

Luna Irrigation Ditch Improvement Project

Assessment of Potential Environmental Impacts

Background

The proposed Luna Irrigation Ditch Improvement Project is located within Luna, New Mexico, and the surrounding area. Luna is located 7 miles (mi) from the Arizona border and 21 mi from Reserve, New Mexico, on the San Francisco River and U.S. Route 180, in Catron County. The ditch begins approximately 2 mi upstream of Luna and extends through town and beyond, and includes approximately 7 mi of open ditch. Water is diverted from the San Francisco River and delivered to approximately 225 acres of irrigated cropland within the Luna Valley.

The ditch owner/operators seasonally construct a temporary diversion dam on the San Francisco River using onsite materials. Flood events frequently wash out the diversion dam, and periodically fill the existing ditch with sediments. In addition to the diversion problems, the open unlined ditches in current operation create long-term concerns with maintenance, stability on slopes, and loss of water due to infiltration, evaporation, and plant root uptake.

The current infrastructure includes an uncontrolled river diversion and ditch entrance, culverts under road crossings, unlined ditches, an approximately 1,700 feet long concrete-lined ditch section north of Highway 180 toward the upper end of the project, a regulating structure where the ditch splits into two separate ditches (the Town and the Main Ditches), several lateral ditches, and numerous outlets.

Proposed Action and Alternatives

The proposed action (PA) is to install a permanent weir and river diversion structure or subsurface infiltration gallery, install water transmission pipeline within the existing ditch, replace the regulating structure where the ditch splits into two ditches, and improve other associated infrastructure. The water transmission pipe chosen was 24 in. diameter, dual wall HDPE pipe, which would be buried an estimated 2 feet below ground level (Portage 2014). The PA also includes site preparation, trenching, stockpiling materials, backfilling, compaction, and site reclamation activities. The PA may also include removal/replacement of the existing concrete liner, or sections of it.

The no action alternative (NAA) is to leave the existing system in place.

Affected Environment

The affected environment considered for the PA and alternatives included the following resource areas and uses: land use; geologic environment/soils resource; water and ecological resources; historical and cultural resources; air quality; noise; aesthetics; and socioeconomics.

Evaluation of Impacts – Assumptions and Methods

Environmental impacts were assumed to primarily result from operations activities associated with improving/rehabilitating the system. For analysis, the PA project area was defined as the ditch/piping infrastructure and a 100-ft buffer area, which is considered conservative, on either side of the ditch/pipe. The buffer area was chosen as an approximation of where project activities (e.g., pipe removal/installation, equipment/vehicle travel, materials staging) would likely take place and where impacts would have the highest likelihood of occurring. The PA project area is shown on Figure 1.

When determining impacts, the analysts assumed that industry standard design features and best management practices (BMPs) typically associated with ditch rehabilitation/improvement work, such as storm water and sediment management, would be implemented with the chosen alternative. Other assumptions made, as needed, are noted in the impact determination discussions in the next section.

