the short term as the existing upland vegetation is converted to wetland habitat. Once established, the new wetland habitat is intended to provide long term positive impacts for a wide variety of species including migratory birds.

### **3.3.7. Special Status Species**

#### **3.3.7.1. Federally Listed Species**

##### **No Action Alternative**

Any impacts to federally listed species and their habitat from the salt loading would be the same as occurred historically. There would continue to be minor direct or indirect impacts to threatened, endangered, or candidate species. Salinity loading of the Colorado River would continue at current rates, due to seepage from the Lone Pine Canal, which may affect water quality within the drainage and thereby indirectly impact species such as the federally listed Colorado River fish.

##### **Action Alternative**

There have been no documented occurrences of any federally threatened, endangered or candidate species within the Project Area, as detailed in Section 3.2.7.1. The biological survey indicated that the Project Area contains land which may serve as habitat for the southwestern willow flycatcher. The Project Area is within the Upper Colorado Recovery Unit (USFWS 2002). While no nests or individuals were observed during site surveys, the area contains two dense riparian habitats that may provide nesting areas for the flycatcher. Pre-construction surveys must be performed for any construction activity occurring during the breeding season between May and August 15. A HRP will be implemented through consultation with the USFWS. Under the HRP, potential southwestern willow flycatcher habitat will be replaced at a 2 to 1 ratio. The HRP plan will be implemented within a year of the completion of the Action Alternative.

The San Juan River Recovery Implementation Program (SJRIP) was established to recover population of the endangered razorback sucker and Colorado pikeminnow. As part of the SJRIP, Section 7 consultation is required for any action that may impact the hydrology of the San Juan River (SJRIP, 2009). The Action Alternative is not intended to change irrigation practices or water levels in the Lone Pine Canal and the Lone Pine Canal does not connect directly to the San Juan River through surface channels or waterways. The Action Alternative is not anticipated to impact the hydrology of the San Juan River. There will be no significant changes existing hydrology.

Construction activities would not take place in the immediate proximity of any natural stream. Seepage from the Lone Pine Canal connects subterraneously to the Colorado River Basin. As a result, no impact to endangered fish species within the Colorado River would result from sedimentation entering the Lone Pine Canal during construction activities. The Action Alternative would result in a long term decrease in salinity, which would increase water quality in the Colorado River and may benefit sensitive fish species.

The Fish and Wildlife Service (2009) concluded that the Colorado pikeminnow, razorback sucker, and New Mexico meadow jumping mouse “may be affected, but not likely adversely affected.” Salinity and possibly selenium reduction may benefit the fish and there potentially could be minor insignificant effect on jumping mouse habitat.

#### **3.3.7.2. Migratory Birds**

##### **No Action Alternative**

Regular maintenance and operations of the Lone Pine Canal will continue to cause minor indirect impacts to migratory birds in the Project Area. Maintenance activities are likely to result

in a temporary disturbance of potential habitat, and birds may avoid the area due to the presence of humans, maintenance vehicles, and the associated noise.

#### **Action Alternative**

Under the Action Alternative a temporary disturbance to the entire canal buffer, approximately 70 acres in total is anticipated. Not all the habitat disturbed by the Action Alternative (70 acres) is suitable migratory bird habitat. Direct impacts to migratory birds would include avoidance of the area by birds during construction and operation, due to increased human presence, vehicles and associated noise. The cumulative impact of the Action Alternative on migratory birds will be low to moderate, based on the quality of the habitat, the acreage of vegetation removal necessary for construction, and the availability of adjacent habitats throughout Montezuma County. Direct impacts are more likely if construction occurs during the breeding season.

The biological survey noted that an active red-tailed hawk nest occurs in the southern portion of the Project Area. Due to the presence of the red-tailed hawk nest, WCAO protocol requires pre-construction surveys if revegetation activities are planned from April 1 to August 15. The surveys must be completed at least 10 days prior to the start of construction, to verify the presence of nesting birds. If no nesting raptors are observed during the surveys, construction may proceed with no restrictions. If nesting raptors are observed, construction must stop until all signs of nest use have stopped for the year.

