Orchard Ranch Ditch Piping Project
Environmental Assessment

Prepared for:

U.S. Bureau of Reclamation
and
Orchard Ranch Ditch Company

Prepared by:

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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

Orchard Ranch Ditch 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 a Proposed Action of authorizing the use of Federal funds to implement the Orchard Ranch Ditch Piping Project in Delta County, Colorado. Reclamation is providing funding for the project through the Colorado River Basinwide Salinity Control Program, and is therefore the lead agency for the purpose of compliance with the NEPA for this Proposed Action.

The EA was prepared 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 to authorize and fund the implementation of the Orchard Ranch Ditch 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 defined at 40 CFR 1508.27. Therefore, an environmental impact statement is not required for this Proposed Action. This finding is based on consideration of the context and intensity as summarized in the EA. Reclamation's decision is to implement the Proposed Action Alternative.

Context

The Colorado River and its tributaries provide municipal and industrial water to about 35 million to 40 million people and irrigation water to nearly 4.5 million acres of land in the United States, and another 3.3 million people and 500,000 acres in Mexico. Elevated salinity concentrations in the River are a major concern in both the United States and Mexico. Elevated salinity levels have impacts to agricultural, municipal, and industrial water users.

In June 1974, Congress enacted the Colorado River Basin Salinity Control Act (Salinity Control Act), Public Law 93-320, which directed the Secretary of the Interior to proceed with a program to enhance and protect the quality of water available in the Colorado River for use in the United States and Republic of Mexico. In October 1984, Congress amended the original act by passing Public Law 98-569 to address

wildlife habitat issues, including fish and wildlife values foregone, project funding, and operation and maintenance of habitat. In July 1995, Public Law 104-20 was enacted, authorizing the Secretary of Interior, through Reclamation, to implement a basinwide salinity control program and enter into contracts, memoranda of agreement, commitments for grants, cooperative agreements, or advances of funds to non-federal entities under such terms and conditions as may be required. Reclamation is one of the agencies working through the Colorado River Basin Salinity Control Program to implement salinity control projects in the Colorado River Basin. The program's overall goal is to cost-effectively reduce the level of salinity in the Colorado River.

The Orchard Ranch Ditch Company (ORDC) is a private, non-profit, mutually funded irrigation company. The ORDC has received a grant from Reclamation, through the Basinwide Salinity Control Program, to replace approximately 2.16 miles of the unlined, open ditch with approximately 2.16 miles of buried irrigation pipe. The ditch system is located in the lower Gunnison River watershed of the upper Colorado River basin, in soils derived from Mancos Shale. The Mancos Shale is a Cretaceous-age saline marine deposit, which contributes salts to irrigation water. The purpose and need of the Proposed Action is to eliminate seepage and reduce salinity in the Colorado River basin by an estimated 1,004 tons of salt per year.

Intensity

The following discussion is organized around the 10 significance criteria described in 40 CFR 1508.27. These criteria were incorporated into the resource analysis and issues concerned in the 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 Proposed Action to reduce impacts. The predicted short-term effects of the Proposed Action include impacts to fish and wildlife resources and habitat due to ground and vegetation disturbance during construction, and until revegetation is completed. The predicted long-term effects are adverse effects to ditch structures as cultural resources eligible for listing in the National Register of Historic Places (NRHP); loss of the ditch system's artificial wetland and riparian habitat; and water depletions to downstream critical habitat for Colorado River endangered fishes. The long-term effect on cultural resources is being mitigated by the preparation of archival-quality photographic documentation, as stipulated in the Memorandum of Agreement (MOA) between Reclamation, the Orchard Ranch Ditch Company, and the Colorado State Historic Preservation Office (SHPO). The long-term loss of artificial wetland and riparian habitat is being mitigated with a habitat replacement project. The Upper Colorado River Endangered Fish Recovery Program serves as mitigation for impacts to critical habitat of the Colorado River endangered fishes, as identified by U.S. Fish and Wildlife Service's (USFWS) 2009 *Final Gunnison River Basin Programmatic Biological Opinion* (PBO). To ensure the historic water depletions of the ditch system are covered under the umbrella of the PBO, the ORDC will enter into a Recovery Agreement with USFWS (see attached Recovery Agreement #06E24100-2018-F-0090). Implementation of the Proposed Action will result in beneficial effects related to reduction of salt and selenium loading in the Gunnison and Colorado River basins.

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 would be disproportionately affected by the Proposed Action.

3. **Unique characteristics of the geographic area**. There are no unique park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas that would be negatively affected by the Proposed Action.

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 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 as described under related NEPA documents; 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 the irrigation ditch system involved in the Proposed Action. Reclamation has entered into an MOA with the SHPO and the ORDC to mitigate the impacts to the affected irrigation ditch system.

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 may affect, but is not likely to adversely affect, the threatened western yellow-billed cuckoo. There is no suitable nesting habitat for cuckoo in the Proposed Action area, but yellow-billed cuckoo could migrate through the area during project activities; however, foraging or migrating habitat is likely not adequate in the Proposed Action area. The Proposed Action may affect, and is likely to adversely affect, the four endangered Colorado River fishes. The fishes occur downstream of the Proposed Action area in the Gunnison and Colorado River basins, and may be indirectly affected by water depletions caused by consumptive use of water by the ditch system. Consumptive loss of water in the Gunnison and Colorado River basins due to agricultural irrigation from the ditch system results in an average annual depletion of approximately 581 acre-feet from the upper Gunnison River watershed, which affects downstream critical habitat for the endangered Colorado pikeminnow, razorback sucker, humpback chub, and bonytail. Pursuant to the Gunnison River Basin Programmatic Biological Opinion

(PBO), the USFWS identified the Upper Colorado River Endangered Fishes Recovery Program as the reasonable and prudent alternative to avoid jeopardy to endangered Colorado River fishes and to avoid adverse modification to designated critical habitat. Reclamation consulted with USFWS on Colorado River Basin historic water depletions caused by operation of the ORDC system (USFWS File No. 06E24100-2018-F-0090). As a result of that consultation, the ORDC executed a Recovery Agreement with the USFWS for its historic depletions, in order to fit under the umbrella of the PBO. The annual depletion rate would not change from historic annual depletion rates as a result of the Proposed Action. Therefore, the Proposed Action would not destroy or adversely modify designated critical habitat for the Colorado River endangered fishes.

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, the Proposed Action is consistent with applicable land management plans, policies, and programs. State, local, and interested members of the public were given the opportunity to participate in the environmental analysis process.

Environmental Commitments

Pursuant to the funding agreement between the ORDC and Reclamation, the ORDC shall permanently dewater, remove from irrigation service, and render incapable of irrigation water delivery those open ditches abandoned as part of the Proposed Action.

