RECLAMATION

Managing Water in the West

Environmental Assessment

Fire Mountain Canal Salinity Reduction Piping Project

Western Colorado Area Office
Upper Colorado Region

July 2018

Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation's natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated 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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FINDING OF NO SIGNIFICANT IMPACT

United States Department of the Interior
Bureau of Reclamation
Western Colorado Area Office
Grand Junction, Colorado

Fire Mountain Canal Salinity Reduction Piping Project

Introduction

In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the Bureau of Reclamation (Reclamation) has conducted an environmental assessment (EA) for the proposed action authorizing the use of Federal funds to replace an open canal with a buried pipeline on Segment 47 of the Fire Mountain Canal, near Hotchkiss, Colorado. Reclamation is providing partial funding for the project and is the lead agency for the purpose of compliance with NEPA for this proposed action.

This EA was prepared by Reclamation to address the potential impacts to the human environment due to implementation of the proposed action.

Alternatives

The EA analyzed the No Action Alternative and the Proposed Action Alternative, which is to authorize and partially fund the Fire Mountain Canal Piping Project.

Decision and Finding of No Significant Impact

Based upon a review of the EA and supporting documents, Reclamation has determined that implementing the proposed action will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the area. No environmental effects meet the definition of significance in context or intensity as summarized in the EA. Reclamation's decision is to implement the Proposed Action Alternative.

Context

The affected locality is the existing Fire Mountain Canal (FMC) and water conveyance structure for water diverted to the canal from Leroux Creek, within the Leroux Creek drainage and Rogers Mesa area, approximately 2 miles northwest from the town of Hotchkiss, in Delta County, Colorado. Affected interests include Reclamation, the Fire Mountain Canal and Reservoir Company (FMCRC), the North Fork Water Conservancy District (NFWCD), shareholders, and adjacent land owners. The project does not have national, regional, or state-wide importance.

Intensity

The following discussion is organized around 10 significant criteria as described in 40 CFR 1508.27. These criteria were incorporated in the resource analysis and issues discussed in the Environmental Assessment (EA).

1. **Impacts may be both beneficial and adverse.** The proposed action will impact resources as described in the EA. Mitigating measures were incorporated into the design of the action alternative to reduce impacts. The predicted short-term effects of the proposed action include impacts to vegetation and soils within the proposed action area, and disturbance during construction which will affect wildlife. The proposed action will also convert approximately 2.5 acres of riparian and wetland habitat to uplands, which will have subsequent impacts to wildlife. Effects to wildlife will be mitigated by improving the vegetation conditions at a nearby natural drainage, at approximately equal or greater value to wildlife habitat. Long term effects include adverse effects to segments of the Fire Mountain Canal and the Leroux Creek Ditch, which are eligible for listing in the National Register of Historic Places (NRHP). This long-term effect is being mitigated by the preparation of archival documentation of these canal segments, as stipulated in the Memorandum of Agreement between Reclamation, FMCRC, and the Colorado State Historic Preservation Officer (SHPO). Beneficial effects include improvements to water quality downstream of the project area due to project salt reduction, and improvements to water efficiency, allocation and delivery along the canal.
   None of the environmental effects discussed in detail in the EA are considered significant. None of the effects from the proposed action, together with other past, current, and reasonably foreseeable actions, rise to a significant cumulative impact.
2. **The degree to which the selected alternative will affect public health or safety or a minority or low-income population.** The proposed action will have no significant impacts on public health or safety. No minority or low-income populations will be disproportionately affected by the proposed action.
3. **Unique characteristics of the geographic area.** There are no park lands or wild and scenic rivers that will be affected by the proposed action. The proposed action will occur in an area of prime farmlands, but adverse effects to these farmlands are not expected. The proposed action area includes a short segment of the Leroux Creek drainage, which contains multi-story vegetation that may be used by the endangered yellow-billed cuckoo. Potential effects to Leroux Creek due to construction and vegetation removal may occur, but effects are expected to be temporary and minor as the area will be revegetated.
4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** Reclamation contacted representatives of other federal agencies, state and local governments, public and private organizations, and individuals regarding the proposed action and its effects on resources. Based on the responses received, the effects of the proposed action on the quality of the human environment are not highly controversial.
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** There are no predicted effects on the human environment that are considered highly uncertain or that involve unique or unknown risks.
6. **The degree to which the action may establish a precedent for future actions with significant adverse effects or represents a decision in principle about a future consideration.**
   Implementing the action will not establish a precedent for future actions with significant effects and will not represent a decision in principle about a future consideration.
7. **Whether the action is related to other actions which are individually insignificant but cumulatively significant.** Cumulative impacts are possible when the effects of the proposed action are added to other past, present, and reasonably foreseeable future actions; however, significant cumulative effects are not predicted, as described in the EA in Section 3.14.

8. **The degree to which the action may adversely affect sites, districts, buildings, structures, and objects listed in or eligible for listing in the National Register of Historic Places.** The Colorado SHPO has concurred with a determination of adverse effect to segments of the Fire Mountain Canal and the Leroux Creek Ditch. Reclamation has entered into a Memorandum of Agreement to mitigate the impacts to the affected segments of the Leroux Creek Ditch and the Fire Mountain Canal. A Memorandum of Agreement has been executed between Reclamation, FMCRC, and the Colorado SHPO to mitigate the adverse effects of the Proposed Action, and is included in Appendix F of the EA.
9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.** The proposed action area includes the Leroux Creek drainage, which contains about 57.2 acres of suitable habitat for the endangered yellow-billed cuckoo. The proposed action transects approximately 0.3 acre of marginally suitable habitat, and will cause the removal of about 45 trees, three inches in diameter or greater. Proposed critical habitat is 2.3 miles from the action area. Reclamation has consulted with the U.S. Fish and Wildlife Service, and a final determination has been made been made that the project may affect, but is not likely to adversely affect, the yellow-billed cuckoo.
10. **Whether the action threatens a violation of Federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment.** The proposed action does not violate any federal, state, local, or tribal law, regulation, or policy imposed for the protection of the environment. In addition, this project is consistent with applicable land management plans, policies and programs. State, local, and interested publics were given the opportunity to participate in the environmental analysis process.

Environmental Commitments

The FMCRC, as the project proponent, is responsible for implementing the following environmental commitments, which are an integral part of the proposed action.

General

1. Environmental commitments will be discussed with the contractor at a pre-construction meeting.
2. Environmental commitments will be discussed with new operators and contractors brought into the project during the construction period. This will likely occur before Phase I and Phase II of construction (Winter 2018, 2019), and during other periods if needed.

Water Quality and Water Resources

3. A Storm Water Discharge application will be submitted for General Permit No. COR-030000, as provided by the Colorado Department of Public Health and Environment, at least ten (10) days prior to the commencement of construction activities.
4. A Storm Water Management Plan will be developed and filed with the Colorado Department of Public Health and Environment. In accordance with the Storm Water Management Plan, Best Management Practices, including storm water drainage, erosion control, and sediment control, will be implemented to prevent or reduce point source pollution during and following construction.
5. A Spill Prevention Control and Countermeasure Plan will be prepared. As part of this plan, fuel storage, equipment, maintenance, and fueling procedures will be developed to minimize the

risk of spills and impacts from these incidents. All employees and workers, including those under separate contracts, will be briefed on the plan.

6. Concrete pours will occur in forms to prevent discharge into waterways. Any wastewater from concrete batching, vehicle wash down, and aggregate processing will be contained and treated or removed for off-site disposal.
7. Equipment will be inspected daily and repaired as necessary to ensure equipment is free of petrochemical leaks.
8. Construction of the siphon through Leroux Creek will occur during a period of low water flow (September 1 through February 15). A temporary pipe will be used in Leroux Creek to route flows around the siphon construction area.
9. Prior to trenching across the active creek bed, a test pit will be excavated to the necessary depth to confirm that the geomorphology and hydrology of the creek will not be affected by the project.
10. Creek bed materials (cobble and boulders) removed during trenching will be set aside and used to re-form the natural appearance and function of the creek bed. Flowfill will be placed around the pipe to prevent surface water loss and retain the natural function of the native bed rock.
11. The creek banks and riparian areas will be restored as much as possible to pre-construction contours and condition upon completion of construction. The Leroux Creek drainage will be restored as per an approved Environmental Restoration Plan.
12. Laterals and tailwater crossings in the project area will be planned in coordination with the landowners relying on the water supply.
13. The pipeline will not interfere with water allocation, including winter stock water allocation, nor create any changes in allocation of water shares. Winter stock water will not be supplied during construction,

Access and Transportation

14. Construction activities and traffic concerns will be coordinated with Delta County.
15. All construction activities will be confined to rights-of-way shown on the construction specifications. Staging will take place in areas shown on Figure 2a and Figure 2b.
16. Signs will be used to notify drivers of safety-related visibility issues.
17. Staging for construction will occur as close as possible to the area of construction to minimize traffic disturbance and safety issues.

Noxious Weeds and Invasive Species

18. All construction equipment will be power-washed and free of soil and debris prior to entering the construction site to reduce the spread of noxious and invasive weeds.
19. Timely and consistent weed treatment will occur within the project area. For example, pre-construction treatment (mowing) will be used to minimize weed spreading during construction. Weed treatment methods will be coordinated with adjacent landowners.
20. Non-native invasive species including Russian olive, tamarisk and elm cleared from the area, will be isolated and removed from the project area to the extent possible.
21. FMCRC will continue to be responsible for complying with the Colorado Noxious Weed Act, and will obtain appropriate pesticide use permits in accordance with Section 402 of the Clean Water Act.

Wildlife, including Federally Listed Species, and Vegetation

22. An Environmental Restoration Plan will be developed prior to construction defining revegetation plans including plant species, timing and seeding or planting methods. The plan

will focus on restoring riparian vegetation in the Leroux Creek drainage area following siphon construction.

23. In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with the U.S. Fish and Wildlife Service, and protection measures are implemented.
24. If a change in project plans will require work outside of areas inventoried for threatened and endangered species, Reclamation will be consulted to determine if additional surveys are required.
25. Construction work in the Leroux Creek drainage area will occur between September 1 and February 15 to avoid effects to raptors and migratory birds, including the Federally listed yellow-billed cuckoo. Pre-construction raptor and migratory bird surveys will be required for any vegetation clearing or other construction activities scheduled to begin between February 15 and September 1. If construction activities are initiated prior to February 15 (i.e., prior to initiation of nesting), construction may continue; however, construction activities may not be initiated after February 15 unless pre-construction surveys are conducted.
26. The siphon has been located to avoid riparian vegetation and mature trees to the extent feasible. Additional on-site meetings will be scheduled as necessary to ensure the Environmental Restoration Plan is implemented.
27. A natural resources specialist would be on-site as needed during the construction and restoration process through the Leroux Creek drainage area.
28. Pipeline trenches left open overnight will be kept to a minimum and covered to reduce the potential for hazards to wildlife. Where trench covers are not practical, wildlife escape ramps will be utilized.
29. Riparian areas within the Leroux Creek drainage, upstream of the siphon area, and including the siphon area, will be restored as soon as practical following construction. Revegetation and weed control following pipeline construction, would follow each construction phase.
30. Monitoring and continued revegetation would occur as needed for two to three years following project construction.
31. To mitigate wildlife habitat disturbance and loss, a habitat replacement plan will be implemented, enhancing the habitat function and value on 9.3 acres. Improvements include removing non-native species and seeding and planting native vegetation.

Cultural Resources

32. All field work required to complete Level I Documentation of the cultural resources impacted by this project will be completed before construction commences, as stipulated in the Memorandum of Agreement between Reclamation, FMCRC and the Colorado SHPO.
33. If previously undiscovered cultural or paleontological resources are discovered during construction, construction activities must immediately cease in the vicinity of the discovery and Reclamation must be notified. In this event, the SHPO shall be consulted, and work shall not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the attached MOA. Stipulations in the MOA with the SHPO are incorporated herein by reference. Additional surveys shall be required for cultural resources if construction plans or proposed disturbance areas are changed.
34. If additional areas of impact (for example: access roads, borrow pits, or waste areas) are identified during the course of the undertaking, they will be inventoried for cultural resources

and consulted on with the State Historic Preservation Officer. No construction work will occur at or near the additional impact areas until this consultation is completed.

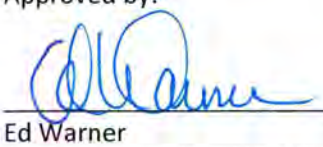
Agricultural Resources and Soils; Ground Disturbance

35. Construction limits will be shown on plans provided to the contractors. Ground disturbance and vegetation removal will be limited to the smallest portion of the Proposed Action area necessary to safely implement the project.
36. Existing access roads will be used to access construction, staging and stockpile areas. No new roads will be constructed.
37. Topsoil will be stockpiled and re-distributed after construction, to facilitate revegetation success.
38. Soil erosion will be minimized by using erosion control measures at the edges of ground disturbances.
39. All disturbed areas will be smoothed and shaped, contoured, and reseeded to as near their pre-project conditions as practicable. Lands in agricultural production will be returned to agricultural production following construction.
40. A non-invasive, drought-tolerant seed mix will be developed in coordination with landowners, and used to revegetate areas disturbed by the project.

Other

41. Dust abatement measures will be implemented during construction of the facilities.
42. The FMCRC and/or contractors will coordinate utility crossings (power, water, phone/fiber optic) to minimize disruption.

Approved by:



Ed Warner
Area Manager, Western Colorado Area Office

9-12-18
Date

FINAL ENVIRONMENTAL ASSESSMENT

1.0 Introduction

This Environmental Assessment (EA) was prepared by the U.S. Bureau of Reclamation (Reclamation) to assess the potential effects of the proposed Fire Mountain Canal Salinity Reduction Piping Project (Project or Proposed Action) located in Delta County, Colorado (project area; Figure 1), approximately 2 miles northwest of the town of Hotchkiss, Colorado. This EA evaluates two alternatives – the Proposed Action that would replace 3.9 miles of open ditch with a buried pipeline, and the No Action alternative with no change in the existing open ditch. This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework to analyze the alternative actions and evaluate potential issues and impacts on resources and values.

1.1 Background

The Fire Mountain Canal (FMC) is a water delivery facility that provides irrigation water to about 15,300 acres of farm and ranch land near the towns of Paonia and Hotchkiss, Colorado. The FMC serves 491 shareholders and is approximately 33.3 miles long, with approximately 90 turnouts. The proposed Project encompasses a 3.9-mile section of the FMC on Rogers Mesa, referred to as Segment 47, and would occur primarily in the same corridor as the existing unlined FMC. The FMC is part of the lower Gunnison River watershed and conveys water in soils derived from Mancos Shale, which contributes to both selenium and salinity levels in the Colorado River Basin. The Proposed Action would reduce salinity concentrations in the Colorado River.

Salinity reduction projects, including this Project, have far-reaching positive effects. The Colorado River and its tributaries provide water to about 40 million people in the United States and Mexico, and supplies water to nearly 5.5 million acres of land (Reclamation 2013). At present, an estimated 8.7 million tons of salt flow into the Colorado River annually, with irrigation associated with agriculture a primary contributor of salinity into the system. The effect of salinity loading into the basin is a major concern in both the United States and Mexico, causing about $295 million per year in damages (e.g., crop productivity and municipal water pipes) (Reclamation 2013).

Salinity and selenium loading are a result of seepage and deep percolation that picks up these constituents as they move through the underlying geology. The increase in salinity and selenium shows up in streams downgradient of the canal prism. Expected salinity reduction is calculated based on measured Total Dissolved Solid loads in basin streams, GIS-based model calculations to determine sub-basin loads, and ditch mapping data that include average flows, ditch lengths, and average annual days of use. A list of published references is provided for more detailed information:

Schaffrath, K.R., 2012, Surface-water salinity in the Gunnison River Basin, Colorado, water years 1989 through 2007: U.S. Geological Survey Scientific Investigations Report 2012–5128, 47 p.

Linard, J.I., 2013, Ranking contributing areas of salt and selenium in the Lower Gunnison River Basin, Colorado, using multiple linear regression models: U.S. Geological Survey Scientific Investigations Report 2013–5075, 35 p., http://pubs.usgs.gov/sir/2013/5075/.

The Colorado River Basin Salinity Control Act (Salinity Control Act), enacted by Congress in 1974 (Public Law 93-320), authorizes the implementation of a broad range of salinity control measures in an effort to mitigate the damage caused by salinity loading and to meet objectives and standards for water quality set by the Clean Water Act. In 1995, Public Law 104-20 authorized Reclamation's Colorado River Basin Salinity Control Program, which began a competitive funding process to select cost-effective projects that would reduce salinity contributions to the Colorado River. These measures are essential to enhancing and protecting water quality in the Colorado River for use in both the United States and Mexico.

As of 2012, the Colorado River Basin Salinity Control Program is controlling over 1.3 million tons of salt per year from entering the Colorado River system due to the combination of efforts from Reclamation, U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS), and the Bureau of Land Management (BLM) (Reclamation 2017). According to the Colorado River Basin Salinity Control Forum, a target of 1.68 million tons of salt needs to be controlled from entering the Colorado River basin by the year 2035.

As much as 75 percent of the selenium load into the Colorado River comes from the irrigation sources on Colorado's western slope, due to extensive irrigation located on Mancos Shale; this chemical contributes to selenium toxicity, which affects mortality, deformities, and decreased reproduction in fish and aquatic birds in the Colorado River Basin (Selenium Task Force 2016). Water quality improvements across the Colorado River Basin are needed to mitigate the costly and damaging effects of salinity and selenium loading. Selenium reduction benefits are expected as soils in the project area are identified as having low to very high selenium mobilization potential (Selenium Management Program Workgroup 2011).

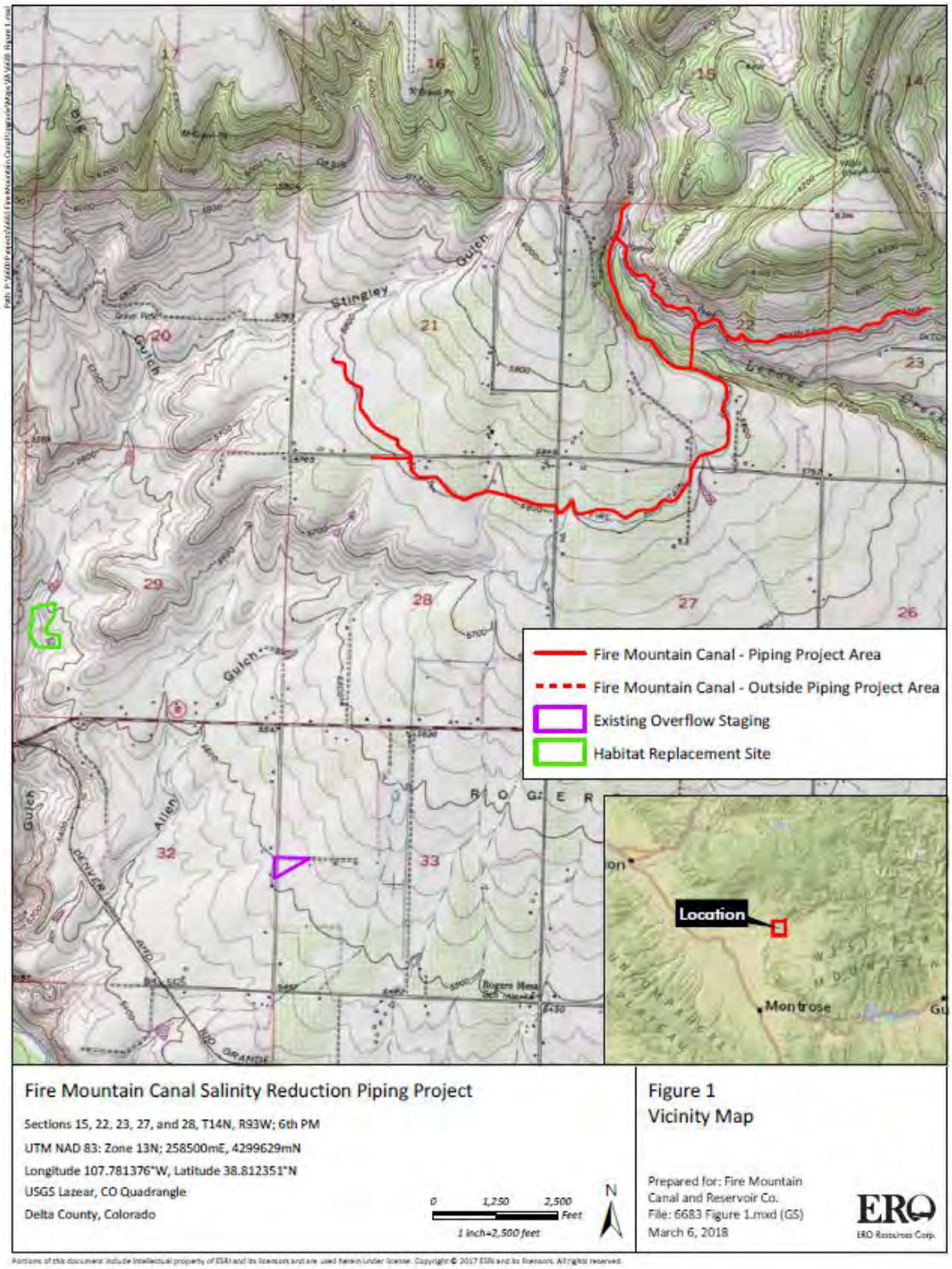
The proposed Project evaluated in this EA contains two federal nexuses related to funding: It is funded in part by Reclamation's Colorado River Basin Salinity Control Program (2015 FOA Project Proposal, FOA No. R15AS00037) (FMC 2015), and in part by NRCS through the Regional Conservation Partnership Program (RCPP). This EA analyzes the Proposed Action in accordance with NEPA requirements for both Reclamation and the NRCS.

1.2 Purpose and Need

The purpose of the Proposed Action is to comply with the Salinity Control Act (Reclamation's federal nexus), and to increase the efficiency of the existing FMC delivery system by preventing water loss through both evaporation and deep percolation, providing a pressurized system with gates and valves, and installing new communication systems to improve water delivery (NRCS' federal nexus). The need for the Proposed Action is to reduce salinity concentrations in the Colorado River Basin, and to address downstream natural resource concerns in the Lower Gunnison Basin and the Colorado River Basin, including inadequate habitat for fish and wildlife, and water and soil quality degradation (NRCS 2018).

By replacing the existing Segment 47 ditch irrigation system with a buried pipe delivery system, the Proposed Action would eliminate seepage in surrounding soils, thereby reducing salinity in the Colorado River Basin by an estimated 2,365 tons of salt per year (FMC 2015). This would also likely reduce selenium loading into the Lower Gunnison Unit area, an area containing many stream segments that are on the State of Colorado's Clean Water Act Section 303(d) List for selenium impairment (FMC 2015).

Figure 1. Project Location Map.



1.3 Decision to be Made

This EA has been prepared to evaluate adverse and beneficial effects of the Proposed Action and No Action alternatives, and to provide a basis for decisions by Reclamation and by NRCS on whether to fund the Proposed Action, which would be implemented by FMCRC. Under the Proposed Action, Reclamation would contribute federal funds to FMCRC, received under the Colorado River Basin Salinity Control Program, for construction of a new pipeline for the purpose of salinity control in the Colorado River Basin. In addition, federal funds would be allocated to the Project by NRCS, as part of the RCPP. Once funded, FMCRC would construct, operate and maintain the pipeline on Rogers Mesa. A project life of 50 years has been identified for this project for the purpose of calculating a project cost per ton of salt controlled over a definite timeframe; however, the functional life of the piping project is expected to be longer than 50 years with proper operation and maintenance. If Reclamation and/or the NRCS decides not to fund the proposed Project, Segment 47 of the FMC would not be replaced with a pipeline, and the canal would continue to operate as an open canal.

1.4 Relationship to Other Projects

Currently, a number of salinity reduction pipeline projects have been installed or are in the process of being constructed within the North Fork of the Gunnison River watershed, lower Leroux Creek drainage and surrounding mesas (generally within 15 to 20 miles of the project area), including:

- Cattleman's Ditches Pipeline Project, Phase I (in progress)
- C Ditch Company's C Ditch/Needle Rock Pipeline Project (3 miles north of the town of Crawford in the Cottonwood Creek drainage)
- Crawford Clipper 4 Irrigation Salinity Control Project (2.5 miles southeast of the town of Hotchkiss in the Cottonwood Creek drainage)
- Grandview Canal Piping Project (just south of the town of Hotchkiss in the Smith Fork River drainage).
- Rogers Mesa Water Distribution Association's Slack and Patterson Laterals Piping Project (about 3 miles west of the town of Hotchkiss)
- Minnesota Canal Piping Project Phases I and II (near the town of Paonia in the North Fork of the Gunnison River drainage)
- North Fork Delta Canal Phase I (East of Delta, in the Gunnison River drainage)
- Lower Stewart Ditch Pipeline Project (near the town of Paonia in the North Fork of the Gunnison River drainage)
- Forked Tongue/Holman Ditch Company's Salinity Control Project (near the town of Eckert in the Tongue Creek drainage)

1.5 Location and Environmental Setting of the Proposed Action Area

The Proposed Action area lies in the Leroux Creek hydrologic unit of the North Fork of the Gunnison River watershed, about 2 miles directly northwest of the town of Hotchkiss in Delta County, Colorado. The Proposed Action area includes irrigated farmlands and a portion of the Leroux Creek drainage located in Sections 15, 21, 22, 23, 27, and 28, Township 14 South, Range 93 West, of the 6th Principal

Meridian. The habitat replacement site occurs in Section 29, Township 14 South, Range 93 West, of the 6th Principal Meridian. The elevations in the project area range from 5,700 to 5,820 feet above sea level.

In the upper third of the Proposed Action area, referred to as the Leroux Creek drainage area, the FMC traverses along the northeast slope of the drainage towards an existing underground siphon beneath Leroux Creek. On the west side of the creek, the FMC converges with water diverted from the Leroux Creek headgate, makes a hairpin curve before traversing along the southwest slope of the drainage, and enters Rogers Mesa. The terrain in the Leroux Creek drainage area is very steep (20 to 50 percent) slopes (NRCS 2017) and consists of dry riparian woodland on the southwest slope and sparsely vegetated badlands occur on the northeast slope (Figure 2a and Figure 2b).

Once on Rogers Mesa, the FMC conveys water south and curves to the southwest across private agricultural lands, terminating at a point about 1,200 feet south of Stingley Gulch. The proposed Project would cross county roads and utilities at three points on Rogers Mesa (Figure 2a).

The habitat replacement site occurs in a natural drainage with several constructed ponds, approximately one mile south and west of the pipeline project, along Big Gulch (Figure 1).

1.6 Scoping, Coordination, and Public Review

Reclamation coordinated with other agencies in scoping and preparing this EA, including the Service, the U.S. Army Corps of Engineers (Corps), the Colorado State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation, and the NRCS. Coordination occurred via meetings, phone calls, and letters from November 2016 through May 2018.

Public scoping was initiated with a notice published in the *Delta County Independent* on January 11, 2017, to help determine the scope and significance of issues related to the Proposed Action. Comments on the Proposed Action were taken during a public scoping period from January 16 to February 15, 2017. FMCRC held a public scoping meeting on February 2, 2017, with 13 people in attendance. Five comment letters were received during the scoping period. The letters expressed concern about restoration of the canal corridor and revegetation following construction, extent of topsoil used when backfilling, access during construction, the presence of utilities and utility crossings (domestic and irrigation water), conveyance of run-off water or wastewater (e.g., tailwater), loss of wildlife habitat, containment during construction to Reclamation-deeded lands, fences, and restoration of impacts on 3150 Road resulting from construction. A suggestion was received to work with the BLM regarding seeding techniques that can improve revegetation success. Seeding a pollinator mix was also suggested. An additional letter was received on July 20, 2017, expressing concerns related to potential project effects on vegetation and wildlife in the drainage at the site of the proposed new siphon crossing, water quality, and hydrology in Leroux Creek.

Public concerns regarding the cumulative impacts of irrigation pipeline projects for salinity control on Rogers Mesa and in the North Fork Valley watershed were summarized during the scoping period as follows:

- Reduced inflows to groundwater from irrigation water seepage affecting domestic wells.

- Construction and development within the watershed and on Rogers Mesa.
- Effects on migratory mammals, birds, and non-migratory wildlife such as local populations of deer and elk.
- Continued division of land and associated barriers to natural pathways for wildlife migration; construction of barrier fencing.
- Private land use and trends; real estate changing hands and new land ownership; lack of irrigation practices and water conservation measures, as well as civic duties associated with administering the extensive infrastructure.

Written comments received during scoping were considered in the selection of topics for analysis in Chapter 3 of this EA.

2.0 Proposed Action

2.1 No Action Alternative

Under the No Action alternative, the existing FMC would be maintained as an open, unlined ditch. Maintenance activities would continue to include dredging of sediment; control of vegetation, invasive weeds, and rodents along the banks; and monitoring and control of seepage and leaks along the canal. The existing open canal, siphon, and maintenance roads would continue to be used.

2.2 Proposed Action Alternative

2.2.1 Project Overview

Under the Proposed Action Alternative, Reclamation and the NRCS would provide funding to the FMCRC through the Salinity Control Program and RCPP, respectively, to pipe Segment 47 of the FMC. The proposed pipeline alignment, siphon area, staging areas, and habitat replacement site are shown on Figure 2b. The proposed Project includes 3.9 miles of new pipeline in the existing canal corridor, 0.5 mile of abandoned canal to be backfilled and restored, and construction of a 0.2-mile subsurface siphon through the Leroux Creek drainage. The existing subsurface siphon would be decommissioned, filled, and abandoned in place to avoid direct effects on the Leroux Creek drainage. All surface features would be removed and the soil regraded and revegetated.

The proposed pipeline construction would likely be accomplished during one winter season (avoiding the period when irrigation flow is present, generally April 15 to September 15), although work may occur to finish construction on the west end during the following winter season. Construction in the Leroux Creek drainage area would avoid the period when migratory birds, the federally protected yellow-billed cuckoo, or active raptor nests are present (February 15 to September 1), unless pre-construction clearance surveys are conducted for migratory birds and active raptor nests. If construction activities are initiated prior to February 15 (i.e., prior to initiation of nesting), construction may continue; however, construction activities may not be initiated after February 15 unless pre-construction surveys are conducted. Restoration of disturbed ground would occur between the winter construction seasons (during the spring and summer) and during follow up seasons.

To provide for effective water turnout and system control, each turnout along the canal would be fitted with a butterfly valve and appropriate energy dissipater consisting of either riprap or a concrete stilling well. Flow would be primarily metered using existing flumes. At the Leroux Creek pipeline, an existing water level sensor and control system (referred to as the Rubicon system) capable of Supervisory Control and Data Acquisition (SCADA) would be used to measure and control water, and would be relocated from its present location to the beginning of the pipeline below the existing Leroux Creek diversion (Figure 2b). A new SCADA sensor would be installed at the new siphon inlet; this system would communicate with the Rubicon system, reducing the likelihood of water spillage.

Winter stock water is currently conveyed by the canal to stock owners and would be incorporated into the project design, though winter stock water would not be available during construction. Six to ten cubic feet per second (cfs) is currently conveyed by the FMC to Jessie Ditch's diversion off Leroux Creek via an existing open ditch along the steep Leroux Creek drainage slope. As part of the proposed project, this water would no longer utilize the open ditch, and instead would be piped to the siphon area and conveyed to Leroux Creek through the emergency spillway pipe on the northeast side of the drainage. Use of the spillway for conveying Jessie Ditch water would allow the emergency spillway to remain clear of debris. Jessie Ditch water would be delivered to Leroux Creek about 800 feet upstream from the current delivery location and the existing diversion out of Leroux Creek for the Jessie Ditch; therefore, an increase of about 6 to 10 cfs would occur for this 800-foot stretch of Leroux Creek during the irrigation season.

Numerous air vents in the pipeline would be needed and installed along the pipeline. To prevent debris plugging the pipeline, the front of the pipe would be flared and a coarse screen installed upstream of the FMC and upstream of the Leroux Creek Pipeline (Figure 2b). A clean-out structure including a coarse and fine trash screen would be installed directly upstream of the siphon inlet. The structure would be approximately 10 feet wide by 80 feet long and would connect to an emergency spillway. Upstream of the Leroux Creek pipeline, an existing trash screen and emergency spillway would be used.

The total Project footprint is summarized below (Table 1). The majority of the earthwork for the project would be completed with tracked equipment (track hoes and dozers). The Project would require approximately 11,900 cubic yards of fill; the majority of fill would be obtained from the project area. The Project would occur largely within an existing disturbed area and involve restoration of approximately 23.8 acres along the alignment. The existing access road (approximately 4.3 acres) would not be restored, and instead would be left in place for future maintenance activities. In addition, areas where new surface features would be installed (approximately 0.3 acre) would not be restored. All restored areas would be reshaped to blend with existing topography and revegetated following project construction.

Table 1. Fire Mountain Canal Pipeline Project Proposed Footprint.

Aspect	Acres	Acres to Restore/Revegetate
New Pipeline and Project Access (average width of 50 feet by 19,353 feet; approximately ½ of this width, or 11.1 acres, is already disturbed)	22.2	17.4[1]
New Siphon (average width of 50 feet, by 961 feet)	1.1	1.1
Decommissioned Structures[2]		0.3[2]
Staging Areas (two primary areas)	2.6	2.6
Abandoned Canal to be Refilled (maximum width of 35 feet by 2841 feet)	2.2	2.2
Habitat site	9.3	N/A
TOTAL	**37.4**	**23.8**

[1] Revegetated acres do not include an existing access road approximately 10 feet in width by 19,353 feet in length (4.4 total acres), and about 0.3 acre would not be restored due to new installed structures within the 50-foot project corridor.
[2] Decommissioned structures include an existing emergency spillway and associated structures around the existing siphon (Figure 2a).

2.2.2 Access and Staging

Access to the project area during construction would be from existing maintenance roads along the canal, from county roads including 3100 Road, Stingley Gulch, and L Road, and from State Highway (SH) 92 approximately 1 mile south of the Project area. No additional access roads are planned. A primary staging area would be established, and a secondary staging area may be used as well at a location approximately 600 feet west of the area shown in the Draft EA (2.6 acres total, Figure 2b).

Pipe welding would occur at locations determined by the contractor, within the construction corridor and existing Reclamation-owned land or easements (Figure 2a). A third existing "overflow" staging area would be used for stockpiling pipe at the former staging site for a piping project constructed in 2015 (Figure 1 and Figure 2a).

2.2.3 Pipeline Construction in Existing Canal

Under the Proposed Action, approximately 3.9 miles of trench would be excavated within the existing canal. The canal bed is already below grade, and an additional 3 to 5 feet in depth will be trenched beneath the canal bed as required based on pipe diameter size and elevation gradient needed for water flow (Figure 2b). The width of temporary disturbance across the corridor would range from 35 to 50 feet, and may be up to 65 feet in places on Rogers Mesa near the Leroux Creek drainage, with an average width of 50 feet. Where possible, the top layer of soil would be separated from subsurface fill, set aside and used for restoring the disturbed ground. Subsurface materials would be separated into fines and larger material, with fines used for bedding and backfill, and larger material used for filling the abandoned section of canal. The pipe trench would be bedded using sorted native materials.

Large trees and brush within the disturbed corridor adjacent to farm land on Rogers Mesa would either be removed or mulched on-site and added to the top layer of fill over the pipeline.

Prior to construction, pipe and other materials would be transported to the staging areas and stockpiled. The pipe would be transported to the trench and set in place within the construction corridor. Following placement of the pipe within the trench, clean native fill acquired from the project area would be placed

around the pipe, and topsoil would be placed on the surface. Another backfill option would include placing controlled low-strength material (flowable concrete fill) around the pipe and completing the backfill with clean native fill. Large debris/rock that exists in the project area would be used as fill for the abandoned canal. Additional fill may be required and would be obtained from a reputable local source.

Environmental commitments, including dust suppression, appropriate flagging, and signage, would be followed to minimize effects on the natural and human environment during construction (see Chapter 4).

2.2.4 Siphon Construction

Trenching and laying the welded pipe for the siphon would progress across the Leroux Creek drainage from south to north. Welded pipe would be installed in the trench in the Leroux Creek drainage area (see Figure 2b). Pipe would be fused and laid in the trench on the sloped sides of the drainage and joined on either side of the creek bed using bolted joints. Existing access roads on both the north and south side of the drainage would be used during siphon construction for equipment staging.

The disturbance width required for construction of the new siphon through the steep and heavily vegetated drainage area would be kept to a minimum and is expected to be contained within a corridor of 50 feet, except in the area across the Leroux Creek active creek bed, where disturbance would be further reduced to the extent practicable. Equipment specialized for steep slopes and for mulching in place would be used for clearing and grubbing down the north and south-facing slopes; this process may take two days or longer on each side. Clearing and grubbing would occur prior to February 15 to avoid effects to raptors, and outside of peak migratory bird nesting season, which occurs between April 1 and July 15. Work in the Leroux Creek drainage area would avoid the breeding season for the yellow-billed cuckoo (May 1 through August 31).

Trenching across Leroux Creek would occur during the low flow months of September, October or November. Creek water would be diverted temporarily into a pipe and routed around the construction area. A temporary berm or dam would be formed upstream of the project area to divert the creek water into the pipe using native materials, inert plastic-covered sand bags, or other similar inert material. A permanent drain used for winterizing the system would be installed in a low-lying area near the creek, allowing siphon water to be drained into the creek in the fall. Creek bed materials extracted during trenching, including cobble and boulders, would be set aside and used to re-form a natural appearance for the creek bed.

In the area of the proposed new siphon, construction disturbance width through the active creek bed would be kept to a minimum (approximately 30 feet of width along the length of 30 feet crossing the creek bed). Construction disturbance width would widen on either side of the creek bank to 50 feet.