### **3.3.7.3. Bald and Golden Eagles**

#### **No Action Alternative**

Regular maintenance and operations of the Lone Pine Canal will continue to cause minor indirect impacts to any bald and golden eagles within the Project Area. Maintenance activities are likely to result in a temporary disturbance of potential habitat, and birds may avoid the area due to the presence of humans, maintenance vehicles, and the associated noise.

#### **Action Alternative**

The Project Area is located within bald eagle winter range as designated by the Colorado Division of Wildlife (CDOW). Bald eagle winter concentrations occur less than 0.5-mile from the Project Area and known roost sites are located 2.8 miles to the east of the Project Area. Additionally, two active bald eagle nests are located within 5 miles of the Project Area, and the closest is approximately 1.18 miles to the east of the project. There is potential for incidental foraging for small prey or carrion in the Project Area. Direct impacts of the project may include avoidance of the area by birds during project construction due to increased human presence, equipment, and associated noise. WCAO protocol requires that if preconstruction surveys if eagles are present within .25-mile radius of construction activities.

### **3.3.8. Cultural and Paleontological Resources**

#### **3.3.8.1. Cultural Resources**

#### **No Action Alternative**

Under the No Action Alternative, there would be no adverse affects to cultural or paleontological resources.

#### **Action Alternative**

The Action Alternative will directly impact site 5MT5181.3 the Lone Pine Lateral. Since avoidance of the resource is not feasible, the Action Alternative will result in an Adverse Effect

to the resource. To mitigate the Adverse Effect, the resource must be documented cartographically using GPS and GIS and a set of archival quality photographs of representative sections of the ditch must be taken. These photographs must meet the Colorado Office of Archaeology and Historic Preservation Level II documentation standards. A comprehensive research document will be written on the cultural site (Appendix F, Cultural MOA).

The Action Alternative will not impact any of the other ten eligible properties in the Project Area. Due to the proximity of the Action Alternative to resource sites 5MT09131, 5MT19469, and 5MT19470 a fence would need to be built around each resource and monitoring would need to be in place for the duration of construction activities.

If the proposed alignment is altered prior to construction, an additional cultural resource survey will need to be conducted to determine if any of the documented cultural resource sites would be impacted by the new alignment. Adaptive Management Practices will be used to address potential changes in project alignment or the location of project staging areas.

### **3.3.8.2. Paleontological Resources**

#### **No Action Alternative**

Under the No Action Alternative, there would be no adverse effects to paleontological resources within the Project Area.

#### **Action Alternative**

There are no known paleontological resources in the Project Area. Under the Action Alternative, there would be ground-disturbing activities which have the potential to disturb subsurface fossil material. If there are inadvertent discoveries of fossil remains during construction, work in that area would cease, and the Bureau of Reclamation, WCAO archaeologist would be notified immediately. The archaeologist would notify the landowner and the Colorado Office of Archaeology and Historical Preservation at that time, and the resource would be avoided, protected, or mitigated. If there are no subsurface discoveries, there would be no effect to paleontological resources from the Action Alternative.

### **3.3.9. Soil, Erosion and Sedimentation**

#### **No Action Alternative**

Under the No Action Alternative, there would be no changes to soil erosion and sedimentation in the Project Area. Soil erosion from water and wind would continue in the area at the current rate.

#### **Action Alternative**

Under the Action Alternative, soil would be excavated and then replaced, compacted, and re-graded during construction. In the short term period immediately following construction, erosion and sedimentation would increase due to the loss of vegetation at the construction site. The proposed pipeline alignment would be reseeded, and over the long term, the soil would return to a pre-project condition, once vegetation is re-established.

### **3.3.10. Indian Trust Assets**

#### **No Action Alternative**

The No Action Alternative would have no impact on ITAs.

**Action Alternative**

Since there are no ITAs within the project vicinity, implementation of the Action Alternative would have no effect on ITAs.

**3.3.11. Environmental Justice**

**No Action Alternative**

The No Action Alternative would have no impact to Environmental Justice populations.

**Action Alternative**

The Project Area lies on privately owned land in Montezuma County, Colorado. The Action Alternative would not involve relocations, health hazards, property takings, the creation of hazardous waste, or economic impacts to any population. The Action Alternative would therefore have no adverse effects that would disproportionately affect minority and low-income populations.