Best Management Practices (BMPs) shall be implemented, as specified in the EA, to protect water quality and soils; to minimize ground and vegetation disturbance; to protect wildlife resources; to protect recreation, visual, agricultural, and grazing resources; and to minimize the spread of weeds (Chapter 4 of the EA is incorporated here by reference).

Required permits, licenses, clearances, and approvals shall be acquired prior to implementation of the Proposed Action (see Section 4.13 of the EA).

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.

In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with USFWS, and protection measures are implemented. Additional surveys shall be required for threatened or endangered species if construction plans or proposed disturbance areas are changed.

Approved by:

_____ _____

Ed Warner Date
Area Manager, Western Colorado Area Office

Table of Contents

List of Environmental Assessment Appendices (follows Chapter 6)

List of Acronyms and Abbreviations

APE	Area of Potential Effect
BLM	Bureau of Land Management
BMPs	Best Management Practices
CAA	Clean Air Act
CDPHE	Colorado Department of Public Health and Environment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CPW	Colorado Parks and Wildlife
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FOA	Funding Opportunity Announcement
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
HDPE	High Density Polyethylene
HQS	Habitat Quality Score
HRP	Habitat Replacement Plan
Interior	Department of the Interior
IPaC	Information, Planning, and Conservation
ITAs	Indian Trust Assets
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

PBO	Programmatic Biological Opinion
PM 2.5	Particulate Matter 2.5 Micrograms for Cubic Meter
PM 10	Particulate Matter 10 Micrograms for Cubic Meter
ORDC	Orchard Ranch Ditch Company
Reclamation	Bureau of Reclamation
Salinity Control Act	Colorado River Basin Salinity Control Act
SH	State Highway
SHPO	State Historic Preservation Office
THV	Total Habitat Value
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Chapter 1 – Purpose and Need for the Proposed Action

1.1 Introduction

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ), and the U.S. Department of the Interior (Interior) regulations implementing NEPA. If approved, the U.S. Department of the Interior Bureau of Reclamation (Reclamation) would provide funding for the Orchard Ranch Ditch Company (ORDC's) proposed Orchard Ranch Ditch Piping Project (hereinafter, "Proposed Project" or "Proposed Action"), located in Delta County, Colorado (Figure 1.1 Project Vicinity Map). The Proposed Action involves the use of Federal funds to pipe approximately 2.16 miles of the Orchard Ranch Ditch and associated laterals.

This EA evaluates the potential effects of the Proposed Action in order to determine whether it would cause significant impacts to the human or natural environment, as defined by the NEPA. If the EA shows no significant impacts associated with implementation of the Proposed Project, Reclamation will issue a Finding of No Significant Impact (FONSI). In the event that significant impacts are identified, an EIS would be necessary prior to implementation of the Proposed Action.

1.2 Background

The Colorado River and its tributaries provide municipal and industrial water for approximately 30-40 million people in the United States and Mexico combined. Irrigation waters from the Colorado River serve 4.5 million acres of land in the United States, and approximately 3.3 million people and 500,000 acres of agricultural land in Mexico. Salinity control measures implemented by Reclamation, the Bureau of Land Management (BLM), and the U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) via the Colorado River Basin Salinity Control Program currently prevent over 1.3 million tons of salt per year from entering the Colorado River System (Reclamation, 2017). According to Reclamation's "Quality of Water – Colorado River Basin," by the year 2035, 1.68 million tons of salt will need to be diverted from the Colorado River annually in order to meet water quality standards in the Lower Colorado River Basin (Reclamation, 2017). About 50 percent of the salinity in the Colorado River System is due to natural sources, including runoff, saline springs, and the erosion of saline geologic formations. Non-natural causes of salinity loading include irrigation activities, reservoir evaporation, and municipal and industrial practices. Agriculture users are the largest consumers of water in the Colorado River Basin and a major contributor to the salinity of the system. Irrigation increases salinity by depleting the amount of water flowing to the Colorado River and by dissolving salts found in underlying saline soils and geologic formations, usually marine (Mancos) shale. Deep percolation of irrigation water mobilizes the salts found naturally in the soils, especially if the lands are over-irrigated which often occurs with flood irrigation practices (Reclamation, 2017).

In June 1974, Congress enacted the Colorado River Basin Salinity Control Act, which directed the Secretary of the Interior to proceed to enhance and protect the quality of water available in the Colorado River for use in the United States and Mexico. Salinity control measures implemented through the Program are currently controlling over 1.3 million tons of salt per year from entering the Colorado River System (Reclamation, 2017).