Prior to trenching across the active creek bed, a test pit would be excavated to the necessary depth to confirm that the geomorphology and hydrology of the creek would not be affected by the project. For planning purposes, it is assumed that backfill using flowfill (liquid concrete) would be used around the siphon pipe to prevent surface water loss and retain the natural function of the native bedrock.

After the pipe is installed and sealed within the creek bed, native cobble and rock set aside during trenching would be replaced in the active creek bed area to restore the existing geomorphology of the creek. The disturbed creek banks would be recontoured and replanted with native riparian plant seedlings as soon as practicable following backfill over the pipe. The creek crossing process is expected to take about a week to complete. Once the flow through the creek bed is restored, all temporary materials would be removed, and siphon construction would continue up the south-facing slope north of the creek.

An emergency spill pipeline would be buried in the pipeline trench on the south slope of the drainage, separated by 2 feet of space. The emergency spill structure would consist of an approximately 400-foot length of pipe and terminate on the north-east side of Leroux Creek in a concrete energy dissipater (approximately 14 feet long by 12 feet wide by 7 feet deep).

Siphon pipe in upland areas and riparian areas on the north and south side of the drainage would be covered and reseeded following construction. An Environmental Restoration Plan would be prepared and approved prior to construction to detail the actions, timing, and plant and seed mixes necessary for restoration through the Leroux Creek drainage. As part of the plan, and as practicable and achievable, existing native bushes and trees would be salvaged and replanted to aid in the restoration of the area within the drainage. In coordination with stakeholders including Reclamation, an ecologist would be on-site as needed during the construction and restoration process through the drainage, and would assist with protection of roots and replanting efforts. In upland areas, some of the cleared slash (native tree branches and underbrush) would be set aside for mulching and some of the cleared slash would be replaced on the surface of the covered pipe to provide screening and cover for wildlife. It is estimated that over 5 to 25 years, vegetation would screen the siphon corridor as it currently screens the existing siphon.

Environmental commitments, including timely, efficient and safe clearing and grubbing outside the migratory bird nesting season, dust suppression, erosion-control and stormwater runoff measures, noise and activity minimization, and environmental restoration steps, would be followed to mitigate impacts to wildlife using the drainage as a connecting corridor between the Grand Mesa and river bottom lands, and to minimize effects on Leroux Creek (see Chapter 4).

2.2.5 Restoration

Following pipeline construction, an estimated 23 acres (total) of disturbance would be revegetated across several distinct vegetative communities, including upland/woodlands within the Leroux Creek drainage area, and upland pasture on Rogers Mesa. Revegetation would follow each construction phase and would continue during the spring and summer. Monitoring and continued revegetation would occur as needed for two to three years following project construction.

Along the abandoned corridor (Figure 2b) traversing the south-facing slope of the Leroux Creek drainage, the existing ditch prism would be backfilled, graded to shed storm water, covered with top soil, and revegetated. The existing maintenance road would continue to be used by FMCRC in this area to access the FMC upstream of the project area.

The disturbed corridor along the pipeline, as well as staging areas and other temporarily disturbed areas, would be recontoured and revegetated following construction. The surface would be sloped and graded to match the surrounding ground surface and seeded or replanted using an approved upland or agricultural pasture seed mix in coordination with Reclamation and private land owners along the canal. Topsoil would be placed last. Methods for ensuring vegetation success include planting at the appropriate time for germination with broadcast or drilling methods and watering, as well as using protective mats or mulch to conserve moisture as necessary. As appropriate, a non-invasive, drought-tolerant seed mix would be used for the drainage area and adobe lands, pasture areas, and riparian areas near Leroux Creek. The seed mix would be developed in cooperation with private land owners (where pasture land is adjacent to the pipeline, landowners would be consulted on the grasses and forbs desired for revegetation). If necessary, to ensure replanted vegetation is not choked by weeds, a broadleaf spray would be applied at key times by the FMCRC. Spray would be used in accordance with the requirements of the organic growers along the FMC.

An Environmental Restoration Plan (plan) would be developed for the Leroux Creek drainage area. The plan would detail seed mixes, erosion control methods, topsoil needs and sources (as applicable), seed bed preparation, and seeding methods, as well as measures to monitor and optimize restoration success. The plan would be developed prior to the first construction phase and submitted to Reclamation for review. The plan would describe restoration practices for disturbed areas in the proposed siphon corridor, as outlined in Section 2.2.4. Restoration practices would also be followed for all disturbed riparian areas and facilities, such as for removal of the existing emergency spillway within the drainage (Figure 2a).

2.2.6 Crossings: Tailwater, Utilities, and Laterals

Tailwater from land irrigated above the FMC would continue to be routed to existing pipes that carry water across the FMC to fields on the other side. FMCRC coordinated management of tailwater directly with landowners at the upstream end of the project and proposes to replace six of the seven existing tailwater crossings in their current locations and add two additional crossings. An open v-ditch would parallel the FMC pipeline to direct all tailwater to one of the eight crossings. At the downstream end of the project, approximately 1,300 feet of additional piping would be buried parallel to the piped FMC in the same trench (Figure 2b). The parallel pipe would receive tailwater and carry it to its historic point of discharge at the downstream end of the project area.

Lateral turnouts would primarily consist of a butterfly valve for flow control. Existing Parshall flumes would be used for flow measurement. A new measuring device would be incorporated into the existing Patterson Lateral screen structure, and diversions to the Patterson Lateral would be controlled with a butterfly valve. The area would be reclaimed and replanted in native riparian or upland vegetation, as appropriate considering soil moisture. In this same area, a pipe would be installed to transport tail water across the new pipeline; ground would be cleared to a 40-foot width in the area, and tail water would be either diverted as desired to property owners south of the canal or discharged into the Patterson Lateral pipe system.

The proposed pipeline would cross utilities at two points along L Road and a third point across 3100 Road. Utility crossings include telephone/fiber optic, electric, domestic water, and irrigation water. All crossings would be designed and installed in coordination with the owning utility to minimize disruptions during the construction phase.

2.2.7 Operation and Maintenance

FMCRC is under contract with the North Fork Water Conservancy District (NFWCD) for operation and maintenance of the FMC, and NFWCD is under contract with Reclamation to manage the Paonia Project. No change in management responsibilities is included in the Proposed Action. Operation and maintenance costs are currently assessed to the canal shareholders, and this would not change under the proposed action. There would be no change in how FMCRC conducts repairs; as with significant repairs in the past, water users could temporarily be without water until repairs are completed and the system resumes operation.

2.2.8 Right-of-Way and Land Ownership

Reclamation owns land in the Leroux Creek drainage and along the canal, and holds easements on private land (Figure 3). On private land, all easements and rights-of-way (ROW) have been previously acquired for the FMC. The proposed Project is located primarily within the existing 50-foot corridor and within FMC's historic ROWs and easements, with the exception of the northeast corner of the project area where a larger pipe size would require additional space. The historic ROW width varies from 200 feet along Leroux Creek to 40 to 50 feet along the canal on Rogers Mesa. A 100-foot-wide easement through the Leroux Creek drainage has been provided to the FMC by a private landowner, though construction would be limited to an approximately 50-foot corridor to mitigate effects on the vegetated habitat in the corridor. Within the creek bed, the construction limits would be contained as much as possible. An average of 50 feet of disturbance has been used for planning purposes. Extensions outside the 50-foot corridor would be coordinated with adjacent landowners prior to and during the construction phase of the project if additional area is determined to be necessary due to unforeseen circumstances such as the presence of large subsurface rock.

2.2.9 Construction Sequence and Schedule

The estimated timetable for the project is two years, although the majority of the pipeline construction would occur during the first fall/winter season, as follows:

- **Phase I: Fall (August through September)**
    - Site preparation including flagging construction limits as needed
    - Vegetation clearing (outside the Leroux Creek drainage and not during migratory bird nesting season)
    - Habitat mitigation tasks
- **Phase I: Winter (September through February)**

  - Pipeline installation, including trenching and laying all mainline pipe starting with the new Leroux Creek siphon, then the Leroux Creek intake ditch between the existing Leroux Creek diversion and the point of convergence with the new siphon, and heading downstream/west as far as possible by spring
  - Restoration/replanting of disturbed areas in the Leroux Creek drainage
  - Decommissioning of existing siphon and structures
  - Water delivery via Phase I pipeline by April 15

- **Phase II: Spring-Summer (March through August)**

  - Restoration and reseeding along new pipeline alignment, including monitoring, weed management, and replanting as needed in the new siphon corridor in the Leroux Creek drainage
  - Habitat mitigation tasks, continued

- **Phase II: Winter (September through February)**

  - (Contingency) Completion of pipeline installation west of 3100 Road
  - Demolition and removal of a portion of the Patterson Lateral clean-out structure
  - Water delivery via completed pipeline by April 15

- **Restoration Phase II: Spring-Summer (March through August)**

  - Phase II grading, restoration and reseeding of project footprint including piped corridor, staging areas, demolition areas, and abandoned canal
  - Additional weed control, seeding and monitoring (as needed) in the Leroux Creek drainage
  - Habitat mitigation site tasks completed; follow up monitoring

2.2.10 Manpower and Equipment

Equipment used for the pipeline project would likely include:

- Up to 6 tracked excavators for excavation, backfill and moving pipe;
- Two front end loaders for loading dump trucks and moving smaller pipe;
- Two tandem dump trucks;
- A small bulldozer for rough grading and maintenance of the site access;
- A pipe fusion machine for heat fusing sections of pipe; and
- A Hydro-Ax or similar equipment for clearing the siphon ROW and mulching existing woody vegetation.

Approximately 15 persons would be on-site from October 15 to March 15 for each of two winters. Work would generally be completed during the work week. Four to eight heavy equipment trips would be made daily to haul pipe between the staging areas and the construction site, assuming the rate of pipeline construction may be 200 to 400 feet per day. Approximately two to six persons would be on-site periodically between April and August for two summer seasons to accomplish revegetation and restoration work. Work would be completed during the work week, and consist of grading/seed spreading, monitoring, and watering activities.

2.2.11 Operation and Maintenance of the Pipeline

Once the pipeline is installed, water would be allocated via use of existing flumes at 13 turnouts along the piped canal. The new system would have a low-head pressure, which would allow for uniform, consistent water delivery. Operation of the new piped canal would occur primarily from April 15 to October 15 each year and would remain essentially unchanged, with the following exceptions: The annual cleaning of sediment from the canal would no longer be needed as most sediment that enters the pipeline would remain suspended in the water and exit the pipe at irrigation turnouts. Minor amounts of sediment would be flushed from the pipe when it is drained at the end of the irrigation season. A screening structure installed as part of the project is designed to be self-cleaning, although periodic maintenance and cleaning would be required. The existing access road along the pipeline would be used to monitor and control the turnouts along the canal. This road would also be used to maintain the valves, measuring devices, and air vents along the pipeline. Annual maintenance of this road would include mowing and blading as needed. This road would be used daily during the irrigation season.

The pipeline system would be simple to operate with no special training required on the part of the water users. Water entering the Leroux Creek pipeline would be measured and controlled using an existing flumegate (a SCADA system referred to as the Rubicon Flumegate), and a new SCADA system installed at the siphon inlet would be used to manage water flow and minimize water loss. Water entering the pipeline from the main canal (upstream of the siphon inlet) would be controlled by an overflow weir and gate that would be used to set the hydraulic grade line at the beginning of the pipeline. Any water in the canal that is in excess of the amount diverted at the headgates would flow down an emergency spillway pipe and discharge into Leroux Creek, along with water diverted for the Jessie Ditch (a total of six to ten cfs would be discharged during the irrigation season). This overflow water would assist with flushing of the trash screen. As mentioned above, all lateral and on-farm turnouts would be controlled and measured, and all overflows would occur at the new emergency spillway at the siphon intake, or the existing spillway at the Leroux Creek pipeline intake (Figure 2b).

2.2.12 Habitat Replacement

As part of the Project, improvements to habitat would occur on a 9.3-acre parcel approximately one mile from the pipeline project area (Figure 1). The improvements include invasive species removal via chemical weed treatment, manual removal and stump treatment of tamarisk and Russian olive, replanting beneficial trees and shrubs, reseeding soil with drought-tolerant seed, and reestablishing beneficial native plant species such as cottonwood, privet, native plum, rabbit brush and sagebrush. Habitat replacement would replace approximately 8.4 habitat units that are expected to be lost due to the loss of canal seepage after pipeline installation.

2.3 Alternatives Considered but Not Analyzed

2.3.1 Alternative Considered but Rejected Prior to FMCRC Project Proposal

Lining the canal segment was considered by FMCRC while developing a feasible project to propose to Reclamation for funding consideration under Reclamation's 2015 Funding Opportunity Announcement. Lining was rejected by FMCRC prior to proposal as it was not deemed to be cost effective. Piping Segment 47 of the FMC and installing a siphon to shorten the overall length of canal piped was proposed to Reclamation. When a project is applicant driven, Reclamation is responsible for analyzing the proposal, and therefore lining Segment 47 of the FMC is not carried forward through the EA analysis.

2.3.2 Complete Removal of Existing Siphon

Removing the existing siphon underneath Leroux Creek would create a disturbed area approximately 30 feet wide by about 250 feet long, perpendicular to the natural drainage of the creek. The area was disturbed previously when the siphon was installed and has grown over, leaving no visible signs remaining on the surface other than a drain. Removal of the siphon would require substantial excavation and backfilling in the creek bed area. Complete removal of the siphon was considered but not analyzed because of the adverse impacts on established vegetation and the potential for accelerated erosion and water quality impacts from surface disturbances near Leroux Creek.

2.3.3 Location of New Siphon

The option of aligning the new siphon either along the western edge or center of a 100-foot easement corridor was considered but eliminated to avoid disturbance to mature trees.

3.0 Affected Environment and Environmental Consequences

This chapter describes the current conditions for each resource that may be affected by the Proposed Action and the No Action alternatives. Information regarding each resource was obtained from research including interviews, pedestrian field assessments, desktop studies, public scoping, and agency coordination as described in Chapters 1 and 5. The section is concluded with a summary of impacts and environmental consequences.

3.1 Environmental Resources Considered but Excluded from Analysis

In order to streamline this EA for the reader, several resources were considered but are not analyzed further. The rationale for excluding the resources from further analysis is as follows:

- **Air Quality.** According to National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency, Delta County meets the requirements for an attainment area, meaning all criteria pollutants are at safe levels. Regulated air pollutants in Delta County, including carbon monoxide, particulate matter (PM 10 and 2.5), ozone, sulfur dioxide, lead, and nitrogen, are below specific limits set for criteria air pollutants under the Clean Air Act (EPA 2017a). During the construction phase for the proposed Project, trenching, excavation, and dirt

work would result in particulate emissions and diesel emissions; however, releases would be minor (two to four pieces of heavy equipment operating at the same time, at most, for a total of 14 months during the construction phase). Releases to the air from construction equipment associated with maintaining the canal would be minimized as a result of the project. Effects on air quality from the proposed Project would be negligible and, therefore, this resource is not carried forward for further analysis.

- **Groundwater.** The U.S. Geological Survey (USGS) prepared a report on the availability, sustainability, and suitability of groundwater on Roger's Mesa (USGS 2008). While piping the canal may reduce contributions to the groundwater table on Roger's Mesa, the contribution of additional irrigation water to the groundwater table due to the decrease in canal conveyance losses could offset some of those reductions; however, data to quantify these potential reductions and contributions is not available. The USGS report includes suggestions for additional studies which would need to be undertaken to develop a numeric model of groundwater flow in the area. Because this information is not available, this resource is not carried forward for further analysis.

- **Recreation.** Minor recreational use of the county roads on Rogers Mesa by pedestrians, bicyclists, and equestrian recreationists occurs; however, residents on Rogers Mesa report very few instances of daily recreational traffic (about two to four occurrences) (Shenk 2017). Fishing activities in Leroux Creek do not occur due to a lack of nearby public access. The canal maintenance roads are not open for public access and use. The proposed Project is not expected to have a discernible effect on recreation and, therefore, this resource is not carried forward for further analysis.

- **Tribal Concerns.** The project area contains land that was occupied by the Ute Tribe, which migrated to the area in the 1600s and occupied the region until expulsion to reservations in 1881 (McDonald 2017). Project notification, along with an invitation to present concerns, was provided in writing on December 1, 2016, to the Southern Ute Indian Tribe, Ute Mountain Ute Tribe, and Ute Indian Tribe - Uintah and Ouray Reservation. No response was received.

- **Socioeconomic Effects.** Socioeconomic impact analyses are intended to analyze population-scale, measurable changes in economic assets. The economic asset associated with the Proposed Action is water. Piping the FMC would not result in a change in value of the canal water and, without a measurable change, there are no effects to analyze.

- **Environmental Justice.** The Council on Environmental Quality (CEQ) has provided guidance on addressing environmental justice under NEPA (CEQ 1997). Under the guidance, minority populations are identified where the percentage of minorities in the affected area exceeds 50 percent, or where the minority population percentage of the affected area is meaningfully greater than the minority population percentage of a much broader area. Within the Hotchkiss area, including Rogers Mesa, portions of the population are a minority race and/or Hispanic or Latino. The communities, however, would not constitute Executive Order (EO) 12898 populations as the Hispanic or Latino and non-White populations do not exceed 50 percent of

the total population and are not meaningfully greater than Colorado's non-White and Hispanic or Latino populations. Non-white minority populations in Hotchkiss are below or comparable to Colorado's and Delta County's non-White minority populations (U.S. Census Bureau (USCB) 2016). Effects on environmental justice populations are not expected as a result of this project and, therefore, this resource is not carried forward for further analysis.

All other resources considered and analyzed are presented in the remainder of this chapter, along with a discussion regarding cumulative effects. Environmental commitments necessary to mitigate the effects of the project on the human and natural environment are discussed in Chapter 4.

3.2 Water Rights

The FMC is a public facility owned by Reclamation and operated by the FMCRC. The majority of its water is delivered to four private ditch companies near the end of the canal, including the Jesse Ditch, and the Rogers Mesa Water Distribution Association's East, Slack and Patterson Laterals (NFWCD 2016). Water for the Jessie Ditch is diverted down a steep adobe slope in the Leroux Creek drainage, upstream of the start of the project area. Delivery gates for the Rogers Mesa East, Slack and Patterson Laterals are located along the length of the FMC in the project area (Figure 2a).

Currently, 208 cfs are decreed to the FMCRC for irrigation from the North Fork of the Gunnison River, 70 cfs are decreed from Terror Creek, and 40 cfs are decreed from Roatcap Creek. In addition, water rights decreed for domestic and stock use during the non-irrigation season (winter stock water rights) are 30 cfs, diverted from the North Fork of the Gunnison River.

FMC's diversion is located just downstream of the town of Somerset on the North Fork of the Gunnison River and supplies approximately 34 miles of irrigation canals (30 miles for the FMC, and another 4 miles for the FMC extension); water in the canals flow generally west. The headgate diversion capacity is 200 cfs, but diversions are generally held to 165 cfs to allow for fluctuations in the river level (DCD 2001). The greatest amount of water used is below Leroux Creek, in the Proposed Action area (DCD 2001).

The history and changes to FMC's water rights, particularly during the Paonia Project in the mid-1960s, is provided in the North Fork Water Conservancy District's 2001 Water Management Plan (DCD 2001). FMC's most senior water right dates back to 1904 (50 cfs). In 1914, a second water right of 44.5 cfs was obtained, and in 1930 additional water rights were decreed from several tributaries, including Terror Creek, Stephens Gulch, Roatcap Creek, Runzel Creek, Love Gulch and Jay Creek, as well as the North Fork of the Gunnison River. The cumulative diversions from all tributaries were limited to 125 cfs (DCD 2001).

Several changes were made to water rights during and following the development of the Paonia Project in the 1960s. In 1967, diversions upstream of the project were moved to downstream, and water rights exchanged to allow for flows into Paonia Reservoir and to stabilize outflows for irrigation throughout the growing season. This supplemental operation and water distribution contract with Reclamation was signed by three companies, including the North Fork Water Conservation District, Leroux Creek Water User's Association, and the FMCRC (then Fire Mountain Canal Company) (DCD 2001). In 1975, the water

right from Runzel Creek was transferred to the Burns Ditch, and in 1985, water rights from Stephens Gulch, Love Gulch, and Jay Creek were abandoned (DCD 2001).

Water delivery loss along the canal due to evaporation, vegetation along the canal, and seepage in the Proposed Action area is estimated to be about 0.95 cfs per day per mile (DCD 2001). Based on this measurement, around 1,289 acre-feet of water is lost annually from Segment 47.

3.2.1 No Action Alternative

Under the No Action alternative, the existing FMC would continue to operate as it has historically operated. Seepage and water loss due to evaporation would continue. Water would continue to be allocated as it is currently allocated.

3.2.2 Proposed Action

Under the Proposed Action, no changes would occur to existing, decreed water rights. The FMCRC would have the ability to better manage its allocation of water through efficiencies gained from piping the delivery system and eliminating seepage. A more reliable water delivery system would be in place for the delivery of existing water rights due to updates to the gate system (i.e., butterfly valves) for farm turnouts, and uniform pressurized water would be delivered to 13 existing turnouts along the system. Water management would be improved by the installation of remote monitoring and control (SCADA system) at the new siphon inlet, minimizing unnecessary spills.

3.3 Surface Water

Surface water features in the project area include the canal itself, an intermittent waterway which normally flows between April and September; Leroux Creek, a perennial drainage on the east end of the project area; and Stingley Gulch, an intermittent drainage at the west end of the project area that receives flow from the FMC. Several small unnamed vegetated swales also occur in the project area and may flow during storm events, but are not labeled on the USGS maps and do not exhibit bed and bank characteristics. Big Gulch is an intermittent drainage west of Stingley Gulch, where the Habitat Replacement is proposed for the FMCRC project.

Water for irrigation conveyed by the FMC is obtained within the North Fork of the Gunnison watershed (North Fork) (HUC North Fork Gunnison 14020004), spread onto farms and fields, and excess water is returned to the same watershed at points along the mesa. The FMC conveys an average of 135 cfs through Segment 47 during normal conditions for the purposes of farming on Rogers Mesa (ITRC 2016). The existing alignment of the FMC includes a buried siphon beneath Leroux Creek and an emergency spillway at the point of the existing siphon inlet. Excess irrigation water drains at the end of the canal into Stingley Gulch. Leroux Creek and Stingley Gulch are eventually tributary to the North Fork of the Gunnison River, southwest of the project area. The North Fork of the Gunnison River then converges with the mainstem of the Gunnison River approximately 5 miles from the project area. The Gunnison River is tributary to the Colorado River.

Water delivery loss along the canal due to evaporation, vegetation along the canal, and seepage in the Proposed Action area is estimated to be about 0.95 cfs per day per mile (DCD 2001). Based on this measurement, around 1,289 acre-feet of water is lost annually from Segment 47.

3.3.1 No Action Alternative

Under the No Action alternative, there would be no change to the existing system. Water delivery would continue for FMC shareholders along Rogers Mesa using the existing open ditch. Water loss from evaporation, uptake of water by vegetation along the canal, and seepage would continue. Routine maintenance of the canal would continue. Water delivered via gravity flow to farms would continue to be laid onto the fields primarily through open ditches, and the pressure and flow would vary depending on the operation of the canal and the season. There would be no change to other waters in the project area, including Leroux Creek, Stingley Gulch, or Big Gulch.

3.3.2 Proposed Action

Under the Proposed Action, 3.9 linear miles of existing open canal would no longer be a surface water feature, and 0.5 mile of open canal would be decommissioned. The FMCRC reviewed definitions and guidance found in the following regulations: 33 CFR 323.2 (Definitions); 33 CFR 323.4 (Discharges not requiring permits); and Regulatory Branch Memorandum 2007-02 (Applicability of Agricultural Exemptions). Based on review, the FMCRC provided a written request to the Corps, asking for concurrence that the project is exempt from permitting requirements under Section 404(f)(1)(C) of the Clean Water Act. The Corps concurred that a permit is not required for this work (SPK-2018-00331) (Appendix H).

Leroux Creek would be temporarily disturbed by the installation of a new siphon. Creek water would be diverted temporarily into a pipe and routed around the construction area. During siphon construction, a trench would be constructed and the siphon installed through the drainage and its banks. An area about 30 feet long by 30 feet wide through the creek bed itself would be disturbed, and a 50-foot wide corridor through the riparian area on the south side of the drainage would be disturbed.

As described in Section 2.2.4, flowfill would be placed around the siphon to seal the siphon area and ensure the subsurface hydrology of the creek is not affected by the project. Existing creek substrate and top soil set aside during construction would be replaced, and the creek bed, bank, and alignment would not be permanently impacted. A revegetation plan including reseeding, replanting salvaged shrubs and sod, bank stabilization and erosion control, and management of storm water flows during construction would ensure site restoration.

Irrigation water for Jessie Ditch and excess canal water (about six to ten cfs, total) would be released at the new siphon location via a newly installed emergency spillway, about 800 feet upstream of the existing diversion for the Jessie Ditch (see Figure 2a). An additional 6 to 10 cfs would flow along the 800 feet within the creek bed in this area. The creek is of sufficient size to accept the proposed minimal increase in flows (personal communication, Craig Ullman, P.E.).

The ephemeral drainages/swales in the project area would be temporarily affected by construction activities. Reseeding would occur to revegetate the canal corridor with upland vegetation.

There would be no change to Stingley Gulch. It would continue to receive tailwater from the canal.

There would be beneficial changes to Big Gulch as a result of the Habitat Restoration Plan. Weed control and other improvements would benefit the Big Gulch and its wetland and riparian buffers.

3.4 Water Quality

Irrigation practices in the project area which result in deep water percolation through Mancos Shale contribute to downstream selenium and salinity levels, adversely affecting the water quality of the Colorado River Basin.

In the last 10 years, selenium concentrations in Leroux Creek have ranged from below detection to 13 µg/L (Colorado Division of Parks and Wildlife (CPW) 2017b). Leroux Creek and the mainstem of the North Fork of the Gunnison River have been classified as impaired waters in accordance with Section 303(d) of the Clean Water Act, due to the effects of selenium on aquatic life (CDPHE 2016; EPA 2017b). Concentrations of selenium in the North Fork of the Gunnison River account for about eight percent of the selenium load in the Lower Gunnison River Basin (CDPHE 2011).

According to the State of Colorado standards for selenium in the Gunnison and Lower Dolores River Basins, acute effects to aquatic systems can occur at 18.4 µg/L, and chronic effects can occur at 4.6 µg/L (CDPHE 2017).

According to the Environmental Protection Agency's *Aquatic Life Ambient Water Quality Criterion for Selenium* (EPA 2016), which provides guidance to states based on the latest scientific knowledge of pollutants in water, even lower levels of selenium can have adverse effects, due to the bio accumulative properties of selenium. For example, the lentic (still water/wetlands) criterion for selenium is 1.5 µg/L (median) and the lotic (flowing water) is 3.1 µg/L (median) (EPA 2016).

Irrigation water diverted from the FMC for the Jessie Ditch is currently released into Leroux Creek about 800 feet downstream of the project area (Figure 2a). Based on visual observations, this irrigation water carries silt and sediment associated with water conveyed by the FMC into Leroux Creek (verbal communication, William Hillyard). The extent of silt and sediment loading has not been quantified. Historical testing of Leroux Creek and the FMC in 2000 by the USGS indicates that the conductivity and selenium levels of these two sources is nearly the same (about 100 to 200 micro siemens/cm; 0.7 mg/L) (CDSN 2018).

3.4.1 No Action Alternative

Under the No Action alternative, irrigation practices would continue, with seepage from the canal and gravity-delivered field irrigation practices contributing an estimated 2,365 tons of salt and an unquantified amount of selenium to the North Fork of the Gunnison River annually (FMC 2015).

3.4.2 Proposed Action

Under the Proposed Action, replacing the open ditch with pipe would eliminate seepage from the ditch system, and therefore is estimated to remove 2,365 tons of salt loading into the Colorado River on an annual basis. In addition, an unquantified amount of selenium would be prevented from entering the North Fork of the Gunnison River, and eventually the Colorado River watershed (FMC 2015). An unquantifiable reduction in selenium loading would occur as a result of the project.

Utilizing the proposed emergency pipeline for the delivery of Jessie Ditch water and abandoning the existing delivery ditch along the steep slope down to Leroux Creek would potentially decrease the silt and sediment load carried into Leroux Creek by an unknown amount. The amount of silt and sediment loading into Leroux Creek from FMC irrigation water would remain unchanged from existing conditions; however, the silt and sediment loading would occur 800 feet upstream of the existing delivery ditch and Jessie Ditch diversion. Based on the results of historic testing of Leroux Creek and the FMC, salinity and selenium levels in Leroux Creek below the proposed Jessie Ditch water delivery pipeline are not expected to change.

3.5 Access, Transportation, and Public Safety

Generally, road traffic on L Road and other county roads is intermittent and sparse, consisting primarily of local farm traffic. Commuter traffic on 3100 Road exists between rural residential housing on Redlands Mesa and population centers up valley such as the towns of Hotchkiss and Paonia, with recent traffic counts as high as 1,843 vehicles over the 24-hour period of July 6, 2016. By contrast, traffic counts along 3250 Road (approaching L Road) were 274 vehicles during the same 24-hour period (Delta County 2017).

3.5.1 No Action Alternative

Under the No Action alternative, there would be no change to access or transportation on Rogers Mesa.

3.5.2 Proposed Action

Construction materials would be transported by flatbed tractor trailers (18-wheelers) to the project area. During construction, four to eight trips of tracked heavy equipment would be made daily between the staging areas and the project area. About 15 people would be on-site, generally during the business day and weekdays. There would be an increase in traffic for transportation and access during construction, but the effects would be minor due to the limited number of required vehicles and the temporary nature of the construction timeframe.

The issue of potential conflicts for a major construction project relying on access to and from the project area on the narrow county roads with no shoulders was raised during public scoping. To mitigate effects, staging areas have been obtained as close as possible to the project area (Figure 2a). Under the Proposed Action, access to the project area during construction would be obtained from existing maintenance roads along the canal (3100 Road, Stingley Gulch, and L Road) and from SH 92, approximately 1 mile south of the project area. Safety-related visibility issues for drivers on the

roadway due to increased construction traffic would be minimized by using signs to notify drivers, and the FMCRC will coordinate construction activities and traffic concerns with Delta County.

3.6 Vegetation

The FMC traverses several vegetation community types and carries irrigation water seasonally from mid-April to late August. Lateral water seepage from the canal supports a riparian fringe habitat along the canal and willows, rushes and sedges occur in areas where vegetation has not been cleared during routine canal maintenance. An access road parallels the canal, is routinely mowed, and weeds along it are treated with herbicide.

In the eastern upper part of the project area (Leroux Creek drainage area, Figure 2a), the canal is located along steeply sloped and sparsely vegetated, adobe dry land. The predominant plant species in this area consists of four-wing saltbush (*Atriplex canescens*) and big sagebrush (*Artemisia tridentate*), as well as other dryland species such as yellow sweet clover (*Melilotis officinales*) and rabbitbrush (*Ericameria nauseosa*). Noxious weeds are present, such as Canada thistle (*Cirsium arvense)*, Russian knapweed (*Acroptilon repens*), Russian thistle (*Salsoa iberica*), and cheatgrass (*Bromus tectorum*).

The canal then crosses under the Leroux Creek drainage through a siphon along a vegetated north-facing slope (Figure 2a). The Leroux Creek drainage area is predominantly a dry riparian woodland and shrubland plant community, consisting of pinyon (*Pinus edulis*), Rocky Mountain juniper (*Juniperus scopulorus*) and Utah juniper (*Juniperus osteosperma*) trees, sumac (*Rhus trilobata*), Gambel oak (*Quercus gambelii*), big sagebrush (*Artemisia tridentate*), and greasewood (*Sarcobatus nees*), with mature cottonwood (*Populus fremontii*), coyote willows (*Salix exigua*) and other riparian species growing in closer proximity to Leroux Creek.

Once out of the drainage, the canal heads south across farmland and fallow land on the mesa top (Figure 2a). Plant diversity and vegetative condition along the ditch is limited due to current farming and residential practices, as well as annual maintenance activities (clearing vegetation from the ditch banks with a track hoe) and maintenance of the canal access road. Nonnative weedy species and dryland farm grasses are common within and adjacent to the canal access road. Vegetation observed in the project area is listed in Appendix B.

The project area also includes a habitat replacement site, which is located about one mile west on Big Gulch. This area supports a weedy riparian corridor with several small ponds, abundant tamarisk and Russian olive.

3.6.1 No Action

Under the No Action alternative, there would be no change to vegetation along the FMC.

3.6.2 Proposed Action

Most impacts under the Proposed Action would be confined to the ditch prism and associated roadway. Fringe riparian habitat as well as trees and shrubs close to the ditch (primarily willow, elm, and Russian olive) would be lost due to disturbance from construction and due to loss of water seepage from the

canal. Minor beneficial effects to vegetation would occur, as annual maintenance/vegetation disturbance along the canal or the application of spray along canal banks to control weeds would no longer be required (a maintenance road would still exist, however).

Piping of the canal would cause a change in vegetation communities. Approximately 2.4 acres of riparian vegetation along the canal would be permanently converted to upland pasture on Rogers Mesa and to upland species in the Leroux Creek drainage (ERO 2017a). Impacts to vegetation communities as a result of the implementation of the Proposed Action are summarized in Table 2. A habitat loss evaluation related to loss of the riparian/wetland vegetation community was performed for the Proposed Action area by ERO Resources (ERO 2017a) and is summarized in the Wildlife section (see Section 3.7.2).

Table 2. Projected Habitat Loss from Impacts to Vegetation Communities.

Vegetation Community	Habitat loss (acres)
Willow fringe bordering farmland	1.20
Herbaceous fringe bordering farmland	0.31
Willow fringe on adobe slopes	0.23
Cottonwood/willow riparian	0.67
Total	2.40

Riparian vegetation in some sections of the project area which are adjacent to irrigated fields and/or wastewater ditches are expected to persist due to the availability of tailwater and wastewater ditches draining back toward the canal area. This water source would lessen the effects on existing riparian vegetation when the open ditch is put into pipe. The project area intersects low-lying swales or drainages in several places as shown on Figure 2a, and water sources for riparian vegetation in these areas are assumed to be isolated from the ditch, and should not be affected as a result of the project. In the Leroux Creek drainage area (see Figure 2a), some vegetation on the sideslopes downgradient of the canal may be supported by canal seepage, and experience dry-up once the canal is piped. Those indirect vegetation dry-up effects are included in the impacts summarized in Table 6.

Approximately two-thirds of the pipeline alignment (more than 2 miles) would be situated within the existing irrigation canal or within planted agricultural fields (see Figure 2a, Rogers Mesa Area).

One new underground water siphon would be constructed through the Leroux Creek drainage and beneath Leroux Creek, requiring grubbing and clearing of approximately 1.1 acres of vegetation within the drainage area. The construction corridor through the drainage channel would be constrained to 50 feet to minimize disturbance as much as possible. Although the corridor would be replanted, there would be a temporary loss of overstory due to the removal of approximately 45 trees larger than 3 inches diameter at breast height. Trees include cottonwood, Russian olive, and Siberian elm in approximately equivalent numbers (i.e., about 15 of each type of tree). Understory regrowth would occur, and the corridor is expected to recover in a similar fashion as the existing siphon area (Photo Log, Appendix C). Disturbed areas would be recontoured and reseeded; however, recovery would occur over 5 years to several decades. To mitigate effects on vegetation adjacent to the creek and to control erosion, seeding and pole plantings would occur. An Environmental Restoration Plan detailing methodologies and types, amounts, and locations of plant species has been developed for the site.

3.7 Wildlife Resources

The Leroux Creek drainage area (see Figure 2a) is secluded and heavily vegetated, particularly along the north-facing slope. Wildlife, including elk, deer, foxes, mountain lions, skunks and other small mammals, amphibians, reptiles, raptors and a variety of migratory birds frequent the area. Fish are present in Leroux Creek (primarily brown trout and brook trout). The Leroux Creek drainage area is mapped as mule deer and elk severe winter range. The area contains several patches of mature, dense cottonwood trees, with a dense mid-story shrub layer.

The Rogers Mesa portion of the project area traverses gently sloped areas adjacent to fallow fields, irrigated fields, orchards, vineyards, and intersecting county roads. The mesa top landscape is fragmented with very few connecting corridors that would provide cover for wildlife. Low-lying swales or draws occur at three places along the canal route, which follows a gentle gradient. Residences and outbuildings are within sight of the FMC on Rogers Mesa. This area is mapped as mule deer and elk severe winter range, and mule deer winter concentration area (CPW-NDIS 2016). Deer and occasionally elk migrate through this area for foraging in winter; however, wildlife fences are frequent barriers to natural movement. The FMC provides a drinking water source for wildlife on the mesa, particularly in the winter.

Areas within both the Leroux Creek Drainage Area and Rogers Mesa Area are subject to an existing level of disturbance, due to canal operation and maintenance including routine weed spraying, system monitoring and operation, and annual ditch cleaning with heavy equipment (typically occurring in the late winter). On Rogers Mesa, farming activity, residential development and roads present a year-round, persistent disturbance to wildlife. The proposed new siphon location is remote and relatively undisturbed, although it is bounded on the north and south by the existing canal and access road.