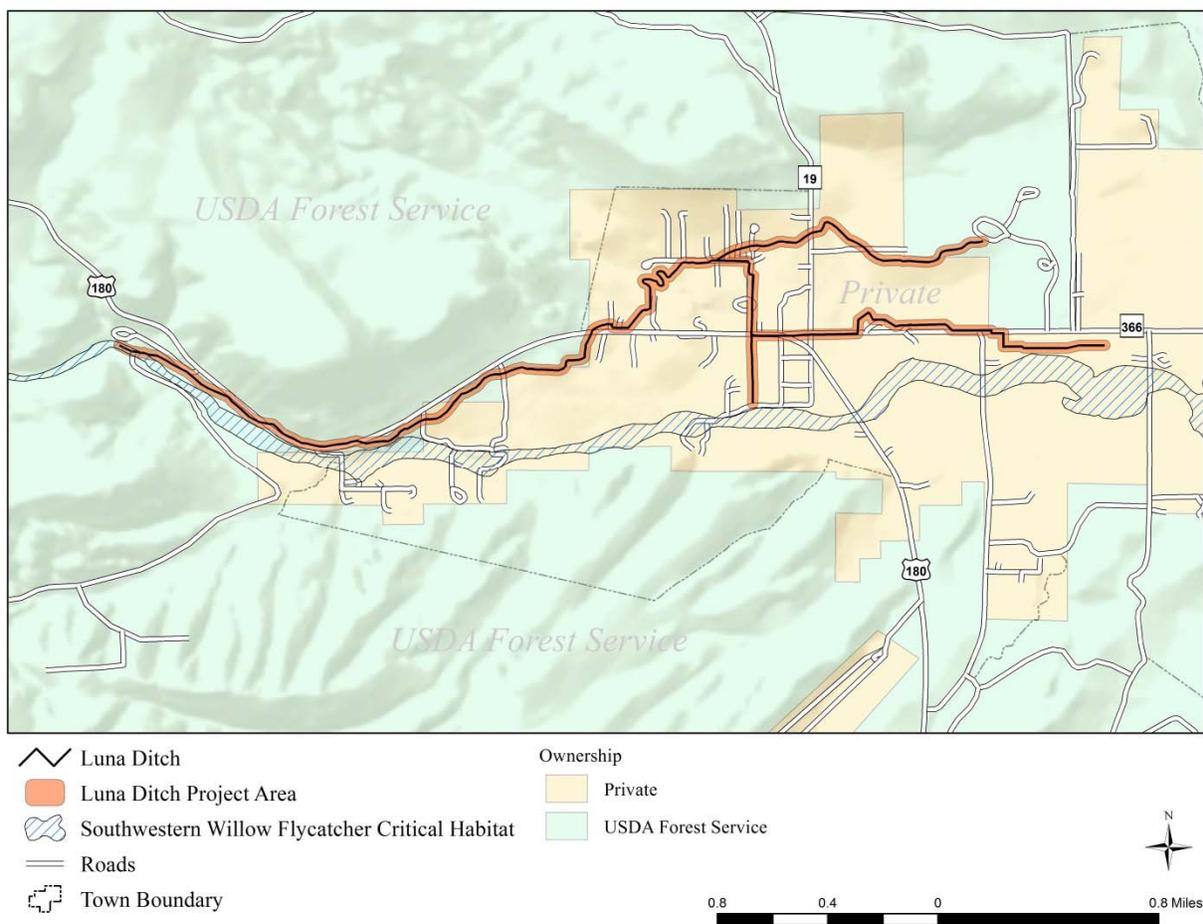


Figure 1. Luna Irrigation Ditch Improvement Project Area.

Impact Determinations

The impact determination discussions that follow include: brief descriptions of the affected resource/environment, criterion/criteria used to evaluate impacts, impact discussions for the PA and NAA, with impact determination statements for both the PA and the NAA.

Land Use

Affected Environment: The PA project area, which includes the buffer area, lies on 56 acres of Forest Service-managed public land and 116 acres of privately-owned land. Of the 56 acres, the ditch itself comprises approximately 3 acres. The project area follows the existing ditch, which passes through parts of Luna, a small rural community. Activities on the land in the project area are related to town infrastructure and small-scale, residential agriculture (ranching/farming) operations. The *Catron County Comprehensive Land Plan* (National Federal Lands Conference 2012^a), the *Catron County Capital Improvement Plan/ Comprehensive Plan* (Consensus Planning Inc. 2007), and various county ordinances guide land use and growth within the County.

Evaluation Criterion: The PA and NAA would be considered to have potentially significant impacts if implementing either would be inconsistent with land use plans and ordinances.

Impacts: After review of applicable plans and ordinances available via Catron County’s website (<http://www.catroncounty.us/files.html>), for the PA, replacing the existing ditch infrastructure with a similar system, does not require or result in property acquisition, change in ownership/management, or change how the land is currently used. Water collected by the system would continue to be conveyed to current users. If structures need to be placed, or other work performed, on public land managed by the Forest Service, approvals may be required.

Under the NAA, the ditch infrastructure would not be replaced.

Because no changes to land use are needed or being made under either alternative, and because the PA and NAA would not be inconsistent with Catron County’s land plan and ordinances, **no impacts** to land use would be anticipated under either the PA or NAA.

Geologic Environment/Soils Resource

Affected Environment: Fluventic haploborolis, mollic eutroboralfs, and aquic ustifluvents are the soil types associated with the project area (USDA 2006). Geotechnical information (complete surveying/mapping) regarding the soil, subsurface conditions, and groundwater in the collection areas is currently not known.

A satellite view of Luna shows land that may be actively used for residential farming/ranching operations (Google Maps 2014). Catron County places high value on the integrity of its soils for its residents. As an example, the *Catron County Comprehensive Land Plan*, states, “...protection of soils from wind and water erosion and maintaining its fertility is critical to sustaining a viable agricultural economy and maintaining high levels of air and water quality” (National Federal Lands Conference 2012).