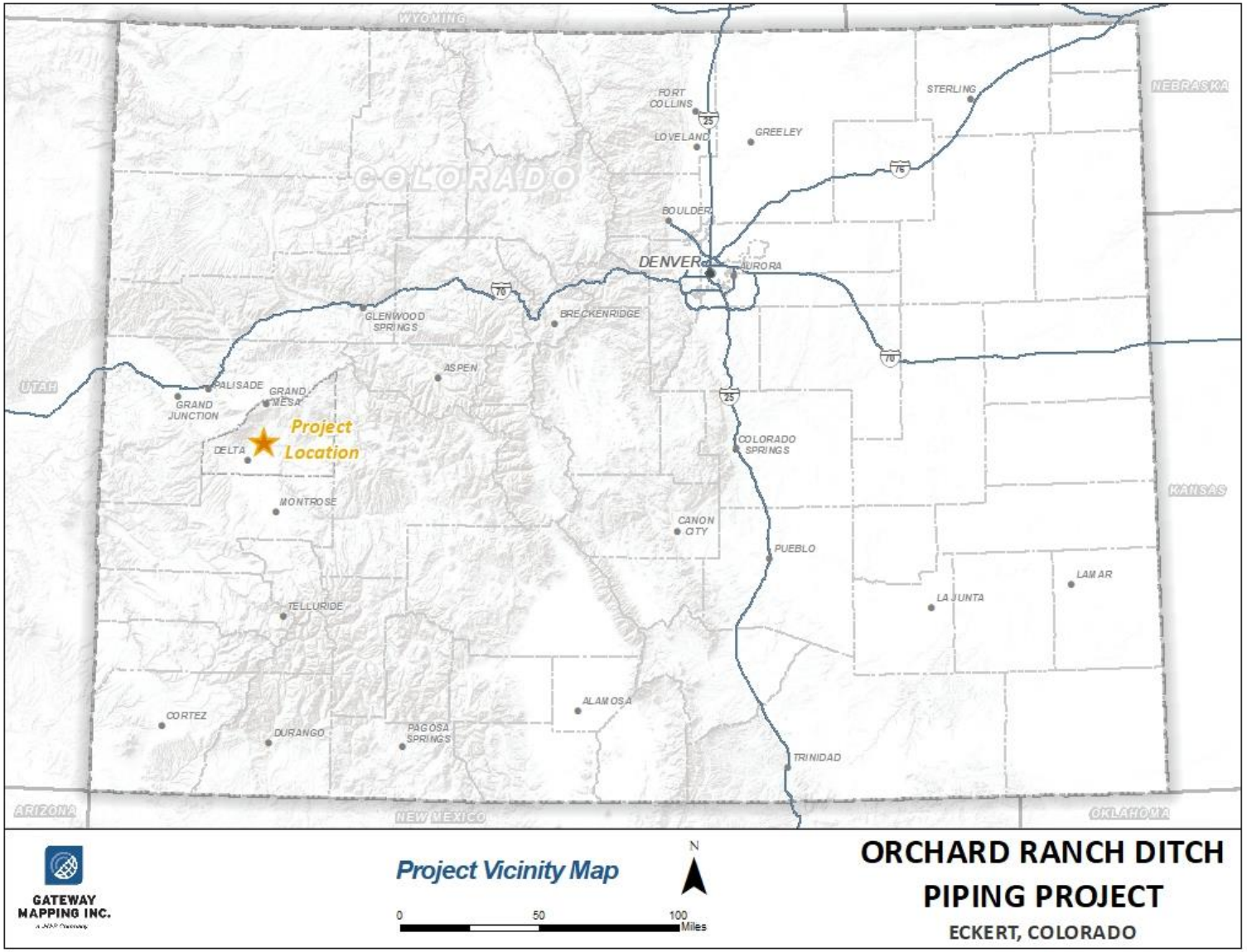

Figure 1.1 Project Vicinity Map

The Proposed Project evaluated in this EA is funded under the Colorado River Basin Salinity Control Program. The program is one of two funding mechanisms that Reclamation uses to allocate Salinity Control Program funds. The Colorado River Basin Salinity Control Program funds projects that improve irrigation practices and reduce salinity loading to the watersheds of the Colorado River Basin.

1.3 Purpose and Need

The purpose and need of the Proposed Project is to replace approximately 2.16 miles of the existing earthen Orchard Ranch Ditch and associated user laterals with pipelines to prevent seepage and thereby reduce salinity loading in the Colorado River Basin by an estimated 1,004 tons/year (Reclamation, 2016b). Additional beneficial effects of the Proposed Action include the potential reduction of selenium in the Colorado River Basin, increased efficiency of the irrigation system, improving on-farm water delivery, and conserving water that is currently lost through the open ditch system.

1.4 Alternatives Considered but Not Carried Forward

Other alternatives, such as lining the canal and varying the pipeline alignment, were considered during the design process. These options were eliminated from detailed analysis in accordance with 40 CFR 1502.14. The alternatives considered were eliminated from further analysis because they were determined to be economically prohibitive, and therefore were not proposed to Reclamation for evaluation.

1.5 Location and Environmental Setting

The Orchard Ranch Ditch is a private irrigation ditch located entirely on private land on the northwest side of Eckert, Colorado. The Proposed Project is located in Sections 12, 13 & 14, Township 14 South, Range 95 West, in Delta County, Colorado. Land use within the project vicinity is primarily agricultural. The elevation of the Proposed Project area is approximately 5,500 feet above sea level and is located about 0.25 mile west of State Highway 65 (SH-65). From its diversion on Surface Creek, the ditch runs generally west-southwest. The Proposed Project area is broadly located in the Colorado Plateau physiographic region, and has a semi-arid, continental climate characterized by low humidity and moderately low precipitation (averaging between 8-13 inches annually). The average maximum temperature is 67 degrees Fahrenheit and the average minimum is 34 degrees Fahrenheit. The growing season is estimated from April 1 to October 1. Figures 1.2 and 1.3 illustrate the project location and broader irrigation water system.