Migratory bird species associated with western riparian habitat and adjacent upland pinyon-juniper and Gambel's oak habitat were observed in the project area. Species include yellow warbler (*Setophaga petechia),* yellow-rumped warbler (*Setophaga coronata*), plumbeous vireo (*Vireo plumbeus*), black phoebe (*Sayornis nigricans*), song sparrow (*Melospiza melodia*), mourning dove (*Zenaida macroura*), violet-green swallow (*Tachycineta thalassina*), spotted towhee (*Pipilo maculatus*), green-tailed towhee (*Pipilo chlorurus*), wild turkey (*Meleagris gallopavo*), and red-tailed hawk (*Buteo jamaicensis*). No Birds of Conservation Concern (BCC), species identified by the Service as top priority for conservation, were observed (USFWS 2008). However, habitat exists for several BCC: Bald eagle (*Haliaeetus leucocephalus*), pinyon jay (*Gymnorhinus cyanocephalus*), gray vireo (*Vireo vicinior*), juniper titmouse (*Baeolophus ridgwayi*), Brewer's sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), and Lewis's woodpecker (*Melanerpes lewis*).

A raptor survey conducted on May 2, 2017, observed an active red-tailed hawk nest located within 0.3 mile of the existing siphon; no other raptor nests were found. Raptors may nest downgradient of the project area within the Leroux Creek drainage area and in trees on Rogers Mesa; however, a raptor survey was not conducted on Rogers Mesa. A prairie dog town is present at the staging area near 3100 Road (Figure 2b), and could provide burrowing owl nesting habitat, though nesting is rare in Delta County (Colorado Bird Atlas Partnership 2016). CPW has mapped the Leroux Creek drainage area as

bald eagle winter concentration area (CPW-NDIS 2016). The closest known bald eagle winter roost is about 3 miles from the project area and the closest nest is about 2 miles from the project area.

State threatened or endangered species (state sensitive species) that could potentially be affected by the proposed Project were analyzed (CPW-NDIS 2016). During October 2016 surveys, several northern leopard frogs (*Rana pipiens*), a state sensitive species, were found along the canal in an area bordered by planted cottonwood trees (Appendix C, Photo 11). No other state-sensitive species were observed during the surveys.

Aquatic resources downstream of the project area include four species of federally endangered Colorado River native fish discussed in Section 3.8; these fish species are currently affected by degraded water quality in the river due to salinity and selenium loading from open-ditch irrigation practices in the Colorado River watershed. Jessie Ditch diverts essentially all of Leroux Creek's water approximately 425 feet downstream of the project area. The lack of water limits the amount of aquatic species that can be supported in Leroux Creek downstream of the project area.

3.7.1 No Action

Under the No Action alternative, there would be no direct effects on wildlife from construction. The FMC would continue to indirectly contribute to high salinity and unquantifiable amounts of selenium in the Colorado River Basin, degrading downstream water quality for aquatic species. The FMC would continue to provide drinking water for incidental wildlife. Heavy equipment would continue to be used in the Leroux Creek Drainage Area on an annual basis to clean and maintain the open canal.

3.7.2 Proposed Action

Under the Proposed Action, wildlife could be affected by three different types of impacts: temporary construction impacts, temporary habitat loss, and permanent habitat loss.

3.7.2.1 Temporary Construction Impacts

A temporary increase in construction noise, dust, emissions, and a general increase in human activity would occur throughout the project area over two winter seasons. The duration of construction of the new siphon through the Leroux Creek Drainage Area is expected to last four to eight weeks. Wildlife could be displaced by the increased human presence, though not during critical breeding seasons for most wildlife. The area is within severe critical winter range for elk and deer established by the CPW, but is small in scale given the size of their severe critical winter range (17,200 acres for elk, for example, based on desktop analysis of data from the CPW). To mitigate effects on wildlife, especially on migratory birds and BCC species, timing restrictions would be imposed, and construction would only occur outside of the active nesting season for migratory birds and raptors. The active season is generally from April 1 to July 15 for most small birds, and February 15 to July 15 for most raptors. Pre-construction surveys for raptors would be completed if construction in the Leroux Creek Drainage Area would occur beyond February 15. (Note: Additional timing restrictions during the yellow-billed cuckoo breeding season, June 1 through August 31, is discussed in Section 3.8.2 and Table 7). Stream habitat may be temporarily disrupted in the 30-foot stream stretch affected during construction of the Leroux

Creek siphon, although timing restrictions (e.g., winter construction) would keep disruption to aquatic species to a minimum.

3.7.2.2 Temporary Habitat Impacts

The installation of the siphon would clear approximately 1.1 acres of vegetation, including potential wildlife nesting and sheltering habitat composed of pinyon-juniper woodlands, Gambel's oak, and riparian vegetation. After construction, the disturbed area in the drainage would be replanted with native riparian species, and covered or screened with slash to provide cover for the wildlife living, foraging, or migrating through the area.

3.7.2.3 Permanent Habitat Impacts

The Colorado River Basin Salinity Control Program stipulates that no net habitat value be lost during the construction of their projects. Public Laws 98-569 and 104-20 associated with the Salinity Control Act require that the Secretary of the Interior "shall implement measures to replace incidental fish and wildlife values foregone" and develop a program that "shall provide for the mitigation of incidental fish and wildlife values that are lost".

Riparian habitat losses expected due to the project are summarized below; these losses are expected to occur during ditch construction or over time from loss of canal water seepage. In addition to vegetation loss, 3.9 miles of open ditch water would no longer be available as a water source for wildlife during the irrigation season (April 15 to September 15), or during the winter (tailwater and stock water flows are typical throughout the winter). Effects would be minor, as wildlife would have access to other sources of open water, such as the nearby Highline ditch which flows through the winter, a number of constructed ponds on the mesa, and Leroux Creek.

Aquatic habitat would be impacted by the project, although most suitable aquatic habitat for fish is upstream of the project area. Aquatic wildlife may be affected by moving the Jessie Ditch outflow into Leroux Creek 800 feet upstream, which would create about six to ten cfs of increased flow during irrigation season (April through September, generally; see also Section 3.3.2). It is possible that the increase in water flows may improve the habitat within the streambed and banks along the 800-foot stretch. During periods when FMCRC water is silty/sandy, the new upstream release location may cause a degradation in water quality along the 800-foot stretch of stream, which may adversely affect the aquatic habitat. During periods when FMCRC water is clear (typically in good weather and in mid to late summer), piping the existing open Jessie ditch may benefit water quality in the creek, due to reduced sedimentation load. Acreages for each habitat type were calculated based on an October 3, 2016, field survey, photographs, and overlay of the proposed project area on a 2015 aerial photo using ArcGIS software. To determine the value of habitat type and plan for its replacement, each habitat type is given a Habitat Quality Score (HQS). This score is based on criteria such as vegetative diversity, degree of stratification, degree of native vs. non-native species, presence of noxious weeds, overall health/condition, degree of interspersion of vegetation with open water, connectivity with other habitat types, uniqueness, water supply, and degree of human alteration. The Total Habitat Value (THV) is calculated for each affected wetland or riparian habitat area by multiplying the acreage of habitat lost

by the Habitat Quality Score (HQS). According to these calculations, a total of 8.4 habitat units would be lost as a result of the project (Table 3).

Table 3. Projected Total Habitat Loss Value from Proposed Action.

Habitat Type	Acres Affected	Habitat Quality Score	Total Habitat Value
Willow fringe	1.20	3.2	3.83
Herbaceous fringe bordering farmland	0.31	3.4	1.05
Willow fringe on adobe slopes	0.23	2.9	0.66
Cottonwood/willow riparian	0.67	4.3	2.88
		Total Units Lost	8.4

The permanent loss of fish and wildlife values foregone as a result of the Proposed Action would be mitigated through implementation of a habitat replacement plan (Wildlife Natural Resource Concepts and Solutions, LLC. 2018), as required by the Salinity Control Act. To replace an estimated habitat loss of approximately 8.4 habitat units, the FMCRC plans to implement a habitat improvement project approximately 1 mile west of the pipeline project in Big Gulch, an area that has been affected by invasive weeds including Canada thistle, burdock, Russian knapweed, tamarisk, and Russian olive. The project would involve manually removing Russian olive and tamarisk, chemically treating non-native invasive weeds to control infestations, planting beneficial trees and shrubs, and reseeding soil with native, drought-tolerant seed to establish a variety of native plant species that are beneficial to wildlife. Native plants such as cottonwood, native plum, willow, four-winged saltbush, rabbit brush and sagebrush would be planted.

3.8 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 protects federally listed endangered, threatened, and candidate plant and animal species and their critical habitats. This section evaluates potential impacts on species listed or proposed to be listed, as well as their designated or proposed critical habitat, as a result of implementation of the Proposed Action.

A survey for species protected under the ESA was conducted on October 16, 17, and 24, 2016, by Wildlife and Natural Resource Concepts & Solutions LLC. An additional survey was conducted by ERO Resources Corporation on April 17, May 2, and May 23, 2017.

Table 4 lists the ten federally threatened, endangered, proposed, or candidate (TEPC) species that have the potential to occur in the project area or be affected by actions in the project area, along with habitat descriptions (ERO 2017a; FWS-IPAC 2017). Based on existing habitat within the project area and known habitat preferences for listed species, potential habitat for the yellow-billed cuckoo (*Coccyzus americanus*), Colorado hookless cactus (*Sclerocactus glaucus),* and clay-loving wild buckwheat *(Eriogonum pelinophilum)* exists in the project area. Surveys for the two plant species did not locate any individuals or populations in the project area. No potential habitat for the eight other listed species occurs within the project area.

Table 4. Federally Threatened and Endangered Species with Potential to Occur in the Project Area.

Common Name (*Scientific Name*)	Status	Habitat Description	Potential to Occur in Project Area
Bonytail chub (*Gila elegans*)	Endangered	Found within the Colorado River and its tributaries.	No, but downstream water effects should be considered.
Colorado pikeminnow (=squawfish) (*Ptychocheilus lucius*)	Endangered	Found within the Colorado River and its tributaries.	No, but downstream water effects should be considered.
Humpback chub (*Gila cypha*)	Endangered	Found within the Colorado River and its tributaries.	No, but downstream water effects should be considered.
Razorback sucker (*Xyrauchen texanus*)	Endangered	Found within the Colorado River and its tributaries.	No, but downstream water effects should be considered.
Greenback cutthroat trout (*Oncorhynchus clarki stomias*)	Threatened	Mid- to high-elevation mountain streams.	No- No habitat occurs within the project area
Clay loving wild buckwheat (*Eriogonum pelinophilum*)	Endangered	Occurs on rolling clay adobe hills and flats; white, alkaline clay barrens derived from the Mancos Shale Formation. Elevation range is 5,180 to 6,350 feet.	No – Limited habitat is present and plant surveys did not locate the species
Colorado hookless cactus (*Sclerocactus glaucus*)	Threatened	Exposed, gravel-covered clay hills; in saltbrush or sagebrush flats; or in pinyon-juniper woodlands.	No - Limited habitat is present and plant surveys did not locate the species
Gunnison sage-grouse *(Centrocercus minimus)*	Threatened	Sagebrush patches with at least 25 percent of the land dominated by a sagebrush cover.	No, the project area is outside the historic range for the species. Additionally, no habitat occurs in the project area
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Deciduous riparian woodlands, with dense cottonwood and willow, and sometimes tamarisk/Russian olive.	Yes, potential habitat exists in Leroux Creek drainage.
North American wolverine (*Gulo luscus*)	Threatened	In alpine conifer forests, tundra, and remote grasslands and shrublands.	No habitat occurs within the project area.

Source: USFWS-IPaC 2017; NatureServe 2017.

Four Endangered Colorado River Basin Fish: The upper Colorado River Basin has four fish species listed as endangered: bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker. Decline of these fish species is due, at least in part, to habitat destruction (diversion and impoundment of rivers) and competition and predation from introduced fish species. In 1994, the Service designated critical habitat for the four endangered fish species in the Federal Register (56 FR 54957-54967), which in Colorado includes the 100-year floodplain of the upper Colorado River from Rifle to Lake Powell, and the Gunnison River from the city of Delta to the city of Grand Junction. These species are described in more detail in Appendix D.

Previously issued biological opinions state that all depletions within the upper Colorado River Basin may adversely affect the four fishes. Water depletions in the Gunnison River Basin have the potential to diminish backwater spawning areas in downstream designated critical habitat in the Colorado River Basin, directly affecting the four endangered fishes and the extent and quality of their designated critical habitat.

The Upper Colorado River Endangered Fish Recovery Program (Recovery Program) was established in 1988 as a partnership of public and private organizations working to recover the four species while

allowing continued and future water development. Recovery strategies include conducting research, improving river habitat, providing adequate stream flows, managing non-native fish, and raising endangered fish in hatcheries for stocking. In 2011, the Service has determined that the Recovery Program has made "sufficient progress to be the reasonable and prudent alternative to avoid the likelihood of jeopardy to the endangered fishes and to avoid destruction or adverse modification of their critical habitat" for "existing depletions" (USFWS 2011). Furthermore, the Gunnison River Basin Programmatic Biological Opinion (PBO) issued by the Service in 2009, found that the Recovery Program is the reasonable and prudent alternative to avoid jeopardy to the endangered Colorado River fishes and avoid adverse modification of designated critical habitat (USFWS 2009). The PBO addressed the depletions associated with the operation of the Paonia Project (Paonia Reservoir and Dam), which covers an existing estimated average annual depletion of 10,000 acre-feet a year. FMC diverts late season irrigation water from Paonia Reservoir, and these depletions are addressed in the PBO; however, the remainder of FMC's depletions which are not associated with Paonia Project water are not covered under the PBO.

Greenback Cutthroat Trout: 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 early summer. Greenback cutthroat trout habitat may occur on the Grand Mesa high above the project site; however, no suitable habitat occurs in the project area (Kowalski 2016).

Clay-Loving Wild Buckwheat: Clay-loving wild buckwheat is federally listed as endangered and is only found in Delta and Montrose counties in Colorado (Spackman et al. 1997). Clay-loving wild-buckwheat is a low, stout perennial herb, five to ten cm in height, with clusters of white or cream-colored flowers that bloom in June and July. The species is threatened by irrigated agricultural land and residential development, oil and gas development, grazing, off-road vehicles and other human activities. There are 19 principal occurrences documented (NatureServe 2017). This small shrub occurs in alkaline clay soils in Mancos Shale badlands at an elevation of about 5,200 to 6,400 feet. It prefers swales and lower slopes, where the highest density of plants are found. Clay-loving wild-buckwheat occurs in sparsely vegetated salt desert shrub communities (NatureServe 2017). Designated critical habitat for clay-loving wild buckwheat is located about 6 miles west of the project area. The south-facing slope of the Leroux Creek drainage along adobe bad lands has potential habitat for the clay-loving wild buckwheat. In October 2016 and May 2017, habitat in the project area was surveyed for sensitive plant species including clay-loving wild buckwheat, and no individuals were found.

Colorado Hookless Cactus: The threatened Colorado hookless cactus is a small cactus normally found on gravelly alluvial soils or in clay between 4,500 and 6,000 feet, and can be associated with shadscale, sagebrush, greasewood, saltbrush, and other desert vegetation. In Colorado, it has been documented in Montrose, Delta, Gunnison, Garfield, and Mesa Counties. Threats may include trampling from grazing, recreational use of lands, off-road vehicle use, and development. Past reports indicate populations present on benches along the North Fork of the Gunnison River from Hotchkiss downstream to the Escalante State Wildlife Area (NatureServe 2017). The south-facing slope of the Leroux Creek drainage

along adobe bad lands has potential habitat for the Colorado hookless cactus. In October 2016 and May 2017, habitat in the project area was surveyed for sensitive plant species including Colorado hookless cactus, and no individuals were found.

Gunnison Sage-Grouse: In 2014, the Service listed Gunnison sage-grouse as a "threatened" species. The Gunnison sage-grouse is a unique species of sage-grouse found in central and western Colorado and eastern Utah. They are about one-third smaller than the greater sage-grouse, and males have more distinct, white tail feathers and filoplume. Female Gunnison and greater sage-grouse have nearly the same plumage, but the female Gunnison is about one-third smaller than greater sage-grouse. CPW and the Service have identified seven Gunnison sage-grouse populations in Colorado: Pinion Mesa, Crawford, San Miguel Basin, Gunnison Basin, Dry Creek Basin, Dove Creek, and Poncha Pass. Human development, livestock grazing, water diversion projects and increased ungulate populations have all contributed to historic losses of habitat for the Gunnison sage-grouse. No suitable or designated critical sage-grouse habitat occurs in the project area. The closest occupied habitat is approximately 4 miles south of the project area (CPW 2017b).

Yellow-Billed Cuckoo: The western yellow-billed cuckoo is listed as "threatened" under the ESA. The species breeds in large blocks of riparian habitat, in particular, mature cottonwood woodlands with dense understory foliage. Based on historical accounts, the species was localized and uncommon along Colorado drainages while being locally common in other western areas. The species was probably never common in western Colorado and is now extremely rare. In 1998, 242 miles of riparian habitat were surveyed along six rivers in west-central Colorado with only one cuckoo detected (Rocky Mountain Bird Observatory 2012). However, in 2008, a breeding pair was confirmed along the North Fork of the Gunnison River. Although the Leroux Creek drainage is not proposed critical habitat, proposed critical habitat is located 2.3 miles from the project area downstream on the North Fork of the Gunnison River (USFWS IPAC 2017).

Based on a field review by ERO in April and May 2017, the Leroux Creek drainage contains several patches of mature dense cottonwood trees, with a dense mid-story shrub layer, providing suitable habitat for the yellow-billed cuckoo. A relatively continuous corridor of riparian woodlands ranging from 100 to 350 feet wide occurs between proposed critical habitat and the action area. Cottonwoods within the continuous stand range from mature (30 to 40 feet tall) to younger aged trees, with a diverse shrub understory providing suitable nesting habitat. Evidence of past caterpillar activity in the trees along Leroux Creek was also observed, providing a potential food source for cuckoos. Four habitat patches were defined within the corridor and near the project area and total 57.2 acres (see Appendix D). The project area intersects a small habitat patch (1.2 acres) that is considered marginal quality, based on the narrowness, lack of mature trees, and openings in the tree canopy.

Surveys have not been conducted in the project area to determine presence/absence of the yellow-billed cuckoo; therefore, the assumption is that cuckoos could be present. Given the proximity to known locations of birds on the North Fork of the Gunnison River (2.3 miles away) and the presence of suitable habitat on Leroux Creek, cuckoos could nest or forage in the project area.

The Rogers Mesa Area (Figure 2a) does not provide cottonwood thickets or dense riparian habitat suitable for yellow-billed cuckoo.

North American Wolverine: Wolverine are three feet long, with a rather short tail, just one-quarter the total length of the animal. They are stocky mammals weighing 20 to 30 pounds and are built like a small bear. Their fur is dark brown to black, and the sides have a characteristic yellowish brown to whitish stripe. In Colorado, nearly all historical and recent reports of wolverines are at higher elevations and in alpine areas. Until recently, the last confirmed wolverine sighting in Colorado was in 1919. Occasional reports of wolverine sightings were investigated, but wolverine was never officially documented.

3.8.1 No Action

Under the No Action alternative, historic water depletions would continue, and there would be no change in effects on ESA species.

3.8.2 Proposed Action

No effects are expected as a result of the Proposed Action for the greenback cutthroat trout, North American wolverine, or Gunnison sage-grouse, as no habitat was observed within the project area and these species do not have a potential to occur in the project area. The project area was surveyed for sensitive plants including Colorado hookless cactus and clay loving wild buckwheat, and no individual species or populations were observed; therefore, no effects are expected to these species as a result of the Proposed Action. Potential effects on the yellow-billed cuckoo and four species of Colorado River endangered fish are discussed below. Consultation with the Fish and Wildlife Service is included in Appendix E.

3.8.2.1 Yellow-Billed Cuckoo

Under the Proposed Action, installation of a siphon across Leroux Creek would disturb approximately 0.3 acre of marginally suitable habitat for the yellow-billed cuckoo, located within a series of patches along Leroux Creek totaling 57.2 acres (ERO 2017b). The habitat that would be removed for the siphon occurs on the edge of a small (1.2 acres) riparian patch, and contains a narrow band (approximately 30 feet wide) of younger aged cottonwood and Siberian elm on the southern bank of Leroux Creek. Riparian habitat north of the creek is also narrow and sparse (see Appendix C). Within the proposed siphon construction area, the project is estimated to remove approximately 45 trees with a diameter at breast height (DBH) greater than 3 inches. This estimate was obtained by counting the number of trees over 3-inch DBH within a 100-square-foot area of the existing potential cuckoo habitat, and estimated that approximately five of these 100-square-foot areas exist within the proposed footprint of the new siphon. Additionally, up to 8 mature cottonwood trees 7.5 to 9 meters tall would be removed. The majority of trees in the corridor are less than 3 inches DBH. Foraging habitat for the cuckoo is available in the Leroux Creek drainage outside of the project area; however, no change would occur to the foraging habitat outside of the project area under the Proposed Action, as no project activities would occur.

Measures to avoid impacts to the yellow-billed cuckoo include:

- Constructing during a time when cuckoos are not present (September 1 to May 31), thereby avoiding disturbance to birds during the breeding season.
- Minimizing removal of mature deciduous trees to only those necessary for construction.
- Locating construction of the siphon within a corridor where large tree removal would be minimized. This would be accomplished by having a pre-construction meeting between the Reclamation biologist (or designee) and the contractor to identify the best route within the easement that avoids as much riparian vegetation as feasible and identify individual trees that could be saved within the established route.
- Using erosion control, stabilization, weed management, and salvaging/separating top soil where it occurs to encourage re-vegetation with native riparian plants.
- Riparian restoration, consisting of dormant season pole plantings/staking of coyote willow (*Salix exigua*), plains cottonwood (*Populus deltoides*), and narrowleaf cottonwood (*Populus angustifolia*) and peachleaf willow (*Salix amygdaloides*), in areas where sufficient water appears available. Cottonwood poles would be replanted after construction at a 2:1 ratio to minimize habitat lost.

Given the small scale of vegetation removal of potential cuckoo habitat (0.3 acre), the marginal quality of the habitat that would be impacted, the location of the proposed siphon on the edge of a small (1.2-acre) habitat patch, and implementation of the above measures to minimize impacts to yellow-billed cuckoo, a Reclamation made the determination that the project may affect, but is not likely to adversely affect, the yellow-billed cuckoo. This determination was made with the conservative assumption that the yellow-billed cuckoo could be present in the Leroux Creek area. The U.S. Fish and Wildlife Service concurred with Reclamation's determination (TAILS 06E24100-2017-F-0464).

3.8.2.2 Colorado River Endangered Fish

Under the Proposed Action, historical depletions would continue. The overall efficiency of the FMC system (crop requirements divided by total diversions) is estimated to be between 36 and 38 percent (DCD 2001). FMC depletions associated with the Paonia Reservoir water (14,650 acre-feet) are estimated at 5,420 acre-feet (37 percent). Paonia Reservoir depletion amounts of up to 10,000 acre-feet are already addressed in the PBO (USFWS 2009), as described above.

Downstream from the Paonia Reservoir, the FMCRC diverts natural flows at the Fire Mountain Diversion Dam, located on the North Fork of the Gunnison River near Somerset (an estimated 30,030 acre-feet annually), and at the Leroux Creek Diversion, located north of the project area (an estimated 3,500 acre-feet annually) (personal communication, Steve Fletcher, 2017). FMCRC depletions not covered by the PBO, associated with the North Fork of the Gunnison River and Leroux Creek diversion water, are estimated at 37 percent of 33,530 acre-feet, or 12,406 acre-feet.

This historic water depletion rate is expected to remain unchanged under the Proposed Action. No change to the FMCRC's estimated historic consumptive use rate or water depletion (the "existing depletion") to the Colorado River Basin would occur as a result of the Proposed Action; however, FMCRC has signed a Recovery Agreement for depletions which were not previously covered in the PBO.

The Proposed Action would result in a potential (unquantified) reduction in selenium loading to the lower Gunnison Basin, which would have a beneficial effect on four species of Colorado River endangered fish.

3.9 Noxious Weeds and Invasive Species

The Colorado Noxious Weed Act designates undesirable plants that are considered a threat to Colorado's natural resources. FMCRC is responsible for complying with the Colorado Noxious Weed Act in the project area. Impacts from weed infestations include the loss of forage for wildlife and livestock, decreased availability of habitat for wildlife, and a loss of biodiversity relative to undisturbed areas.

Twelve State of Colorado (CDA 2016) and eight Delta County-listed (Delta County 2010) noxious weeds were observed during site visits within the project area (Table 5). The Colorado Noxious Weed Act contains three lists of noxious weeds: List A, List B, and List C. List A and B weeds are targeted for eradication. List C species are so widespread they are not currently subject to requirements for eradication.

Weeds are distributed across the existing FMC corridor on Rogers Mesa and in places along the FMC in the Leroux Creek drainage area largely due to ground disturbance associated with maintaining the existing canal, roads and residential development. Cheatgrass and field bindweed are pervasive throughout the project area. Canada thistle occurs in patches intermittently along the canal and road on Rogers Mesa. Several areas within the canal corridor are dominated by Russian knapweed. Occurrences of hound's tongue were observed in a low-lying swale near the center of the Proposed Action area on Rogers Mesa, and in the proposed siphon area in the Leroux Creek drainage. Russian olive and tamarisk occur intermittently within riparian fringe along the canal. Other weeds listed in Table 4, including burdock and halogeton, were present intermittently in the project corridor.

Table 5. Weeds Observed in the Project Area.

Common Name	*Scientific Name*	Delta County Noxious Weed List	State of Colorado Noxious Weed List
Burdock	*Arctium sp*	Yes	List C
Canada Thistle	*Cirsium arvense*	Yes	List B
Cheatgrass	*Bromus tectorum*	No	List C
Field Bindweed	*Convolvulus arvensis*	No	List C
Halogeton	*Halogeton glomeratus*	Yes	List C
Hound's Tongue	*Cynoglossum officinale*	No	List B
Russian Knapweed	*Acroptilon repens*	Yes	List B
Russian Olive	*Elaegnus angustifolia*	Yes	List B
Tamarisk	*Tamarix parviflora*	Yes	List B

3.9.1 No Action

Under the No Action alternative, there would be no change to invasive species in the project area; weeds would continue to exist along the canal and maintenance road, and may spread due to ongoing maintenance, livestock and other disturbances.

3.9.2 Proposed Action

Under the Proposed Action, weeds may be spread to the project area during the construction phase from tracked equipment, and existing weeds may be spread within the disturbed construction corridor. Within the Leroux Creek drainage area, the disturbance of native vegetation would create opportunities for populations of weedy species to increase or to invade disturbed areas. FMCRC will continue to be responsible for complying with the Colorado Noxious Weed Act, including obtaining appropriate pesticide use permits in accordance with Section 402 of the Clean Water Act.

Effects as a result of the Proposed Action would be mitigated by power-washing construction equipment to be sure it is free of soil and debris prior to entering the construction site, by timely weed treatment, and by re-establishing drought-tolerant, non-invasive vegetation within the disturbed corridor.

During clearing and grubbing, as much as feasible, weedy material including non-native shrubs and trees such as Russian olive, tamarisk and elm would be isolated and removed from the site, and not mulched and replaced.

The Proposed Action could have beneficial effects over the long term, as placement of the canal in pipe would reduce the extent of annual ground disturbance in the project area, and may mitigate the extent of invasive weeds spread on an annual basis.

3.10 Cultural Resources

Cultural resources are defined as physical or other expressions of human activity or occupation. Such resources include culturally significant landscapes, prehistoric and historic archaeological sites, isolated artifacts or features, traditional cultural properties, Native American and other sacred places, and artifacts and documents of cultural and historical significance. In fall 2016 and spring 2017, Flattops Archaeological Consultants conducted a Class III cultural resource inventory of the project's Area of Potential Effect (APE) (McDonald 2016, 2017). All proposed pipe alignments, including a 100-foot-wide pipeline corridor, proposed construction disturbance areas, access roads, proposed staging areas, and the habitat replacement site were inventoried.

The inventory resulted in the recordation of two segments of the Fire Mountain Canal, a segment of the Patterson Ditch, a segment of the Slack Ditch, and a segment of the Leroux Creek Ditch. The Fire Mountain Canal was determined eligible for listing in the National Register of Historic Places (NRHP) in prior segment recording (5DT1277.1-.3). The newly recorded segments of the Fire Mountain Canal (sites 5DT1277.4 and 5DT1277.6) are also recommended as eligible for listing on the NRHP. The recorded segments of the Patterson Ditch and Slack Ditch are field evaluated as not contributing to the eligibility of the recorded linear resource. The Leroux Creek Ditch was recommended as eligible for the NRHP in prior segment recording (5DT2005.1 and .2), and the newly recorded segment of the Leroux Creek Ditch (5DT2005.3) is also recommended as eligible for listing on the NRHP.

3.10.1 No Action

The No Action alternative would have no effect on cultural resources.

3.10.2 Proposed Action

In consultation with the SHPO, Reclamation determined that the Proposed Action would have an adverse effect on the Fire Mountain Canal and Leroux Creek Ditch. A Memorandum of Agreement has been executed between Reclamation, FMCRC, and the SHPO to mitigate the adverse effects of the Proposed Action, and is included in Appendix F. To mitigate the adverse effects to the eligible cultural resources, Level I documentation has been completed to capture the historic characteristics of the canal and ditch.

3.11 Agricultural Resources and Soils

The NRCS has analyzed soil types and irrigation status in the region, and used this data to identify farmlands of state and national importance. The Proposed Action area contains three types of farmland of national or statewide importance (NRCS 2017). Appendix G contains detailed soil maps.

Prime Farm Land if Irrigated. According to the USDA, prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. Approximately 1,800 linear feet of the proposed pipeline installation occurs on this farmland type. The mapped soil unit is Avalon loam, 3 to 6 percent slopes (Map Unit 10) and Mesa loam, 0 to 3 percent slopes (Map Unit 53). The area occurs along the western side of Rogers Mesa, in areas consisting of irrigated pasture, orchards, fallow pasture, and residential development/roads.

Farmland of Unique Importance. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and fiber crops. Under proper management, these lands are capable of producing high yields. A total of approximately 11,900 linear feet of the Proposed Action area crosses this farmland type; the two staging areas (3.9 acres, total) also occur on this farmland type. The primary mapped soil unit is Mesa-Utaline stony loams, 3 to 12 percent slopes (Map Unit 55) and Agua Fria stony loam, 3 to 12 percent slopes (Map Unit 3). Additional soil types include Saraton gravelly loam, 3 to 12 percent slopes (Map Unit 68) and 3 to 20 percent slopes (Map Unit 69) and Utaline sandy loam, 3 to 12 percent slopes (Map Unit 78). The mapped Farmland of Unique Importance occurs along the majority of the project corridor in the Rogers Mesa area, along irrigated pasture, vineyards, orchards, fallow pasture and residential development/roads (see Appendix G for more detail).

Farmland of Statewide Importance. Approximately 2,600 linear feet of the Proposed Action area crosses this farmland type; however, this area is on the steep southwest-facing slope of the Leroux Creek drainage and is not farmable. The primary mapped soil unit is Fluvaquents, flooded (Map Unit 35).

Other mapped soil units found in the Proposed Action area (Appendix G) are Saraton-Agua Fria complex, 20 to 50 percent slopes (Map Unit 70), and Midway-Gaynor silty clay loams, 10 to 40 percent slopes (Map Unit 56).

All of the soil types are derived from Mancos Shale, which contributes to salinity and selenium loading in the Colorado River Basin.

3.11.1 No Action

Under the No Action alternative, there would be no effects to soils or farmlands within the project area. Soils derived from Mancos Shale would continue to contribute to salinity and selenium loading via deep percolation of irrigation water in the project area.

There would be no effect to prime or unique farmlands. Farmlands in the project area would contine to produce as in the past.

3.11.2 Proposed Action

Under the Proposed Action, new soil disturbance would occur along the existing canal during construction. Assuming approximately one-half of the 50-foot construction corridor is already disturbed, an additional 11.1 acres may be disturbed. Additional areas of soil disturbance would be associated with decommissioning existing structures (0.3 acre), installing a new siphon (1.1 acres) and the use of two new staging areas (2.6 acres). The location of Staging Area 2 has changed from the issuance of the Draft EA, but impacts are expected to be the same.

Soil exposure and erosion potential is present on the steep slopes of the Leroux Creek drainage, along the canal prism that would be abandoned and potentially used as a source for fill. Efforts to minimize soil runoff would be implemented per the storm water management plan which is required for construction permitting under the Clean Water Act. Efforts would include silt fencing or fiber logs downslope of any soil disturbance. In addition, the productive upper layer in the soil profile (top soil) would be removed and reserved prior to construction where possible, and replaced following construction; however, top soil is minimal or not present in much of the project area.

Following project construction, permanent disturbance of 0.3 acre of soil would occur due to the installation of new features including spillways, drains, and turnouts, and approximately 4.4 acres would continue to be used as a maintenance road. A total of about 23 acres of disturbed soil would be reclaimed; disturbed areas would be smoothed, shaped, contoured and revegetated with drought-tolerant vegetation.

Much of the project would occur within the disturbed corridor of the existing canal and restoration over the buried pipe may expand the farmland of national or statewide importance in some areas. Weed presence may increase immediately after the construction phase, but effects would be mitigated by reseeding and managing reseeded areas, as described in Chapters 2 and 4. Negative impacts to prime farmland in the project area would be negligible.

3.12 Noise

Human-induced noise in the project area occurs due to normal farm/tractor activity, traffic, intermittent heavy construction for utility maintenance, and occasional use of orchard fans. Heavy equipment traffic associated with maintenance of the canal occurs throughout the project area during annual maintenance and periodic repairs.

3.12.1 No Action

Under the No Action alternative, there would be no change to noise induced by human activity throughout the project area.

3.12.2 Proposed Action

Under the Proposed Action, the construction phase of the project would introduce noise to the project area, primarily associated with heavy equipment use and trips between staging areas and the pipeline trench (an estimated four to eight trips each day). Effects from heavy equipment noise would be limited to the duration of the pipeline construction phase, lasting approximately 14 months across two winter seasons. Effects on the Rogers Mesa Area are expected to be negligible. After construction, there would be beneficial effects to human-induced noise in the Leroux Creek Drainage Area as heavy equipment operation would not be required annually. Traffic would occur on the maintenance road as needed to access the pipeline. Effects from noise would be short-term and minor.

3.13 Visual Resources

The viewshed on Rogers Mesa is dominated by irrigated farm fields, interspersed with vegetation along the canal. Farmland as viewed from the roadside is a patchwork of cultivated fields, occasionally bordered with a vegetated fringe. Vegetation directly adjacent to the canal is visually prominent particularly in the northeast sections of the project area where the canal is widest. In this area, a wide willow fringe occurs on the side of the canal opposite the maintenance road. Other sections of the canal appear more as a ditch bordering fields or fallow land, with a narrow, interspersed willow fringe and weeds (Photo Log, Appendix C). The Leroux Creek drainage is hidden from the viewshed on Rogers Mesa.

3.13.1 No Action

Under the No Action alternative, no change is expected to visual resources.

3.13.2 Proposed Action

Under the Proposed Action, both short-term and permanent effects to visual resources would occur. During the period between trenching and successful reclamation/reseeding, a linear scar along the pipeline would be visible along L Road and 3100 Road. Heavy equipment and construction traffic would be present in localized areas over the short term. Construction equipment and dirt moving operations in the Leroux Creek Drainage Area would be completely hidden from view of nearby roads and paths. In the Rogers Mesa Area, riparian and wetland vegetation along the canal would be replaced with upland vegetation. Mature cottonwood stands may survive due to the availability of water from nearby irrigated fields, although some may gradually die. Other ephemeral drainages and low-lying swales containing mature riparian vegetation do not appear to get their water from FMC seepage, and therefore no effects to the riparian vegetation viewshed are expected in these areas. An existing maintenance road would persist both during construction and over the long term after the project.

3.14 Cumulative Effects

Cumulative effects under NEPA are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7).

The direct and indirect effects of past and ongoing (present) actions are included in the affected environment analyses above. The primary goal of this cumulative effects analysis is to determine the magnitude and significance of incremental environmental consequences on the resources analyzed in this EA due to the implementation of reasonably foreseeable future actions. Reclamation determines the appropriate spatial boundary for the cumulative effects analysis based on several factors, such as scope of the proposed action and how far effects of the proposed action can be measured. The spatial boundary for the cumulative effects analysis includes Rogers Mesa and the Leroux Creek drainage area within proximity of the project area, and the temporal boundary is 50 years (life of project).

There are no reasonably foreseeable future actions planned within the spatial and temporal boundaries of the cumulative effects analysis. Therefore, there would be no cumulative effects to the resources analyzed in this EA due to reasonably foreseeable future actions.

3.15 Summary of Effects

In summary, the following table (Table 6) describes the effects of the No Action and Proposed Action alternatives.

Table 6. Summary of Effects.

Resource Issue	No Action	Proposed Action
Water rights	No change	More efficient and accurate allocation of water shares
Surface water	No change to surface water	Segment 47 would be converted to a pipe, and open water in the existing canal would become uplands. Approximately 3.9 linear miles of existing open canal would no longer be a surface water feature, and 0.5 mile of open canal would be decommissioned. The diversion point for six to ten cfs of irrigation water supplying the Jessie ditch would be incorporated into the new siphon. During the irrigation season, this water would be released approximately 800 feet up-stream of the existing release point in Leroux Creek, creating increased downstream water flows in the creek (Figure 2b).
Water quality	Continued salt and selenium loading into the Colorado River Basin	Reduced salt loading into the Colorado River Basin. Approximately 2,365 tons of salt would be retained on Rogers Mesa and would not enter the watershed. An unknown amount of selenium would be retained on Rogers Mesa and would not enter the watershed.
Access, Transportation and Public Safety	No effect	Four to eight trips, daily, would be made between the project area and staging areas. Effects to access, transportation and public safety have been mitigated by placing staging areas close to the project area.