**3.3.12. Public Health, Safety, Access, and Transportation**

**No Action Alternative**

Under the No Action Alternative, there would be no adverse effects to public health, safety, access or transportation resources.

**Action Alternative**

Under the Action Alternative, there would be no impacts to public health or safety. Access and transportation resources would be temporarily disrupted during construction. The Action Alternative would not impact any U.S. or State Highways. The Action Alternative would require the temporary closure of approximately six local roads (County Roads 20, 21, 22, M, N and P). Only one road would be closed at a time for 1 to 3 days to construct pipe crossings and to reconstruct the roads as necessary. Traffic in the area is minimal, alternative routes are plentiful, and detours are expected to be kept to the minimum amount of time necessary to construct the facilities. All temporary road closures will be coordinated with local law enforcement and emergency services. The public will also be notified of road closures and detour routes.

**3.3.13. Visual Resources**

**No Action Alternative**

There would be no impact to visual resources under the No Action Alternative.

**Action Alternative**

Under the Action Alternative there would be no long term impacts to visual resources. Construction activities would temporarily disturb vegetation. The Project Area will be revegetated and returned to pre-construction contours to the greatest extent possible.

### **3.3.14. Hazardous Materials**

#### **No Action Alternative**

The No Action Alternative would not increase hazardous materials in the Project Area.

#### **Action Alternative**

There would be no increase of hazardous waste material due to the Action Alternative. During construction the use, storage, and disposal of hazardous materials and wastes on site will be managed in accordance with Federal, State, and local standards (described in Chapter 4).

### **3.3.15. Noise**

#### **No Action Alternative**

The No Action Alternative would have no impact to noise in the Project Area. Regular maintenance and operation activities on the Lone Pine Canal may temporarily increase noise in the area.

#### **Action Alternative**

There would be no long term impacts to noise from the Action Alternative. Construction activities will lead to minor temporary increases in noise in the Project Area. Increases in noise are likely to be generated from the use of construction vehicles. Best Management Practices would be followed to mitigate the impacts of increased noise to adjacent residents (detailed in Chapter 4).

### **3.3.16. Climate Change**

While there has been little research done on how climate change is impacting the San Juan River Basin specifically, research on impacts of climate change on the Colorado River Basin predicate some anticipated changes to the general area. Predicted changes include: earlier, warmer springs; drier, warmer summers; an increase in spring runoff; a decrease in summer runoffs; an increase in evaporation; and an increase in irrigation demand.

These changes could reduce the available water supply and impact the ability of MVIC to meet water rights in the Project Area. The Action Alternative would greatly reduce the amount of water lost through the existing open channel canal.

### **3.3.17. Related Actions and Cumulative Impacts**

NEPA regulations require the consideration of the relationship of the Action Alternative and its impacts to other projects and activities in the area. The relationship between projects and activities may be direct, indirect, or cumulative. Related actions are those actions which, when

viewed with other proposed actions, have similarities to the proposed action that provide a basis of evaluation together, such as similar timing, or location. Connected actions are those actions that are interrelated with the proposed action. While cumulative actions are those actions, which, when viewed with other proposed actions, have cumulatively significant impacts.

At this time there are no known federal, state or local projects occurring in the Project Area or vicinity. The Action Alternative will comply with all relevant federal, state, and local permits (detailed in Chapter 4). The proposed area and duration of disturbance under the Action Alternative are small and short term and long term impacts are not expected to raise cumulative impacts to a significant level.