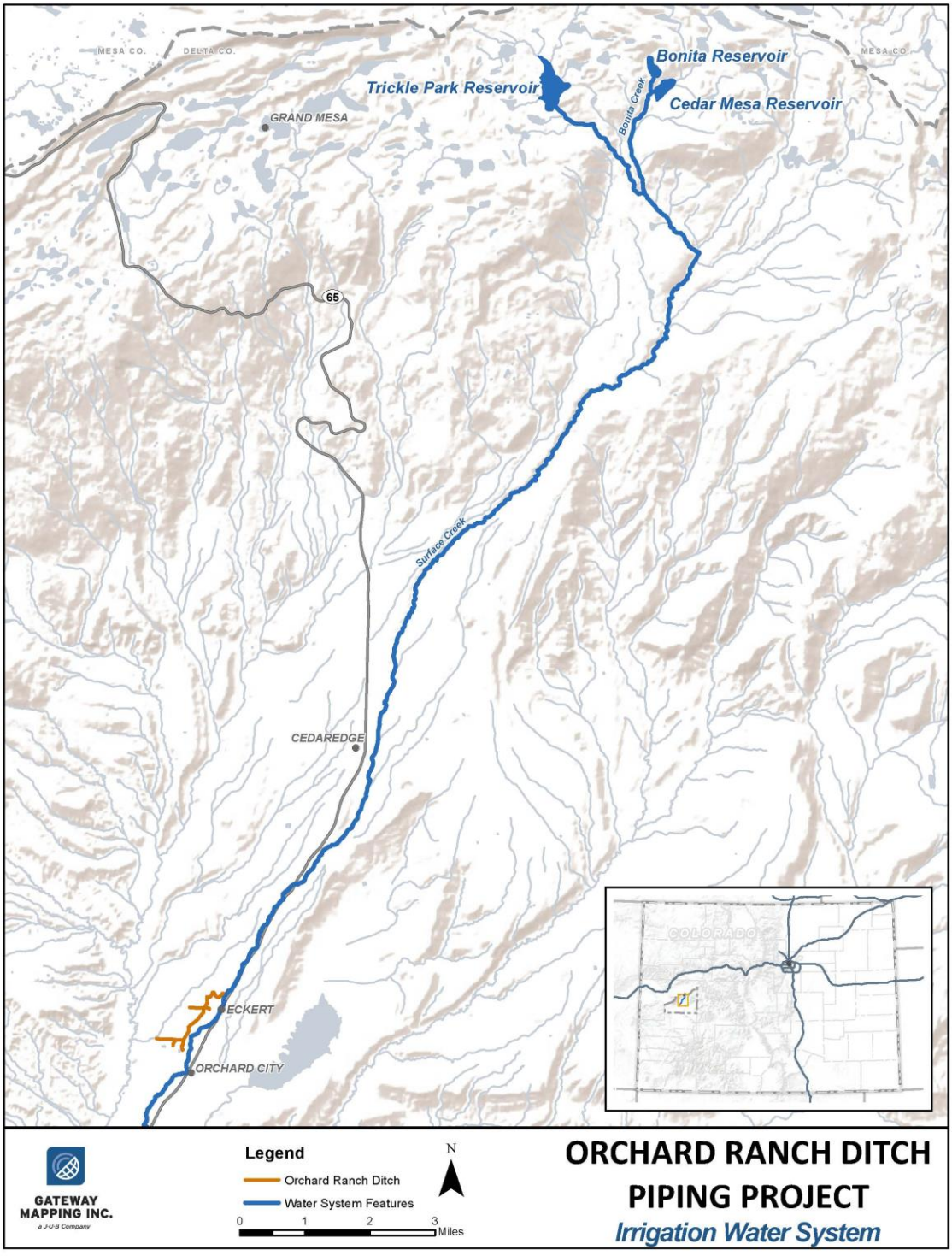

Figure 1.2 ORDC Irrigation System Map

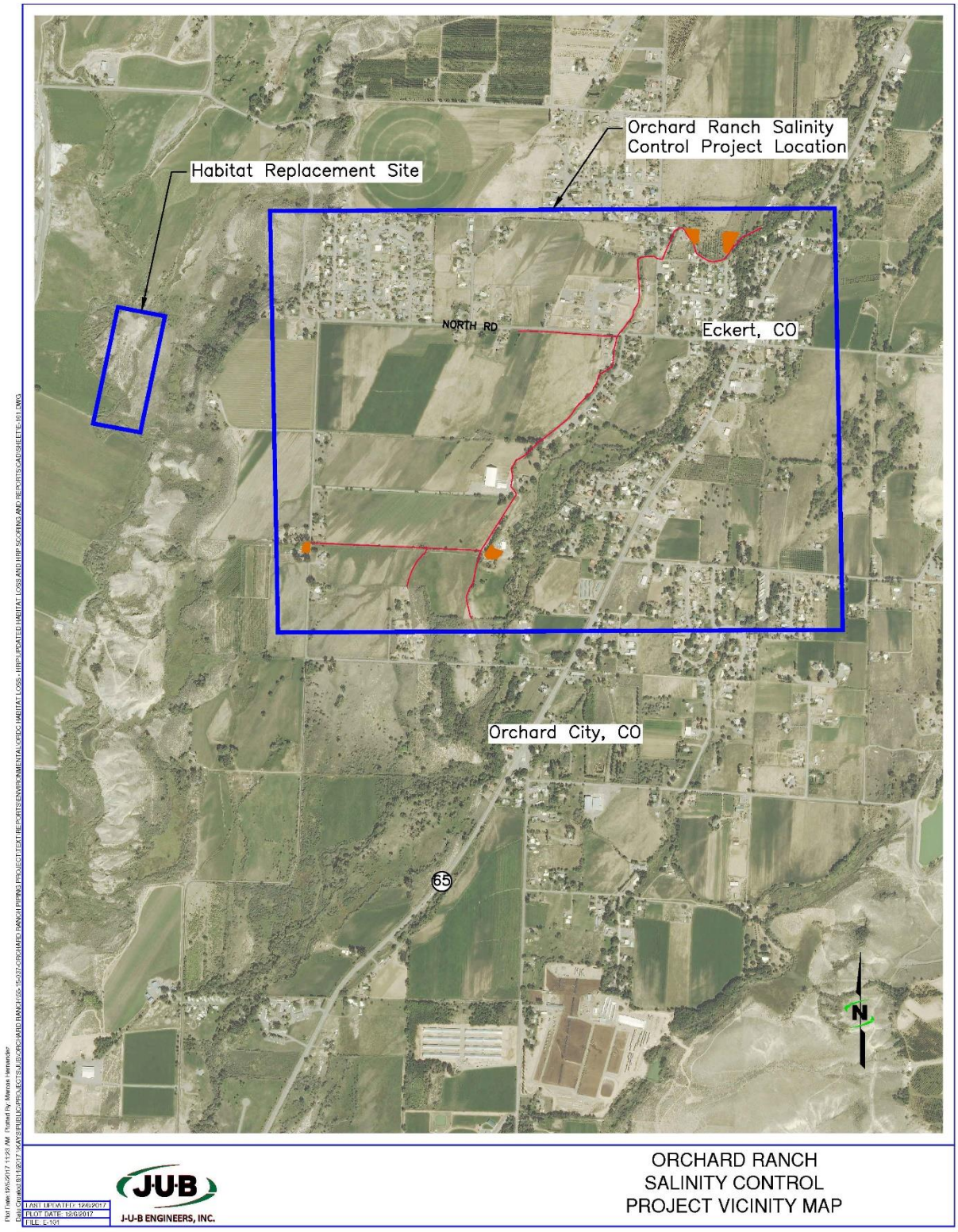

Figure 1.3 Project Location Map

The Proposed Project area lies within the Gunnison River Basin, and within the larger Colorado River Basin. The Grand Mesa National Forest is to the north. The Gunnison River travels east to west, approximately 5 miles south of the Proposed Action area, and the Gunnison Gorge is located to the southeast. The Uncompahgre Plateau is to the southwest, with the West Elk Mountains located farther to the east.

The Proposed Project is located in the Surface Creek watershed sub-basin, and the Orchard Ranch Ditch mostly parallels Surface Creek to its western side. Surface Creek has a perennial flow regime, and is fed by the West Fork-Bonita Creek, Bonita Creek, and Cedar Mesa and Park Reservoirs, which are located on the southwestern slope of the Grand Mesa within the Grand Mesa National Forest. The valley is the southern extent of Cedar Mesa. The narrow valley where the Proposed Project would be located is largely flat. The geology is dominated by basalt glacial alluvium deposited along the floodplain of Surface Creek. The alluvium overlays Cretaceous-age Mancos Shale, which is the source of the various salts and selenium in adjacent waterways. According to Natural Resources Conservation Service (NRCS) data, the soils are predominantly Mesa Loam with 3-6 percent slopes (Appendix A. Soil Survey and Farmland Classification).