Resource Issue	No Action	Proposed Action
Vegetation	No effect; continued annual removal of riparian vegetation along canal	Approximately 2.4 acres of riparian vegetation along the canal would be converted to uplands on Rogers Mesa and in the Leroux Creek drainage on a permanent basis (ERO 2017a). New temporary disturbance would occur during construction, including approximately 1.1 acres through the Leroux Creek drainage for installation of a new siphon, and approximately 2.6 acres for staging. Following construction, all disturbance areas would be revegetated.
Wildlife Resources including Raptors and Migratory Birds	Continued disturbance associated with heavy equipment work in the Leroux Creek drainage.	Lost habitat values resulting from the Proposed Action would be replaced at the habitat replacement site. In the Leroux Creek drainage area, temporary disturbance to wildlife may occur during construction. Timing restrictions would mitigate effects to nesting birds. Avoidance measures would be used to mitigate mature tree loss in the Leroux Creek drainage.
Threatened and Endangered Species	No effect	Disturbance to approximately 0.3 acre of marginally suitable yellow-billed cuckoo habitat within a corridor of 57.2 acres of suitable habitat. No direct effects to the yellow-billed cuckoo due to timing restrictions. No change to historical water depletions affecting Colorado's endangered native fish species.
Noxious Weeds and Invasive Species	Continued weed pressure in the existing canal corridor due to annual maintenance/ground disturbance.	Weed pressure would increase temporarily due to expanded ground disturbance associated with construction. New ground disturbance in the Leroux Creek drainage could cause weeds to spread into the drainage area. With revegetation efforts and weed mitigation, effects are expected to be short-term and minor. Beneficial effects are expected due to the revegetation of upland species and reduced need for annual maintenance/ground disturbance in the canal corridor. In addition, weed and invasive species treatment would occur at the habitat replacement site at Big Gulch under the Proposed Action.
Cultural Resources	No Effect	Proposed Action would have an adverse effect on the Fire Mountain Canal and Leroux Creek Ditch. A Memorandum of Agreement has been executed between Reclamation and the Colorado SHPO to mitigate the adverse effects of the Proposed Action, and is included in Attachment G. To mitigate adverse impacts to the eligible ditch segments, Level I documentation would be prepared to capture the historic characteristics of the canal and ditch prior to their destruction.
Agricultural Resources and Soils	No Effect	Negative impacts to prime farmland in the project area would be negligible, as much of the construction disturbance would be confined to the existing canal and maintenance road, and all disturbed areas including pasture would be revegetated. Assuming approximately ½ of the 50-foot construction corridor is already disturbed, an additional 11.1 acres may be disturbed. Additional areas of soil disturbance would be associated with decommissioning existing structures (0.3 acres), filling the abandoned section of canal (2.2 acres), installing a new siphon (1.1 acre) and the use of two new staging areas (2.6 acres).
Visual and Noise Resources	No Effect	Temporary disruption to pastoral views due to localized heavy equipment use and ground scarring across the mesa for two approximate 7-month periods during the winter. Permanent removal of a surface water feature on the mesa. Increased noise during construction phase.
Cumulative Effects	No Effect	No cumulative effects.

4.0 Environmental Commitment Plan

Table 7 describes the environmental commitments and related mitigation developed to protect resources and mitigate adverse impacts, as identified in Chapter 3 of this EA, to a non-significant level. The cooperative agreement between Reclamation and the FMCRC requires that FMCRC be responsible for "…implementing and/or complying with environmental commitments contained in National Environmental Policy Act (NEPA) compliance documents to be prepared by the Recipient and approved by Reclamation for the project." The FMCRC will utilize this table to document compliance with each commitment, and will submit it to Reclamation as a record of compliance.

The following environmental commitments will be implemented by FMCRC as an integral part of the Proposed Action.

Table 7. Fire Mountain Canal Pipeline Project Environmental Commitments.

Environmental Commitment	Timing	Date of Compliance	FMCRC Initials
General			
1. Environmental commitments will be discussed with the contractor at a pre-construction meeting.	Pre-construction		
2. Environmental commitments will be discussed with new operators and contractors brought into the project during the construction period. This will likely occur before Phase I and Phase II of construction (Winter 2018, 2019), and during other periods if needed.	During construction		
Water Quality and Water Resources			
3. A Storm Water Discharge application will be submitted for General Permit No. COR-030000 as provided by the Colorado Department of Public Health and Environment at least ten (10) days prior to the commencement of construction activities.	Pre-construction		
4. A Storm Water Management Plan will be developed and filed with the Colorado Department of Public Health and Environment. In accordance with the Storm Water Management Plan, Best Management Practices, including storm water drainage, erosion control, and sediment control will be implemented to prevent or reduce point source pollution during and following construction. A copy of this plan will be provided to Reclamation.	Pre-construction		
5. A Spill Prevention Control and Countermeasure Plan will be prepared. As part of this plan, fuel storage, equipment, maintenance, and fueling procedures will be developed to minimize the risk of spills and impacts from these incidents. All employees and workers, including those under separate contracts, will be briefed on the plan. A copy of this plan will be provided to Reclamation.	Pre-construction		
6. Concrete pours will occur in forms to prevent discharge into waterways. Any wastewater from concrete batching, vehicle wash down, and aggregate processing will be contained and treated or removed for off-site disposal.	During construction		
7. Equipment will be inspected daily and repaired as necessary to ensure equipment is free of petrochemical leaks.	During construction		

Environmental Commitment	Timing	Date of Compliance	FMCRC Initials
8. Construction of the siphon through Leroux Creek will occur during a period of low water flow (September 1 through February 15), and when no precipitation is anticipated. A temporary pipe will be used in Leroux Creek to route flows around the siphon construction area.	During construction.		
9. Prior to trenching across the active creek bed, a test pit will be excavated to the necessary depth to confirm that the geomorphology and hydrology of the creek will not be affected by the project.	During construction.		
10. Creek bed materials (cobble and boulders) removed during trenching will be set aside and used to re-form the natural appearance and function of the creek bed. Flowfill will be placed around the pipe to prevent surface water loss and retain the natural function of the native bed rock.	During construction.		
11. The creek banks and riparian areas will be restored as much as possible to pre-construction contours and condition upon completion of construction. The Leroux Creek drainage will be restored as per an approved Environmental Restoration Plan.	During construction.		
12. Laterals and tailwater crossings in the project area will be planned in coordination with the landowners relying on the water supply.	Pre-construction, during construction		
13. The pipeline will not interfere with water allocation, including winter stock water allocation, nor create any changes in allocation of water shares. Winter stock water would not be supplied during construction.	During construction, post construction		
Access and Transportation			
14. The FMCRC and/or contractor will coordinate construction activities and traffic concerns with Delta County.	Pre-construction		
15. All construction activities will be confined to rights-of-way shown on the construction specifications. Staging will take place in areas shown on Figure 2a and Figure 2b.	During construction		
16. Signs will be used to notify drivers of safety-related visibility issues.	During construction		
17. Staging for construction will occur as close as possible to the area of construction to minimize traffic disturbance and safety issues	During construction		
Noxious Weeds and Invasive Species			
18. All construction equipment will be power-washed and free of soil and debris prior to entering the construction site to reduce the spread of noxious and invasive weeds.	During construction		
19. Timely and consistent weed treatment will occur within the project area. For example, pre-construction treatment (mowing) will be used to minimize weed spreading during construction. Weed treatment methods will be coordinated with adjacent landowners.	Pre-construction, during construction and post-construction		
20. Non-native invasive species including Russian olive, tamarisk and elm cleared from the area, will be isolated and removed from the project area, to the extent possible.	During construction		
21. FMCRC will continue to be responsible for complying with the Colorado Noxious Weed Act, and will obtain appropriate pesticide use permits in accordance with Section 402 of the Clean Water Act.	Post-construction		

Environmental Commitment	Timing	Date of Compliance	FMCRC Initials
Wildlife, including Federally Listed Species, and Vegetation			
22. An Environmental Restoration Plan will be developed prior to construction defining revegetation plans including plant species, timing and seeding or planting methods. The plan will focus on restoring riparian vegetation in the Leroux Creek drainage area following siphon construction.	Pre-construction		
23. In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with the U.S. Fish and Wildlife Service, and protection measures are implemented.	During construction		
24. If a change in project plans will require work outside of areas inventoried for threatened and endangered species, Reclamation will be consulted to determine if additional surveys are required.	During construction		
25. Construction work in the Leroux Creek drainage area will occur between September 1 and February 15 to avoid effects to raptors and migratory birds including the Federally listed yellow-billed cuckoo. Pre-construction raptor and migratory bird surveys will be required for any vegetation clearing or other construction activities scheduled to begin between February 15 and September 1. If construction activities are initiated prior to February 15 (i.e., prior to initiation of nesting), construction may continue; however, construction activities may not be initiated after February 15 unless pre-construction surveys are conducted.	Pre-construction and during construction		
26. Siphon is being located to avoid riparian vegetation and mature trees to the extent feasible. Additional on-site meetings will be scheduled as necessary to ensure the Environmental Restoration Plan is implemented.	Pre-construction and during construction		
27. A natural resources specialist would be on-site as needed during the construction and restoration process through the Leroux Creek drainage area.			
28. Pipeline trenches left open overnight will be kept to a minimum and covered to reduce the potential for hazards to wildlife. Where trench covers are not practical, wildlife escape ramps will be utilized.	During construction and Post-construction		
29. Riparian areas within the Leroux Creek drainage disturbed upstream of the siphon area, and including the siphon area, will be restored as soon as practical following construction. For the pipeline area, revegetation would follow each construction phase. Staging areas would be restored at the end of the project.	During construction and Post-construction		
30. Monitoring and continued revegetation would occur as needed for two to three years following project construction.			
31. To mitigate wildlife habitat disturbance and loss, a habitat replacement plan will be implemented, enhancing the habitat function and value on 9.3 acres. Improvements include removing non-native species and seeding and planting native vegetation.	During construction and Post-construction		

Environmental Commitment	Timing	Date of Compliance	FMCRC Initials
Cultural Resources			
32. All field work required to complete Level I Documentation of the cultural resources impacted by this project will be completed before construction commences. (A Memorandum of Agreement has been executed between Reclamation and the Colorado SHPO to mitigate the adverse effects of the Proposed Action, and is included in Appendix F of this EA).	Pre-construction		
33. If previously undiscovered cultural or paleontological resources are discovered during construction, construction activities must immediately cease in the vicinity of the discovery and Reclamation must be notified. In this event, the SHPO shall be consulted, and work shall not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the attached MOA. Stipulations in the MOA with the SHPO are incorporated herein by reference. Additional surveys shall be required for cultural resources if construction plans or proposed disturbance areas are changed.	During construction		
34. If additional areas of impact (for example: access roads, borrow pits, or waste areas) are identified during the course of the undertaking, they will be inventoried for cultural resources and consulted on with the State Historic Preservation Officer. No construction work will occur at or near the additional impact areas until this consultation is completed.	During construction		
Agricultural Resources and Soils; Ground Disturbance			
35. Construction limits will be shown on plans provided to the contractors. Ground disturbance and vegetation removal will be limited to the smallest portion of the Proposed Action area necessary to safely implement the project.	Pre-construction and during construction		
36. Existing access roads will be used to access construction, staging and stockpile areas. No new roads will be constructed.	During construction		
37. Topsoil will be stockpiled and re-distributed after construction, to facilitate revegetation success.	During construction		
38. Soil erosion will be minimized by using erosion control measures at the edges of ground disturbances.	During construction		
39. All disturbed areas will be smoothed and shaped, contoured, and reseeded to as near their pre-project conditions as practicable. Lands in agricultural production will be returned to agricultural production following construction.	During construction		
40. A non-invasive, drought-tolerant seed mix will be developed in coordination with adjacent landowners, and used to revegetate areas disturbed by the project.	During construction and Post-construction		
Other			
41. Dust abatement measures will be implemented during construction of the facilities. Water for dust suppression will not be obtained from the river or Leroux Creek.	During construction		

Environmental Commitment	Timing	Date of Compliance	FMCRC Initials
42. The FMCRC and/or contractors will coordinate utility crossings (power, water, phone/fiber optic) to minimize disruption.	During construction		

5.0 Consultation and Coordination

5.1 Public Involvement

Reclamation provided the public an opportunity to comment on the Draft EA and FONSI between March 12, 2018 through April 13, 2018. During this time, four comment documents were received. Copies of the comment documents and responses to the comments are included in Appendix A.

5.2 Government Agencies

5.2.1 Western Colorado Area Office, Upper Colorado Region, Bureau of Reclamation

Lesley McWhirter, Environmental & Planning Group Chief

Jennifer Ward, Environmental Protection Specialist

Justyn Liff, Public Relations Specialist

Amanda Ewing, Biologist

5.2.2 U.S. Fish and Wildlife Service

Terry Ireland, Fish and Wildlife Biologist

5.2.3 Delta Conservation District

Hannah Grossman, Environmental Planner

5.3 Proponent

5.3.1 FMCRC

Steve Fletcher, Manager
Dixie Luke, President

5.3.2 ERO Resources

Aleta Powers, Principal, Biologist

Aimee Way, Biologist

Cassandra Shenk, NEPA Specialist, Environmental Planner

5.3.3 Natural Wildlife Concepts and Solutions LLC

Mike Zeman, Biologist

5.3.4 Applegate Engineering and JUB

Craig Ullman, Engineer and Project Manager, Applegate
Luke Gingerich, Assistant Project Manager, JUB

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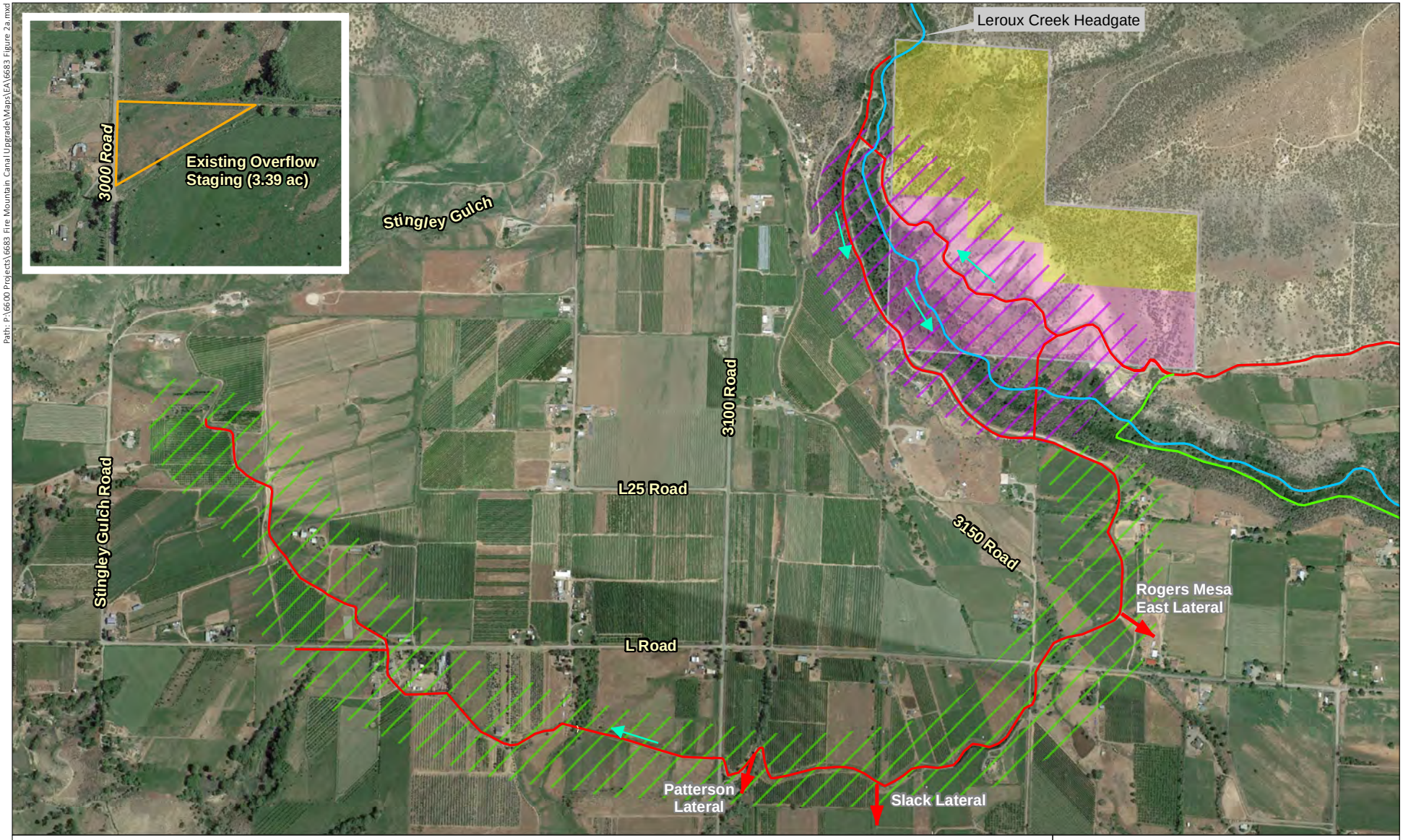


Fire Mountain Canal Salinity Reduction Piping Project

- Fire Mountain Canal - Extent of Proposed Piping
- Jessie Ditch
- Leroux Creek
- US Bureau of Reclamation Land
- US Bureau of Land Management
- Private Land
- Leroux Creek Drainage Area
- Rogers Mesa Area

0 450 900 Feet

1 inch=1,200 feet

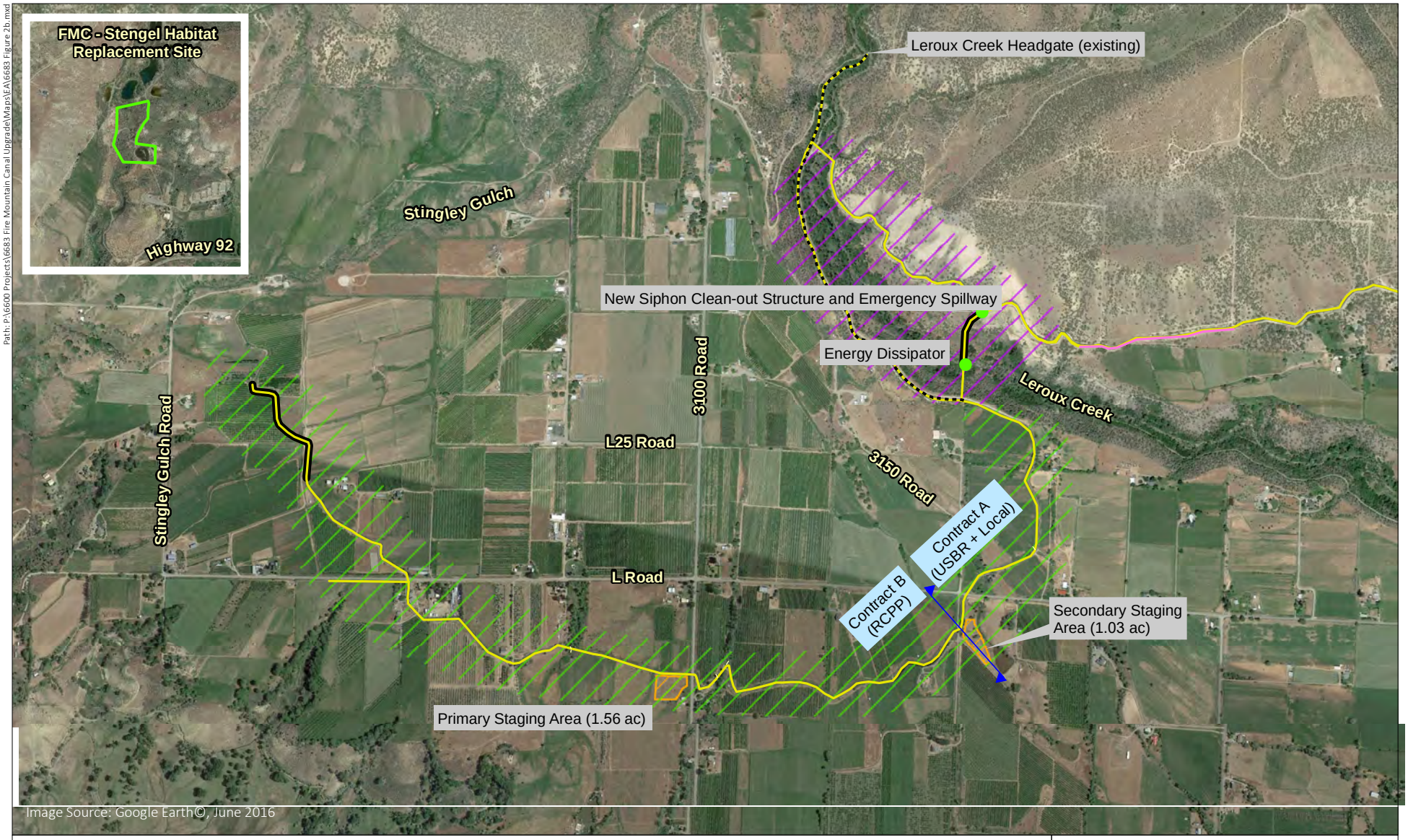
N

Image Source: Google Earth©, June 2016

Figure 2a
Existing Conditions

Prepared for: Fire Mountain Canal and Reservoir Co.
File: 6683 Figure 2a.mxd (GS)
July 26, 2018

ERO Resources Corp.



Path: P:\6600 Projects\6683 Fire Mountain Canal Upgrade\Maps\EA\6683 Figure 2b.mxd

Fire Mountain Canal Salinity Reduction Piping Project

- Pipeline Alignment in Existing Corridor (19,716 ft/3.73 mi)
- Siphon (961 ft/0.18 mi)
- Abandoned/Refilled Canal (2,841 ft/0.54 mi)
- Leroux Creek Pipeline
- May Raise Canal Bank 1-2 Feet, No Work in Canal
- Double Piped Area
- Staging Area
- Leroux Creek Drainage Area
- Rogers Mesa Area

0 700 1,400 Feet

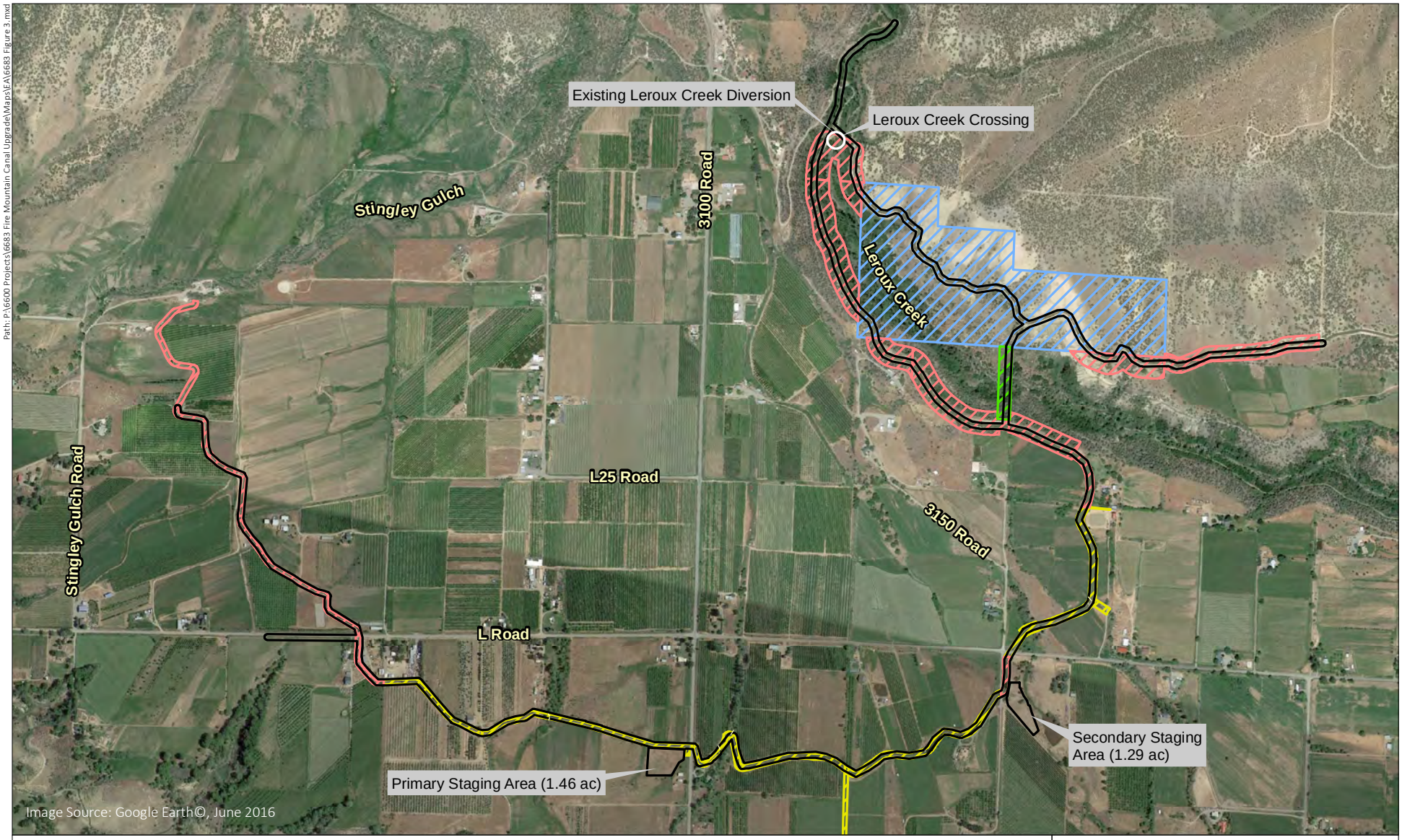
1 inch=1,400 feet

N

Figure 2b
Proposed Action Area

Prepared for: Fire Mountain Canal and Reservoir Co.
File: 6683 Figure 2b.mxd (GS)
June 14, 2018

ERO Resources Corp.



Fire Mountain Canal Salinity Reduction Piping Project

- Project Area
- Land Aquisition
  - Fee Title
  - Acquired Easement
  - 1890 ROW
  - Withdrawals (US Bureau of Reclamation Land)

0 600 1,200 Feet

1 inch=1,200 feet

N

Figure 3
Land Ownership

Prepared for: Fire Mountain Canal and Reservoir Co.
File: 6683 Figure 3.mxd (GS)
July 27, 2018

ERO Resources Corp.

Appendix A Comment Responses and Comment Letters

Appendix A Comment Responses and Comment Letters

Four comment documents containing 26 distinct, substantive comments were received during the comment period (Some comments were duplicated between comment documents.) The comments questioned Reclamation's use of facts or analyses in the draft EA and suggested modifications of the proposed action. In compliance with 40 CFR 1503.4, possible responses to these comments include:

- Modifying the alternatives or developing and evaluating new alternatives
- Supplementing, improving, or modifying the analyses
- Making factual corrections

Reclamation reviewed each comment and classified them according to topic or comment category below. Summary comments and consolidated responses follow. Changes were made to supplement, improve, or modify the EA as a result of these comments, and the reader is referred to the section of the EA where the changes occurred.

Category: Alternatives

Comment Numbers: 2,11,22

Summary comment: Commenters proposed modifications to the proposed action. The comments were: consider canal lining instead of the siphon; consider control of tailwater at the upstream end of the proposed pipeline. One comment requested a performance bond from the construction contractor.
Response: A discussion on lining the canal has been added to Section 2.3.1 of the Final EA. A discussion on tailwater management at the upstream end of the project has been added to Section 2.2.6 of the Final EA. A performance bond is required for this project.

Category: FMCRC Management of Operation and Maintenance

Comment Numbers: 17,18,27

Summary comment: Commenters questioned how FMCRC management of operation and maintenance would be implemented in the future. The comments were: how will FMC operate and maintain the pipeline or deliver water if the pipeline is being repaired, and who will respond to and pay for such events; what would be an alternative source of water in the event of an outage requiring significant repairs; concerns over an increase in cost of water shares.
Response: A discussion on operation and maintenance responsibilities has been added to the Proposed Action description. Reclamation engineers indicate that pipeline operation and maintenance tends to be less expensive than open ditch operation and maintenance over time.

Category: Biology

Comment Numbers: 3,6,8,9,10,14,15

Summary comment: Commenters questioned the adequacy of the analysis of effects to wildlife habitat in the Leroux Creek drainage area, loss of wildlife habitat, impacts to threatened and endangered species, and impacts to yellow-billed cuckoo foraging habitat adjacent to the project area.
Response: Additional description of effects to wildlife in the Leroux Creek drainage area has been added to Sections 3.7 and 3.7.2 of the Final EA. Loss of wildlife habitat is disclosed in Section 3.6.2 of the Final EA. A discussion regarding U.S. Fish and Wildlife concurrence on Reclamation's determination of effect to threatened and endangered species has been added to Section 3.8.2.1 of the Final EA. A discussion

on yellow-billed cuckoo foraging habitat adjacent to the project area has been added to Section 3.8.2.1 of the Final EA.

Category: NEPA Process

Comment Numbers: 19,26

Summary comment: Commenters questioned the adequacy of a 50-year duration of action.
Response: Clarification on the 50-year project life was added to Section 1.3 of the Final EA.

Category: Private Property Rights

Comment Numbers: 25

Summary comment: Commenter questioned the analysis of property rights and how trespass onto private property would be prevented.
Response: Rights-of-way and landownership is discussed in Section 2.2.7 of the Final EA. A map showing land status in the project area (Reclamation fee title land, easement, or right-of-way) has been added to Section 2.2.7 of the Final EA. FMCRC would provide the contractor with construction corridor widths as described in the EA to ensure against trespass outside of the project area and onto private property.

Category: Socioeconomics

Comment Numbers: 12,13

Summary comment: Commenters questioned the adequacy of the socioeconomic analysis.
Response: Language clarifying the intent, extent, and purpose of socioeconomic analyses has been added to Section 3.1 of the Final EA.

Category: Visual

Comment Numbers: 15

Summary comment: Commenter questioned the lack of analysis of visual impact from vegetation disturbance or loss.
Response: The visual effect of the transition of an open ditch to a pipe is disclosed in Section 3.13.2 of the Final EA.

Category: Water Quality

Comment Numbers: 1,7

Summary comment: Commenter questioned the quantification of salt removal from the Colorado River basin and the quantification of effects on water quality downstream of the proposed Jessie Ditch water delivery location in Leroux Creek.
Response: A discussion on how salt removal is quantified has been added to Section 1.1 of the Final EA. A discussion on historic water quality in the Leroux Creek and FMC has been added to Sections 3.4 and 3.4.2 of the Final EA.

Category: Surface Water

Comment Numbers: 4,5

Summary comment: Commenter questioned the effects of the Proposed Action on the geomorphology and hydrology of Leroux Creek and the quantification of changed flows at the siphon and downstream in Leroux Creek.
Response: Section 2.2.4 of the Final EA discusses how the Proposed Action would be designed so there would be no effect on the geomorphology and hydrology of Leroux Creek. A discussion regarding additional flows in Leroux Creek downstream of the siphon has been added to Section 3.3.2 of the Final EA.

Category: Groundwater

Comment Numbers: 16

Summary comment: Commenters questioned the adequacy of the analysis of groundwater as it relates to domestic well water.
Response: A discussion on groundwater has been added to Section 3.1 of the Final EA.

Category: Noxious Weeds and Reseeding

Comment Numbers: 20,21,23,24

Summary comment: Commenters questioned the adequacy of noxious weed control and prevention, and reseeding efforts.
Response: FMCRC is liable under Colorado state law to comply with the Colorado Noxious Weed Act. This would not change under implementation of the Proposed Action. The noxious weed environmental commitment has been updated to reflect this language in Chapter 4 of the Final EA. The specificity of developing a drought tolerant seed mixture has been added to the appropriate environmental commitment in Chapter 4 of the Final EA.

Comment Letter 1

HOSKIN FARINA & KAMPF
PROFESSIONAL CORPORATION

Gregory K. Hoskin
Terrance L. Farina
Gregg K. Kampf
David A. Younger
David M. Scanga
Michael J. Russell
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William H. Nelson
(1926-1992)

April 11, 2018

Ed Warner, Area Manager
United States Bureau of Reclamation
445 Gunnison Avenue, Suite 221
Grand Junction, CO 81501

Via Hand Delivery:

Re: Hillyard Comments on Draft Environmental Assessment for Fire Mountain Canal Salinity Reduction Project

Dear Mr. Warner:

I am writing on behalf of William and Susan Hillyard ("Hillyards"), the owners of approximately 67 acres located in the NW1/4 of the SE1/4 and the SW1/4 of the SE1/4 of Section 22, Township 14 South, Range 93 West of the 6th P.M. (the "Hillyard Property"). The Fire Mountain Canal, which was improved and enlarged between 1949 and 1953 as a part of the federal Paonia Project, owned by the United States Bureau of Reclamation ("Reclamation") and is currently operated and maintained by the Fire Mountain Canal and Reservoir Company ("FMCRC"), cuts through a portion of the Hillyard Property.

FMCRC has proposed a project that would replace approximately 3.67 miles of the Fire Mountain Canal, currently an open canal, with buried pipe for the purported purpose of preventing seepage losses and reducing salinity loading to the Colorado River Basin (the "Project"). The scope of the Project includes piping the Fire Mountain Canal where it currently crosses the Hillyard Property. Another aspect of the Project includes the installation of a siphon across the Leroux Creek drainage in a location directly adjacent to the western border of the Hillyard Property (the "Siphon"). The Hillyard Property will be directly impacted by both the piping of the Fire Mountain Canal and the installation of the Siphon.

Because of the federal nexus of the Project, including but not limited to funding by Reclamation and the U.S. Department of Agriculture's Natural Resource Conservation Service, compliance with the National Environmental Policy Act ("NEPA") and the Endangered Species Act of 1973 ("ESA") are required. On March 12, 2018, Reclamation released its Draft

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Environmental Assessment for the Project (the "EA"), which included a biological report with a draft Finding of No Significant Impact for the Project as part of the required Section 7 Consultation with the U.S. Fish and Wildlife Service under the ESA. The Hillyards provide the following comments regarding the EA and the biological report.

Comment #

Neither FMCRC nor Reclamation have ever provided, either in the EA or in public material, the factual basis and analysis regarding the conclusory statements regarding the anticipated reductions in salinity and selenium from the Project, or its constituent parts such as the Siphon. Seepage studies from the existing canal would be necessary to determine the mobilization of salts and selenium from alleged canal seepage in the impacted canal reaches. Hillyards have independently obtained samples of selenium and salinity at the upstream and downstream locations to be eliminated by installation of the Siphon. Those informal results, enclosed as Appendix A, indicate that there is no increase in the salinity of the canal water as it passes through that reach. Further, FMCRC has failed in the EA to examine viable alternatives with potentially less damaging environmental impacts than the proposed installation of the Siphon, specifically, canal lining options in the reach to be eliminated by the installation of the Siphon. Instead FMCRC posed the analysis as a no action alternative versus use of the Siphon. In short FMCRC artificially limited the available alternatives to address the alleged salinity and selenium issues.

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Not only did FMCRC fail to examine other alternatives, the Hillyards initial observation is that the EA and its biological report does not effectively evaluate or otherwise consider the effects of the Project on critical fish and wildlife habitat located on the Hillyard Property directly adjacent to or downstream of the proposed Siphon. Attached as Appendix B is the June 18, 2017 Report by Alexander Nees of Olson Associates documenting the baseline environmental conditions on the Hillyard Property (the "Olson Report"). A copy of the Olson Report was previously provided to FMCRC, but is provided again, and the observations made therein should be considered and treated as part of the Hillyards' comments to the draft EA.

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The anticipated and potential hydrologic effects on Leroux Creek as it passes through the Hillyard Property have been ignored by the EA. First, as raised in the Olson Report, the open trench necessary to install the siphon has a potential to puncture or disrupt a slate aquitard that promotes consistent surface flow in Leroux Creek. A breach of the slate layer may allow for dewatering of the creek, degrading the biological and ecological function within the adjacent riparian corridor and associated wetlands. This impact will be directly felt on the Hillyard Property, but is likely to have further deleterious impacts further downstream as well. Investigations and sampling into the depth of the slate layer at the location of the proposed siphon should be undertaken. If the slate layer is in fact at a level that it will be necessary to compromise its integrity in the installation of the siphon, the Project should modify or propose ways to avoid a loss of natural surface and subsurface flow to Leroux Creek.

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Second, the FMCRC proposes to now deliver canal water to Leroux Creek at the Siphon location directly adjacent to the Hillyard Property, rather than continuing the historical point of delivery several hundred yards downstream. This change will increase the burden on the Hillyard Property, subjecting to flow levels that are more sustained than have historically occurred. Further, water from the Fire Mountain Canal typically has a higher silt content and elevated salinity above the natural flow of Leroux Creek. This change in the delivery location of canal water to Leroux will result in a degradation of the water quality within the reach from the siphon to the point where water has historically been delivered. Increased sediment load will reduce the quality of habitat for native fish and invertebrate species. Further, salinity and sedimentation increases may also have a negative impact on riparian and wetland vegetation. None of these potential impacts on the downstream riparian habitat or its vegetative corridor have been studied. Investigation into the baseline water quality within the impacted reach of Leroux Creek should be undertaken, and a determination of the likely water quality of water delivered from the canal into Leroux Creek should made. If the quality of water, in temperature, ph, selenium, salinity, or sediment load of the water to be introduced into the new stream reach is higher than the baseline water quality, mitigation measures should be implemented as part of the project, and if not feasible, a no action alternative should be considered.