Evaluation Criteria: The PA and NAA would be considered to have potentially significant impacts if either would result in changes to the geologic landscape, and/or diminish/deplete area soils, and/or be inconsistent with county values regarding its soils.

Impacts: The PA would be conducted during the irrigation off-season, when surface water and groundwater levels are low and the chance of a flood event is minimal. Under the PA, there would be excavation, displacement, and compaction of soils, and cleanout and structure placement/replacement activities, which would all generate dust within the project area. Activities involving concrete liner

^a The Catron County Comprehensive Land Plan was published in 1992. The online version shows updates to the plan up to 2012.

removal/replacement, and use of concrete for structure placement, could also generate dust. These impacts are local and temporary in nature, and reducible through application of BMPs. Historically, the area has been subject to similar activities with placement of the original system. After the infrastructure is replaced, the site would be reclaimed.

Construction of a temporary holding/dewatered area may be necessary to perform in-stream diversion-point work. When this work is completed, water flow berming/barriers would be removed. Because the San Francisco River is critical habitat for the Loach minnow (See Ecological Resources section), and because in-stream work could result in temporary sediment discharge/disruption, turbidity, and thermal changes to the water, an informal Section 7 consultation, as outlined by the USFWS, would be recommended (USFWS 2013).

Concrete liner removal/replacement activities would necessitate recycling/disposal of concrete to a local recycling facility or landfill. Dust would be generated removing, and transporting the concrete. If not recycled, concrete would be added to the local landfill inventory or otherwise placed in a construction fill if permitted by the local solid waste authority.

Overall, the soils in the area are not expected to be reduced, depleted, or significantly impacted by these activities. Replacing the ditch/pipe system and reclaiming the site is not inconsistent with county policy on soils. Because there will be minor impact to soils, primarily dust generation, during implementation of the PA, a **less-than-significant impact** determination was made for the geologic environment/soils resource.

Under the NAA, and in spite of continual maintenance, the unlined ditches are creating slope stability and water loss concerns. Flood events are periodically washing out the temporary diversion and filling the ditch with sediment, resulting in ditch maintenance, water reliability, and sediment pulse concerns.

While the current situation is not an immediate threat, it would be expected to trend toward increasingly significant changes to the existing soil and geologic landscape. At present, a **less-than-significant** impact determination was concluded for the NAA.

Water Resources

Affected Environment: The ditch system diverts water from the San Francisco River and conveys it for irrigation use. The system loses water to infiltration, evaporation, and plant root uptake. The temporary diversion dam has been providing more reliable flow/water availability to users; however, the dam must be reconstructed after flood events. Water that is lost from the ditch evaporates, is used by nearby vegetation, and also recharges ground water.

The *Catron County Comprehensive Land Plan*, and ordinances such as Ordinance 011-92, “An Ordinance Providing for the Protection of Rights to and Uses of Water,” and Ordinance 009-92, “An Ordinance Providing for Water Allocation and Riparian Management,” are examples of the county’s policies and rules concerning water rights and water allocation affecting the project area.

Evaluation Criteria: *The PA and NAA would be considered to have potentially significant impacts if either would be inconsistent with county plans or ordinances, result in impacts to uses of the water, or results in changes to water that make it unavailable for use.*

Impacts: The PA would be conducted during the irrigation off-season, when surface water and groundwater levels are low and the chance of a flood event is minimal. Under the PA, the improved ditch

system would recoup water loss. The PA would result in improved performance of the diversion system and reduce maintenance needs.

Construction of a temporary holding/dewatering pond area may be necessary to perform in-stream diversion-point work. When this work is completed, water flow berms/barriers would be removed and water flow restored. Because the San Francisco River is critical habitat for the Loach minnow (See Ecological Resources section) at the diversion point, and because in-stream work could result in temporary sediment discharge/disruption, turbidity, and thermal changes to the water, an informal Section 7 consultation, as outlined by the USFWS, would be recommended (USFWS 2013).

When in use, and by design, a subsurface infiltration gallery pulls/collects subsurface water. The volume of this pulled water is generally small when compared to the overall volume of available groundwater. If an infiltration gallery is placed/replaced, an increase in draw down of subsurface water would be expected over the current condition, as a result of improved gallery performance. However, no measureable unintended drawdown of subsurface/ground water sources is anticipated. Additionally, no measureable withdrawals/drawn downs of the San Francisco River is expected.