### 3.4 Summary of Environmental Consequences

**Table 3.3 Summary of Environmental Consequences**

| Resource Issue                         | Alternatives   |   |
|--|--|---|
|  | No Action  | Action  |
| <b>Air Quality</b>                     | No Effect  | Minor short term effects due to fugitive dust and equipment exhaust from construction activity. Mitigate with Best Management Practices (BMP).  |
| <b>Water Resources</b>                 | Continued salt loading of the Colorado River Basin. Long term minor to moderate impacts.           | Reduced seepage from the Lone Pine Canal, thereby improving the efficiency of the irrigation system.  |
| <b>Water Quality</b>                   | Continued salt loading of the Colorado River Basin will cause long term minor to moderate impacts. | The Action Alternative would eliminate approximately 953 tons of salt from entering the Colorado River Basin annually; thereby reducing the salinity and improving water quality. There would be long term benefits to water quality from the decreased salinity.   |
| <b>Upland Vegetation Resources</b>     | Minor impacts from continued maintenance and operation activities on the Lone Pine Canal.          | Short term upland vegetation loss, with the potential for an increase in invasive plants (see Appendix E, Habitat Replacement Plan). BMPs will be employed to decrease the likelihood of the spread of invasive species.  |
| <b>Wetlands and Riparian Resources</b> | Minor impacts from continued maintenance and operation activities on the Lone Pine Canal.          | Permanent loss of riparian areas along lateral channels (see Appendix E, Habitat Replacement Plan). No USACE NWP because of the agricultural exemption.   |
| <b>Fish and Wildlife Resources</b>     | Minor direct and indirect impacts may occur due to continued salt loading.                         | Minor short term disturbance and displacement during construction. Downstream habitat may be improved as a result of long term increased water quality. There will be permanent loss of riparian areas along the channel once the Lone Pine Canal is piped. A HRP will be put in place to mitigate for the loss of the habitat. |



| Resource Issue  | Alternatives   |   |
|---|--|---|
|   | No Action  | Action  |
| <b>Special Status Species- Federally Listed Threatened, Endangered, and Candidate Species</b> | Minor direct and indirect impacts may occur due to continued salt loading. | Potential loss of habitat for southwestern willow flycatcher. Mitigate with HRP. Habitat will be replaced at 2 to 1 ratio (see Appendix E, Habitat Replacement Plan). Preconstruction surveys required for construction activities occurring between April 1 and August 15. |
| <b>Special Status Species – Migratory Birds</b>   | No Effect  | Preconstruction surveys required for areas within a 0.5-mile radius of known nest sites and 0.25-mile of all devegetation activities occurring between April 1 and August 15.   |
| <b>Special Status Species – Bald &amp; Golden Eagles</b>                                      | No Effect  | No Effect   |
| <b>Cultural &amp; Paleontological Resources</b>   | No Effect  | Adverse Effect to 5MT5181.3. (Lone Pine Canal Lateral) mitigate per MOA with the Colorado SHPO. Construction monitoring and fencing of sites 5MT09131, 5MT19469 and 5MT19470.   |
| <b>Soil, Erosion and Sedimentation</b>  | No Effect  | No Effect   |
| <b>Indian Trust Assets</b>  | No Effect  | No Effect   |
| <b>Environmental Justice</b>  | No Effect  | No Effect   |
| <b>Public Health, Safety, Access &amp; Transportation</b>                                     | No Effect  | Temporary closure of six county roads and detours during the construction of road crossings.  |
| <b>Wild &amp; Scenic Rivers</b>   | No Effect  | No Effect   |
| <b>Visual Resources</b>   | No Effect  | Minor, short term temporary impacts to vegetation in the Project Area.  |
| <b>Hazardous Materials</b>  | No Effect  | No Effect. Best Management Practices during construction to prevent contamination.  |

| <b>Resource Issue</b>     | <b>Alternatives</b>   |   |
|---------------------------|---|---|
|                           | <b>No Action</b>  | <b>Action</b>   |
| <b>Climate Change</b>     | No Effect   | Improved water efficiency may offset minor amounts of water that may be lost due to climate change. |
| <b>Cumulative Impacts</b> | Continued salt load of Colorado River Basin would result in long term cumulative impacts to water quality in the U.S. and Mexico. | No Effect   |

## Chapter 4: Environmental Commitments and Mitigation Measures

This chapter discusses the environmental commitments and related mitigation that have been made by Reclamation during the development and analysis of the Action Alternative. The commitments, as described below would be implemented by MVIC as agreed in the cooperative agreement with Reclamation. The cooperative agreement includes the requirements that MVIC be responsible for "...implementing and/or complying with the environmental commitments contained in the NEPA/ESA compliance documents

The Action Alternative was selected, in part, because it minimizes potential impacts to resources. The Action Alternative would comply with all federal, state, and local laws, ordinances, regulations, and standards for construction and operations (Best Management Practices). The following environmental commitments would be implemented as an integral part of the Action Alternative for the Lone Pine Salinity Control Project.