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Third, FMCRC's evaluation of the impact of the siphon project on the Yellow-Billed Cuckoo has avoided investigation of the habitat area most likely to be impacted by the Project. As set out in page 16 of the Threatened and Endangered Survey Report section of the EA, Habitat Patch 4 is defined as a 23-acre tract along Leroux Creek directly south of the Siphon. Habitat Patch 4 is contained completely within the Hillyard Property. As previously documented by the Olson Report, the Hillyard Property is within 2.3 miles of proposed Critical Habitat for the Yellow-Billed Cuckoo, and contains significant areas of continuous riparian vegetation that provide high quality foraging habitat for the Yellow-Billed Cuckoo, and have the potential to contribute to the success of nesting pairs located along the North Fork. The disturbance to or potential impact on this riparian vegetation from the Project should be adequately evaluated for potential impacts on the Yellow-Billed Cuckoo.

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FMCRC has represented that Habitat Patch 4 was not evaluated because private land access could not be obtained. This representation is incorrect, as FMCRC and its agents never sought access to the Hillyard Property for such evaluations, nor was any such request ever denied by the Hillyards. Hillyards have frequently invited and made it known that they are open to such baseline investigations regarding the status and quality of habitat in the Leroux Creek drainage.

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In light of the fact that there have been sightings of the Yellow-Billed Cuckoo within Habitat Patch 4, confirming actual use by the species, the failure of FMCRC to evaluate the impact of the Project on that foraging habitat is not reasonable, nor could any findings in the absence of that evaluation reasonably support a finding of no significant impact on the Cuckoo. The impact on the Project, including the installation of the siphon, and any attendant impacts on

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vegetation as a result of delivery of canal water to Leroux Creek on Cuckoo foraging habitat located within Habitat Patch 4 should be investigated, and to the extent necessary to avoid an adverse modification of foraging habitat for the Cuckoo, mitigation requirements or no action alternatives should be considered.

At section 2.2.6 the EA discusses how tailwater from upgradient irrigation would be managed in light of the changes proposed by the Project, specifically the piping of the Fire Mountain Canal. Specifically, the EA proposes:

> Tailwater from land irrigated above the FMC would continue to be routed to existing pipes that carry water across the FMC to fields on the other side. At the downstream end of the project, approximately 1,300 feet of additional piping would be buried parallel to the piped FMC in the same trench (Figure 2b). The parallel pipe would receive tailwater and carry it to its historic point of discharge at the end of the project area.

Presumably, the proposed use of the parallel pipe at the downstream end of the Project is because tailwater from fields along those portions of the canal historically drained into the Fire Mountain Canal, rather than being transmitted by pipes to fields on the other side. A similar issue happens on the Hillyard Property, as there are locations, specifically where the Fire Mountain Canal runs
11 adjacent to the Hillyards home, barn, and other outbuildings, that tailwater from the up gradient fields has accrued to the canal. At these locations there is no place other than the canal for the tailwater to go. Piping the canal, without determining how this tailwater will be addressed will result in damage to the Hillyard Property. This physical situation is obvious on inspection and has been informally raised with FMCRC and its engineers/environmental consultants. Hillyards question why tailwater in similar situations have been addressed at the distal end of the Project with the use of a tailwater collection pipeline, but no comparable solution has been proposed for the portions of the Hillyard Property impacted by the Project.

Hillyards appreciate the opportunity to comment on the EA and look forward to working with Reclamation and FMCRC to address the foregoing concerns and deficiencies with the EA and the Project.

Sincerely,

HOSKIN FARINA & KAMPF
Professional Corporation

John P. Justus

JPJ:JPJ
Cc: Client

Enclosures (2)

Appendix A

09-Jun-2017

Stuart Hall
Olsson Associates
760 Horizon Drive
Suite 102
Grand Junction, CO 81506

Re: **Hilyard Canal (017-1184)** Work Order: **17051616**

Dear Stuart,

ALS Environmental received 2 samples on 26-May-2017 09:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 9.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Certificate No: MN 998501

Report of Laboratory Analysis

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 123456

☐ Cincinnati, OH +1 513 733 5336 ☑ Holland, MI +1 616 399 6070 ☐ Salt Lake City, UT +1 801 266 7700
☐ Everett, WA +1 425 356 2600 ☐ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Mid-Atlantic, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Hilyard Canal	A	Salinity
Work Order		Project Number	017-1984	B	Selenium
Company Name	Olsson Associates	Bill To Company	Olsson Associates	C	
Send Report To	Stuart Hall	Invoice Attn	Stuart Hall	D	
Address	760 Horizon Drive, Ste. 102	Address	760 Horizon Drive, Ste. 102	E	
City/State/Zip	Grand Junction, CO 81506	City/State/Zip	Grand Junction, CO 81506	F	
Phone	970.263.7800	Phone	970.263.7800	G	
Fax	970.263.7456	Fax	970.263.7456	H	
e-Mail Address	shall@olssonassoc.com	e-Mail Address		I	
				J	

No.	Sample Description	Date	Time	Matrix	Preserv.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Hilyard Upstream	05/22/17	1150	W	0	1	X	X									
2	Hilyard Downstream	05/22/17	1425	W	0	1	X	X									
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	

Sample(s) Please Print & Sign: Max Neas

Shipment Method: FedEx

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other

Results Due Date:

Relinquished by: Date: 5/22/17 Time: 17:30 Received by:

Relinquished by: Date: 5-22-17 Time: 1830 Received by (Laboratory): 5/24/17 0930

Notes: Chevron Pricing Applies - Ref. Bruce Schleiter 574

QC Package: (Check Box Below)

x	Level II: Standard QC	
	Level III: Std QC + Raw Data	
	Level IV: SW846 CLP-Like	
	Other:	

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

ALS Group, USA

Sample Receipt Checklist

Client Name: **OLSSON** Date/Time Received: **26-May-17 09:30**

Work Order: **17051616** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 26-May-17 (Date) Reviewed by: Chad Whitton (eSignature) 26-May-17 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.0/4.0 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/26/2017 3:51:09 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☑	N/A ☐
pH adjusted by:			

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

ALS Group, USA

Date: 09-Jun-17

Client: Olsson Associates
Project: Hilyard Canal (017-1184)
Work Order: **17051616**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
17051616-01	Hilyard Upstream	Water		5/22/2017 11:50	5/26/2017 09:30	
17051616-02	Hilyard Downstream	Water		5/22/2017 14:25	5/26/2017 09:30	

ALS Group, USA

Sample Receipt Checklist

Client Name: **OLSSON** Date/Time Received: **26-May-17 09:30**

Work Order: **17051616** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 26-May-17 (Date) Reviewed by: Chad Whelton (eSignature) 26-May-17 (Date)

Matrices: Water

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.0/4.0 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	5/26/2017 3:51:09 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑

ALS Group, USA

Date: 09-Jun-17

Client: Olsson Associates
Project: Hilyard Canal (017-1184)
WorkOrder: 17051616

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
mg/L	Milligrams per Liter
mg/L (as NaCl)	Milligrams per Liter as Sodium chloride

ALS Group, USA

Date: *09-Jun-17*

Client: Olsson Associates
Project: Hilyard Canal (017-1184) **Work Order:** 17051616
Sample ID: Hilyard Upstream **Lab ID:** 17051616-01
Collection Date: 5/22/2017 11:50 AM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A 6/2/17 13:36	Analyst: **RH**
Selenium	ND		0.0050	mg/L	1	6/2/2017 04:58 PM
SALINITY			**A2520 B**			Analyst: **ED**
Salinity	57		15	mg/L (as NaCl)	1	6/8/2017 02:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: *09-Jun-17*

Client: Olsson Associates
Project: Hilyard Canal (017-1184) **Work Order:** 17051616
Sample ID: Hilyard Downstream **Lab ID:** 17051616-02
Collection Date: 5/22/2017 02:25 PM **Matrix:** WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS BY ICP-MS			**SW6020A**		Prep: SW3005A 6/2/17 13:36	Analyst: **RH**
Selenium	ND		0.0050	mg/L	1	6/2/2017 05:03 PM
SALINITY			**A2520 B**			Analyst: **ED**
Salinity	**77**		**15**	**mg/L (as NaCl)**	1	6/8/2017 02:30 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Olsson Associates
Work Order: 17051616
Project: Hilyard Canal (017-1184)

QC BATCH REPORT

Batch ID: **R213508** Instrument ID **WETCHEM** Method: **A2520 B**

MBLK Sample ID: **WBLKW1-170608-R213508** Units: **mg/L (as NaCl)** Analysis Date: **6/8/2017 02:30 PM**
Client ID: Run ID: **WETCHEM_170608L** SeqNo: **4470828** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Salinity	ND	15								

LCS Sample ID: **WLCSW1-170608-R213508** Units: **mg/L (as NaCl)** Analysis Date: **6/8/2017 02:30 PM**
Client ID: Run ID: **WETCHEM_170608L** SeqNo: **4470829** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Salinity	175.1	15	192.5	0	91	80-120	0			

DUP Sample ID: **17051616-01A DUP** Units: **mg/L (as NaCl)** Analysis Date: **6/8/2017 02:30 PM**
Client ID: **Hilyard Upstream** Run ID: **WETCHEM_170608L** SeqNo: **4470831** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Salinity	56.69	15	0	0	0		56.51	0.318	5	

The following samples were analyzed in this batch: 17051616-01A 17051616-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Group, USA

Date: 09-Jun-17

Client: Olsson Associates
Work Order: 17051616
Project: Hilyard Canal (017-1184)

QC BATCH REPORT

Batch ID: **102728** Instrument ID **ICPMS2** Method: **SW6020A**

MBLK	Sample ID: **MBLK-102728-102728**				Units: **mg/L**			Analysis Date: **6/2/2017 01:22 PM**		
Client ID:	Run ID: **ICPMS2_170602A**			SeqNo: **4461260**		Prep Date: **6/2/2017**		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	ND	0.0050								

LCS	Sample ID: **LCS-102728-102728**				Units: **mg/L**			Analysis Date: **6/2/2017 01:27 PM**		
Client ID:	Run ID: **ICPMS2_170602A**			SeqNo: **4461261**		Prep Date: **6/2/2017**		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	0.1028	0.0050	0.1	0	103	80-120	0			

MS	Sample ID: **17051712-02AMS**				Units: **mg/L**			Analysis Date: **6/2/2017 01:47 PM**		
Client ID:	Run ID: **ICPMS2_170602A**			SeqNo: **4461265**		Prep Date: **6/2/2017**		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	1.088	0.050	1	0.003483	108	75-125	0			

MSD	Sample ID: **17051712-02AMSD**				Units: **mg/L**			Analysis Date: **6/2/2017 01:52 PM**		
Client ID:	Run ID: **ICPMS2_170602A**			SeqNo: **4461266**		Prep Date: **6/2/2017**		DF: **1**		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Selenium	1.07	0.050	1	0.003483	107	75-125	1.088	1.67	20	

The following samples were analyzed in this batch: 17051616-01A 17051616-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Appendix B

OLSSON ASSOCIATES

MEMORANDUM

To: William Hillyard

From: Alexander Nees, Olsson Associates

Date: June 18, 2017

Re: Environmental conditions at 31657 L Road, Hotchkiss, CO

Summary: The property contains valuable riparian habitat and serves as a link between the North Fork river corridor and the Grand Mesa uplands. The proposed development project on Fire Mountain Canal has the potential to degrade the hydrology of Leroux Creek, disrupt the utilization of habitat by big game, introduce new weed vectors into an already-vulnerable ecosystem, and reduce foraging habitat for federally-Threatened yellow-billed cuckoo which nest in adjacent areas.

Summary

Olsson Associates was contracted by Mr. Hillyard to evaluate the currently existing environmental conditions on his property, in order to provide baseline data necessary to evaluate potential environmental impacts associated with proposed changes to the Fire Mountain Canal, which bisects the property. The construction is proposed within the Hillyard property boundary and areas immediately adjacent to the property, which is located on Rogers Mesa, approximately 3 miles northwest of the town of Hotchkiss, in Delta County, Colorado. The property consists of five parcels (ID#s 324122400028 through 324122400032), which are bisected by the Fire Mountain Canal (**Figure 1**).

Parcel 324122400028 is the primary focus of this evaluation, since this parcel contains approximately 0.3 linear miles of Leroux Creek and the associated riparian corridor. Leroux Creek is a perennial tributary to the North Fork of the Gunnison which drains the south slope of the Grand Mesa, and the preservation of the biologic, hydrologic, and ecologic function of this riparian corridor is the major issue of concern in view of the proposed construction on the canal.

A site visit was completed on May 22, 2017. At that time the property and the drainage of Leroux Creek were traversed on foot, and notes and observations were recorded. Photos and discussion are presented in the appended **Photo Log**, and are referenced to illustrate discussion points as needed.

Background

Mr. Hillyard requested an evaluation of existing conditions on the property due to concern over potential impacts associated with the proposal to install a siphon for the Fire Mountain Canal. The siphon would transport the entire flow of the Canal from the north side of Leroux Creek to the south side of Leroux Creek, using a buried concrete box culvert system to pass underneath Leroux Creek. The stated purpose of the siphon is to eliminate a section of unlined ditch that is believed to contribute significantly to the salinity load in the Fire Mountain Canal. Installation of the siphon would require an open-cut trench that would cross the entire width of the Leroux Creek drainage. Assuming a basic similarity to another similar project, the installation would involve the removal of all vegetation, the excavation of a trench, and the installation of the culvert. Access for construction vehicles would also be required. In summary, a disturbance corridor of approximately 50-100 feet wide would cross Leroux Creek. This disturbance corridor would be located immediately upstream (west) of the Hillyard property (**Figure 1**).

760 Horizon Drive, Suite 102
Grand Junction, CO 81506

Environmental Characteristics

- Riparian Vegetation
  Along the banks of Leroux Creek throughout the property, the canopy is dominated by plains cottonwood (*Populus deltoides*) and narrowleaf cottonwood (*P. angustifolia*). These species hybridize freely on the property (**Photo 8**). The underbrush is dominated by skunkbrush (*Rhus aromatica*), with minimal willow component. This indicates that shallow groundwater is generally limited to the bed of the Creek, and does not extend laterally from the Creek. The co-occurrence of plains cottonwood and narrowleaf cottonwood indicates that the riparian corridor has a transitional ecological character between the lowlands along the North Fork (dominated by plains cottonwood) and high elevation creeks on the Grand Mesa (dominated by narrowleaf cottonwood). Hybridization between the two species is common, and the hybrids are typically sterile trees or intermediate character referred to as lanceleaf cottonwood (*P. x acuminata*). The combination of three cottonwood varieties within the bounds of the property creates a diversity of growth form, phenology, and pathogen resistance that is unusual in riparian vegetation of western Colorado.
- Weeds
  The existing alignment of the Fire Mountain Canal surrounds the canyon of Leroux Creek on both sides. The ditch road and ditch banks have very extensive noxious weed populations, including jointed goatgrass (*Aegilops cylindrica*), hoary cress (*Cardaria draba*), bindweed (*Convolvulus arvensis*), cheatgrass (*Bromus tectorum*), and Russian knapweed (*Arctophylos repens*). These areas associated with the ditch are serving as a seed source for the significant weed infestations in the riparian corridor of Leroux Creek. The riparian area is heavily infested with hoary cress and cheatgrass, with additional populations of houndstongue (*Cynoglossum officinale*), common mullein (*Verbascum thapsus*), and Scotch thistle (*Onopordum acanthium*). Noxious weeds are currently the most significant threat to the continued ecological health of the area (**Photos 3 & 11**). The proposed siphon installation would introduce additional disturbance into the riparian corridor, and also create a continuous corridor for weeds to spread from the ditch banks directly into the riparian area.
- Water diversions and seepage
  Currently Leroux Creek contains significant surface flow where it enters the property (**Photo 4**). A lateral ditch from the Fire Mountain Canal drains directly into Leroux Creek near the downstream end of the Hillyard property. This discharge increases the flow volume of the Creek, but drastically degrades the water quality (**Photo 7**). The entire volume of Leroux Creek is diverted into a lateral ditch at the downstream edge of the Hillyard property (**Photo 9**). This dewaters the creek except for minor ditch seepage, and the vegetation becomes less dense, but maintains a riparian character presumably supported by shallow groundwater (**Photo 10**).
- Yellow-billed Cuckoo (*Coccyzus americanus*)
  The western population of the yellow-billed cuckoo is listed as Threatened under the Endangered Species Act, and is known to inhabit and breed along the North Fork of the Gunnison. To protect areas of known cuckoo breeding activity, portions of the North Fork have been proposed for designation as Critical Habitat. The boundary of the proposed Critical Habitat is approximately 2.3 miles from the Hillyard property (see inset map, **Figure 1**). Cuckoos rely on dense riparian vegetation for breeding, but can forage within disjunct riparian vegetation up to 4 miles from their nesting sites, which would include the Hillyard property. The Hillyard property includes significant areas of continuous riparian vegetation that provide high-quality foraging habitat for the cuckoo (**Photos 8-10**), and which have the potential to contribute to the success of nesting pairs located along the

North Fork. Any proposal for disturbance to riparian vegetation in Leroux Creek (including the canal work) should adequately evaluate the potential for impacts to the cuckoo.

- Upland Vegetation
  A large portion of the canyon of Leroux Creek is not dominated by riparian vegetation, but includes woody uplands on fluvaquent soils derived from flood events. These soils are considered prime farmlands due to their fertility and thickness, and it is unusual to find such soils that have not been converted to agriculture. Dominant upland species include oakbrush (*Quercus gambelii*) and skunkbrush, but also big sagebrush (*Artemisia tridentata* subspp.), juniper (*Juniperus* spp.), and greasewood (*Sarcobatus vermiculatus*) (**Photo 2**). The high-quality soils allow these species to grow to unusual size and produce berries and acorns in abundance, forming an attractive food source for animals. Although these upland species are not limited in extent in the surrounding area in the same way as the riparian species, their location on fertile floodplain soils gives them added value for conservation.

Wildlife Utilization

Colorado Parks and Wildlife (CPW) maps the entire area of Rogers Mesa and the adjacent Redlands Mesa as Sensitive Wildlife Habitat for mule deer. In addition, several areas on the south-facing slopes on either side of Leroux Creek are designated as Elk Winter Concentration areas. In general, these areas have been identified as having special value to ungulate wildlife because they include low-elevation, south-facing slopes that have minimal snowpack in the winter, and which provide crucial resting and foraging habitat in that season.

Riparian corridors are generally heavily utilized by wildlife, both as foraging habitat and as transportation corridors connecting spatially-separated habitat zones. During the investigation, droppings from deer, elk, turkey, an black bear were observed in the riparian corridor of Leroux Creek, supporting the contention that big game utilizes the area. The landowner further confirmed this based on personal observations.

The riparian corridor of Leroux Creek is an active and important link between the low-elevation river bottoms along the North Fork of the Gunnison, and the higher-elevation slopes of the Grand Mesa. The Hillyard property forms a small but crucial link in this connection. The value of the corridor lies in its elevational range, and its defacto protected status due to being entirely private land and inaccessible to the public. The continuous nature of the vegetation in the riparian corridor provides cover, shade, and food for the wildlife using the corridor, and maintaining the continuity of the riparian corridor is important to the continued function of the Creek as a habitat corridor (**Photos 2-3, 8-10**).

The proposed construction of a siphon for the Fire Mountain Canal, which would necessitate vegetation removal and open-cut trenching across the entire width of the Leroux Creek canyon, would fundamentally disrupt the continuity of the riparian corridor, and has the potential to significantly disrupt the use of the corridor by big-game wildlife. Disruption is especially likely for elk, which are sensitive to human disturbance and do not easily habituate to changed environmental conditions, noise, or vegetation alteration.

Hydrologic Conditions and Concerns

The portion of Leroux Creek within the property flows in a canyon which is incised into the surface of Rogers Mesa. Rogers Mesa is topped by Quaternary alluvium/colluvium composed of basalt cobbles and boulders derived from the Grand Mesa. This basalt forms an erosion-resistant caprock on the underlying Mancos Shale. The canyon of Leroux Creek has cut through this caprock and has incised deeply into the Mancos Shale (**Photo 4**)

Mancos Shale is both highly erosive and fairly permeable. Drainages located in Mancos Shale do not commonly support perennial surface flows, due to the extent of infiltration into the underlying sediment. Leroux Creek is unusual because it is underlain by an impermeable slate layer within the larger Mancos Shale formation. This slate layer forms an aquitard which dramatically reduces the permeability of the streambed, and is likely responsible for the surface flow within Leroux Creek (Photos 5 & 6). Similar slate layers are not uncommon within the Mancos Shale formation but are typically of limited areal extent and thickness.

The open-cut trench that would be necessary to install the proposed siphon on the Fire Mountain Canal has the potential to puncture the slate aquitard which allows surface flow in Leroux Creek. This risks dewatering Leroux Creek downstream from the siphon, as the surface flow could potentially permeate through the breach in the slate layer at the point where the siphon passes underneath the creekbed. Dewatering Leroux Creek would fundamentally degrade the biological and ecological function of the riparian corridor and associated jurisdictional wetlands, with a significant deleterious effects to the wildlife and scenic beauty of the area, and a loss of the characteristics that Mr. Hillyard is seeking to preserve on his property.

Prior to the approval of any siphon installation, subsurface test excavations or drillings should be performed to evaluate the thickness of the slate aquitard, the extent of saturation above and below the aquitard, and the potential for the siphon to pierce the aquitard. No construction should be permitted without full engineering and hydrologic assessment of the risk to Leroux Creek's surface flow and associated shallow groundwater.

If you have any questions or require additional information, please do not hesitate to contact the Olsson office by telephone at 970.263.7800.

Sincerely,

Alexander Nees

Figure 1. Property Map

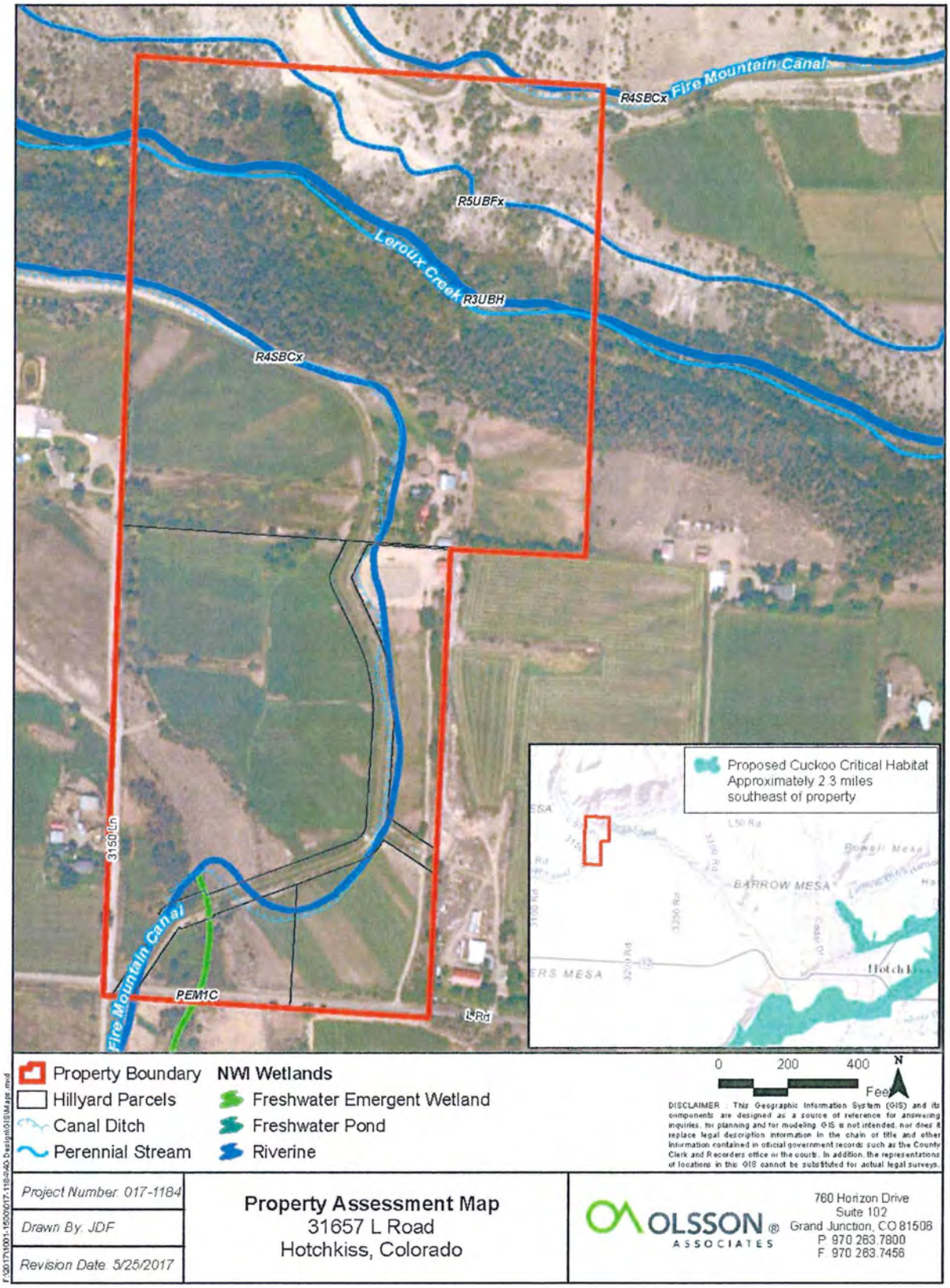

PHOTO LOG –
All photos taken May 22

Figure 1. Property Map

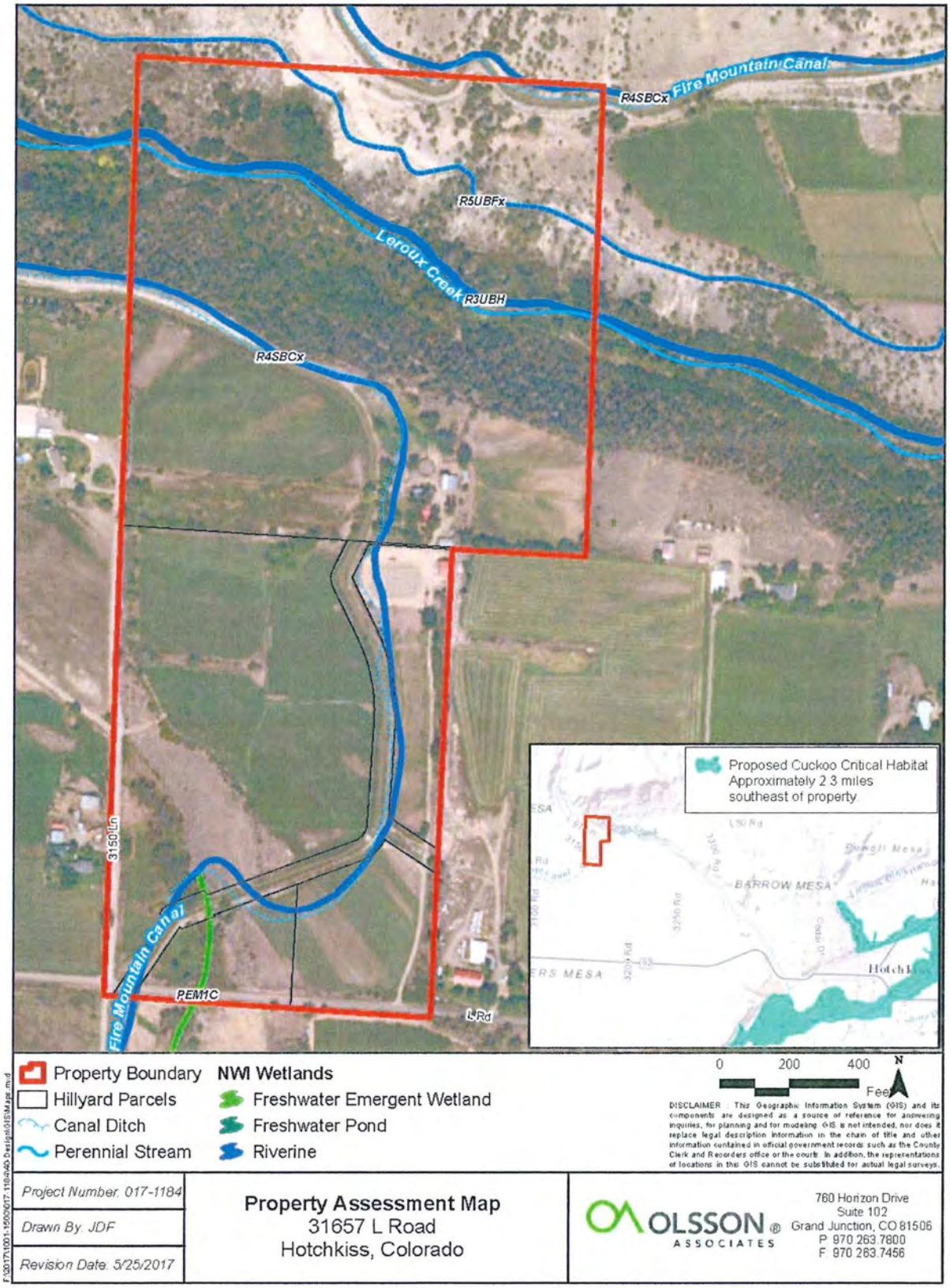

PHOTO LOG –
All photos taken May 22

OLSSON ASSOCIATES

HILYARD PHOTO LOG

Project Name:	Site Location:	Project No.
Hilyard Assessment	31657 L Road, Hotchkiss, Delta County, Colorado (T14S R93W Sec 22)	017-1184

PHOTO 1

View looking northwest, taken from the south rim of Leroux Creek canyon. Note upland vegetation on slopes in foreground and far distance, with riparian vegetation in the middle distance. The alignment of the Fire Mountain canal is visible on the bare Mancos Shale slopes in the distance. Seepage from this canal provides a significant source of water in this portion of Leroux Creek.

PHOTO 2

Typical vegetation on the lower slopes and in the portions of the canyon that are not within the riparian corridor. Upland species dominate, primarily oakbrush (*Quercus gambelii*) and skunkbrush (*Rhus aromatica*), but also big sagebrush (*Artemisia tridentata* subspp.), juniper (*Juniperus* spp.), and greasewood (*Sarcobatus vermiculatus*).

OLSSON ASSOCIATES

HILYARD PHOTO LOG

Project Name:	Site Location:	Project No.
Hilyard Assessment	31657 L Road, Hotchkiss, Delta County, Colorado (T14S R93W Sec 22)	017-1184

PHOTO 3

Herbaceous invasive weeds dominate the understory throughout the canyon, with the exception of the creek channel and its fringe. Common species include whitetop, houndstongue, cheatgrass, scotch thistle, and common mullein. All these species are Colorado Noxious Weeds (except cheatgrass). A whitetop infestation is visible in the foreground.

PHOTO 4

The channel of Leroux Creek is minimally incised, and is dominated by large-diameter igneous cobbles derived from volcanic material on the Grand Mesa. The riparian fringe is dominated by skunkbrush, but cottonwoods and willows occur in local profusion where additional water is available due to canal seepage or other diversions.

OLSSON ASSOCIATES

HILYARD PHOTO LOG

Project Name:	Site Location:	Project No.
Hilyard Assessment	31657 L Road, Hotchkiss, Delta County, Colorado (T14S R93W Sec 22)	017-1184

PHOTO 5

The entire channel of Leroux Creek within the Hilyard property is underlain by an impermeable slate layer within the larger Mancos Shale formation.
Visible (from top to bottom) in this river bank are the following strata:

1) poorly sorted alluvial/colluvial deposits from previous flood events or landslides.
2) Mancos Shale sediments.
3) Slate layer.

PHOTO 6

The slate layer forms an aquitard that prevents infiltration of surface water into the permeable sediments underlying the Creek, and is likely responsible for the perennial surface flow in this location.

Such slate layers are generally of limited thickness and extent within the Mancos Shale.

OLSSON ASSOCIATES

HILYARD PHOTO LOG

Project Name:	Site Location:	Project No.
Hilyard Assessment	31657 L Road, Hotchkiss, Delta County, Colorado (T14S R93W Sec 22)	017-1184

PHOTO 7

A lateral ditch from the Fire Mountain Canal drains directly into Leroux Creek near the downstream end of the Hilyard property. This discharge (seen at left in near- view) increases the flow volume of the Creek, but drastically degrades the water quality. Note the sediment plume mixing with the clear creek water. It is not known how often or how long this discharge occurs.

PHOTO 8

In downstream Leroux Creek canyon, the canopy is dominated by plains cottonwood (*Populus deltoides*) and narrowleaf cottonwood (*P. angustifolia*). These species hybridize freely on the property. This mixture indicates transitional ecological character between the lowlands along the North Fork and high elevation creeks on the Grand Mesa.

OLSSON ®
ASSOCIATES

HILYARD PHOTO LOG

Project Name:	Site Location:	Project No.
Hilyard Assessment	31657 L Road, Hotchkiss, Delta County, Colorado (T14S R93W Sec 22)	017-1184

PHOTO 9

The entire volume of Leroux Creek is diverted into a lateral ditch at the downstream edge of the Hilyard property. The banks of the ditch are largely dominated by Russian olive (Eleagnus angustifolia), with cottonwoods forming a minor component.

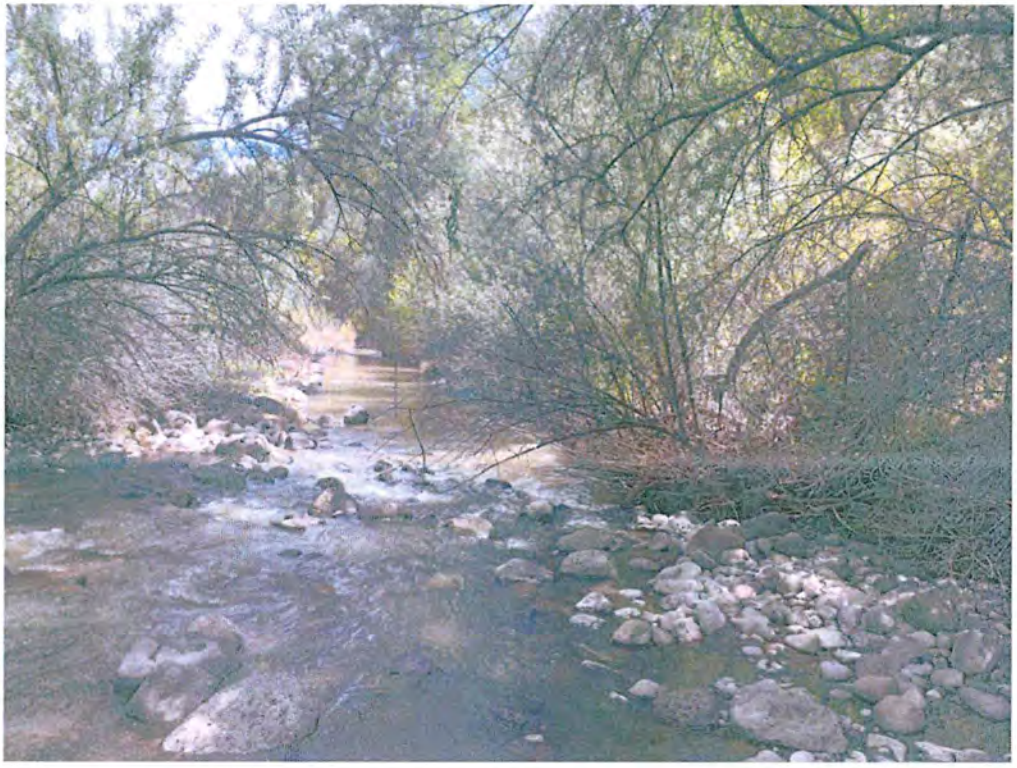

PHOTO 10

The native channel of Leroux Creek downstream from the ditch diversion in Photo 9 has only minimal surface water, likely derived from ditch seepage and discharge. The riparian fringe is degraded and open, with minimal closed canopy. Conditions appear to be similar downstream to the confluence with the North Fork, but could not be investigated due to private land preventing access.

OLSSON ASSOCIATES

HILYARD PHOTO LOG

Project Name:	Site Location:	Project No.
Hilyard Assessment	31657 L Road, Hotchkiss, Delta County, Colorado (T14S R93W Sec 22)	017-1184

PHOTO 11

The majority of the Leroux Creek drainage is not occupied by a riparian corridor as in Photos 8-10, but is a level terrace bench approximately 6-10 feet above the Creek, and dominated by weedy herbaceous species (houndstongue in the foreground) and an ecletic mix of upland and mesic species (willows and oakbrush visible in the middle distance).

PHOTO 12

Several occurrence of stinking milkvetch (*Astragulus praelongus*) were noted within the canyon, in unusual ecological settings for this plant. Stinking milkvetch is commonly found on xeric selenium-rich soils, and its presence in a mesic setting suggests that the soil may be enriched with selenium derived from the adjacent slopes of unvegetated Mancos Shale.

Comment Letter 2

Ward, Jennifer <jward@usbr .gov>

Fwd: [EXTERNAL] Comments on Draft Environmental Assessment, Fire Mountain Canal

1 message

McWhirter , Lesley <lmcwhirter@usbr.gov> Mon, Apr 16, 2018 at 7:54 AM
To: Jenny Ward <jward@usbr.gov>
Cc: Mark Wernke <mwernke@usbr.gov>

---------- Forwarded message ----------
From: Wink Davis <

By email: lmcwirter@usbr.gov

Re: Comments on Draft Environmental Assessment, Fire Mountain Canal

Dear Sir:

Comment #

My wife and I own and operate Mesa Winds Farm & Winery located at 31262 L Road on Rogers Mesa, Colorado. The Fire Mountain Canal bisects our farm. We will be very significantly impacted by the above-referenced piping project.

12 The treatment of Socioeconomic Impacts of this project in the above-referenced Environmental Assessment, at page 22, is inadequate and, indeed, insulting to those of us who will be impacted by this project. These socioeconomic impacts are summarily dismissed in 2 brief sentences which concludes that the only impact will be the temporary positive economic stimulus created by "engineering, environmental planning, and construcon ser vices recruited to implement the project over 2-3 years."