Implementing the PA would not result in depositing any foreign material or discharging any substance into a waterway such that land or water is degraded or made unavailable for habitat and downstream uses. Replacing the ditch system would not be inconsistent with county plans and ordinances. Thus, implementation of the PA is anticipated to result in **less-than-significant** impacts to water resources.

Under the NAA, water that has been lost from the pipe to the surrounding environment has been used by vegetation or seeped into the soils/groundwater. With reduced performance of the current system, less water has been collected, delivered and available to the users. No critical shortages have been reported. However, continued decline of the system would be expected to result in continual and increasing impacts to the water users, particularly if a ditch component completely failed in the near term. Thus, implementation of the NAA was concluded to result in **potentially significant** impacts to water resources.

Ecological Resources

Affected Environment: The Montane Conifer Forests are found west of the Rio Grande at elevations from about 7000 to 9500 feet. Ponderosa pine and Gambel oak are common, along with mountain mahogany and serviceberry. Some Douglas-fir, southwestern white pine, and white fir occur in a few areas. Blue spruce may occasionally be found in cool, moist canyons. The influence of the Sierra Madre flora is seen mostly in the southern mountains and diminishes to the north. In the far south, other oaks appear, such as silverleaf oak, netleaf oak, Arizona white oak, and Emory oak. The summer rains are especially important for herbaceous plants. The region is geologically diverse with volcanic, sedimentary, and some intrusive and crystalline rocks. Endemic Gila trout occur in some of the region's streams. Livestock grazing, logging, and recreation are the primary land uses. Wildfire is an important feature influencing the forested ecosystems in this region (Griffith et al 2006). The project area lies within a section of Montane Coniferous Forest (Dick-Peddie 1991).

The U.S. Fish and Wildlife Service's (USFWS') Information, Planning, and Conservation System (IPaC) was used to identify federally-designated threatened and endangered (T&E) flora and fauna species. No T&E flora species were identified or anticipated to be found within the project area (USFWS 2014).

Four species, the Loach minnow (*Tiaroga cobitis*), Southwestern Willow flycatcher (*Empidonax traillii extimus*), Spikedace (*Meda fulgida*), and Narrow-headed garter snake (*Thamnophis rufipunchatus*), are likely to be found within the project area (USFWS 2014). Their status and habitat requirements are shown

in Table 1. The Southwestern Willow flycatcher has designated critical habitat within a very small segment of the PA project area, as shown on Figure 1.

Evaluation Criteria: The PA and NAA would be considered to have potentially significant impacts if either would result in “take” of T&E species within federally-designated critical habitat, which includes killing, harming, harassing, pursuing, hunting, capturing, collecting or attempting to engage in any such conduct; or result in habitat reduction for T&E species.

Table 1. T&E animal species likely to be found in the project area presented in order of listing status (USFWS 2014).

Common Name	Scientific Name	Status	Habitat Requirements	Occurrence in Project Areas
Loach minnow	<i>Tiaroga cobitis</i>	Endangered	Turbulent, rocky riffles of mainstream rivers and tributaries at or less than 2,200 meters in elevations	Likely
Southwestern Willow flycatcher	<i>Empidonax traillii extimus</i>	Endangered	Dense riparian habitats with microclimatic conditions dictated by the local surroundings. Located in the US during the summer, migrates to wintering areas in Central America.	Likely
Spikedace	<i>Meda fulgida</i>	Endangered	Midwater habitats of runs and pools especially in the downstream ends of rivers	Likely
Narrow-headed garter snake	<i>Thamnophis rufipunctatus</i>	Proposed Threatened	Found near river banks or streams	Likely

Impacts: Under the PA, project activities are assumed to require a small crew of workers and a few pieces of construction equipment, over a period of a few months, depending on weather conditions. The PA would be conducted during the irrigation off-season, when surface water and groundwater levels are low.

- **Species.** PA activities at the point of diversion within the San Francisco River would occur within aquatic habitat. A dewatered area would be created to conduct the work. When work is completed, the dewatered area would be restored to its pre-existing condition. These activities could cause temporary soil, water, and vibrational disturbance within the stream in the immediate area of activities. If nearby during operations, aquatic species would likely relocate to a nearby area in the stream away from disturbance and would return to the area when disturbance ceases. PA activities do not involve any foreign material discharge to the creek.