1.6 Relationship to Other Projects

Other salinity control projects recently completed, or currently underway in the same basin-wide area as the Proposed Action, include the following (Figure 1.4):

- 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 Phase I and II (near the Town of Paonia in the North Fork of the Gunnison River drainage)
- Lower Stewart Ditch Pipeline Project (near the Town of Paonia in the North Fork of the Gunnison River drainage)
- Bostwick Park Water Conservation District's Siphon Lateral Salinity Control Project (near the City of Montrose)
- Forked Tongue/Holman Ditch Company's Salinity Control Project (near the Town of Eckert in the Tongue Creek drainage)
- Uncompahgre Valley Water Users Association Phase 7 and 8 (near Town of Olathe)
- North Delta Irrigation Canal Salinity Control Project I (northeast of the City of Delta)
- Cattleman's Ditches Pipeline Project Phase I and II (south of the town of Crawford, Colorado, in the Alkali Creek drainage)
- C Ditch Company's C Ditch/Needle Rock Pipeline Project (3 miles north of the Town of Crawford in the Cottonwood Creek drainage)
- Clipper Irrigation Salinity Control Project 4, Zanni Lateral Pipeline Project, and Center Ditch Pipeline Project (2.5 miles southeast of the Town of Hotchkiss and immediately west of Crawford, CO in the Cottonwood Creek drainage)
- Grandview Canal Piping Project (just south of the Town of Hotchkiss in the Smith Fork River drainage)

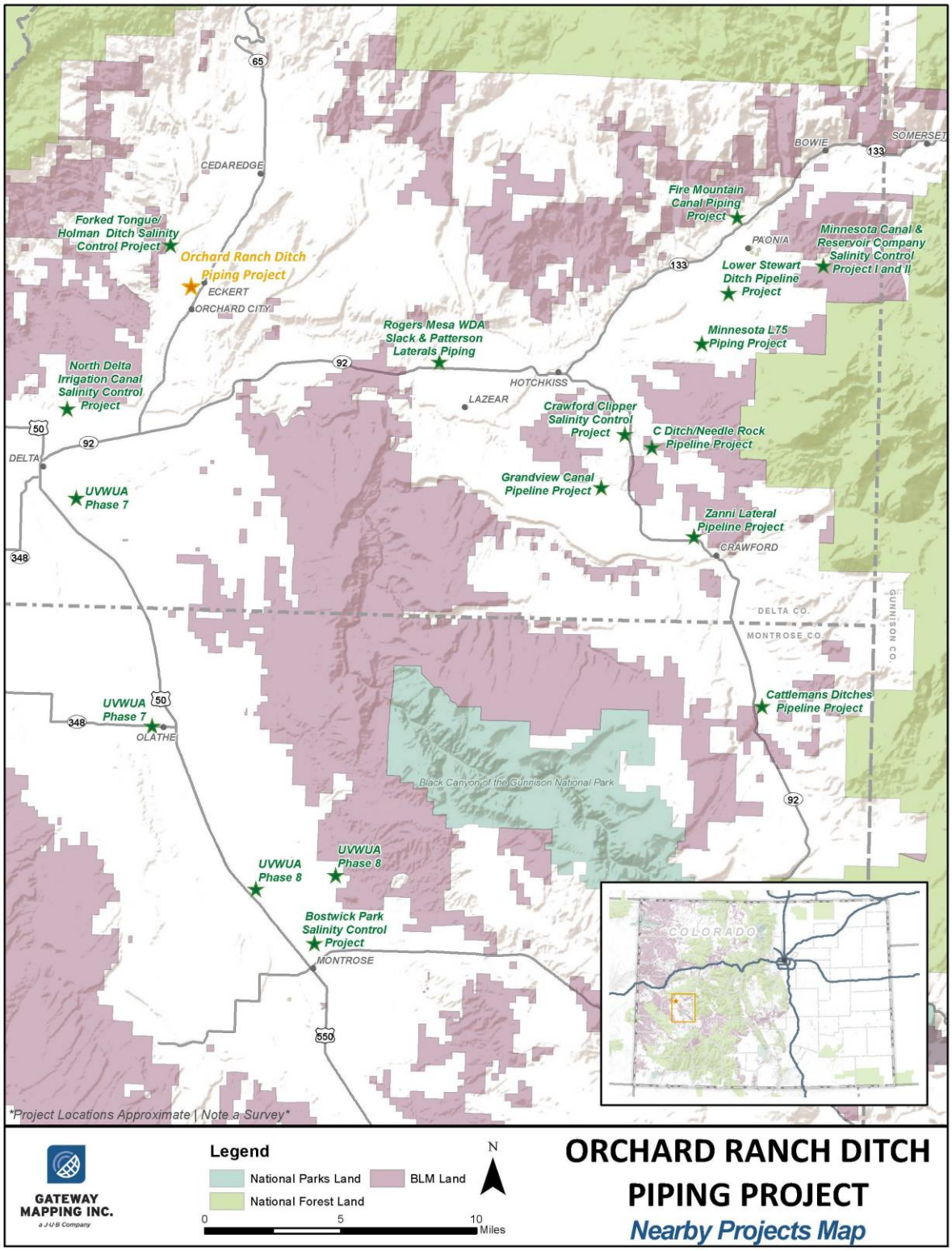

Figure 1.4 Nearby Projects

1.7 Scoping, Coordination and Public Review

Scoping was completed by Reclamation, in consultation with the following agencies and organizations, during the planning stages of the Proposed Action:

- Colorado Office of Archaeology and Historic Preservation, Denver, CO
- Colorado Parks and Wildlife, Gunnison, CO
- U.S. Fish and Wildlife Service, Ecological Services, Grand Junction, CO
- U.S. Army Corps of Engineers, Colorado West Regulatory Branch, Grand Junction, CO
- Colorado Department of Transportation, Grand Junction, CO
- Delta County Board of Commissioners
- Orchard City Board of Trustees
- Southern Ute Tribe, Ute Mountain Ute Tribe, and Ute Indian Tribe (Uintah and Ouray Reservation)

The goal of the scoping process was to identify any potential natural and human environmental issues and concerns associated with implementation of either the Proposed Action or the No Action Alternative. Several design alternatives were considered during the initial design phase; however, these alternatives were dismissed from inclusion in ORDC's proposal because they would increase maintenance time and costs, while failing to provide similarly consistent, long-term reduction in salinity loading to the Colorado River. Therefore, the Proposed Action and a No Action Alternative, discussed in Chapter 2, are the subject of analysis for this EA.

In compliance with the NEPA, the Draft EA and Draft FONSI was made available for public comment for a 30-day period (see Section 5). The Draft EA/Draft FONSI was distributed on December 19, 2017 to ORDC shareholders, private landowners adjacent to the Proposed Project, and interested organizations and agencies, which are listed in Appendix B. Reclamation requested comments by January 19, 2018. No comments were received.