This is far from the serious consideraon of socioec onomic impacts of the project as required by NEPA. One cannot evaluate impacts without studying them at least minimally, as was done in the consideraon of T ribal Concerns and Economic Jusce. In this le . er I menon a f ew socioeconomic impacts which the Bureau of Reclamaon w ould have discovered if they had bothered to look and which are significant from the perspecv e of the affected community. I expect other impacts would have been discovered if the BoR had given this element the attenon it deser ves.

13 It must be acknowledged that the negav e impacts of this project will be felt by the farmers and residents of Rogers Mesa whereas the benefits (salinity reducon) will be r ealized down stream in the Colorado River Basin. Salinity reducon do wnstream does not benefit the farmers of Rogers Mesa. However, there are significant potenal impacts t o the local affected community which deserve to be studied and evaluated.

The social fabric of the Rogers Mesa Community is deeply entwined with the Fire Mountain Canal (FMC) as it is presently configured – an open waterway that supports a riparian corridor. I am not arguing that it must be le as is. I am ar guing that the changes brought-on by pung it in pipe deserve to be studied, analyzed, and mig ated.

Negav e impacts include

14 • Loss of wildlife habitat, as noted in the EA.

15 • Loss of visual and scenic amenies (as w ell as wildlife) as the riparian vegetaon is lost due to drying-up of the riparian corridor. Landscape becomes more uniform, less varied, more industrial.

16 • Drying-up of domesc and irrig aon w ater wells due to disrupng the seepag e from the FMC. The cost to replace an exisng domes c w ater well with a service from the Rogers Mesa Domesc W ater Company is approximately $20,000. Numerous exisng homes are served by wells serving 3 residences, so the consequences to the community of losing each such well could be as much as $60,000. This is a significant financial impact which many residents cannot afford. In evaluang the socioec onomic impacts of

this project, the EA should have, at least, determined how many residents would be impacted in this way, the cost to the community, and how many residents can actually afford to switch to commercially available water. We hold the right to clean, reliable water is a human right, not to be taken-away lightly.

17 • The farmers and ranchers who serve on the Fire Mountain R&C Company Board of Directors are volunteers. The way they manage the canal is stable and predictable. The imposion of this ne w element, an enclosed pipeline, will impact their operaons. F or instance; they know how to keep FMC funconal as it is pr esently constructed. What provision is there for repairs and maintenance to the pipeline over the 50-year planning horizon? Whereas there may be less repairs and maintenance, when a problem does occur it is likely to be more difficult and expensive to repair. What enty is char ged with responding to such events? Will there be a budget for such response? In the event of an outage that requires significant repairs what will be an alternav e source of water for the farmers and ranchers who depend on the FMC water for their livelihood? These are potenally signific ant socioeconomic impacts that should be evaluated in detail.

18

19 • The proposed 50-year life of this project is inadequate. Rogers Mesa is home to farms and ranches that have been producing food and that have been served by irrigaon w ater for over 100 years. The exisng , tradional open-dit ch delivery system has proven resilient and relav ely simple to maintain and repair. What would we see today on Rogers Mesa if the early seler s had seled f or an irrigaon w ater delivery system with a 50-year life? Today's farmers and ranchers are beng their futur e on their connued access t o FMC water. To suggest that they may need a new system, or extensive repairs, in a short 50 years will have substanal socioec onomic impacts on the community which should be studied and evaluated in assessing the impacts of this project.

20 • The Rogers Mesa Distribuon Compan y's Slack Lateral and Patterson Lateral were put in pipe a couple of years ago, ostensibly in the interest of salinity reducon. The Slack Lateral runs adjacent to my West fence. During the course of the project I was repeatedly assured that the project would reclaim the disturbed area and plant appropriate cover crops. This was never done. The area is now a mess of noxious and invasive weeds including Knapweed and various species of thistle. This exists on land owned by the Bureau of Reclamaon. This has a signific ant impact on my farm and the other farms traversed by the Slack and Patterson laterals. Despite our best efforts to farm responsibly and protect our neighbors from the introducon of no xious weeds we find that the Bureau of Reclamaon has permi ed a despicable and perhaps illegal condion t o exist. Moreover, the backfill was done in a sloppy and irresponsible manner such that large rocks are on the surface and what soil shows is caliche. This ground will never be the dense thicket of habitat that existed before. This is a significant socioeconomic impact on the farms and farmers of Rogers Mesa. We deserve to have this examined and evaluated in an honest matter in the Environmental Assessment.

22 • The foregoing bullet point exemplifies the case that, at the end of a project of this magnitude, parcularly when le t to the lowest bidder, it is common that corners are cut. Why should we expect any different outcome than what happened on the laterals. I strongly urge that the BoR require a performance bond to back up its assurances that reclamaon will be thor oughly and sensiv ely done. I want to know that cover crop

23 selecon is done in c ollaboraon with the a ffected landowners. For example: The farmers and ranchers of Rogers Mesa are burdened by Hair Barley, an invasive weed,

introduced by the Colorado Dept of Transportaon t o reclaim its road cuts, specifically because it is aggressive and drought tolerant. It served CDOT's purposes but has been disastrous for agriculture. Why should we expect anything different from BoR? Only if this socioeconomic impact is honestly and authenc ally studied and realisc mig aons put in place. Without such treatment we have no assurance that we will not be treated as those of us burdened by the Distribuon Compan y's project were treated. We deserve no less than to have these socioeconomic impacts examined and analyzed in the EA and to be guaranteed the measures that will be taken to mig ate these impacts.

24

- Further, on the issue of reclamaon, wher e will the water come from to establish the cover crop that must be an essenal part of r eclaiming our lands? This is an arid environment. Without adhering to best pracces and pr oviding sufficient water, only weeds will grow in the disturbed ground.

25

- The corridor of land owned by the BoR for the FMC is 50 feet wide. How will adjacent landowners be assured that our lands will not be trespassed upon by equipment and spoils during the project? I find it highly unlikely that the contractor will be able to respect our property rights. How will he be able to respect our rights if the BoR has not bothered to determine where the limits of its property rights are? These are issues that arose on the piping of the laterals, that I have raised in letters to the BoR, and which have been ignored in this EA. Private Property Rights are very important to people on Rogers Mesa. Measures to contain the impacts of this project onto land over which BoR has its own rights should be specified in assessing the socioeconomic impacts of this project.

The foregoing list of nine impacts of this project are off-the-top-of-my-head. None has been addressed in the Environmental Assessment. Certainly more would be revealed if the EA had made an honest effort to assess the socioeconomic impacts of this project. The purpose of the environmental assessment is to understand the potenal impacts on the c ommunity as well as the environment for the purpose of avoiding and/or mig ang such impacts. B y failing to even bother to consider socioeconomic impacts, the Bureau of Reclamaon has been der elict in its duty and has failed the affected community. This is not a construcv e or encouraging precursor to this project.

Sincerely

Philip Winship Davis

http://www.mesawindsfarm.com
wink@mesawindsfarm.com
970-250-4788

Mesa Winds Farm & Winery
31262 L Road
Post Office Box 327
Hotchkiss, Colorado 81419

Comments identical to those contained in the Davis comment letter were previously numbered in the Davis comment letter.

Comment Letter 3

Don R. Grant
The Villa Vineyards
10927 3150 Road
Hotchkiss, CO 81419

April 12, 2018

Ed Warner, Area Manager
Bureau of Reclamation
445 West Gunnison Avenue, Suite 221
Grand Junction, CO 81501

By email: lmcwirther@usbr.gov

Re: Comments on Draft Environmental Assessment, Fire Mountain Canal

Dear Sir:

My wife and I own and operate The Villa Vineyard on 3150 Road on Rogers Mesa, Colorado. The Fire Mountain Canal borders the entire length of our North Property Line. We may very well be significantly impacted by the above-referenced piping project.

The treatment of Socioeconomic Impacts of this project in the above-referenced Environmental Assessment, at page 22, is inadequate and, indeed, insulting to those of us who will be impacted by this project. These socioeconomic impacts are summarily dismissed in 2 brief sentences which concludes that the only impact will be the temporary positive economic stimulus created by "engineering, environmental planning, and construction services recruited to implement the project over 2-3 years."

This is far from the serious consideration of socioeconomic impacts of the project as required by NEPA. One cannot evaluate impacts without studying them at least minimally, as was done in the consideration of Tribal Concerns and Economic Justice. In this letter I mention a few socioeconomic impacts which the Bureau of Reclamation would have discovered if they had bothered to look and which are significant from the perspective of the affected community. I expect other impacts would have been discovered if the BoR had given this element the attention it deserves.

It must be acknowledged that the negative impacts of this project will be felt by the farmers and residents of Rogers Mesa whereas the benefits (salinity reduction) will be realized down stream in the Colorado River Basin. Salinity reduction downstream does not benefit the farmers of Rogers Mesa. However, there are significant potential impacts to the local affected community which deserve to be studied and evaluated.

The social fabric of the Rogers Mesa Community is deeply entwined with the Fire Mountain Canal (FMC) as it is presently configured – an open waterway that supports a riparian corridor. I am not arguing that it must be left as is. I am arguing that the changes brought-on by putting it in pipe deserve to be studied, analyzed, and mitigated.

Negative impacts include

- Loss of wildlife habitat, as noted in the EA.
- Loss of visual and scenic amenities (as well as wildlife) as the riparian vegetation is lost due to drying-up of the riparian corridor. Landscape becomes more uniform, less varied, more industrial.
- Drying-up of our domestic and irrigation water well due to disrupting the seepage from the FMC. The cost to replace this existing domestic water well with a service from the Rogers Mesa Domestic Water Company is approximately $20,000. Numerous existing homes are served by wells serving 3 residences, so the consequences to the community of losing each such well could be as much as $60,000. This is a significant financial impact which many residents cannot afford. In evaluating the socioeconomic impacts of this project, the EA should have, at least, determined how many residents would be impacted in this way, the cost to the community, and how many residents can actually afford to switch to commercially available water. We hold the right to clean, reliable water is a human right, not to be taken-away lightly.
- The farmers and ranchers who serve on the Fire Mountain R&C Company Board of Directors are volunteers. The way they manage the canal is stable and predictable. The imposition of this new element, an enclosed pipeline, will impact their operations. For instance; they know how to keep FMC functional as it is presently constructed. What provision is there for repairs and maintenance to the pipeline over the 50-year planning horizon? Whereas there may be less repairs and maintenance, when a problem does occur it is likely to be more difficult and expensive to repair. What entity is charged with responding to such events? Will there be a budget for such response? In the event of an outage that requires significant repairs what will be an alternative source of water for the farmers and ranchers who depend on the FMC water for their livelihood? These are potentially significant socioeconomic impacts that should be evaluated in detail.
- The proposed 50-year life of this project is inadequate. Rogers Mesa is home to farms and ranches that have been producing food and that have been served by irrigation water for over 100 years. The existing, traditional open-ditch delivery system has proven resilient and relatively simple to maintain and repair. What would we see today on Rogers Mesa if the early settlers had settled for an irrigation water delivery system with a 50-year life? Today's farmers and ranchers are betting their future on their continued access to FMC water. To suggest that they may need a new system, or extensive repairs, in a short 50

Comment #

21

years will have substantial socioeconomic impacts on the community which should be studied and evaluated in assessing the impacts of this project.

- The Rogers Mesa Distribution Company's Slack Lateral and Patterson Lateral were put in pipe a couple of years ago, ostensibly in the interest of salinity reduction. Due to the lack of proper reclamation the area impacted by this work is now a new growth of noxious and invasive weeds including Knapweed and various species of thistle. This exists on land owned by the Bureau of Reclamation. This has a significant impact on my neighbors farm and the other farms traversed by the Slack and Patterson laterals. This ground will never be the dense thicket of habitat that existed before. This is a significant socioeconomic impact on the farms and farmers of Rogers Mesa. We deserve to have this examined and evaluated in an honest matter in the Environmental Assessment.
- The foregoing bullet point exemplifies the case that, at the end of a project of this magnitude, particularly when let to the lowest bidder, it is common that corners are cut. Why should we expect any different outcome than what happened on the laterals. I strongly urge that the BoR require a performance bond to back up its assurances that reclamation will be thoroughly and sensitively done. As explained in my initial letter of concern, I want to know that cover crop selection is done in collaboration with the affected landowners. For example: The farmers and ranchers of Rogers Mesa are burdened by Hair Barley, an invasive weed, introduced by the Colorado Dept of Transportation to reclaim its road cuts, specifically because it is aggressive and drought tolerant. It served CDOT's purposes but has been disastrous for agriculture. Why should we expect anything different from BoR? Only if this socioeconomic impact is honestly and authentically studied and realistic mitigations put in place. Without such treatment we have no assurance that we will not be treated as those of us burdened by the Distribution Company's project were treated. We deserve no less than to have these socioeconomic impacts examined and analyzed in the EA and to be guaranteed the measures that will be taken to mitigate these impacts.
- Further, on the issue of reclamation, where will the water come from to establish the cover crop that must be an essential part of reclaiming our lands? This is an arid environment. Without adhering to best practices and providing sufficient water, only weeds will grow in the disturbed ground, which is the entire North boundary of our property.
- The corridor of land owned by the BoR for the FMC is 50 feet wide. How will adjacent landowners be assured that our lands will not be trespassed upon by equipment and spoils during the project? I find it highly unlikely that the contractor will be able to respect our property rights. How will he be able to respect our rights if the BoR has not bothered to determine where the limits of its property rights are? Is this issue being ignored in this EA? Private Property Rights are very important to people on Rogers Mesa. Measures to contain the impacts of this project onto land over which BoR has its own rights should be specified in assessing the socioeconomic impacts of this project.

It appears that none of the foregoing list of nine impacts of this project have been addressed in the Environmental Assessment. Certainly more would be revealed if the EA had made an honest effort to assess the socioeconomic impacts of this project. The purpose of the environmental assessment is to understand the potential impacts on the community as well as the environment for the purpose of avoiding and/or mitigating such impacts. By failing to even bother to consider socioeconomic impacts, the Bureau of Reclamation has been derelict in its duty and has failed the affected community. This is not a constructive or encouraging precursor to this project.

Sincerely

Don R. Grant

Comment Letter 4

April 13, '18

Dear Miss McWhirtl,

I am a small cattle operator in the North fork Valley that depends hugely on irrigation Water. I appriate the tremendous support of your agency towards farmers and ranchers.

The document I did not read but I understand the project has given 4½ million dollars worth of support to improve the five Mt. Canal on Rogers Mesa.

Comment # 26

My question is, if these projects have a 50 year life expectancy what happens after 50 years? My friend looked it up and it was not addressed in the document.

I am also concerned about the cost of Water per shares. I lease land for my cows and hay. Barely making a profit - some years, not. I hope to pass this on to my children - but it won't be possible with higher water assessments.

Thank you for your time -

Sincerely

Carroll Lynch

2L Ranch

Hotchkiss

Appendix B Vegetation Observed in the Project Area

Appendix B: Vegetation observed in the project area

Common Name	*Scientific Name*	Wetland Indicator**	Native/Invasive
Alfalfa	*Medicago sativa*	UPL	Invasive
Alkali bulrush	*Schoenoplectus maritimus*	OBL	Native
American elm	*Ulmus americana*	FAC	Native
Big sagebrush	*Artemisia tridentata*	UPL	Native
Bluejoint	*Calamagrostis canadensis*	FACW	Native
Buffaloberry	*Shepherdia argentea*	FACU	Native
Burdock	*Arctium sp*	UPL	Invasive
Canada thistle*	*Cirsium arvense*	FAC	Invasive
Cattail	*Typha latifolia*	OBL	Native
Cheatgrass*	*Bromus tectorum*	UPL	Invasive
Clematis	*Clematis* sp.	FAC-FACU	Native
Coyote willow	*Salix exigua*	FACW	Native
Dogbane	*Apocynum cannabinum*	FAC	Native
Field bindweed*	*Convolvulus arvensis*	UPL	Invasive
Four-wing saltbush	*Atriplex canescens*	UPL	Native
Foxtail sedge	*Carex alopecoidea*	OBL	Native
Fremont cottonwood	*Populus fremontii*	UPL	Native
Fringe willowherb	*Epilobium ciliatum*	FACW	Native
Gambel oak	*Quercus gambelii*	UPL	Native
Goldenrod	*Solidago canadensis*	FACU	Native
Gumweed	*Grindelia squarrosa*	FACU	Native
Halogeton	*Halogeton glomeratus*	UPL	Invasive
Hound's tongue	*Cynoglossum officinale*	FACU	Invasive
Kochia*	*Kochia scoparia*	UPL	Invasive
Mullein	*Verbascum thapsus*	FACU	Invasive
Narrowleaf cottonwood	*Populus angustifolia*	FACW	Native
Orchard grass	*Dactylis glomerata*	UPL	Invasive
Peachleaf willow	*Salix amygdaloides*	FACW	Native
Pinion pine	*Pinus edulis*	UPL	Native
Prickly lettuce	*Lactuca serriola*	FACU	Invasive
Primrose	*Primula* sp.	OBL-FACU	Native
Rabbitbrush	*Ericameria nauseosa*	UPL	Native
Redtop	*Agrostis gigantea*	UPL	Native
Ricegrass	*Achnatherum sp*	UPL	Native
Rocky mountain juniper	*Juniperus scopulorum*	UPL	Native
Russian knapweed*	*Acroptilon repens*	UPL	Invasive
Russian olive*	*Elaeagnus angustifolia*	FAC	Invasive
Russian thistle*	*Salsola iberica*	UPL	Invasive
Scouring rush	*Equisetum hyemale*	FACW	Native
Showy milkweed	*Asclepias speciosa*	FAC	Native
Siberian elm*	*Ulmus pumila*	UPL	Invasive
Smooth brome	*Bromus inermis*	UPL	Invasive
Snakeweed	*Gutierrezia* sp.	UPL	Native
Sumac	*Rhus trilobata*	UPL	Native
Tall fescue	*Festuca arundinacea*	UPL	Invasive
Tamarisk*	*Tamarix parviflora*	FAC	Invasive
Tansy aster	*Aster pattersonii*	UPL	Native
Timothy grass	*Phleum pratense*	FAC	Invasive
Torrey's rush	*Juncus torreyi*	FACW	Native
Utah juniper	*Juniperus osteosperma*	UPL	Invasive (in Colorado)
Western wheatgrass	*Pascopyrum smithii*	FACU	Invasive
Woods' rose	*Rosa woodsii*	FACU	Native
Yellow sweet clover	*Melilotus officinalis*	FACU	Invasive

Appendix C Photo Log

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 1. Willow fringe bordering canal traversing adobe slope, northeast portion of project, view is to the east after end of irrigation season, 2016.

Photo 2. Existing siphon intake, view east, after water has entered the canal.

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 3. Existing siphon, view southwest from point of siphon intake (Photo 2). Drain grate is visible along with Leroux Creek.

Photo 4. Cottonwood/riparian habitat on Leroux Creek at the point of the proposed siphon crossing.

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 5. Vegetation along north-facing slope of Leroux Creek Drainage, proposed siphon corridor.

Photo 6. Cottonwood/willow bordering farmland, view south at the point where the canal exists in Leroux Creek Drainage.

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 7. Fire mountain canal just before it exists the Leroux Creek Drainage. View is to the west.

Photo 8. Caterpillar nests which provide forage for migratory birds.

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 9. Bridge over existing canal; would be removed when the canal is piped. View northwest.

Photo 10. View east of canal traversing south slope of Leroux Creek Drainage above proposed siphon outlet.

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 11. Leopard frog observed along canal, October 2016

Photo 12. Herbaceous fringe in farmland, central portion of project, view east.

Fire Mountain Canal and Reservoir
Appendix C- Environmental Assessment
Photo Log

Photo 13. Terminus of project, view south, northwest portion of project area.

Photo 14. View north along the central portion of the canal showing effects of canal maintenance and invasive weeds; Canada thistle (in view), as well as Russian knapweed, kochia, cheatgrass, Russian thistle, and field bindweed were common in the proposed action area.

Appendix D Threatened and Endangered Species Survey

Threatened and Endangered Survey Report
Fire Mountain Canal
Salinity Control Pipeline Project

Prepared by:
Wildlife and Natural Resource Concepts & Solutions, LLC
And
ERO Resources Corporation

August 29, 2017

Table of Contents

Figures:

Attachments:

1 Introduction

The following Biological Survey Report has been prepared to evaluate existing habitat, including habitat for species protected under Section 7(c) of the Endangered Species Act (ESA), within the Proposed Action Area for proposed 2017 Fire Mountain Canal & Reservoir Company (FMCRC) Salinity Control Pipeline Project (project) in Delta County, Colorado. The project is funded in part by Bureau of Reclamation's (Reclamation's) Basinwide Salinity Control Program (2015 FOA Project Proposal, FOA No. R15AS00037) (FMCRC 2015) and by the Natural Resource Conservation Service (NRCS) through the Regional Conservation Partnership Program (RCPP). The proposed project is located in Sections 21, 22, 27 & 28 T. 14S, R. 93W, about 3 miles west of the Town of Hotchkiss, Colorado (Figure 1). A habitat replacement site (approximately 7.67 acres) would be included as part of the project, and is located in Section 29 T. 14S, R. 93W, west of the pipeline project (Figures 1 and 2).

A survey for federally threatened, endangered, proposed, or candidate (TEPC) species, as well as for potential suitable habitat for such species was conducted on October 16, 17, and 24, 2016 by Wildlife and Natural Resource Concepts & Solutions LLC, and on April 17, May 2, and May 23, 2017 by ERO Resources Corporation (ERO). This report summarizes the survey findings and evaluates potential effects resulting from the proposed project on TEPC species listed or suitable, proposed or designated critical habitat for these species.

2 Action Area and Description of Proposed Action

The general elevation of the project area is approximately 5,800 feet above sea level. Existing land use within the project area vicinity is open rangeland and agricultural. The northern portion of the project area occurs within the Leroux Creek drainage in desert sagebrush vegetation, as well as pinion-juniper woodland habitat with riparian vegetation growing in close proximity to the Fire Mountain Canal (FMC). The southern and southwestern portion of the project area crosses irrigated and fallow farm lands; agriculturally productive areas contain hay fields, vineyards and fruit orchards.

The project would involve replacing about 3.52 miles of open canal for conveying irrigation water, with buried pipe, and installing a new 0.18-mile section of pipe to siphon water from the FMC across the Leroux Creek drainage. The siphon would allow the FMC (traversing along the northeast slope) to join water entering the canal from Leroux Creek (traversing along the southwest slope of Leroux Creek drainage) as shown on the Proposed Action Area map (Figure 2). Relocating the siphon downgradient from its existing location would enable 0.49 mile of open canal/earthen ditch and an existing siphon to be abandoned. The decommissioned canal prism would be backfilled and the corridor recontoured and reclaimed; the adjacent access road would remain in place and continue to be used to access the open canal east of the project area. Prior to and during construction pipe supplies, vehicles and equipment would be staged at either a 1.89-acre staging area or 1.45-acre staging area, adjacent to the piping corridor, as shown on Figure 2.

The piping project would occur within the existing disturbed corridor with the exception of the new siphon transecting the Leroux Creek drainage (a 50-foot by 958-foot long corridor, or 1.10 acres) and

designated staging areas (3.34 acres, total). Existing access roads would be used during project construction, and no additional access roads would be required. A total temporary disturbance of approximately 32.9 acres and reclamation of approximately 32.7 acres of surface area would occur as a result of the project. In addition, a 7.67-acre habitat replacement site is included in the project; acreage in this area will be improved via methods such as seeding, plantings and weed control, and surface disturbances are not expected.

Approximately 11,900 cubic yards of fill for bedding beneath the pipeline and for placement over the pipeline would be required, and would be obtained on-site as well as from an approved supplier. During construction, earthwork for the project would be completed with tracked equipment (trackhoes and dozers).

The proposed construction schedule would occur over two winter seasons, between fall/winter and spring. Construction activities would occur during the period when irrigation flow is not present, and outside the migratory bird nesting season (late September or October, ending in early April). A typical work day/work week would be followed during construction consisting of five 10-hour work days.

Following the construction phase, all disturbed areas including staging areas would be reshaped and contoured to blend in with the existing topography and revegetated. To avoid direct effects to the Leroux Creek drainage, the existing 48-inch-diameter siphon transecting the drainage would be flow-filled with inert concrete, capped, and abandoned in place rather than excavated and removed. The new siphon area in the drainage (1.10 acres) would be revegetated and replanted with native vegetation. Additionally, specific measures to avoid impacts to the yellow-billed cuckoo are part of the project's design features, and include:

- Constructing during a time when cuckoos are not present (September 1 to May 31), thereby avoiding disturbance to birds during the breeding season.
- Minimizing removal of mature deciduous trees to only those necessary for construction.
- Locating construction of the siphon within a corridor where large tree removal would be minimized. This would be accomplished by having a pre-construction meeting between the Reclamation biologist (or designee) and the contractor to identify the best route within the easement that avoids as much riparian vegetation as feasible and identify individual trees that could be saved within the established route.
- Using erosion control, stabilization, weed management, and salvaging/separating top soil where it occurs to encourage re-vegetation with native riparian plants.
- Riparian restoration, consisting of dormant season pole plantings of coyote willow ((*Salix exigua*), plains cottonwood (*populus deltoids*), and narrowleaf cottonwood (*Populus angustifolia*) and peachleaf willow (*Baccharis salicifolia*), in areas where sufficient water appears available. Cottonwood poles would be replanted after construction at a 2:1 ratio to minimize habitat lost.

To ensure successful riparian restoration, specific planting methods, including hole depth and timing, seed/plant sources, and follow-up monitoring including weed management would be defined and implemented by the FMCRC in consultation with a qualified biologist and Reclamation.

A habitat mitigation project would occur simultaneously with the constructed pipeline project at a 7.67-acre site 1.5 miles south west of the project area (Figure 1). The habitat mitigation project would

involve the enhancement/restoration of an existing drainage/wetland area inundated with non-native invasive vegetation.

Once the pipeline is installed, water would be allocated via use of existing flumes at 13 turnouts along the piped canal. The new system would have a low-head pressure, which would allow for uniform, consistent water delivery. The pipeline would be operated and maintained seasonally and used to deliver water to shareholders, with an expected lifetime of approximately 50 years. Maintenance and routine water meter checks along the pipeline would occur weekly using the existing access road on Rogers Mesa. Maintenance within the Leroux Creek drainage would involve routine visual inspections, access to the open canal upgradient of the project area, and annually draining the siphon.

3 Consultation History

3.1 Endangered Colorado River Fishes

The FMC obtains stored irrigation water from the Paonia Reservoir, particularly in the late season. The Gunnison River Basin Programmatic Biological Opinion (PBO) issued by U.S. Fish and Wildlife Service (USFWS) in 2009 addressed the depletions associated with the operation of Paonia Reservoir and Dam, which covered an existing estimated average annual depletion of 10,000 acre-feet a year. The PBO found that the Upper Colorado River Endangered Fish Recovery Program (Recovery Program), established in 1988, is the reasonable and prudent alternative to avoid jeopardy to the endangered Colorado River fishes and avoid adverse modification of designated critical habitat. The Recovery Program is a partnership of public and private organizations working to recover the four species while allowing continued and future water development. Recovery strategies include conducting research, improving river habitat, providing adequate stream flows, managing non-native fish, and raising endangered fish in hatcheries for stocking. Furthermore, in 2011, the USFWS determined that the Recovery Program has made "sufficient progress to be the reasonable and prudent alternative to avoid the likelihood of jeopardy to the endangered fishes and to avoid destruction or adverse modification of their critical habitat" for "existing depletions".

Additional water conveyed by the FMC for irrigation is diverted from Leroux Creek and the North Fork of the Gunnison River; water depletions as a result of these diversions are not addressed in the PBO (non-federal projects with existing depletions are not required to consult under Section 7 until there is a federal nexus). Since the FMCRC is receiving federal dollars for the proposed piping project under the Colorado River Basin Salinity Control Act, a federal nexus is established and the remainder of FMCRC's depletions which are not associated with project water from Paonia Reservoir need to be addressed. Under the proposed project, these additional historic depletions would be addressed by the FMCRC entering in to a recovery agreement with the USFWS (however, payment into the Recovery Program would not be required for these historic depletions, due to their initiation prior to 1988).

3.2 Yellow-billed cuckoo

Informal discussions have occurred regarding yellow-billed cuckoo presence, habitat and impacts. On April 28, 2017, ERO contacted Terry Ireland, biologist with the U.S. Forest Service (USFS) by phone for direction regarding potential habitat in the project area for the yellow-billed cuckoo, any known cuckoo occurrences, design features for avoidance and minimization of impacts, and potential effects

determination. Based on the description of habitat in the project area, particularly at the point where the proposed siphon transects multi-story habitat in the Leroux Creek drainage, Terry concurred that the project may affect the yellow-billed cuckoo (cuckoo) and the nature of mature tree removal would be factor in determining the effects. If the siphon/disturbance occurs in the wide part of the patch in optimal habitat, a "likely to adversely affect" determination may be made. If the siphon/disturbance occurs in a narrow part of the patch and/or near the end of a patch, in less optimal habitat (e.g., smaller trees, open understory), and removal of fewer large trees occurs, the determination may be "not likely to adversely affect". Surveys for the cuckoo were discussed, as well as the option to "assume presence" of the bird in absence of a survey effort.

Subsequently, the FMCRC in consultation with ERO and Reclamation made a decision to "assume presence" of the cuckoo. On May 2 and May 23, 2017, biologists with ERO mapped four distinct habitat patches in the drainage, and evaluated the nature of effects to habitat at the point of siphon crossing. Field surveys were conducted by FMCRC and ERO, and the optimum alignment for the siphon selected within the corridor. On May 26, 2017, a draft memo summarizing the effects to habitat was prepared and submitted to Reclamation for review.

On June 30, 2017 Reclamation's biologist, Amanda Ewing, met with Terry Ireland to review pictures of the siphon alignment, discuss the suitability of nesting habitat in the area, and discuss conservation measures. It was agreed that the areas composed of an understory of sagebrush, greasewood, and pine trees are not suitable nesting habitat. Given the vegetative composition of the siphon area, it is more likely that the area is utilized for foraging purposes as opposed to nesting, with the most suitable foraging habitat occurring closer to the creek. The conservation measures identified to reduce impacts and avoid adverse impacts were: have construction work occur outside of the season of cuckoo presence, minimize disturbance within the more suitable foraging habitat, conduct a pre-construction meeting between the biologist and contractor to flag the best siphon alignment and identify individual trees that could be avoided within the flagged alignment, and re-vegetate disturbed areas.

3.3 Federally Listed and Candidate Species

The Endangered Species Act (ESA) of 1973 protects federally listed endangered, threatened and candidate plant and animal species and their critical habitats. The USFWS Information for Planning and Conservation (IPaC) was used to generate a list of species protected under the ESA with the potential to occur in the project vicinity (Table 1); a square polygon was used to encompass staging areas, the habitat replacement site, and the entire pipeline route.

The IPaC list included ten federally threatened, endangered, proposed, or candidate (TEPC) species that have the potential to occur in the project area. These are listed in Table 1 along with habitat descriptions (ERO 2017a; FWS-IPAC 2017).

Based on known habitat preferences for listed species, a small area in the north-east portion of the project area (along the south-facing slope of the Leroux Creek drainage) contains potential habitat for Colorado hookless cactus (*Sclerocactus glaucus*) and clay-loving wild buckwheat (*Eriogonum pelinophilum*). However, this habitat is not considered suitable, due to the presence of weeds and the extent of disturbance that has occurred within the existing FMC corridor. Further, pedestrian plant surveys were conducted using 10-15 foot transects across the project area in potential suitable habitat

along the north-east side of Leroux Creek, up to the FMC. No individuals or populations of Colorado hookless cactus or clay-loving wild buckwheat were located in the project area, and these species are not analyzed further in this report.

No sagebrush habitat suitable for the Gunnison sage-grouse occurs in the project area. No forested or high elevation habitat suitable for the wolverine occurs in the project area. The greenback cutthroat trout is not known to occur in the project area and no suitable high elevation streams occur. These three species are not analyzed further in this report.

Habitat for the yellow-billed cuckoo (*Coccyzus americanus*) exists in the project area, and additional detail is included in the analysis below Table 1. The Colorado River endangered fishes could be affected by water depletions and are therefore considered in this analysis.

Table 1. Federally threatened or endangered species with potential to occur in the project area.

Common Name (*Scientific Name*)	**Status**	**Habitat Description**	**Potential to Occur in Project Area or Downstream Effects**
Gunnison sage-grouse *(Centrocercus minimus)*	Threatened	Sagebrush patches with at least 25 percent of the land dominated by sagebrush cover.	No suitable habitat occurs in the project area; the project area is outside the historic range for the species.
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Deciduous riparian woodlands, with dense cottonwood and willow, and sometimes tamarisk.	Yes, potential habitat exists in Leroux Creek.
Bonytail chub (*Gila elegans*)	Endangered	Found within the Colorado River and its tributaries.	No - but downstream water effects should be considered.
Colorado pikeminnow (=squawfish) (*Ptychocheilus lucius*)	Endangered	Found within the Colorado River and its tributaries.	No- but downstream water effects should be considered.
Greenback cutthroat trout (*Oncorhynchus clarki stomias*)	Threatened	Mid- to high-elevation mountain streams.	No habitat occurs within the project area.
Humpback chub (*Gila cypha*)	Endangered	Found within the Colorado River and its tributaries.	No - but downstream water effects should be considered.
Razorback sucker (*Xyrauchen texanus*)	Endangered	Found within the Colorado River and its tributaries.	No - but downstream water effects should be considered.
Clay loving wild buckwheat (*Eriogonum pelinophilum*)	Endangered	Occurs on rolling clay adobe hills and flats;	No –Potential habitat is marginal and not

Common Name (*Scientific Name*)	Status	Habitat Description	Potential to Occur in Project Area or Downstream Effects
		white, alkaline clay barrens derived from the Mancos Shale Formation. Elevation range is 5,180 to 6,350 feet.	considered suitable; plant surveys did not locate the species.
Colorado hookless cactus (*Sclerocactus glaucus*)	Threatened	Exposed, gravel-covered clay hills; in saltbrush or sagebrush flats; or in pinyon-juniper woodlands.	No –Potential habitat is marginal and not considered suitable; plant surveys did not locate the species.
North American wolverine (*Gulo luscus*)	Threatened	In alpine conifer forests, tundra, and remote grasslands and shrublands.	No habitat occurs within the project area.

Source: FWS-IPaC 2017.

4 Project Area Baseline Conditions

The environmental baseline identifies the current status of, and effects on, the species in the action area. Environmental baseline is the past and present impacts of all federal, state, or private actions and other human activities in an action area, the anticipated impacts of all proposed federal projects in an action area that have already undergone formal or early Section 7 consultation, and the impact of state or private actions that are contemporaneous with the consultation process [50 CFR §402.02]. The current condition of the habitat, including all impacts that have occurred or are occurring to the species up to the time of the proposed action subject to consultation, is included in the following baseline conditions discussion.

4.1 Vegetation and Habitat

The environmental setting in the pipeline project area is comprised of two landforms/topography and ecosystems: Rogers Mesa, a developed agricultural landscape; and the Leroux Creek drainage, a tributary to the North Fork of the Gunnison River. West of the pipeline project area, the proposed 7.67-acre habitat mitigation site is in an ephemeral drainage with constructed ponds.

Near the Leroux Creek drainage, the FMC corridor (including the canal and adjacent maintenance road) traverses a steep, dry adobe south-facing slope for approximately 0.59 miles, enters a siphon, crosses beneath Leroux Creek, and converges with diverted water from Leroux Creek. The FMC corridor traverses approximately 0.9 miles along the north-facing slope of the Leroux Creek drainage. This slope is more densely vegetated, undeveloped/pristine and steep. Intermittent pockets of mature trees and shrubs occur near the FMC, such as cottonwoods, elm and Russian olive. Vegetation is multi-storied and dense near the siphon outlet between the FMC and the Leroux Creek. The riparian vegetation along the

canal appears to be either supported by natural groundwater, natural seeps, or by seepage from the FMC. Moving from west to east, the drainage slope steepens and the creek bed descends farther from the project corridor. In the area proposed for the new siphon, the drainage is steep and wide, with the proposed siphon length extending 958 feet across the drainage (Figure 2). Approximately 0.15 mile south east of the point of the proposed new siphon crossing across the drainage, the FMC corridor makes a 90-degree curve out of the drainage area, and enters Rogers Mesa (Figure 2).

On Rogers Mesa, many sections of the project alignment are adjacent to irrigated fields and/or overflow ditches which drain back towards the FMC. The proximity of these water sources provide wetland and riparian habitat in the area. The plant diversity and habitat value along the ditch is somewhat limited because of current farming practices and development along the ditch, including county roads. The new pipe alignment would be situated within existing irrigation canals or within planted agricultural fields. The access road that parallels the FMC on Rogers Mesa is routinely mowed, and weeds along the road are routinely treated with herbicide.

A list of species/vegetation observed in the project area is provided (Attachment A). Surveys were conducted to identify wetland/riparian habitat types that would be physically disturbed by construction activities and/or affected by the loss of open or subsurface/seeping water supporting these plant communities. Wetland/riparian vegetation impacted by the proposed project includes four distinct types:

Willow Fringe in Farmland (H1). This community is dominated by coyote willows, which in some areas have been mowed low to the ground during ditch maintenance. Although the area is primarily a monoculture of willow, other species are present in isolated locations, such as western wheatgrass, cattails, scouring rush, showy milkweed, mallow, wild rose, prickly lettuce, common mullein, and gumweed, and are found growing up to the water's edge.