The Southwestern Willow flycatcher, the Narrow-headed garter snake, and other terrestrial species could be present in the project area. For these areas, construction activities would generate ground vibration and noise. Fauna species and human activity have been studied extensively in the literature. An umbrella study of the topic was conducted by Whittaker and Knight (1998) who found that species will be attracted to, habituate to, or avoid an activity and that, in most cases, wildlife habituate to an activity as long as its habitat needs (e.g., food, water,

cover) are met. During operations, noise and vibration would occur during daylight hours, would be somewhat constant at low levels (e.g., idling equipment/vehicles) for longer periods and/or intermittent at more intense levels (e.g., digging, earth moving), depending on the specific activity and equipment used, and would cease at the end of each day. Terrestrial species may temporarily leave the immediate area of the noise and vibration and return to it when operations diminish or cease. They are not expected to permanently leave or abandon the area. The area's wildlife is habituated to existing rural noise of humans, farming operations, and local traffic. When the PA is completed, which is estimated to be over the course of a few months, noise levels would return to current noise and ambient background levels.

- **Habitat.** Activities to improve the ditch system require moving soil and may consequently impact native vegetation in the area immediately around ditch infrastructure. Vegetation in this area may be untouched, disturbed, or removed during the course of construction activities. When improvement activities cease, areas that require re-vegetation would be reclaimed. Until vegetation regrows, reclaimed areas may appear barren. Some vegetation impacted may be within Southwestern Willow flycatcher designated-critical habitat, as shown on Figure 1. Installing piping reduces any water that had been previously leaking from the ditch, which some vegetation species had been using. In these areas, less vegetation may recover, which may temporarily affect habitat for Southwestern Willow flycatcher. Few critical habitat areas intersect with project activities. The majority of flycatcher habitat would be unaffected and affected areas would be expected to recover in the short-term and not permanently/significantly reduced. Because flycatcher habitat may be temporarily affected, Section 7 informal consultation is advised. No aquatic habitat/aquatic vegetation, including critical habitat, is expected to be permanently reduced as a result of implementing the PA.

Under the PA, no take of T&E species is anticipated and no permanent reduction in terrestrial or aquatic habitats is expected. Because project activities occur within Loach minnow and Southwestern Willow flycatcher designated-critical habitats, an authorization from the appropriate public-land/water management agency may be required. Because noise and vibration would be generated under the PA, but would be temporary, and because vegetation may be removed in the short-term, but recover, a **less-than-significant** determination was concluded for ecological resources.

Under the NAA, because the ditch infrastructure would not be replaced, **no impacts** to ecological resources are anticipated.

Historical and Cultural Resources

Affected Environment: Section 106 of the National Historic Preservation Act (NHPA) requires government agencies to take into account the effects of their actions on historic properties. These properties are listed on the National Register of Historic Places. New Mexico's Cultural Properties Act (Sections 18-6 through 18-6-23, NMSA 1978), among other things, requires that state agencies provide the state historic preservation office (SHPO) with an opportunity to participate in planning for activities that will affect properties that are on the State Register of Cultural Properties or the National Register of Historic Places.

The Prehistoric and Historic Sites Preservation Act of 1989 (Sections 18-8-1 through 18-8-8, New Mexico Statutes Annotated 1978), among other things, prohibits the use of state funds for projects or programs that would adversely affect sites on the State or National Registers unless the state agency or local government demonstrates that there is no feasible and prudent alternative and that all possible planning has been done to minimize the harm to the register site.

The National Register shows 11 properties within Catron County; none of which are within the project area. The New Mexico Historic Preservation Division State Register of Cultural Properties shows no properties near to Luna or the project area (State of New Mexico 2012).

Luna is a historical village that was documented as settled in the 19th century; however, the town's Hough Ruin dated 700 years earlier, suggest prior inhabitants. In 1995, ten rooms were excavated by archaeologists from the Museum of New Mexico when a great kiva was discovered. After further excavation it was found this site, thought to be a Mogollon ruin, was different from other ruins. It was found to be a large, L-shaped, multi-storied ruin containing 20 to 35 rooms, and two kivas. Kivas were used for religious purposes. Although a shelter was built over the excavated ruins for their protection, it has yet to be developed, due to lack of money, into a visitor's center and historical site (Catron County 2014).

The *Catron County Comprehensive Land Plan* (National Federal Lands Conference 2012) shows the County's value of its culture and customs in its policies. As examples, "Remnants of early life forms, geological history and cultures have evolved as an important segment of a local economy and has become the signature of the local tourism trade"; "To support agriculture on private and public lands as part of our custom, culture, heritage, and as an important segment of our local economy, as well as providing for a secure national food supply"; "Many sites represent a unique culture and are closely related to early religious settlement of the area. They continue to have historical significance that are held by many residents as reverent or consecrated sites, and are the essence of their entity. These sites must remain accessible and be preserved" (National Federal Lands Conference 2012).