Issues determined to be of potential significance, and therefore appropriate for further impacts analysis under this EA, are discussed in Chapter 3. The following issues were determined to be insignificant or not applicable, and are not analyzed in greater detail within this document:

Indian Trust Assets and Native American Religious Concerns (not applicable)**.** Indian Trust Assets (ITAs) may include lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. No ITAs have been identified within the Proposed Project area. The American Indian Religious Freedom Act was enacted to protect and preserve Native American traditional religious rights and cultural practices. These rights include, but are not limited to, access to sacred sites, freedom to worship through ceremonial and traditional rights, and use and possession of objects considered sacred. No Native American sacred sites are known within the Proposed Project area. Reclamation consulted with the Southern Ute Tribe, Ute Mountain Ute Tribe, and the Ute Indian Tribe (Uintah and Ouray Reservation), and no comments were received from the Tribes. Neither the No Action Alternative, nor the Proposed Action, would have an effect on ITAs or Native American sacred sites.

Environmental Justice and Socio-Economic Issues (not applicable)**.** Executive Order 12898 provides that Federal agencies analyze programs to assure that they do not have a disproportionately adverse effect on minority or low-income populations or Indian Tribes. The Proposed Project does not occur on Indian

reservation lands. The Proposed Action would not involve any relocations, health hazards, hazardous waste, property takings, or substantial economic impacts. Therefore, neither the No Action Alternative, nor the Proposed Action, would be expected to have an adverse environmental justice impact.

Jurisdictional Wetlands and Other Waters of the U.S. (not applicable)**.** The Proposed Action would affect surface and shallow subsurface hydrology supplied to wetland and riparian areas along the Proposed Action alignment. As an agricultural irrigation construction project, the Proposed Action was found to be exempt from requiring a Section 404 Permit pursuant to the Clean Water Act exemption found at 33 CFR Part 323.4 (a)(3). According to the regulatory determination issued by the U.S. Army Corps of Engineers (USACE) on December 23, 2016, a Department of Army Permit is not required for the Proposed Project work (Appendix C. Wetland Resources).

Wild and Scenic Rivers, Wilderness, or Wilderness Study Areas (not applicable)***.*** According to the National Park Service (NPS) River Database, there are no Wild and Scenic Rivers or study rivers within the general vicinity of the Proposed Project.

The Gunnison Gorge National Conservation and Wilderness Area is located approximately 12 miles from the Proposed Project area. The Gunnison Gorge Wilderness Area encompasses 17,784 acres of land and includes a 14-mile stretch of the Gunnison River. As a wilderness area, the land is managed through the BLM.

The Black Canyon of the Gunnison National Park, which is managed by the NPS, is located to the southeast of the Gunnison Gorge Conservation Area. The park contains 12 miles of the 48-mile long canyon of the Gunnison River. The park boundary is roughly 26 miles from the Proposed Project area. Neither the Gunnison Gorge National Conservation and Wilderness Area nor the National Park are located within the vicinity of the Proposed Project; therefore, the Proposed Project would have no impact to these resources.

Chapter 2 – Proposed Action and Alternatives

2.1 Introduction

As discussed in Section 1.4, the alternatives evaluated in this EA include a No Action Alternative and the Proposed Action Alternative. The analysis contained in this EA, along with other pertinent information, will guide Reclamation's decision about whether or not to fund and implement the Proposed Action. The Proposed Action is analyzed in comparison to a No Action Alternative in order to determine potential effects.

2.2 No Action Alternative

Under the No Action Alternative, Reclamation would not authorize the use of Federal funds for the Orchard Ranch Ditch Piping Project. Seepage from the existing ditch would continue to contribute to the salt and selenium loading in the Gunnison and Colorado Rivers.

2.3 Proposed Action Alternative

Under the Proposed Action, Reclamation would authorize funding to the ORDC to replace the existing Orchard Ranch irrigation ditch with a piped system (Figure 2.1 Proposed Project). The entire Orchard Ranch Ditch would be piped and pressurized with HDPE pipe ranging in size from 6 to 36 inches in diameter. The project would also include the placement of meters at 21 turnout locations. Screens would be installed to remove debris at the head of the pipeline.

The Proposed Project alignment would largely follow the existing alignment. Approximately 0.11 mile would be new alignment. The existing Orchard Ranch Ditch is roughly 1.7 miles long with a capacity of 22 cubic feet per second (cfs). There are approximately 2.4 miles of multiple-user laterals along the existing ditch. There are currently 33 users, three of which are multi-person subdivisions. Presently, most of the irrigation in the Proposed Project area is flood irrigation, using furrows and gated pipe. The Proposed Action would pipe 2.16 miles of the ORDC ditch and associated user laterals.

Piping of the existing ditch and laterals would reduce the amount of water lost through seepage, increasing efficiency, while reducing salt and selenium contributions to adjacent waterways. The Proposed Action would also reduce the amount of ongoing system maintenance. Maintenance currently includes removing debris from the laterals, clearing overgrown vegetation, and replacing outdated valves and gates. It is anticipated that implementation of the Orchard Ranch Ditch Piping Project would result in an annual reduction of 1,004 tons of salt to the Colorado River Basin.

As part of the Proposed Action, the ORDC would be required to mitigate for the loss of riparian habitat associated with the piping of the existing Orchard Ranch Ditch. To mitigate for the loss of riparian habitat, the ORDC will implement a Habitat Replacement Project (HRP), located approximately 2 miles from the Proposed Action area (Figure 1.2). The HRP would improve upon a degraded area of riparian habitat along Hamilton Draw and Tongue Creek by removing invasive weed species and planting native plants to improve species diversity and structure at the site.