Herbaceous Fringe in Farmland (H2). Sedge, scouring rush, bulrush, and a few cattails are dominant species in herbaceous fringe areas. Most of these areas have been mowed low to the ground during ditch maintenance. Upland species such as prickly lettuce, rabbitbrush, alfalfa, cheatgrass, bindweed, and orchard grass are found growing up to the ditch banks.

Fringe Wetland Species in Adobe Hills (H3). This community is dominated with dryland vegetation (yellow & white clover, sunflowers, rabbitbrush, wild licorice, sand dropseed, and 4-winged saltbush); therefore, wetland species fringing the ditch, though few, add to the diversity. There are a few willows, sedges, and bulrush.

Cottonwood-Willow Riparian Zone (H4). This vegetation type generally consists of medium-aged (15 to 20 feet tall) cottonwood and elm trees between the FMC and Leroux Creek, as well as small isolated patches on Rogers Mesa adjacent to farm land. The tree canopy in the Leroux Creek drainage is mostly open, and the understory generally shrubby and dense, consisting of three-leaved sumac, willows, and Gambel oak. Specifically in the Leroux Creek drainage, some larger, mature-aged cottonwoods occur and are about 30 to 50 feet tall. Based on aerial photography, seepage along the FMC may be supporting some vegetation upslope from the Leroux Creek riparian area, as the cottonwood gallery in the vicinity of the FMC's hairpin turn and siphon is perceptibly more dense and wide, compared to the

riparian corridor in the drainage upgradient to the Grand Mesa and downgradient to the confluence with the North Fork of the Gunnison River. On Rogers Mesa, some small areas of willows, scouring rush, sedges, elm trees, and cottonwoods occur. Some of the cottonwoods have been planted by landowners on property near the FMC.

The two staging areas selected for the project are fallow farmland in upland areas, and generally consist of upland native and non-native pasture grass and weed species. The habitat mitigation site is an ephemeral drainage with constructed ponds, and heavily infested with weeds such as: burdock, Russian knapweed, Russian olive, cheatgrass, Canada thistle, and tamarisk. Trees are very limited in the area except for numerous scattered Russian olive trees.

5 Endangered Colorado River Fishes

5.1 Environmental Baseline for Endangered Colorado River Fishes

The upper Colorado River basin has four fish species listed as endangered: bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker. Decline of the four endangered fish species is due primarily to human-induced changes in water flows and habitat loss, occurring as a result of diversion and impoundment of rivers. Native fishes are adversely affected by depletions to water flow at sensitive life-stages. Depletions may reduce high spring flows, resulting in changes to food supply and productivity. Reductions in water flows can reduce spawning habitat availability and adversely affect backwater habitats, resulting in lower habitat quality. Water depletions may also contribute to flow changes that favor nonnative fish species. Competition with nonnative fish species has been identified as a factor in the decline of the endangered Colorado River fishes (USFWS 2009).

The Recovery Program, a partnership of public and private organizations working to recover the four species while allowing continued and future water development, was established in 1988 (see also Section 3, Consultation History). Recovery strategies include conducting research, improving river habitat, providing adequate stream flows, managing non-native fish, and raising endangered fish in hatcheries for stocking.

In 1994, USFWS designated critical habitat for the four endangered fish species in the Federal Register (56 FR 54957-54967), which in Colorado includes the 100-year floodplain of the upper Colorado River from Rifle to Lake Powell, and the Gunnison River from the City of Delta to the City of Grand Junction. The project area does not occur within or adjacent to designated critical habitat; the closest designated critical habitat is in the Gunnison River at the City of Delta, approximately 20 miles southwest (downstream) of the Proposed Action Area.

On December 4, 2009, the USFWS issued the final Gunnison River Basin Programmatic Biological Opinion (PBO; USFWS 2009). The USFWS has determined that projects that fit under the umbrella of the Gunnison River PBO would avoid the likelihood of jeopardy or adverse modification of critical habitat for depletion impacts to the Gunnison River Basin.

In 2011, the USFWS determined that the Recovery Program has made “sufficient progress to be the reasonable and prudent alternative to avoid the likelihood of jeopardy to the endangered fishes and to avoid destruction or adverse modification of their critical habitat” for “existing depletions” (USFWS

2011). Furthermore, the Gunnison River Basin Programmatic Biological Opinion issued by USFWS in 2009, (USFWS 2009) found that the Recovery Program is the reasonable and prudent alternative to avoid jeopardy to the endangered Colorado River fishes and avoid adverse modification of designated critical habitat.

5.1.1 Bonytail

The bonytail is the rarest native fish in the Colorado River Basin, and is listed as endangered under the ESA (59 Fed. Reg. 13374 [March 21, 1994]). The bonytail has a streamlined body and typically achieves a maximum size of about 18 inches in length (Behnke and Benson 1980). Historically, the bonytail was abundant and widespread in rivers throughout the Colorado River Basin (59 Fed. Reg. 13374 [March 21, 1994]). The bonytail is not known to occur in the project area. The current distribution of the species is limited to a small population in Lake Mojave, and a few records exist from Lake Havasu and from the Yampa, Green, and Colorado rivers (59 Fed. Reg. 13374 (March 21, 1994)). Wild populations consist only of older fish, and recruitment of younger fish is virtually nonexistent (59 Fed. Reg. 13374 (March 21, 1994)).

The optimum habitat for bonytail appears to be open rivers of relatively uniform depth and current velocity (Behnke and Benson 1980). The bonytail requires warm water temperatures of approximately 18 degrees C (64 degrees F) for spawning (59 Fed. Reg. 13374 (March 21, 1994)). The cause of decline in this species is thought to be lower water temperatures as a result of construction of reservoirs (Woodling 1985). Hybridization and competition with nonnative fish may also be factors in the decline of this species.

5.1.2 Colorado pikeminnow

The Colorado pikeminnow is endemic to the Colorado River Basin of the southwestern United States and is listed as endangered under the ESA. This fish was formerly known as the Colorado squawfish. Adults can reach a maximum size of up to 6 feet in length and 80 lbs in weight (USFWS 2002a). Historically, the Colorado pikeminnow was found throughout lower elevation warm waters of the Colorado River Basin (Behnke and Benson 1980). Currently, the Colorado pikeminnow is found in the Green River and upper Colorado River basins, and there are small numbers of individuals (with limited reproduction) in the San Juan River basin (USFWS 2002a). Habitat requirements of the Colorado pikeminnow include pools, deep runs, and eddy habitats (USFWS 2002a). Colorado pikeminnow habitat is characterized by high spring flows that maintain the necessary channel and habitat diversity (USFWS 2002a). Adults use gravel and cobble deposits for spawning, which occurs after spring runoff when water temperatures rise. Larvae are sheltered in nursery habitat, including quiet water and backwaters in areas with stable summer flows (USFWS 2002a).

Spawning by Colorado pikeminnow in the Colorado River may have been adversely affected by construction of dams resulting in reduction in peak flows (59 Fed. Reg. 13374 (March 21, 1994)). Peak flows serve to clear out gravel and cobble deposits and reshape nursery backwaters (USFWS 2002a). Additional threats to Colorado pikeminnow include stream flow regulation, habitat modification, competition with and predation by nonnative fish species, pesticides, and pollutants (USFWS 2002a).

5.1.3 Humpback chub

The humpback chub is endemic to the Colorado River Basin of the southwestern United States and is listed as endangered under the ESA. The distinguishing feature of this species is a prominent, rounded hump on the body immediately behind the head. The hump is presumably an adaptation to maintain stability on the bottom of a stream in turbulent flow (Behnke and Benson 1980). The historical distribution of this species is not well known, as the humpback chub was not described as a species until 1946. The original distribution of this species was presumably limited to swift, deepwater areas in the Colorado River Basin (Behnke and Benson 1980). Presently, the species is restricted to areas in and upstream of the Grand Canyon (Woodling 1985). The humpback chub is not known to occur in the project area. The humpback chub is found in river canyons, where it uses a wide variety of habitats, including pools, riffles, rocky runs, rapids, and eddies (USFWS 2002b).

Threats to the humpback chub include reduced peak spring flows, availability of shoreline eddy and deep canyon habitats, and competition and predation by nonnative fish species (59 Fed. Reg. 13374 [March 21, 1994]). Hybridization with other species may also be a threat to the humpback chub (59 Fed. Reg. 13374 [March 21, 1994]). Critical habitat for the humpback chub was designated on the Colorado River from Black Rocks downstream to Fish Ford River in Utah (59 Fed. Reg. 13374 [March 21, 1994]).

5.1.4 Razorback sucker

The razorback sucker is endemic to the Colorado River Basin of the southwestern United States, and is listed as endangered under the ESA. Adults reach a maximum size of approximately 3.3 feet in length and 11 lbs in weight (USFWS 2002b). Historically, razorback suckers were widespread in warm-water reaches of the Colorado River Basin (USFWS 2002c). Today, razorback suckers occur in small numbers in the Green River, upper Colorado River, San Juan River, lower Colorado River between Lake Havasu and Davis Dam, reservoirs of Lakes Mead and Mojave, Verde River, Salt River, and Fossil Creek (USFWS 2002b). Razorback suckers inhabit a wide variety of habitats including impounded and riverine habitats, eddies, backwaters, gravel pits, flooded bottoms, flooded mouths of tributary streams, slow runs, sandy riffles, and others (59 Fed. Reg. 13374 [March 21, 1994]).

In the the Gunnison Basin, the razorback sucker spawns during high spring flows (typically April through June). After spawning, the larvae and fry are protected by nursery habitat in floodplain wetlands and riparian areas, where waters are warmer and vegetation provides hiding habitat. Razorback suckers eventually leave floodplain wetlands, though they can remain there until they grow to adult size. This species prefers to forage in quiet waters near the river banks (UCREFRP 2017).

Dams that changed the flow regime of rivers are thought to be the major cause of decline in populations of razorback suckers (Behnke and Benson 1980). Threats to the razorback sucker include streamflow regulation, habitat modification, predation by nonnative fish species, pesticides, and pollutants (USFWS 2002c). The critical habitat for this species includes the Colorado River and its 100-year floodplain from Rifle, Colorado to Lake Powell, as well as the Gunnison River from Delta, Colorado to the Colorado River confluence (59 Fed. Reg. 13374 [March 21, 1994]).

5.2 Effects Analysis for Colorado River Basin's Endangered Fish

The bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker occur downstream from the project area in the Gunnison and Colorado rivers, with the nearest critical habitat 20 miles

downstream. These species are not present in the project area and would not be directly affected by project activities; however, the USFWS has determined that water depletion in the lands surrounding habitat occupied by these species result in an adverse effect to these species and their habitat (USFWS 2009).

The Paonia Reservoir, including the Fire Mountain Canal Upgrade and Extension were constructed between 1959 and 1962 (McDonald 2017). Improvements were also made to the Leroux Creek diversion by the Leroux Ditch & Enlargement Company, as part of the project. Both the FMC (completed in 1901) and the Leroux Creek Ditch system (adjudicated in 1889) were about 60 years old at the time (McDonald 2017). Water depletions associated with these structures have been occurring over many years. The depletion rate is expected to remain unchanged by the project, with no new depletions and no change to the FMCRC's estimated historic consumptive use rate or water depletion is expected. The existing depletion to the Gunnison and Colorado River Basins will continue to occur as a result of the project.

The FMC begins downstream from Paonia Reservoir and the Paonia Dam. Currently, an estimated 14,650 acre-feet of stored water is supplied from the Paonia Reservoir (pers. communication, Steve Fletcher, 2017). The overall efficiency of the FMC system (crop requirements divided by total diversions) is estimated to be between 36 and 38 percent (NFWCD 2001). Therefore, FMC depletions associated with the Paonia Reservoir water (14,650 acre-feet) are estimated at 5,420 acre-feet (37 percent). Paonia Reservoir depletion amounts of up to 10,000 acre-feet are already addressed in the Gunnison River Basin Programmatic Biological opinion (USFWS 2009), as described above.

Downstream from the Paonia Reservoir, the FMC diverts water at the Fire Mountain Diversion Dam, located on the North Fork of the Gunnison River near Somerset (an estimated 30,030 acre-feet annually), and at the Leroux Creek Diversion, located north of the project area (an estimated 3,500 acre-feet annually) (pers. communication, Steve Fletcher, 2017). FMC depletions not covered by the Gunnison River Basin Programmatic Biological Opinion, associated with the North Fork of the Gunnison River and Leroux Creek diversion water are estimated at 37 percent of 33,530 acre-feet, or 12,406 acre-feet.

The FMC extends 34.7 miles along the north side of the valley with over 30 miles of laterals, and services over 480 water users with approximately 8,200 acres irrigated (NFWCD 2001); additional water is supplied by the FMC for Leroux Creek Water Users Association, and Ragged Mountain Water Users Association, bringing the total acreage irrigated as a result of the FMC to about 15,300 acres.

Beneficial effects to the Colorado River Basin's endangered fish are expected due to improvements in downstream water quality. The project will result in the reduction of salt loading to the Colorado River Basin by about 2,365 tons per year (FMC 2015), and a potential (unquantified) reduction in selenium loading to the lower Gunnison Basin.

6 Yellow-billed cuckoo

6.1 Environmental Baseline for Threatened Yellow-billed Cuckoo

The yellow-billed cuckoo (cuckoo) is a neotropical migratory bird, migrating during the summer to locations throughout the United States, southern Canada, and northern Mexico. The cuckoo migrates south and winters in South American locations from Colombia and Venezuela, to northern Argentina (Ehrlich et al. 1988; AOU 1998). In November 2014, USFWS listed the yellow-billed cuckoo as federally threatened (USFWS 2014). Primary habitat for the yellow-billed cuckoo consists of open woodlands with dense understory and riparian woodlands with limited grazing disturbance (Wiggins 2005). Nest sites are typically found along river valleys in deciduous riparian woodland patches with an abundance of caterpillars and other large insect fauna. Yellow-billed cuckoos migrate north in late spring, typically arriving to their breeding grounds in the western U.S. in late May or early-mid June. They migrate south to their over-wintering grounds in South America in late August or early-mid September (Bennett 2014). Exact migration arrival and departure dates can vary (Daw 2014). The loss, degradation, and fragmentation of riparian habitat have been identified as the primary factors causing cuckoo declines in the western United States (Carter 1998, USFWS 2001). The species breeds in large blocks of riparian habitat, in particular, mature cottonwood woodlands with dense understory foliage.

On Colorado's Western Slope, the cuckoo depends on old-growth riparian woodlands of cottonwood with dense understories (Kingery 1998, Righter et al. 2004). Cuckoos prefer developed multi-structured riparian areas with a dense high canopy, a shrub layer, and an herbaceous understory (Johnson et al 2008).

Based on historical accounts, the species was localized and uncommon along Colorado drainages while being locally common in other western areas. In 1998, 242 miles of riparian habitat were surveyed along six rivers in west-central Colorado with only one cuckoo detected (Rocky Mountain Bird Observatory 2012). However, in 2008, a breeding pair was confirmed along the North Fork of the Gunnison River. Since 2010, the confluence of the North Fork Gunnison River and Leroux Creek has been a reliable location to observe cuckoos, located 3.3 miles downstream of the project area (Petry personal communication 2017).

Suitable breeding and nesting cuckoo habitat parameters, as defined by USFWS (USFWS 2015) are:

- Vegetation that is predominantly multi-layered, with riparian canopy trees and at least one layer of understory shrubby vegetation. Riparian over story and understory vegetation that supports suitable cuckoo habitat may include: cottonwood (Populus spp), willow (Salix spp), alder (Alnus spp), walnut (Juglans spp), boxelder (Acer spp), sycamore (Plantanus spp), ash (Fraxinus spp), mesquite (Prosopis spp), tamarisk (Tamarix spp), and Russian olive (Elaeagnus angustifolia). Suitable understory vegetation does not include grasses or forbs although herbaceous vegetation is often present alongside shrubby understory
- Patches of multi-layered vegetation (as described above) that are at least 12 acres (5 ha) or greater in extent and separated from other patches of suitable habitat by at least 300 meters;
- Somewhere within a patch, the multi-layered riparian vegetation (as described above) should be at least 100 meters wide by 100 meters long. This is to avoid patches that may be long enough to meet the minimum area (12 acres) but are so narrow that they are unsuitable-- 750 meters x 75 meters (length x width) for example; and

- Open areas, or gaps of multi-layered vegetation within a patch are less than 300 meters.

6.1.1 Habitat Suitability

Leroux Creek is the only area within the project area that has the potential to provide suitable habitat for the yellow-billed cuckoo (cottonwood riparian habitat is not present on Rogers Mesa, or at the Habitat Replacement site). Based on a field review in April and May, 2017, the Leroux Creek drainage contains four distinct patches of mature dense cottonwood trees, with a dense mid-story shrub layer, providing suitable nesting and foraging habitat for the cuckoo, though some of the habitat is narrower than 100 meters wide (Figure 3, Attachment B Photo Log). Leroux Creek provides a relatively contiguous corridor of riparian woodlands composed of mature to younger aged-cottonwoods with a diverse shrub understory, ranging from 20 to 110 meters wide across the creek between proposed critical habitat on the North Fork of the Gunnison River and the project area. Evidence of past caterpillar activity in the trees along Leroux Creek was also observed, providing a potential food source for cuckoos. The mesa-top section of the FMC proposed for piping does not provide cottonwood thickets and dense riparian habitat suitable for cuckoo.

Surveys have not been conducted in the project area to determine presence/absence of the cuckoo; therefore, the assumption is that cuckoos could be present. Given the proximity to known locations of cuckoos on the North Fork of the Gunnison River (3.3 miles away) and the presence of suitable habitat, cuckoos could nest or forage along Leroux Creek.

The following describes the habitat within the project vicinity, from north to south along Leroux Creek. The USFWS defines habitat characteristics in metric units; therefore, both metric and standard measurements are included.

Habitat Patch 1: Leroux Creek, North of the Leroux Creek Bridge. 13 acres were mapped in Habitat Patch 1 and suitable habitat continues north along Leroux Creek beyond the mapping boundaries.

Medium-aged 13 to 20 feet (4 to 6 meters) tall cottonwood trees occur between the FMC and Leroux Creek in this area (Attachment B, Photo 3). The tree canopy is mostly open, and the understory is shrubby and dense, consisting of three-leaved sumac, willows, and Gambel oak. Overall, the habitat is narrow, ranging from 65 to 300 feet (20 to 90 meters) wide. There are multiple openings in the cottonwood trees (Attachment B, Photo 4). Therefore, Habitat Patch 1 is considered marginal quality cuckoo habitat.

Habitat Patch 2: Leroux Creek Bridge to the Proposed Siphon Area. Habitat Patch 2 (20 acres) ranges from mature to medium-aged, closed canopy cottonwood trees between the FMC to the southwest, Leroux Creek, and the FMC to the northeast (Attachment B, Photo 5 and 6). The understory is dense and shrubby up to about 15 feet (4.5 meters) high and the patch averages about 360 feet (110 meters) wide (Attachment B, Photo 7). Therefore, Habitat Patch 2 is considered good quality cuckoo habitat. At the southeastern edge of the habitat, the riparian vegetation becomes narrower and sparser (Attachment B, Photo 8) adjacent to Habitat Patch 3.

Habitat Patch 3: Proposed Siphon Location Habitat Patch 3 (1.2 acres) includes narrow bands of young to medium-aged cottonwood and Siberian elm trees with a few scattered mature cottonwood trees. Overall, the trees are young, having a small diameter (less than 5 inches) at breast height (DBH) and the

mid-story is densely populated with shrubs (Attachment B, Photo 9). There are openings in the canopy and the habitat is narrow with the widest point at about 200 feet (60 meters).

The riparian habitat on Leroux Creek is relatively continuous in this section, but is separated by openings within the tree over story (Attachment B, Photo 10 and 11). This habitat patch was mapped separately because it is where a 100-foot (30.5-meter) corridor was evaluated to place a new siphon, which will be constructed in a 50-foot (15-meter) wide corridor. This habitat patch is considered marginal quality, based on the narrowness, lack of mature trees, and openings in the tree canopy. In addition, this patch does not meet the minimum size/acreage requirements specified by the USFWS to meet suitable habitat criteria.

Habitat Patch 4: Leroux Creek South of the Proposed Siphon 23 acres were mapped in Habitat Patch 4, and suitable habitat continues south along Leroux Creek beyond the mapping boundaries. This habitat patch consists of mature to young cottonwoods lining the banks of Leroux Creek (Attachment B, Photo 12). The habitat is slightly narrower than 330 feet (100 meters), averaging 280 feet (85 meters) wide. Private land access was not obtained, and the habitat was assessed from the aerial photographs and the road above the creek only. Due to the lack of access the quality of Habitat Patch 4 was not evaluated. In addition, this patch does not meet the width requirements specified by the USFWS to meet suitable habitat criteria.

6.2 Effects Analysis for Threatened Yellow-billed Cuckoo

No direct effects to yellow-billed cuckoo are expected as a result of project work since work related activities would occur outside the time when the species is typically present. Implementation of the project, specifically installation of the siphon within a 50-foot wide corridor across Leroux Creek, would remove 0.3 acres of marginally suitable habitat out of Habitat Patch 3. Depending on the placement of the siphon, an estimated 1 to 8 mature trees up to 30 feet tall would be removed in this area, and 45 younger trees having greater than 3 inches DBH. The majority of trees in the patch have less than 3 inches DBH. Several measures to avoid and minimize impacts to the cuckoo are part of the project's design features, and include:

- Constructing during a time when cuckoos are not present (September 1 to May 31), thereby avoiding disturbance to birds during the breeding season.
- Minimizing removal of deciduous trees to only those necessary for construction.
- Locating construction of the siphon within a corridor where large tree removal would be minimized. This would be accomplished by having a pre-construction meeting between the Reclamation biologist (or designee) and the contractor to identify the best route within the easement that avoids as much riparian vegetation as feasible and identify individual trees that could be saved within the established route.
- Using erosion control, stabilization, weed management, reclamation, and salvaging/separating top soil where it occurs to encourage re-vegetation with native riparian plants.
- Riparian restoration, consisting of dormant season pole plantings of coyote willow (*Salix exigua*), plains cottonwood (*Populus deltoids*), and narrowleaf cottonwood (*Populus angustifolia*) and peachleaf willow (*Salix amygdaloides*), in areas where sufficient water appears available. Cottonwood poles would be replanted after construction at a 2:1 ratio to minimize habitat lost.

Given the width of Habitat Patch 2 and its location in the drainage between two sections of the FMC, it is possible that water leaking from the unlined FMC contributes subsurface water to the cottonwood forest and may contribute to the width and robustness of the habitat. A potential indirect effect is that Habitat Patch 2 may shrink in size over time due to reduced water availability. When the water is placed into a pipe, seepage would be less likely to occur.

Approximately 0.86 acres of habitat classified as cottonwood-willow riparian zone (H4) may be affected due to loss of water/canal seeping as a result of piping; approximately 0.44 of these acres occur in Habitat Patch 2. Given the limited acreage and distribution of vegetation removal/loss associated with the siphon alignment and piping, it is unlikely to alter the suitability of the habitat or have any measurable effect to prey availability. Vegetation loss on Rogers Mesa adjacent to farmland is not considered suitable habitat and work in this area is unlikely to affect the cuckoo.

7 Determination and Rationale

7.1 Endangered Colorado River Fishes

A preliminary determination has been made that the project "may affect, is likely to adversely affect", the endangered Colorado River fishes. The project also "may affect, is likely to adversely affect" designated critical habitat for the Colorado River fishes. This determination is the appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the project or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. The determination of "may affect, is likely to adversely affect" is appropriate because water depletions from the Gunnison and Colorado River systems have and will continue to occur. Water depletions associated with the Paonia Reservoir project are covered under the umbrella of the Gunnison River Basin PBO. Approximately 14,650 acre-feet of irrigation water is supplied by the Reservoir on a typical year (pers. communication, Steve Fletcher). However, as much as 33,500 acre-feet is diverted from the river annually. Assuming a 37% overall efficiency rate (crop requirements divided by total diverted water) (NFWCD 2001)) the proponent will be required to enter into a recovery agreement with the USFWS for an estimated depletion of 12,406 acre-feet from the Gunnison River.

7.2 Yellow-billed cuckoo

A preliminary determination has been made that the project may affect, but is not likely to adversely affect the yellow-billed cuckoo, given the small-scale nature of vegetation removal of riparian habitat (0.3 acres), the marginal quality of the habitat that would be removed, the presence of the siphon in narrow habitat, and the above measures to minimize impacts to cuckoo. Up to 8 mature trees may be removed, based on the trench location for the siphon. FMCRC would minimize removal of mature trees, and would replace trees removed at a 2:1 ratio.

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ATTACHMENT A: Vegetation Observed in the Project Area

Common Name	*Scientific Name*	Classification	Native/Invasive
Big sagebrush	*Artemisia tridentata*	UPL	Native
Bluejoint	*Calamagrostis canadensis*	FACW	Native
Buffaloberry	*Shepherdia argentea*	FACU	Native
Burdock	*Arctium sp*	UPL	Invasive
Canada thistle*	*Cirsium arvense*	FAC	Invasive
Cattail	*Typha latifolia*	OBL	Native
Cheatgrass*	*Bromus tectorum*	UPL	Invasive
Clematis	*Clematis* sp.	FAC-FACU	Native
Coyote willow	*Salix exigua*	FACW	Native
Dogbane	*Apocynum cannabinum*	FAC	Native
Field bindweed*	*Convolvulus arvensis*	UPL	Invasive
Four-wing saltbush	*Atriplex canescens*	UPL	Native
Foxtail sedge	*Carex alopecoidea*	OBL	Native
Fremont cottonwood	*Populus fremontii*	UPL	Native
Fringe willowherb	*Epilobium ciliatum*	FACW	Native
Gambel oak	*Quercus gambelii*	UPL	Native
Goldenrod	*Solidago canadensis*	FACU	Native
Gumweed	*Grindelia squarrosa*	FACU	Native
Halogeton	*Halogeton glomeratus*	UPL	Invasive
Hound's tongue	*Cynoglossum officinale*	FACU	Invasive
Indian Paintbrush	*Castilleja Mutis ex L. f.*	UPL	Native
Kochia*	*Kochia scoparia*	UPL	Invasive
Mullein	*Verbascum thapsus*	FACU	Invasive
Narrowleaf cottonwood	*Populus angustifolia*	FACW	Native
Orchard grass	*Dactylis glomerata*	UPL	Invasive
Peachleaf willow	*Salix amygdaloides*	FACW	Native
Pinion pine	*Pinus edulis*	UPL	Native
Plains cottonwood	*Populus deltoides*	UPL	Native
Prickly lettuce	*Lactuca serriola*	FACU	Invasive
Primrose	*Primula* sp.	OBL-FACU	Native
Rabbitbrush	*Ericameria nauseosa*	UPL	Native
Redtop	*Agrostis gigantea*	UPL	Native
Ricegrass	*Achnatherum sp*	UPL	Native
Rocky mountain juniper	*Juniperus scopulorum*	UPL	Native
Russian knapweed*	*Acroptilon repens*	UPL	Invasive
Russian olive*	*Elaeagnus angustifolia*	FAC	Invasive
Russian thistle*	*Salsola iberica*	UPL	Invasive
Scouring rush	*Equisetum hyemale*	FACW	Native
Showy milkweed	*Asclepias speciosa*	FAC	Native
Siberian elm*	*Ulmus pumila*	UPL	Invasive
Smooth brome	*Bromus inermis*	UPL	Invasive
Snakeweed	*Gutierrezia* sp.	UPL	Native
Sumac	*Rhus trilobata*	UPL	Native

Common Name	*Scientific Name*	Classification	Native/Invasive
Tall fescue	*Festuca arundinacea*	UPL	Invasive
Tamarisk*	*Tamarix parviflora*	FAC	Invasive
Tansy aster	*Aster pattersonii*	UPL	Native
Timothy grass	*Phleum pratense*	FAC	Invasive
Torrey's rush	*Juncus torreyi*	FACW	Native
Utah juniper	*Juniperus osteosperma*	UPL	Invasive (in Colorado)
Western wheatgrass	*Pascopyrum smithii*	FACU	Invasive
Woods' rose	*Rosa woodsii*	FACU	Native
Yellow sweet clover	*Melilotus officinalis*	FACU	Invasive

*Colorado State listed noxious weed (Colorado Department of Agriculture (CDA) 2017).

**Upland (UPL), Faculative Upland (FACU),Faculative (FAC), Faculative Wetland (FACW), Obligate (OBL).

Appendix E US Fish and Wildlife Service Consultation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Colorado Ecological Services

IN REPLY REFER TO:
FWS/R6/ES CO

Front Range:
Post Office Box 25486
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Western Slope:
445 W. Gunnison Avenue
Suite 240
Grand Junction, Colorado 81501-5711

ES/GJ-6-CO-09-F-001-GP034
TAILS 06E24100-2017-F-0464

February 9, 2018

Memorandum

To: Area Manager, Western Colorado Area Office, Bureau of Reclamation, Grand Junction, Colorado

From: FOR Western Colorado Supervisor, Ecological Services, U.S. Fish and Wildlife Service, Grand Junction, Colorado Kurt L. Broderick

Subject: Request for Consultation under Section 7 of the Endangered Species Act for the Fire Mountain Canal Pipeline Project, Part 2

In accordance with Section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.), and the Interagency Cooperation Regulations (50 CFR 402), the Fish and Wildlife Service (Service) transmits this correspondence to serve as the final biological opinion (BO) for the Fire Mountain Canal Pipeline Project.

The Bureau of Reclamation (Reclamation) is requesting consultation pursuant to Section 7 of the ESA for an irrigation ditch piping project. Under the Colorado River Salinity Control Program, Reclamation has entered into a contract with the Fire Mountain Canal & Reservoir Company to provide funding assistance to pipe portions of the Fire Mountain Canal in order to reduce salt loading into the Colorado River.

The proposed project is located centrally in Delta County, Colorado, approximately three miles northwest of the Town of Hotchkiss. The proposed action will replace the existing system of unlined open canal with a buried pipe delivery system, which will eliminate ditch seepage and reduce salinity in the Colorado River Basin by an estimated 2,365 tons of salt per year. An additional beneficial effect of the proposed action is the potential reduction of selenium in the Colorado River Basin. The project will replace approximately 4 miles of the Fire Mountain Canal with approximately 3.5 miles of buried irrigation pipe. In addition, a 7.67-acre habitat replacement site is included in the project; acreage in this area will be improved via methods such as seeding, plantings and noxious weed control.

Reclamation has determined that the proposed action may affect, but is not likely to adversely affect the western yellow-billed cuckoo (*Coccyzus americanus*) and will have no effect on its

proposed critical habitat. The project area lies approximately three miles outside of proposed critical habitat and habitat known to be occupied by this species. The project is also timed such that project activities will avoid the breeding season for the cuckoo (June 1- September 1). We concur with your determinations for the western yellow-billed cuckoo.

Reclamation has also determined that, due to historic water depletions, the four endangered fish in the Colorado River Basin and their critical habitats would be adversely affected (Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*)). A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated on January 22, 1988. The Recovery Program was intended to be the reasonable and prudent alternative for individual projects to avoid the likelihood of jeopardy to the endangered fishes from impacts of depletions to the Upper Colorado River Basin. In order to further define and clarify the process in the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (RIPRAP) which identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner.

On December 4, 2009, the Service issued a final Gunnison River Basin Programmatic Biological Opinion (PBO) (this document is available for viewing at the following internet address: http://www.coloradoriverrecovery.org/documents-publications/section-7-consultation/GUPBO.pdf). The Service has determined that projects that fit under the umbrella of the Gunnison River PBO would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion impacts. The Gunnison River PBO states that in order for actions to fall within the umbrella of the PBO and rely on the RIPRAP to offset its depletion, the following criteria must be met.

1. A Recovery Agreement must be offered and signed prior to conclusion of section 7 consultation.

2. A fee to fund recovery actions will be submitted as described in the proposed action for new depletion projects greater than 100 acre-feet/year (AF/yr). The 2018 fee is $21.17 per AF and is adjusted each year for inflation.

3. Reinitiation stipulations will be included in all individual consultations under the umbrella of this programmatic.

4. The Service and project proponents will request that discretionary Federal control be retained for all consultations under this programmatic.

The Recovery Agreement was signed by the Service and the Water User. The depletions associated with this project involve 17,826 acre-feet per year of historic depletions which do not make contributions to fund recovery actions. Reclamation has agreed to condition its approval documents to retain jurisdiction should section 7 consultation need to be reinitiated. Therefore, the Service concludes that the subject project meets the criteria to rely on the Gunnison PBO to

offset depletion impacts and is not likely to jeopardize the continued existence of the species and is not likely to destroy or adversely modify designated critical habitat.

The Service and the Recovery Program track all water depletions that are covered under the Gunnison PBO and other water depletion PBOs within the Upper Colorado River Basin on a quarterly basis. A summary of those depletions are available at: http://www.coloradoriverrecovery.org/documents-publications/section-7-consultation/consultation-list.html. Also, in accordance with the Section 7, Sufficient Progress, and Historic Projects Agreement, the Service reviews cumulative accomplishments and shortcomings of the Recovery Program in the upper Colorado River basin. Per that Agreement, the Service uses the following criteria to evaluate whether the Recovery Program is making "sufficient progress" toward recovery of the four listed fish species:

- actions which result in a measurable population response, a measurable improvement in habitat for the fishes, legal protection of flows needed for recovery, or a reduction in the threat of immediate extinction;
- status of the fish populations;
- adequacy of flows;
- and magnitude of the impact of projects.

Through these bi-annual Sufficient Progress reviews the Service evaluates the best available and current information to determine if the Recovery Program continues to offset depletion effects identified in existing Section 7 consultations including the depletions covered by these PBOs. In the most recent assessment (dated December 10, 2017), the Service determined that sufficient progress has been made towards recovery. Sufficient Progress reports can be found at: http://www.coloradoriverrecovery.org/documents-publications/section-7-consultation/sufficient-progress-letters.html.

The reinitiation criteria for the Gunnison PBO apply to all projects under the umbrella of the PBO. For your information the reinitiation notice from the Gunnison River PBO is presented below.

REINITIATION NOTICE

This concludes formal consultation on the subject action. The proposed action includes adaptive management because additional information, changing priorities, and the development of the States' entitlement may require modification of the Recovery Action Plan. Therefore, the Recovery Action Plan is reviewed annually and updated and changed when necessary and the required time frames include changes in timing approved by means of the normal procedures of the Recovery Program, as explained in the description of the proposed action. Every 2 years, for the life of the Recovery Program, the Service and Recovery Program will review implementation of the Recovery Action Plan actions that are included in this BO to determine timely compliance with applicable schedules. As provided in 50 CFR sec. 402.16, reinitiation of formal consultation is required for new projects where discretionary Federal Agency involvement or control over the action has been retained (or is authorized by law) and under the following conditions:

1. **The amount or extent of take specified in the incidental take statement for this opinion is exceeded**. The terms and conditions outlined in the incidental take statement are not implemented. The implementation of the proposed reoperation of Aspinall and the Selenium Management Program will further decrease the likelihood of take caused by water depletion impacts.

2. **New information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion,** such as impacts due to climate change. In preparing this opinion, the Service describes the positive and negative effects of the action it anticipates and considered in the section of the opinion entitled "EFFECTS OF THE ACTION."

3. **The identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the BO.** It would be considered a change in the action subject to consultation if the reoperation of Aspinall and the Selenium Management Program described in this opinion are not implemented within the required timeframes. If a draft Selenium Management Program document is not completed within 18 months of the final PBO and a final document within 24 months, reinitiation of consultation will be required. Reinitiating consultation could consist of an exchange of memoranda examining the progress made on the plan and evaluating the consequences of extending the timeframe. Also, at any time, if funding is not available to implement the Selenium Management Program reinitiation of consultation will be required.

   The analysis for this BO assumed implementation of the Colorado River Mainstem Action Plan of the RIPRAP because the Colorado pikeminnow *(Ptychocheilus lucius)* and razorback sucker *(Xyrauchen texanus*) that occur in the Gunnison River use the Colorado River and are considered one population. The essential elements of the Colorado River Plan are as follows: 1) provide and protect instream flows; 2) restore floodplain habitat; 3) reduce impacts of nonnative fishes; 4) augment or restore populations; and 5) monitor populations and conduct research to support recovery actions. The analysis for the non-jeopardy determination of the proposed action that includes about 37,900 af/yr of new water depletions from the Gunnison River Basin relies on the Recovery Program to provide and protect flows on the Gunnison and Colorado Rivers.

4. **The Service lists new species or designates new or additional critical habitat, where the level or pattern of depletions covered under this opinion may have an adverse impact on the newly listed species or habitat.** If the species or habitat may be adversely affected by depletions, the Service will reinitiate consultation on the PBO as required by its section 7 regulations. The Service will first determine whether the Recovery Program can avoid such impact or can be amended to avoid the likelihood of jeopardy and/or adverse modification of critical habitat for such depletion impacts. If the Recovery Program can avoid the likelihood of jeopardy and/or adverse modification of critical habitat no additional recovery actions for individual projects would be required, if

the avoidance actions are included in the Recovery Action Plan. If the Recovery Program can't avoid the likelihood of jeopardy and/or adverse modification of critical habitat then the Service will reinitiate consultation and develop reasonable and prudent alternatives.

If the annual assessment from Reclamation's reports indicates that the operation of the Aspinall Unit to meet flow targets or that the Selenium Management Program, as specified in this opinion has not been implemented as proposed, Reclamation will be required to reinitiate consultation to specify additional measures to be taken by Reclamation or the Recovery Program to avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletions and water quality. Also, if the status of all four fish species has not sufficiently improved, as determined by the Service in a formal sufficient progress finding under provisions of the Recovery Program, Reclamation will be required to reinitiate consultation. If other measures are determined by the Service or the Recovery Program to be needed for recovery prior to the review, they can be added to the Recovery Action Plan according to standard procedures. If the Recovery Program is unable to complete those actions which the Service has determined to be required, Reclamation will be required to reinitiate consultation in accordance with ESA regulations and this opinion's reinitiation requirements.