Evaluation Criteria: *The PA and NAA would be considered to have potentially significant impacts if either would result in violations to the NHPA or be inconsistent with Catron County's values for its culture and customs.*

Impacts: Under the PA, replacing ditch infrastructure that serves irrigation uses is consistent with the county's culture and customs. Because no national or state historic properties or religious sites are located within or near to the project area, there would be no impacts to historical and cultural resources, or subsequent violation to the NHPA. Additionally, no project activities are anticipated to affect the Hough Ruin. Under the PA, **no impacts** to historical and cultural resources would be anticipated.

Under the NAA, the ditch infrastructure would not be replaced and **no impacts** to historical and cultural resources would be anticipated.

Air Quality

Affected Environment: The U.S. Environmental Protection Agency (EPA) has established national ambient air quality standards (NAAQS) for criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, suspended particulate matter, and lead). New Mexico also has standards that are more stringent than federal standards. Both sets of standards are shown in Table 3. The EPA lists only one area in the entire state that is not in attainment with criteria pollutants: Anthony, located in Dona Ana County approximately 239 mi southeast of Luna, is in non-compliance for PM-10. *Catron County Comprehensive Land Plan* policy statements place a priority on high air quality and protection of the area's air from degradation to protect its residents' health and well-being (National Federal Lands Conference 2012).

Evaluation Criteria: *The PA and NAA would be considered to have potentially significant impacts if implementing either would result in a NAAQS non-compliance violation, or be inconsistent with Catron County's policy regarding its air quality.*

Table 2. National and New Mexico Ambient Air Quality Standards.

Air Pollutant	Measure	National AAQS	New Mexico AAQS	PSD Increment Class I
Carbon monoxide	1-hr average	35 ppm ^a	13.1 ppm	
	8-hr average	9 ppm ^a	8.7 ppm	
Nitrogen dioxide	1-hr average	100 ppb		
	24 hr		0.10 ppm	
	Annual average	53 ppb	0.05 ppm	2.5 µg/m ³
PM ₁₀	24-hr block average	150 µg/m ^{3a}	150 µg/m ³	8 µg/m ³
	Annual average		50 µg/m ³	4 µg/m ³
PM _{2.5}	24-hr block average	35 µg/m ^{3b}		
	Annual average	12 µg/m ^{3c}		
Ozone	1-hour	0.12		
	8-hr rolling average	0.075 ppm ^d		
Sulfur dioxide	1-hr average	75 ppb		2 µg/m ³
	3-hr block average	0.50 ppm		25 µg/m ³
	24-hr block average	0.14 ppm	0.10 ppm	5 µg/m ³
	Annual average	0.03 ppm	0.02 ppm	
Lead	Rolling 3-month average	0.15 µg/m ³		
Hydrogen sulfide	1 hr		0.025 ppm	

Table Notes:

- Not to be exceeded more than once per year.
- To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³.
- To attain this standard, the 3-year average of the annual arithmetic mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
- To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

General Notes:

ppb = parts per billion, ppm = parts per million

Data Sources:

40 CFR § 50, 2013, “National Primary and Secondary Ambient Air Quality Standards,” *Code of Federal Regulations*, Office of the Federal Register, June 13, 2013.

New Mexico Administrative Code 20.2.3: Title 20, Environmental Protection, Chapter 2, Air Quality (Statewide), Part 3, Ambient Air Quality Standards, December 30, 2013.

Impacts: Under the PA, activities that could affect air quality result from digging, compacting, and moving soil, all which release small particulate/dust to the atmosphere. Activities involving concrete removal/replacement, and use of concrete for structure placement could also generate dust. Construction equipment, such as small to mid-size front-end loaders, bulldozers, forklifts and electrical generators, release fuel emissions that could also affect air quality.

Implementing the PA is a short-term, temporary, small-scale construction operation that would generate dust and equipment emissions in small quantities. These impacts are reduced through implementation of BMPs. It is highly unlikely that either dust or emissions would be of sufficient quantity during operations to result in local or regional non-compliances. Most dust and emissions would be localized to the project area itself, which would include residences and businesses near to the ditch line in Luna. Dust and emission may be perceived as a nuisance; however, the amount generated would not contribute overall to air quality issues in Luna or to non-compliance in Anthony. As such, **less-than-significant** impacts to air quality are anticipated to result from implementing the PA.