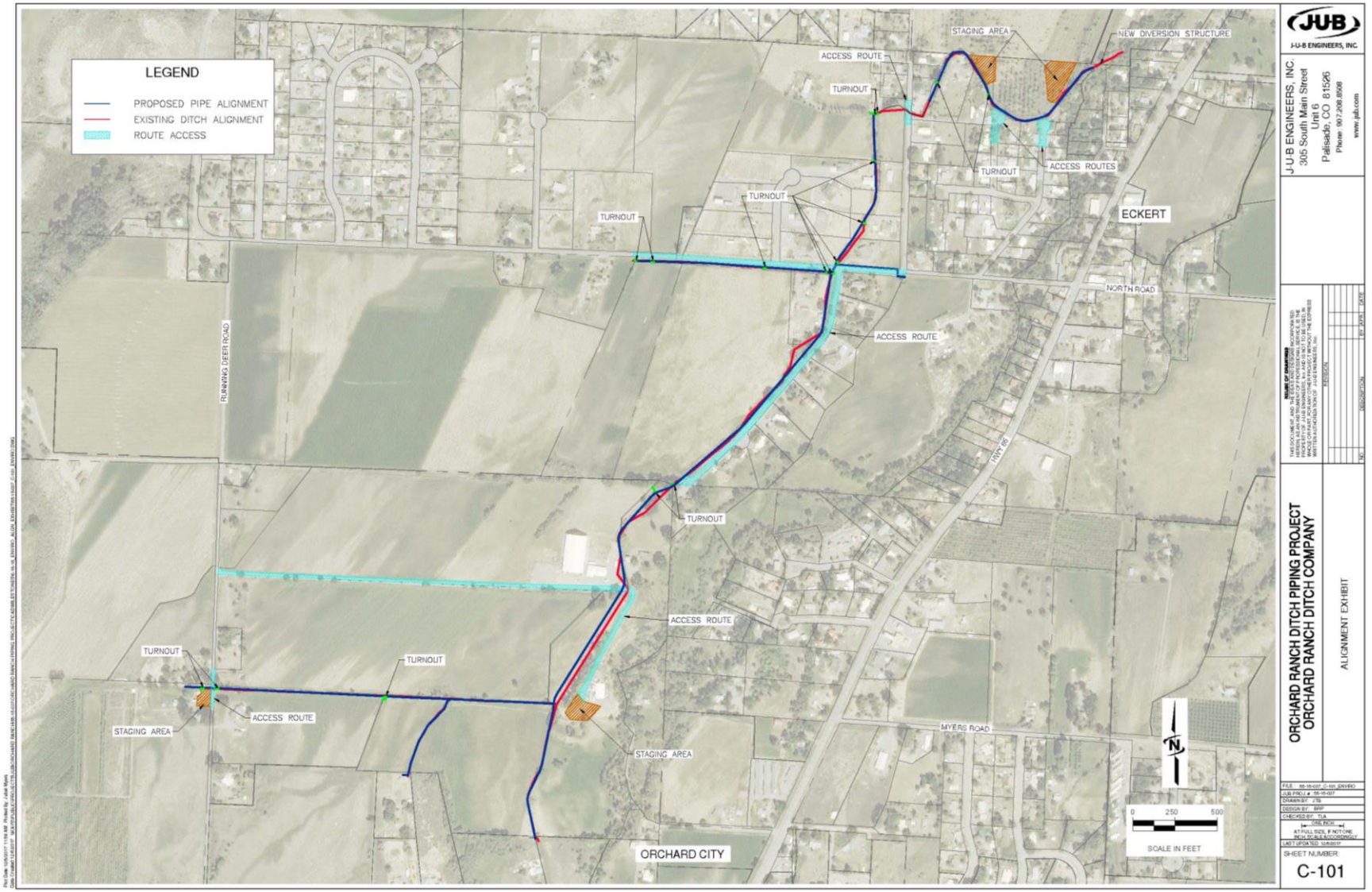

Figure 2.1 Proposed Project Alignment

2.3.1 Construction Procedures

Sequencing of construction activities for the project would occur as follows:

- Survey and flagging of the construction area
- Mobilization of construction equipment
- Delivery of construction materials to staging areas
- Excavation of trenches
- Pipe fusing
- Pipe placement within the excavated trenches
- Backfill around the pipe and compaction of the backfill
- Restoration and clean-up activities, including planting and reseeding of disturbed areas
- Simultaneous implementation of seasonally appropriate actions included in the Habitat Replacement Plan

2.3.1.1 Trench Excavation

Excavation would be performed using appropriately-sized construction equipment to minimize disturbance to the surrounding area. Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment would be used to complete the project. Excavated material would be stockpiled at an approved staging site nearby, and used as backfill after pipe installation. Topsoil would be separated from other materials and would be replaced as the top layer of soil, wherever possible. Minor vegetation clearing would occur as a result of the trenching process. Approximately three to four mature trees may have to be removed if the pipeline alignment cannot trench around them. Efforts would be made to avoid tree removal during the trenching process. Trench width would depend on the size of the pipe being installed. The mean width of the pipeline trench would be approximately four feet. Approximately 11,106 feet of trench would be excavated to install the pipeline. The anticipated total disturbance area would be 25 acres, including potential staging areas.

2.3.1.2 Pipe Installation

The pipe would be transported to the staging areas. From the staging areas, the pipe would either be transported by a loader to the work site or fused into longer sections and hauled to the work site via existing access roads. Each section of pipe would be fused together with a pipe fuser and placed in the prepared trench or existing ditch prism. After pipe installation, backfill would be placed around the pipes and mechanically compacted. Soil in work areas would be spread evenly to blend with the natural topography and maintain local drainage patterns. Stockpiled topsoil would then be spread evenly over the disturbed site and reseeded with a native species or an agricultural seed mix, as appropriate.

2.3.2 Construction Staging Areas

Construction staging areas have been identified for the Proposed Project and are shown on Figure 2.1. Staging areas are actively disturbed, unirrigated fields or inactive, previously disturbed lots without vegetation. The staging areas would be used to stockpile pipe, place construction equipment, and park construction vehicles.

2.4 Habitat Replacement Project

As required by the Salinity Control Act, a habitat replacement project would be implemented as part of the Proposed Project to replace incidental fish and/or wildlife values foregone in association with the

implementation of the proposed piping. A habitat replacement plan (HRP) would be implemented to improve the habitat quality and value within the habitat replacement site (HRS) selected by the ORDC and approved by Reclamation.

The general actions of the HRP are to remove non-native, invasive species and revegetate with native plants to improve the stratification and species diversity of the HRS in order to enhance wildlife habitat value. The HRP is included in Appendix D.

As part of the vegetation restoration objectives for the HRS, 75 cottonwood seedlings and 300 buffaloberry and willow stake plantings would be established across the site with a goal of 80% survivability within each planting zone of the HRS. In addition to seedling and stake plantings, a High Desert Meadow seed mix would be seeded across the outer edges of the HRS in order to promote and improve pollinator habitat. No new water features are planned for the project, as the Hamilton Draw and Tongue Creek are the central water sources of the HRS. Final implementation actions for the HRP are:

- Decrease invasive species coverage across the site, such that no more than 20% of noxious weed cover exists within the site, and no single path size exceeds 10 square feet.
- Increase native species diversity across the site.
- Improve stratification within the overall site through establishment of overstory and shrub-layer species, as well as through seeding of native grasses and forbs.

Monitoring would be conducted yearly to measure the success of the HRP. The survivability rates for each planting zone and across the overall HRS would be measured and tracked. Ocular measurements of invasive species coverage would be assessed and managed over time to determine the reduction of invasive species. Photos would be taken yearly at designated photo points to visually monitor the changes in structure and diversity over time.

Chapter 3 - Affected Environment and Environmental Consequences

3.1 Introduction

This chapter discusses the existing environment of the Proposed Project area and the resources that may be affected by the Proposed Action and the No Action Alternatives. The present condition and characteristics of each resource are discussed, followed by an analysis of the anticipated impacts associated with the No Action and Proposed Action Alternatives. This chapter includes a summary comparison of the alternatives.