- 1. Standard Reclamation Management Practices** – Standard reclamation construction management practices would be applied during construction activities to minimize environmental effects and would be implemented by construction personnel or included in contract specifications. If the Action Alternative alignment or the construction staging areas are moved outside of the potential area of effect evaluated in this environmental assessment additional environmental analyses including cultural and biological surveys would be undertaken as necessary.
- 2. Construction Activities Confined to the Surveyed Corridor** – All construction activities would be confined to the one hundred foot wide surveyed corridor and adjacent construction area locations that have been surveyed for cultural and biological resources.
- 3. Disturbed Areas** – During construction topsoil would be saved and then redistributed after completion of construction activities. Subsequently, disturbed areas resulting from the project would be smoothed, shaped, contoured and reseeded to as near their pre-project condition as practicable. Seeding and planting would occur at appropriate times with weed-free seed mixes as per landowners' specifications. The composition of seed mixes would be coordinated with a wildlife habitat specialist and property owners.
- 4. Air Quality** – MVIC would implement measures to control fugitive dust during construction activities. MVIC would be required to follow the EPA's recommended control methods for aggregate storage pile emissions to minimize dust generation, including periodic watering of equipment, staging areas, and dirt/gravel roads. All loads that have the potential of leaving the bed of the truck during transportation would be covered or watered to prevent the generation of fugitive dust. Chemical stabilization would not be allowed. Construction machinery and operation/maintenance vehicles would be routinely maintained to ensure that engines remain tuned and emission-control equipment is properly functioning as required by law. MVIC would comply with all Colorado State air quality regulations.
- 5. Water Resources and Water Quality** –MVIC would follow BMPs to prevent suspended sediment loading and to provide sediment control structures. If required, the contractor would obtain permits. All conditions of permitting requirements would be strictly adhered to by the contractor. "Saved water" resulting from the more efficient system would not be used to develop new irrigation lands.

**6. Vegetation Resources** – MVIC would ensure that ground disturbance was limited to the smallest feasible areas and that they implement BMPs to reduce disturbance to the vegetation resources in the Project Area. BMPs would include planting or reseeding disturbed areas, as per landowners' specifications; monitor planting to ensure establishment; control noxious weeds in disturbed areas; and the use of accepted erosion control measures during construction.

**7. Fish and Wildlife Resources** – MVIC would ensure that construction activities are confined to the smallest feasible area to limit disturbance to wildlife within the Project Area. BMPs including noise reduction measures, recontouring and reseeding of the disturbed areas. A plan to replace wildlife value foregone would be finalized and approved by Reclamation following coordination with the USFWS and Colorado Division of Wildlife Resources. A HRP would be developed prior to groundbreaking. The HRP would be implemented by MVIC within one year of the completion of construction activities. The HRP success will be monitored two times per year and evaluated within five years of the plan's implementation.

**8. Special Status Species** – MVIC would ensure that BMPs are employed for all construction activities to minimize the disturbance to any special status species within the Project Area. BMPs include confining construction activities to the smallest feasible area and reseeding disturbed areas. If the proposed alignment is altered prior to construction, an additional biological resource survey will need to be conducted to determine if there are impacts to documented biological resources.

**8.1. Federally Listed Species** –MVIC would implement conservation measures to address potential impacts to the southwestern willow flycatcher. MVIC would ensure that no construction occurs during the southwestern willow flycatchers breeding season (May 1 through August 15). If construction activities must occur during this timeframe preconstruction surveys would be performed following USFWS protocol to determine the presence/absence of the southwestern willow flycatchers. The preconstruction surveys would be performed by a certified biologist at least ten days prior to construction. Reclamation would coordinate the results of these surveys with USFWS to determine any additional mitigation measures.

Reclamation and MVIC would establish a HRP through consultation with the Fish and Wildlife Service prior to construction. The HRP would replace any potential southwestern willow flycatcher habitat at a 2 to 1 ratio. The requirements set forth in the HRP would be implemented by MVIC within one year of the completed construction.