Under the NAA, the ditch/piping system would not be replaced. No construction activities would be conducted, and **no impacts** to air quality would be anticipated.

Aesthetics

Affected Environment: The visual character of an area is defined in terms water, landform, vegetation, and cultural modifications. These components are characterized or perceived in terms of the design elements' form, line, color, texture, and scale. Visual components also may be described as being distinct (unique or special), average (common or not unique), or minimal (a liability) elements of the visual field and in terms of the degree to which they are visible to surrounding viewers (e.g., foreground, middle ground, and background).

The visual quality of an area is defined in terms of the visual character and the degree to which these features combine to create a landscape that has the following qualities: vividness (memorable quality), intactness (visual integrity of environment), and unity (compositional quality). An area of high visual quality usually possesses all three of these characteristics. The visual quality of an area also is defined in terms of the visual sensitivity within the view shed of the project area. Locations of visual sensitivity are defined in general terms as areas where high concentrations of people may be present or areas that are readily accessible to large numbers of people. Visual quality is negatively impacted by atmospheric particulate resulting from human activities (e.g., construction, prescribed fires) and natural events such as dust storms and lightning-caused wildfires

Clean Air Act amendments protect particulate matter and sulfur dioxide emissions into federal Class I (e.g., wilderness, large national memorial parks), Class II (e.g., national monuments, national recreation areas, national wild and scenic rivers, national wildlife refuges) and III (areas less protected than Class I and II areas). There are no protected classes within or adjacent to the project area. The nearest Class I area to Luna is the Gila Wilderness, approximately 35 mi southeast and the Mount Baldy Wilderness, approximately 40 mi west in Arizona.

Evaluation Criteria: The PA and NAA would be considered to have potentially significant impacts to aesthetics if implementing either would result in changes to/degradation of visual quality, views, and the aesthetic landscape.

Impacts: Under the PA, and as presented in the air quality and geologic environment/soils sections, it is unlikely that sufficient dust would be generated from construction activities to hinder visual quality or exceed any of the Prevention of Significant Deterioration standards in Table 2, which apply to visibility, or impact either of the two Class I wilderness areas. There may be dust that temporarily obscures localized visibility at the project site during construction activities.

The visual sensitivity associated with replacing ditch infrastructure would not be impacted, because the project area is not identified as an area of high scenic quality and not readily used by large numbers of people. Replacing an unlined/lined ditch system with a pipe that is subsequently buried, would alter a

small portion of the landscape from a casual viewer's perspective as the ditch would not continue to look like a ditch. To viewers accustomed to seeing the unlined/lined ditch as a "stream" the improvement may not be positive. To viewers who see the ditch as a manmade structure, the reclaimed land could appear more natural, particularly when the area's vegetation re-establishes.

There would be temporary minor aesthetic changes to the landscape during project activities, with the presence of laborers and equipment on site for a few days. After PA implementation, some areas around the ditch-line may appear barren until vegetation re-establishes, but these are temporary aesthetic changes. Overall, impacts to visual and aesthetic resources were concluded to be **less than significant** under the PA.

Under the NAA, the ditch/pipe system would not be replaced and visual quality and sensitivity would not be changed from the current condition. **No impacts** to aesthetic resources would result from the NAA.

Noise

Affected Environment: Noise is unwanted sound. Noise-control for aircraft and airports, interstate motor carriers and railroads, workplace activities, trucks, motorcycles, and portable air compressors, etc., is regulated through various federal and state standards and local ordinances. For environmental noise, the EPA is the agency that enforces the Noise Control Act. For occupational noise, the federal Occupational Health and Safety Administration (OSHA) is the agency that enforces noise standards for workers. Towns and municipalities have local ordinances to control residential/community noise levels. BMPs exist to reduce noise levels to workers and the environment if noise is expected to reach levels of concern.

Ambient noise sources in the project area consist of birds, insects, wildlife, wind and water. Sources that generate noise above background levels are generally associated with humans in and around the area, farming operations, and vehicular traffic on nearby roads. The project area does not lie within a noise abatement area. Wildlife and noise is discussed in the Ecological Resources section; this section addresses noise and the human environment.