All individual consultations conducted under this programmatic opinion will contain language requesting the applicable Federal agency to retain sufficient authority to reinitiate consultation should reinitiation become necessary. The recovery agreements to be signed by non-Federal entities who rely on the Recovery Program to avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion impacts related to their projects will provide that such non-Federal entities also must request the Federal agency to retain such authority. Non-Federal entities will agree by means of recovery agreements to participate during reinitiated consultations in finding solutions to the problem which triggered the reinitiation of consultation.

If you have any questions regarding this consultation or would like to discuss it in more detail, please contact Creed Clayton of our Western Slope Field Office at (970) 628-7187, Email: creed_clayton@fws.gov.

cc: FWS/UCREFRP, Lakewood; Email: Kevin_McAbee@fws.gov

RECOVERY AGREEMENT

This RECOVERY AGREEMENT is entered into this 25 day of January, 2018, by and between the United States Fish and Wildlife Service (Service) and Fire Mountain Canal Ditch and Reservoir Company (Water User).

WHEREAS, in 1988, the Secretary of Interior, the Governors of Wyoming, Colorado and Utah, and the Administrator of the Western Area Power Administration signed a Cooperative Agreement to implement the Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin (Recovery Program); and

WHEREAS, the Recovery Program is intended to recover the endangered fish while providing for water development in the Upper Basin to proceed in compliance with state law, interstate compacts and the Endangered Species Act; and

WHEREAS, the Colorado Water Congress has passed a resolution supporting the Recovery Program; and

WHEREAS, on December 4, 2009, the Service issued a programmatic biological opinion (2009 Opinion) for the Gunnison River Basin and the operation of the Wayne N. Aspinall Unit concluding that implementation of specific operation of the Aspinall Unit, implementation of a Selenium Management Plan and specified elements of the Recovery Action Plan (Recovery Elements), along with existing and a specified amount of new depletions, are not likely to jeopardize the continued existence of the endangered fish or adversely modify their critical habitat in the Gunnison River subbasin and Colorado River subbasin downstream of the Gunnison River confluence; and

WHEREAS, Water User is the owner/operator of Fire Mountain Canal (Water Project), which causes historic water depletions to the Gunnison River subbasin; and

WHEREAS, Water User desires certainty that its depletions can occur consistent with section 7 and section 9 of the Endangered Species Act (ESA); and

WHEREAS, the Service desires a commitment from Water User to the Recovery Program so that the Program can actually be implemented to recover the endangered fish and to carry out the Recovery Elements.

NOW THEREFORE, Water User and the Service agree as follows1:

1. The Service agrees that implementation of the Recovery Elements specified in the 2009 Opinion will avoid the likelihood of jeopardy and adverse modification under section 7 of the ESA, for depletion impacts caused by Water Users Water Project. Any consultations under section 7 regarding Water Projects depletions are to be governed by the provisions of the 2009 Opinion. The Service agrees that, except as provided in the 2009 Opinion, no other measure or action shall be required or imposed on Water Project to comply with section 7 or section 9 of the ESA with regard to Water Projects depletion impacts or other impacts covered by the 2009 Opinion. Water User is entitled to rely on this Agreement in making the commitment described in paragraph 2.

2. Water User agrees not to take any action which would probably prevent the implementation of the Recovery Elements. To the extent implementing the Recovery Elements requires active cooperation by Water User, Water User agrees to take reasonable actions required to implement those Recovery Elements. Water User will not be required to take any action that would violate its decrees or the statutory authorization for Water Project, or any applicable limits on Water Users legal authority. Water User will not be precluded from undertaking good faith negotiations over terms and conditions applicable to implementation of the Recovery Elements.

3. If the Service believes that Water User has violated paragraph 2 of this Recovery Agreement, the Service shall notify both Water User and the Management Committee of the Recovery Program. Water User and the Management Committee shall have a reasonable opportunity to comment to the Service regarding the existence of a violation and to recommend remedies, if appropriate. The Service will consider the comments of Water User and the comments and recommendations of the Management Committee, but retains the authority to determine the existence of a violation. If the Service reasonably determines that a violation has occurred and will not be remedied by Water User despite an opportunity to do so, the Service may request reinitiation of consultation on Water Project without reinitiating other consultations as would otherwise be required by the Reinitiation Notice section of the 2009 Opinion. In that event, the Water Projects depletions would be excluded from the depletions covered by 2009 Opinion and the protection provided by the Incidental Take Statement.

4. Nothing in this Recovery Agreement shall be deemed to affect the authorized purposes of Water Users Water Project or The Service statutory authority.

5. This Recovery Agreement shall be in effect until one of the following occurs.

a. The Service removes the listed species in the Upper Colorado River Basin from the endangered or threatened species list and determines that the Recovery Elements are no longer needed to prevent the species from being relisted under the ESA; or

---

1Individual Recovery Agreement may be changed to fit specific circumstances.

b. The Service determines that the Recovery Elements are no longer needed to recover or offset the likelihood of jeopardy to the listed species in the Upper Colorado River Basin; or

c. The Service declares that the endangered fish in the Upper Colorado River Basin are extinct; or

d. Federal legislation is passed or federal regulatory action is taken that negates the need for [or eliminates] the Recovery Program.

6. Water User may withdraw from this Recovery Agreement upon written notice to the Service. If Water User withdraws, the Service may request reinitiation of consultation on Water Project without reinitiating other consultations as would otherwise be required by the Reinitiation Notice section of the 2009 Opinion.

Water User Representative
President, Five Mountain Canal & Reservoir Board President

1/25/18
Date

Western Slope Supervisor
U.S. Fish and Wildlife Service

1/19/18
Date

(ES/GJ-6-CO-09-F-001- GP034/Creed Clayton

Appendix F Memorandum of Agreement Regarding Cultural Resources

MEMORANDUM OF AGREEMENT
BETWEEN
THE WESTERN COLORADO AREA OFFICE, BUREAU OF RECLAMATION,
FIRE MOUNTAIN CANAL AND RESERVOIR COMPANY,
AND THE COLORADO STATE HISTORIC PRESERVATION OFFICER
REGARDING THE FIRE MOUNTAIN CANAL PIPING PROJECT,
SALINITY CONTROL PROGRAM,
DELTA COUNTY, COLORADO

WHEREAS, the Bureau of Reclamation (Reclamation) and the Fire Mountain Canal and Reservoir Company (FMCRC) plan to pipe 3.57 miles of the Fire Mountain Canal (Project); and

WHEREAS, Reclamation plans to fund FMCRC to pipe and partially reroute 3.57 miles of the Fire Mountain Canal, as allowed for by the Basinwide Salinity Control Program, thereby making the Project an undertaking subject to review under Section 106 of the National Historic Preservation Act (NHPA), 16 U.S.C. § 470f, and its implementing regulations, 36 CFR Part 800; and

WHEREAS, Reclamation has defined the undertaking's area of potential effect (APE) as contained within a 100-foot-wide corridor centered on 3.57 miles of the existing Fire Mountain Canal, including 5.7 acres on Reclamation-administered land and 37.6 acres on private land for a total of 43.3 acres, as described in Attachment A; and

WHEREAS, Reclamation as lead Federal agency has determined that the Project will have an adverse effect on the Fire Mountain Canal/5DT1277, including segment 5DT1277.4. This cultural resource has been determined by Reclamation, in consultation with the Colorado State Historic Preservation Officer (SHPO), to be eligible for inclusion on the National Register of Historic Places under Criteria A; and

WHEREAS, the FMCRC is the sponsor of the Project, has participated in the consultation, and has been invited to sign the MOA; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), Reclamation has notified the Advisory Council on Historic Preservation (Council) of its adverse effect determination providing the specified documentation, and the Council has chosen not to participate in the consultation pursuant to 36 CFR § 800.6(a)(1)(iii);

WHEREAS, Reclamation has notified Tribes about the proposed undertaking, and the Tribes have chosen not to participate in the consultation; and

NOW, THEREFORE, pursuant to Section 106 of the NHPA, Reclamation and the SHPO agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect on historic properties:

STIPULATIONS

Reclamation shall ensure that the following measures are carried out:

I. Prior to any modification of the recorded segments of the Fire Mountain Canal (5DT1277.4), Reclamation will ensure that the property will be recorded in accordance with the guidance for Level I Documentation found in "Historic Resource Documentation, Standards for Level I, II, and III Documentation" (Office of Archaeology and Historic Preservation Publication 1595, March 2013). The documentation will be of archival quality, and will include a detailed narrative history, mapping of the properties and photographic documentation of the portions of the historic properties to be included in the project. Photographs will be black and white archival quality (4" x 6") prints. Features will be plotted on the maps with GPS waypoints and will be extensively described and indexed in the report.

II. Stipulation I must be satisfied prior to construction and/or any earth disturbances within the APE.

III. Reclamation will submit a copy of the Level I Documentation to the SHPO within one (1) year of the execution of this MOA. The SHPO shall review and provide comments within thirty (30) calendar days of receipt. Once accepted by SHPO, SHPO shall receive a minimum of one archivally stable copy of the final recordation for its files and provide documentation of acceptance. The activities prescribed by the stipulations of this MOA shall be carried out by or under the direct supervision of a person or persons meeting, at minimum, the Secretary of the Interior Profession Qualification Standards (48 FR 44738-39) (PQS) in the appropriate discipline. This does not preclude the use of properly supervised persons who do not meet the PQS.

IV. A copy of the Level I Documentation will be placed on Reclamation's Western Colorado Area Office's cultural resources webpage. Availability of the documentation will be announced through a press release. The SHPO shall receive notification once the document is placed on the webpage.

V. DURATION

This MOA will be null and void if its terms are not carried out within one (1) year from the date of its execution. Prior to such time, Reclamation may consult with the other signatories to reconsider the terms of the agreement. Unless terminated pursuant to Stipulation X, below, this MOA will be in effect through Reclamation's implementation of the stipulations of this MOA, and will terminate and have no further force or effect when Reclamation, in consultation with the SHPO, determines that the terms of the MOA have been fulfilled in a satisfactory manner.

VI. POST-REVIEW DISCOVERIES

If potential historic properties are discovered or unanticipated effects on historic properties found, the FMCRC shall implement the discovery plan included as Attachment B of this MOA.

VII. MONITORING AND REPORTING

Each year following the execution of this MOA until its stipulations are carried out, it expires, or is terminated, FMCRC shall provide all parties to this MOA a summary report detailing work carried out pursuant to its terms. Such report shall include any scheduling changes proposed, any problems encountered, and any disputes and objections received in FMCRC's efforts to carry out the terms of this MOA.

The signatories may monitor activities pursuant to this MOA, and the Council will review such activities if so requested by a party to this MOA. Reclamation will cooperate with the signatories in carrying out their review and monitoring responsibilities.

VIII. DISPUTE RESOLUTION

Should any signatory or concurring party to this MOA object at any time to any actions proposed or the manner in which the terms of this MOA are implemented, Reclamation shall consult with such party to resolve the objection. If Reclamation determines that such objection cannot be resolved, Reclamation will:

a. Forward all documentation relevant to this dispute, including Reclamation's proposed resolution, to the ACHP. The ACHP shall provide Reclamation with its advice on the resolution of the objection within thirty (30) days of receiving adequate documentation. Prior to reaching a final decision on the dispute, Reclamation shall prepare a written response that takes into account any timely advice or comments regarding the dispute from the ACHP, signatories and concurring parties, and provide them with a copy of this written response. Reclamation will then proceed according to its final decision.

b. If the ACHP does not provide its advice regarding the dispute within the thirty (30) day time period, Reclamation may make a final decision on the dispute and proceed accordingly. Prior to reaching such a final decision, Reclamation shall prepare a written response that takes into account any timely comments regarding the dispute from the signatories and concurring parties to the MOA, and provide them and the ACHP with a copy of such written response.

c. Reclamation's responsibility to carry out all other actions subject to the terms of this MOA that are not the subject of the dispute remain unchanged.

IX. AMENDMENTS

This MOA may be amended when such an amendment is agreed to in writing by all signatories. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

X. TERMINATION

If any signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other signatories to attempt to develop an

amendment per Stipulation IX, above. If within thirty (30) days (or another time period agreed to by all signatories) an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories.

Once the MOA is terminated, and prior to work continuing on the undertaking, Reclamation must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the ACHP under 36 CFR § 800.7. Reclamation shall notify the signatories as to the course of action it will pursue.

Execution of this MOA by FMCRC, Reclamation and SHPO and implementation of its terms evidence that Reclamation has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:

Colorado State Historic Preservation Officer

By: _____ Date: 1/20/17
for Steve Turner, AIA, SHPO

Bureau of Reclamation, Western Colorado Area Office

By: _____ Date: 1-9-17
Ed Warner, Area Manager

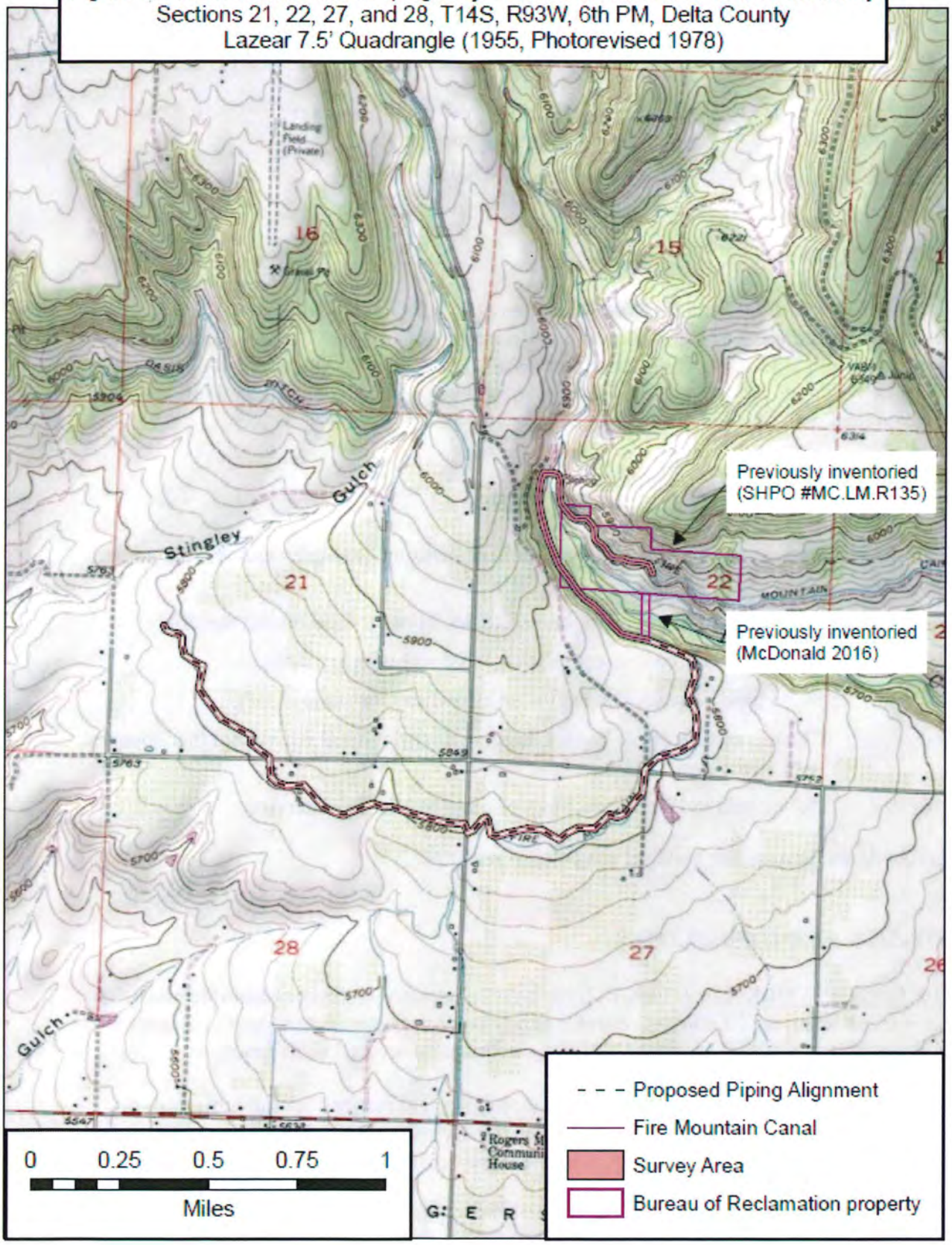
INVITED SIGNATORIES:

Fire Mountain Canal and Reservoir Company

By: _____ Date: 12/17/2016
Dixie Luke, President

ATTACHMENT A – AREA OF POTENTIAL EFFECT

Figure 1: Fire Mountain Canal Piping Project Class III Cultural Resource Inventory
Sections 21, 22, 27, and 28, T14S, R93W, 6th PM, Delta County
Lazear 7.5' Quadrangle (1955, Photorevised 1978)



ATTACHMENT B – UNANTICIPATED DISCOVERY PLAN

PLAN AND PROCEDURES FOR THE UNANTICIPATED DISCOVERY OF CULTURAL RESOURCES

FIRE MOUNTAIN CANAL PIPING PROJECT
SALINITY CONTROL PROGRAM,
DELTA COUNTY, COLORADO

1. INTRODUCTION

The Fire Mountain Canal and Reservoir Company (FMCRC) plans to pipe and partially reroute approximately 3.57 miles of the Fire Mountain Canal. The purpose of this project is to reduce the salt load in the Colorado River Basin. The following Unanticipated Discovery Plan (UDP) outlines procedures to follow, in accordance with state and federal laws, if archaeological materials are discovered.

2. RECOGNIZING CULTURAL RESOURCES

A cultural resource discovery could be prehistoric or historic. Examples include, but are not limited to:

- An accumulation of shell, burned rocks, or other food related materials
- An area of charcoal or very dark stained soil with artifacts,
- Stone tools or waste flakes (i.e. an arrowhead, or stone chips),
- Clusters of tin cans or bottles, logging or agricultural equipment that appears to be older than 50 years,
- Buried railroad tracks, decking, or other industrial materials.

When in doubt, assume the material is a cultural resource.

3. ON-SITE RESPONSIBILITIES

STEP 1: STOP WORK. If any FMCRC employee, contractor or subcontractor believes that he or she has uncovered a cultural resource at any point in the project, all work adjacent to the discovery must stop. The discovery location should be secured at all times.

STEP 2: NOTIFY MONITOR. If there is an archaeological monitor for the project, notify that person. If there is a monitoring plan in place, the monitor will follow its provisions. If there is not an archaeological monitor, notify the project manager.

STEP 3: NOTIFY BUREAU OF RECLAMATION. Contact the Project Overseer at the Bureau of Reclamation:

Project Manager:	Reclamation Project Overseer:
Ms. ~~Dixie Luke~~ Steve Fletcher	Jennifer Ward
(970)-872-3664 970 250-8118	970-248-0651
dluke6265@skybeam.com sfletcher@montrose.net	jward@usbr.gov

The Project Manager or the Reclamation Project Overseer will make all other calls and notifications.

If human remains are encountered, treat them with dignity and respect at all times. Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection in place and to shield them from being photographed. Do not call 911 or speak with the media.

4. FURTHER CONTACTS AND CONSULTATION

A. Project Manager's Responsibilities:

- Protect Find: The FMCRC Project Manager is responsible for taking appropriate steps to protect the discovery site. All work will stop in an area adequate to provide for the total security, protection, and integrity of the resource. Vehicles, equipment, and unauthorized personnel will not be permitted to traverse the discovery site. Work in the immediate area will not resume until treatment of the discovery has been completed following provisions for treating archaeological/cultural material as set forth in this document.

- Direct Construction Elsewhere On-site: The FMCRC Project Manager may direct construction away from cultural resources to work in other areas prior to contacting the concerned parties.

- Contact CR Manager: If there is a CR Program Manager, and that person has not yet been contacted, the Project Manager will do so.

- Contact Project Overseer: If the Project Overseer at the Bureau of Reclamation has not yet been contacted, the Project Manager will do so.

- Identify Find: The Project Manager will ensure that a qualified professional archaeologist examines the find to determine if it is archaeological.

    - If it is determined not archaeological, work may proceed with no further delay.

    - If it is determined to be archaeological, the Project Manager will continue with notification.

    - If the find may be human remains or funerary objects, the Project Manager will ensure that a qualified physical anthropologist examines

the find. If it is determined to be human remains, the procedure described in Section 5 will be followed.

B. Project Overseer's Responsibilities

- Notify SHPO: The Project Overseer will notify the Colorado State Historic Preservation Office (SHPO).

Colorado State Historic Preservation Office:
Mr. Steve Turner, AIA
State Historic Preservation Officer
Colorado Historical Society
1200 Broadway
Denver CO, 80203
(303)-866-2776

C. Further Activities

- Archaeological discoveries will be documented as described in Section 6.
- Construction in the discovery area may resume as described in Section 7.

5. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect.

Because the project is a Federal undertaking, the provisions of the Native American Graves Protection and Repatriation Act of 1990 apply, and the Project Overseer will follow their provisions. In areas where the project extends off of Federal lands, the requirements under State Law Colorado Revised Statute (CRS) 24-80 part 13 apply. If the remains are not modern, NAGPRA and ARPA apply if they are found to be Native American. ARPA and the Unmarked Human Graves Colorado Statute (CRS 24-80-1301-1305) apply if the human remains are Native American and/or determined to be of archaeological interest.

In the event possible human skeletal remains are discovered, FMCRC will comply with applicable state and federal laws, and the following procedure:

A. Notify Law Enforcement Agency or Coroner's Office:

In addition to the actions described in Sections 3 and 4, the Project Manager will immediately notify the local law enforcement agency or coroner's office.

The coroner (with assistance of law enforcement personnel) will determine if the remains are human, whether the discovery site constitutes a crime scene, and will notify SHPO.

Delta County Coroner
(970) 874-5918

B. Further Activities:

When consultation and documentation activities are complete, construction in the discovery area may resume as described in Section 7.

6. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS

Archaeological deposits discovered during construction will be assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Manager will ensure the proper documentation and assessment of any discovered cultural resources in cooperation with the Bureau of Reclamation, SHPO, affected tribes, and a contracted consultant (if any). All prehistoric and historic cultural material discovered during project construction will be recorded by a professional archaeologist in accordance with all state and federal laws.

7. PROCEEDING WITH CONSTRUCTION

Project construction outside the discovery location may continue while documentation and assessment of the cultural resources proceed. A professional archaeologist must determine the boundaries of the discovery location. In consultation with SHPO and affected tribes, the Project Manager and Project Overseer will determine the appropriate level of documentation and treatment of the resource.

Construction may continue at the discovery location only after the process outlined in this plan is followed and FMCRC and the Bureau of Reclamation determine that compliance with state and federal laws is complete.

AMENDMENT TO
MEMORANDUM OF AGREEMENT
BETWEEN
THE WESTERN COLORADO AREA OFFICE, BUREAU OF RECLAMATION
AND THE COLORADO STATE HISTORIC PRESERVATION OFFICER
REGARDING THE FIRE MOUNTAIN CANAL PIPING PROJECT,
SALINITY CONTROL PROGRAM,
DELTA COUNTY, COLORADO

WHEREAS, a Memorandum of Agreement (MOA) regarding the Fire Mountain Canal Piping Project was executed on January 20, 2017; and

WHEREAS, the MOA was executed under the assumption that all project areas had been surveyed for cultural resources; however, additional project elements have since been defined and surveyed for cultural resources. This adjustment will result in an additional adverse impact to a site that is eligible for the National Register of Historic Places.

NOW THEREFORE, in accordance with Stipulation IX ("Amendments"), the Signatories agree to the MOA as follows:

1. Stipulation I is modified to read as follows:

> Prior to any modification of the recorded segments of the Fire Mountain Canal (5DT1277.4) or the Leroux Creek Ditch (5DT2005.3), Reclamation will ensure that the properties will be recorded in accordance with the guidance for Level I Documentation found in "Historic Resource Documentation, Standards for Level I, II, and III Documentation" (Office or Archaeology and Historic Preservation Publication 1595, March 2013). The documentation will be of archival quality, and will include a detailed narrative history, mapping of the properties and photographic documentation of the portions of the historic properties to be included in the project. Photographs will be black and white archival quality (4" x 6") prints. Features will be plotted on the maps with GPS waypoints and will be extensively described and indexed in the report.

Execution and implementation of this Amendment to the MOA by the Signatories, and implementation of its terms, shall evidence that Reclamation has afforded the ACHP and the Colorado SHPO an opportunity to comment on the Undertaking and its effects, and that Reclamation has taken into account the effects of the Undertaking on historic properties in compliance with 36 C.F.R. Part 800 and Sections 106 and 110 of the NHPA.

SIGNATORIES:

Colorado State Historic Preservation Officer

By: _____ Date: 8/7/17
for Steve Turner, AIA, SHPO

Bureau of Reclamation, Western Colorado Area Office

By: _____ Date: 7/27/17
For Ed Warner, Area Manager

INVITED SIGNATORIES:

Fire Mountain Canal and Reservoir Company

By: _____ Date: 7/12/2017
Dixie Luke, President

Tara Hoffmann
State Cultural Resources Specialist
U.S. Department of Agriculture
Denver Federal Center
P.O. Box 25426
Denver, Colorado 80225-0426

OCT 2 3 2017

Re: Class III Cultural Resource Survey for the Lower Gunnison Project: Delta, Gunnison, and Montrose Counties, Colorado (HC #73026)

Dear Ms. Hoffmann:

Thank you for your correspondence dated October 11, 2017 and received on October 12, 2017 initiating consultation with our office under Section 106 of the National Historic Preservation Act (Section 106). We understand that the Bureau of Reclamation (BOR) is partnering with NRCS for this project and has designated NRCS as the lead Federal agency for Section 106 compliance of BOR resources. Following our review of the cultural resource inventory report, we do not object to the area of potential effect (APE) for the subject undertaking.

The inventory has identified fifteen cultural resources as a result of field survey. We concur with your determination that the following resources support the overall eligibility of the resource for the National Register of Historic Places (NHPA): 5DT.1277.7, 5DT.1277.8, 5DT.1780.6, 5DT.2005.4, 5DT.2093.1, 5DT.2094.1, 5DT.2095.1, 5GN.6371.1, 5MN.1854.5, 5MN.1856.2, 5MN.2035.3, 5MN.10895.1, and 5MN.10896.1. We also concur with your determination that 5DT.1959.2 does not support the overall eligibility of the resource for the NRHP. In addition, we agree that structure 5DT.2096 requires additional survey (or "needs data") prior to an official determination of eligibility. Based on these determinations and for the purposes of Section 106 compliance, resources 5DT.1277.7, 5DT.1277.8, 5DT.1780.6, 5DT.2005.4, 5DT.2093.1, 5DT.2094.1, 5DT.2095.1, 5GN.6371.1, 5MN.1854.5, 5MN.1856.2, 5MN.2035.3, 5DT.2096, 5MN.10895.1, and 5MN.10896.1 shall be treated as eligible for the NRHP.

Based upon these determinations and project plans we concur with your finding of no adverse effect on historic properties for resources 5DT.1277.7, 5DT.1277.8, 5DT.2005.4, 5DT.2093.1, 5DT.2095.1, 5GN.6371.1, 5MN.1854.5, 5MN.1856.2, 5MN.2035.3, 5DT.2096, and 5MN.10896.1 [36 CFR 800.5(d)(1)]. For resources 5DT.1780.6, 5DT.2094.1, and 5MN.10895.1, we concur with your finding of adverse effect on historic properties, as the proposed pressurized piping systems will alter the design, materials, and workmanship of these structures [36 CFR 800.5(d)(2)]. Therefore, we concur with the overall project finding of *Adverse Effect* on historic properties, pursuant to 36 CFR 800.5(d)(2).

In our experience, projects that have had similar resource mitigation efforts have completed at minimum Level II documentation defined by the Colorado Office of Archaeology and Historic Preservation. Other actions have included developing multiple interpretive panels that have guided hikers on a developing historic narrative as one travels across a trailed landscape. These

are just a few examples of how mitigation efforts could be applied, when considering the available infrastructure and interpretive resources that may support the current mitigation efforts. We look forward to consulting further on the proposed treatment plan to mitigate adverse effects.

Should unidentified archaeological resources be discovered in the course of the undertaking, work must be interrupted until the resources have been evaluated in terms of the National Register eligibility criteria (36 CFR 60.4) in consultation with our office pursuant to 36 CFR 800.13. Also, should the consulted-upon scope of the work change please contact our office for continued consultation under Section 106 of the National Historic Preservation Act.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

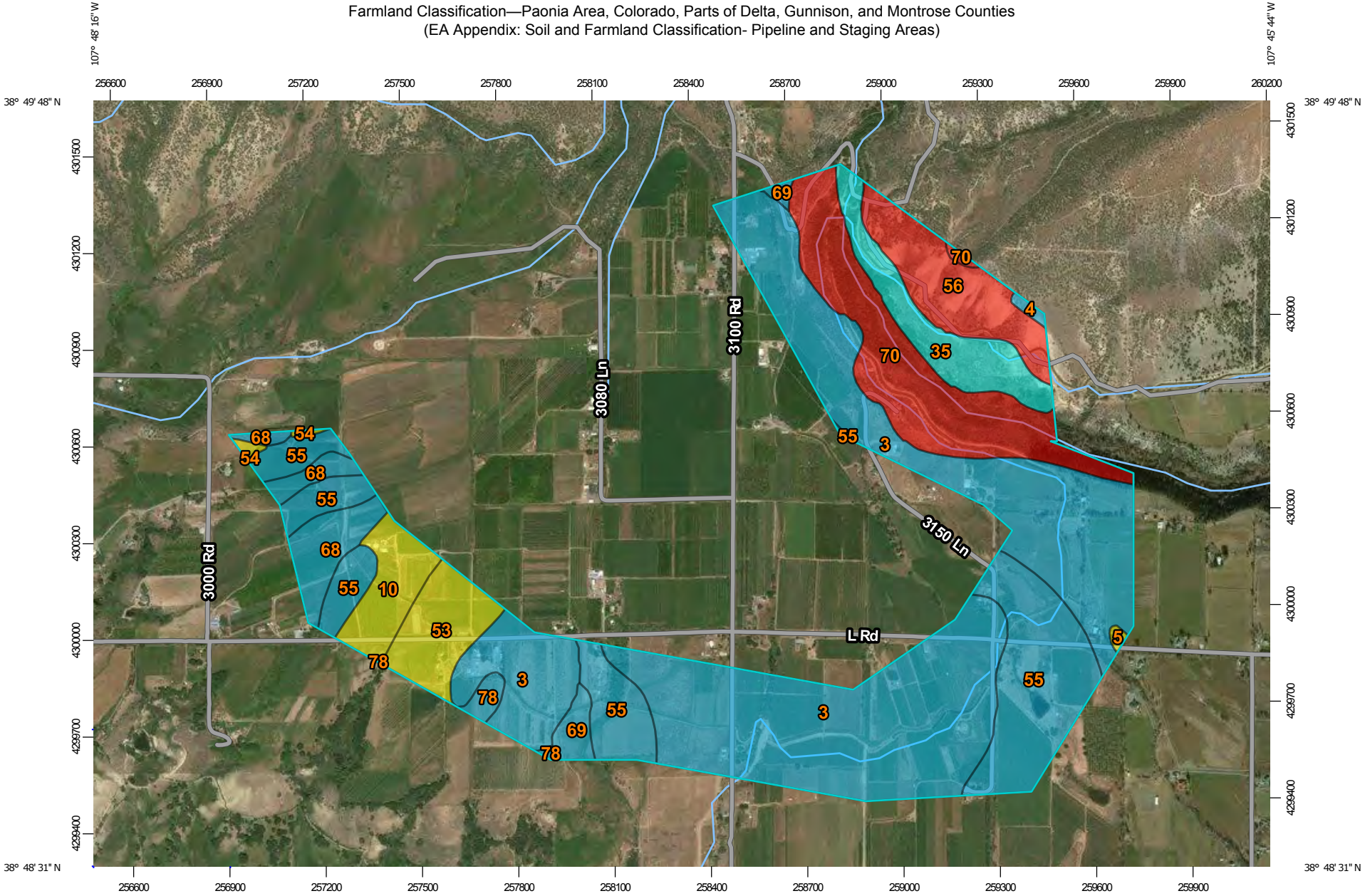
Thank you for the opportunity to comment. If we may be of further assistance, please contact Edward Jakaitis, Section 106 Compliance Manager, at (303)866-4678 or edward.jakaitis@state.co.us.

Sincerely,

for Steve Turner, AIA
State Historic Preservation Officer
1200 Broadway
Denver, CO 80203

Appendix G Farmland Classification and Soils

Farmland Classification—Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties
(EA Appendix: Soil and Farmland Classification- Pipeline and Staging Areas)



Map Scale: 1:16,800 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 200 400 800 1200

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Soil Rating Points

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Water Features

MAP INFORMATION

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background


Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties
Survey Area Data: Version 9, Sep 23, 2016

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Dec 31, 2009—Mar 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties (CO679)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
3	Agua Fria stony loam, 3 to 12 percent slopes	Farmland of unique importance	223.1	46.2%
4	Agua Fria stony loam, 12 to 25 percent slopes	Farmland of unique importance	1.0	0.2%
5	Agua Fria clay loam, 1 to 6 percent slopes	Prime farmland if irrigated	0.7	0.1%
10	Avalon loam, 3 to 6 percent slopes	Prime farmland if irrigated	17.1	3.5%
35	Fluvaquents, flooded	Farmland of statewide importance	25.5	5.3%
53	Mesa loam, 0 to 3 percent slopes	Prime farmland if irrigated	20.4	4.2%
54	Mesa loam, 3 to 6 percent slopes	Prime farmland if irrigated	1.2	0.3%
55	Mesa-Utaline stony loams, 3 to 12 percent slopes	Farmland of unique importance	78.6	16.3%
56	Midway-Gaynor silty clay loams, 10 to 40 percent slopes	Not prime farmland	29.6	6.1%
68	Saraton gravelly loam, 3 to 12 percent slopes	Farmland of unique importance	18.9	3.9%
69	Saraton stony loam, 3 to 20 percent slopes	Farmland of unique importance	6.0	1.2%
70	Saraton-Agua Fria complex, 20 to 50 percent slopes	Not prime farmland	57.8	12.0%
78	Utaline sandy loam, 3 to 12 percent slopes	Farmland of unique importance	3.3	0.7%
Totals for Area of Interest			**483.4**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Appendix H U.S. Army Corps of Engineers (USACE) Exemption Letter

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT
1325 J STREET
SACRAMENTO CA 95814-2922

April 23, 2018

Regulatory Division (SPK-2018-00331)

Fire Mountain Canal and Reservoir Company
Attn: Mr. Steve Fletcher
Post Office Box 543
Hotchkiss, Colorado 81419

Dear Mr. Fletcher:

This concerns your proposed Fire Mountain Canal Salinity Reduction Project which entails installing a 961-foot siphon, conversion of 3.9 miles of open ditch to pipe, and activities related to habitat mitigation. The siphon and ditch-to-pipe conversion would occur on Leroux Creek, along Segment 47 of the Fire Mountain Ditch, crossing through Sections 21, 22, 27 and 28 of Township 14 South, Range 93 West, 6th P.M., centered near Latitude 38.812351°, Longitude -107.781376°, approximately 3 miles northwest of the Town of Hotchkiss, in unincorporated Delta County, Colorado. Habitat mitigation is proposed on a 9.3 acre parcel, approximately 1.3 mile west-southwest of the siphon and ditch-to-pipe conversion activities, on Big Gulch, in Section 29, Township 14 South, Range 93 West, 6th P.M., centered near Latitude 38.804914, Longitude -107.817808.

Based on the information you have provided, we have determined that the project, including installation of 3.9 miles of new pipeline in the existing canal corridor, 0.5 mile of abandoned canal to be backfilled and restored, construction of a 0.2 mile subsurface siphon through the Leroux Creek drainage, and associated habitat mitigation activities will not result in the discharge of dredged or fill material within waters of the United States or is otherwise exempt from Section 404 of the Clean Water Act. Therefore, a Department of the Army Permit is not required for this work.

Our disclaimer of jurisdiction is only for this activity as it pertains to Section 404 of the Federal Clean Water Act and does not refer to, nor affect jurisdiction over any waters present on site. Other Federal, State, and local laws may apply to your activities. Therefore, in addition to contacting other Federal and local agencies, you should also contact state regulatory authorities to determine whether your activities may require other authorizations or permits.

Please refer to identification number SPK-2018-00331 in any correspondence concerning this project. If you have any questions, please contact me at the Grand Junction Regulatory Office, 400 Rood Avenue, Room 224, Grand Junction, Colorado 81501, by email at *w.travis.morse@usace.army.mil*, or telephone at (970) 243-1199 extension 1014. For more information regarding our program, please visit our website at *www.spk.usace.army.mil/Missions/Regulatory.aspx*.

We appreciate your feedback. At your earliest convenience, please tell us how we are doing by completing the customer survey on our website under *Customer Service Survey*.

Sincerely,

Travis Morse
Senior Project Manager
Colorado West Section
Regulatory Division

Cc.
Mr. Steve Fletcher, Fire Mountain Canal and Reservoir Company, sfletcher@montrose.net
Ms. Cassandra Shenk, ERO Resources Corporation, cshenk@eroresources.com
Ms. Jeanie McCulloch, Delta County Planning and Community Development, planning@deltacounty.com
Mr. Lori Kassib, USDA-NRCS Delta Field Office, lori.kassib@co.usda.gov
Ms. Jennifer Ward, U.S. Bureau of Reclamation, jward@usbr.gov