All construction activities should be performed between August 16 and March 15 to avoid disruptions to the red-tailed hawk breeding season (March 16 - July 1) and the southwestern willow flycatcher breeding season (May –August 15) in appropriate areas. If construction occurs during the southwestern willow flycatcher's breeding season, Fish and Wildlife Service protocol surveys to determine the presence/absence of southwestern willow flycatchers would be conducted by a certified biologist. If construction occurs during the red-tailed hawk breeding season pre-construction nesting surveys would be required.

**8.2. Migratory Birds** – Preconstruction nesting surveys for .25-mile radius are required by MVIC for all devegetation construction activities occurring between April 1 and August 15. Preconstruction surveys are necessary at least 10 days prior to construction to verify the presence of birds. The preconstruction surveys would be performed by a certified biologist at least ten days prior to construction.

## **9. Cultural/Paleontological Resources –**

**9.1 Cultural Resources** – Prior to construction, a MOA between Reclamation, MVIC and the Colorado Office of Archaeology and Historic Preservation for Adverse Effect to Site

5MT5181.3 will be completed and implemented. The MOA has been drafted and Reclamation is waiting for concurrence from the Colorado Office of Archaeology and Historic Preservation. To mitigate the Adverse Effect, the resource must be documented cartographically using GPS and GIS and a set of archival quality photographs of representative sections of the ditch must be taken. These photographs must meet the Colorado Office of Archaeology and Historic Preservation Level II documentation standards. A comprehensive research document will be written for the resource.

MVIC would ensure that due to the proximity of the Action Alternative to resource sites 5MT09131, 5MT19469, and 5MT19470 a fence would need to be built around each resource and monitoring would need to take place during construction.

Construction personnel would be trained in proper procedures in the event of an inadvertent discovery of cultural resources. Anyone who has inadvertently discovered possible cultural artifacts must stop work immediately and contact the Bureau of Reclamation WCAO's archaeologist. Work would stop until the proper authorities were able to assess the discovery. A "Quick Reference" card provided by MVIC explaining the required procedures would be provided by Reclamation to construction workers prior to the start of construction. Instructions for proper procedures in case of an inadvertent discovery would be placed in all construction vehicles.

If the proposed alignment or construction staging areas is altered prior to construction, an additional cultural resource survey will need to be conducted to determine if any of the documented cultural resource sites would be impacted by the new alignment.

**9.2 Paleontological Resources** – In the event of the discovery of paleontological resources during construction, Reclamation would evaluate the significance of the find before construction activities could proceed. Construction personnel would be trained in proper procedures in the event of an inadvertent discovery. Anyone who has inadvertently discovered a possible paleontological resource must stop work immediately and contact the Bureau of Reclamation WCAO's archaeologist. Work would stop until the proper authorities were able to assess the discovery. A "Quick Reference" card provided by MVIC explaining the required procedures would be provided by Reclamation to construction workers prior to the start of construction. Instructions for proper procedures in case of an inadvertent discovery would be placed in all construction vehicles.

**10. Soil Sedimentation and Erosion** – MVIC would use and implement measures contained in Reclamation's erosion control guidelines and BMPs to control soil erosion. BMPs will include using water trucks to minimize wind erosion and control dust during construction activities; construction of temporary or permanent sedimentation basins as needed; and selectively remove, stockpile, and replace top soil as a surface medium for revegetation.

**11. Public Health, Safety, Access and Transportation** – MVIC would ensure that all required state, county, and local permits would be acquired prior to construction activities along County Roads 20, 21, 22, M, N, and P. All temporary road and access closures will be coordinated with local law enforcement and emergency services. The public will also be notified of any road closures and detours.

**12. Hazardous Materials** – MVIC would require that during construction the use, storage, and disposal of hazardous waste materials and wastes on-site will be managed in accordance with federal, state, and local standards.

## Chapter 5: Consultation and Coordination

### 5.1 Introduction

Reclamation's public involvement process presents the public with opportunities to obtain information about a given project and allows all interested parties to participate in the project through written comments. The key objective is to create and maintain a well-informed, active public that assists decision makers throughout the process, culminating in the implementation of an alternative.