Evaluation Criteria: *The PA and NAA would be considered to have potentially significant impacts if implementing either would degrade the existing noise landscape or impact workers.*

Impacts: For the PA, a few pieces of construction equipment are required to move soils and to place pipe and other infrastructure. If the concrete liner is removed, machinery would be used to break up the concrete and equipment used to load it to trucks for transport and disposal. Noise would be generated during these operations, would occur during daylight hours, would be constant at low levels (i.e., idling equipment) for longer periods and/or intermittent at higher levels depending on the specific activity and equipment used, and would cease at the end of each day. When the PA is completed, which is estimated to be over the course of a few months, noise levels would return to current noise and ambient background levels. Because the PA is a relatively small-scale operation, noise generated from implementing the PA is not anticipated to result in noise levels above background sufficient to interrupt or impact farming operations or other activities in the area. Operational noise may be perceived as a nuisance, initially and possibly intermittently during operations, but is not expected to change the existing soundscape.

New Mexico operates its own occupational safety and health program under a plan approved by the U.S. Department of Labor. This program provides safety and health protections to most private sector workers and state and local government employees within the state. Workers implementing the PA would fall under the rules and regulation of the State Plan (New Mexico Environment Department 2014), under the construction industry standard. In general, New Mexico has adopted the federal regulations for

construction workers. As such, the State Plan addresses noise protection (and other health and safety protections) for construction workers, and no impacts to workers are anticipated. Because noise would be generated under the PA, a **less-than-significant** impact determination was concluded.

For the NAA, because the ditch/pipe system would not be replaced, there would be no noise introduced to the existing landscape. **No impacts** would result from implementing the NAA.

Socioeconomics

Affected Environment: Catron County is New Mexico’s largest and most sparsely settled county, with more than half of its land area set aside in three National Forests: the Gila, Cibola, and Apache. Catron County’s economy is based on cattle ranching, lumber, tourism, and recreation (National Federal Lands Conference 2012). Indicators used to describe the affected environment for socioeconomic resources typically include population size, economic health (e.g., impacts on local housing markets), employment/unemployment, and income.

The PA project area analyzed lies on 56 acres of Forest Service-managed public land (i.e., 3 acres of ditch, 53 acres undeveloped lands and roadways) and 116 acres of privately-owned land, outside and within the unincorporated village of Luna. Census data is not available for Luna. A satellite view of Luna shows land that may be actively used for residential farming/ranching operations (Google Maps 2014). The ditch system provides water for irrigation. Making improvements to the existing ditch system is not anticipated to affect the private owner’s property value or private rights or water rights.

Evaluation Criteria: *The PA and NAA would be considered to have potentially significant impacts if implementing either could measurably change the existing socioeconomic environment.*

Impacts: Under the PA, it is estimated that a small crew of workers would conduct activities over a period of a few months. Workers may be locally based or relocate temporarily to perform the work. It is unlikely non-local workers would be permanently relocated to the area as a result of the PA. Project personnel would spend some income locally for food, housing, transportation, recreation/leisure activities during the project duration. However, the type of project (infrastructure) and short-term nature of its implementation make it unlikely to result in any significant, measureable longer-term change to the local economy, housing, employment, or personal income. Thus, the PA was determined to have **less-than-significant** impacts.

Under the NAA, diminished flow has not been reported as an immediate threat to water users, but continued decline of the diversion system would be expected to result in continual reduction of water to users.

Because implementing the NAA trends toward measurable change of the existing socioeconomic environment, a **potentially significant** determination was concluded.

Summary of Impacts and Significance

Table 4 provides a summary of the impacts identified in the analysis. For the PA, no impacts were found for land use and historical and cultural resources. Less-than-significant impacts were found for geologic environment/soils, ecological resources, water resources, air quality, aesthetics, noise, and socioeconomics. Less-than-significant impacts were generally found to be short-term, localized and directly related to project activities.

For the NAA, no impacts were found for land use, ecological resources, historical and cultural, air quality, aesthetics, and noise. Less-than-significant impacts were found for geologic environment/soils. Potentially significant impacts were found for water resources and socioeconomics. The potentially significant findings were related to trends for continual loss of water from a degraded system to farming operations that over time would be expected to increase in magnitude.

Because the proposed action is to improve a system that already exists, the PA is not anticipated to contribute additional incremental impacts (i.e., cumulative impacts) to either the environmental or human landscapes.

Table 3. Summary of impacts for the Luna Irrigation Ditch Improvement PA.

Resource Area	No Action	Proposed Action
Land Use	NI	NI
Geologic Environment/Soils	LS	LS
Water Resources	PS	LS
Ecological Resources	NI	LS
Historical and Cultural Resources	NI	NI
Air Quality	NI	LS
Aesthetics	NI	LS
Noise	NI	LS
Socioeconomics	PS	LS
NI = No impact LS = Less than significant impact PS = Potentially significant impact		

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