The Lone Pine Canal Salinity Control Project was developed over many years as a means to addressing the guidelines in the Colorado River Basin Salinity Control Program and to improve the efficiency of the canal. Conceptual plans for the project were developed by the MVIC Water Board. In May 2008, MVIC prepared and submitted a formal funding application for the basin wide salinity funds through Reclamation's Funding Opportunity Announcement (FOA) 08-SF-40-2742. After failing to receive funds in 2008, MVIC applied for funds in May 2009 as part of Reclamation's funds from the American Recovery and Reinvestment Act (ARRA).

### 5.2 Public Involvement

Through this project's conception and funding application process, MVIC representatives have met with all of the property owners along the length of the Lone Pine Canal project limits. The most recent meetings (home visits) with all of the property owners took place in July 2009. These meetings were held to discuss the proposed project, address any questions the property owners might have regarding the proposed project and to identify any potential issues for property owners along the canal. These discussions were used to in the preliminary engineering phase to help establish the Action Alternative. MVIC also sent letters in August 2009 detailing information about the proposed project to each property owner along the length of the Lone Pine Canal.

The Final Environmental Assessment will be posted on Reclamation's website and availability of the document for review will be advertised in the Durango Herald and the Cortez Journal. Copies of the document will be made available at the WCAO in Durango and the MVIC office in Cortez.

### 5.3 Agency Coordination

EA was prepared for the Bureau of Reclamation by MVIC, through a contract with J-U-B Engineers, Inc. Several local, federal, private, and other agencies were consulted during the preparation of this EA, including the following:

- U.S. Department of Interior, Fish and Wildlife Service, Ecological Services, Grand Junction, CO
- U.S. Army Corps of Engineers, Durango Regulatory Office
- Colorado Division of Wildlife, Southwest Region, Durango Office
- Colorado Office of Archaeology and Historic Preservation, Denver Office
- Advisory Council of Historic Preservation, Department of Interior, Washington D.C.

## Chapter 6: Preparers

The following table provides a list of the agency representatives and consultants who participated in the preparation of the Draft Environmental Assessment.

**Table 6.1: List of Preparers**

| Name                          | Title/Position   | Contributions   |
|-------------------------------|--|---|
| <b>Agency Representatives</b> |  |   |
| Michael Francis               | Biologist, US Bureau of Reclamation, Western Colorado Area Office                | Lead Agency Representative  |
| Robert Waldman                | Environmental Specialist, US Bureau of Reclamation, Western Colorado Area Office | NEPA Oversight  |
| Joe Tuomey                    | Archaeologist, US Bureau of Reclamation, Western Colorado Area Office            | Cultural and Paleontological Resource Oversight   |
| <b>Consultants</b>            |  |   |
| Brian Smith, PE               | Engineer, J-U-B, Engineers, Inc.   | Project Manager   |
| Alex Beseris                  | Environmental Manager, J-U-B, Engineers, Inc.                                    | NEPA Oversight  |
| Marti Hoge, MA                | Environmental Planner, J-U-B Engineers, Inc.                                     | Alternative Analysis<br>Affected Environment<br>Environmental Consequences<br>Environmental Commitments |
| Daren Fluke                   | Planner, J-U-B Engineers, Inc.   | Affected Environment<br>Environmental Consequences  |
| Brian Goff                    | CAD Specialist, J-U-B Engineers, Inc.  | GIS, Graphics   |
| Andy Ashton                   | GIS Specialist, J-U-B Engineers, Inc.  | GIS, Graphics   |

**Table 6.1: List of Preparers (continued)**

| Name            | Title/Position   | Contributions  |
|-----------------|--|--|
| Sandy Friedley  | Biologist, Ecosphere Environmental Services                  | Biological Resource Survey<br>Wetland Delineation Report |
| Alexis Watts    | Biologist, Ecosphere Environmental Services                  | Biological Resource Survey<br>Wetland Delineation Report |
| Jerry Fetterman | Woods Canyon Archaeological Consultants                      | Cultural Resource Survey                                 |
| Terry Ireland   | US Fish and Wildlife Service, Grand Junction Office          | Species and Habitat Replacement Plan Consultation        |
| Kara Hellige    | Chief, Durango Regulatory Office, US Army Corps of Engineers | Wetland and Habitat Replacement Plan Consultation        |



## Chapter 7: References

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