3.2 Water Rights and Use

The Proposed Project is located within the Gunnison River Basin. This basin encompasses approximately 7,800 square miles of western Colorado, extending from the Continental Divide to the confluence of the Gunnison and Colorado Rivers near Grand Junction. Several drainages originate near the Proposed Project area and drain southward to the North Fork of the Gunnison River.

Flood irrigation is currently the primary means of irrigating agricultural crops within the Proposed Project area. Furrows and gated pipe are used in most fields to help facilitate flood irrigation. The ORDC owns three water right decrees, totaling 22.17 cfs, each of which stems from Surface Creek. There are no rights for water storage within the Proposed Project area. Some individuals using the Orchard Ranch Ditch have storage rights in Grand Mesa Reservoirs. This water is released and delivered via Surface Creek and the Orchard Ranch Ditch. In addition, any user of the ORDC's irrigation system can lease reservoir water from Grand Mesa Reservoirs on a year-to-year basis. Typically, users run approximately 400-500 acre-feet of storage water in the ditch annually.

3.2.1 No Action Alternative

The No Action Alternative would have no effect on water rights and uses within the Gunnison River Basin. The water delivery systems would continue to function as they have in the past. Due to the lack of efficiency in the ORDC system, late season irrigation water may continue to be scarce in drier years and may limit the types and numbers of crops produced at each location.

3.2.2 Proposed Action

The Proposed Action would result in increased water delivery efficiency in the ORDC system. The Proposed Action would eliminate seepage through the existing earthen ditch and laterals. The Proposed Action would not include new storage or irrigation of new lands. No additional water rights, new storage rights, or changes to water rights would be required under the Proposed Action.

3.3 Water Quality

Water quality of the Gunnison and Colorado Rivers is threatened by high salinity and selenium levels. From 2005 through 2015, it is estimated that an average of 97.5 million tons of salt were loaded annually into the Colorado River (Reclamation, 2017). Irrigated agriculture is the largest user of water in the Colorado River Basin and is a major contributor of salinity to the watershed. Irrigation increases salinity by depleting the amount of water flowing to the Colorado River and by dissolving salts found in

underlying saline soils and geologic formations, usually marine (Mancos) shale. Deep percolation of irrigation water mobilizes the salts found naturally in the soils, especially if the lands are over-irrigated, which often occurs with flood irrigation practices. High salinity levels make it difficult to grow agricultural crops. Salt in water systems plugs and destroys municipal and household pipes and fixtures.

Selenium is a nonmetal that most often occurs in soils in soluble forms such as selenite, which is easily leached into rivers by runoff. Though trace amounts of selenium are necessary for cellular functioning of many organisms, it becomes toxic in slightly elevated amounts. Elevated selenium levels may cause reproductive failure and deformities in fish and aquatic birds.

Surface Creek is listed for lead on the Colorado Department of Public Health and Environment's (CDPHE's) Monitoring and Evaluation list (M&E list) (CDPHE 2012). The M&E list identifies waters that have exhibited reason to suspect water quality problems, but there is uncertainty about the contributing factors. Surface Creek flows into Tongue Creek, which is listed as impaired due to high selenium concentrations. Some nearby waterbodies are also impaired due to high selenium concentrations. For example, Cedar Run Ditch, which parallels Surface Creek and is only 690 feet east of Surface Creek at its closest point, is also classified as impaired due to high selenium concentrations. Seepage from the ORDC irrigation system may contribute to increased selenium levels in downstream waterways.

The Habitat Replacement component of the Proposed Action lies within the same hydrologic unit, as it is adjacent to Hamilton Draw, which also empties into Tongue Creek. Hamilton Draw is also listed as impaired for selenium.

3.3.1 No Action Alternative

Existing water quality trends and water resource designations would not change under the No Action Alternative. Salt would continue to reach the Colorado River annually from seepage of irrigation waters from the unlined earthen ditch. Seepage from the Orchard Ranch Ditch likely would continue to contribute to the high selenium levels of the waterways in the general vicinity of the Proposed Project. Waterways most likely to be impacted by selenium and salt contributions from the Orchard Ranch Ditch would include Surface Creek, Tongue Creek, other tributaries of the Gunnison River, and ultimately the Colorado River.

3.3.2 Proposed Action

The Proposed Action would eliminate seepage from the Orchard Ranch Ditch and laterals. Implementation of the Proposed Action is estimated to result in a total annual reduction of 1,004 tons of salt to the Colorado River. A reduction in selenium levels in Tongue Creek below the Surface Creek confluence, as well as in the Colorado River and connecting waterways, is also anticipated, although the amount has not been quantified. Thus, the Proposed Action is anticipated to have a long-term, beneficial impact on water quality.

There would be no change in water quality as a result of implementation of the habitat replacement plan.

Construction activities within the ditch alignment have the potential to cause temporary, adverse impacts on water quality. Best management practices (BMPs) would be implemented throughout the construction process to avoid or reduce the likelihood of temporary construction impacts on water

quality (see Appendix G: Environmental Commitments). BMPs to protect water quality would include the following:

- Fuels, lubricants, hydraulic fluids, and other petrochemicals would be stored and dispensed of in approved staging areas. Equipment would be inspected daily for petrochemical leaks. Construction equipment would be parked, stored, and serviced only at approved staging areas. Staging areas utilized for refueling equipment or storing any petrochemicals must be at least 300 feet from the nearest open water source.
- An oil spill response plan would be prepared for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, would be briefed and made familiar with this plan. The plan would be developed prior to initiation of construction. An oil spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and on-site at all times.
- Onsite supervisors and equipment operators would be trained and knowledgeable in the use of spill containment equipment.
- Appropriate Federal and Colorado authorities would be immediately notified in the event of any contaminant spill.

CWA Section 401 Water Quality Certification is not required because the Proposed Action is exempt from Section 404 of the CWA (33 CFR Part 323.4 (a)(3)). The USACE provided written verification of this exemption on December 23, 2016 (Appendix C. Wetland Resources).

Additionally, Section 402 of the CWA requires that all construction sites that disturb one acre or more of land must obtain a storm water discharge permit pursuant to the National Pollutant Discharge Elimination System (NPDES). Because the Proposed Project would disturb approximately 25 acres, a Storm Water Pollution Prevention Plan would be prepared, and the construction contractor would obtain a permit from CDPHE prior to initiating construction activities.

3.4 Rights-of-Way and Land Use

The ORDC currently owns and maintains all associated easements through private property for the operation and maintenance of the ditch. Land use within the operating ditch easement in the Proposed Project area is agricultural or residential. The Orchard Ranch Ditch has historically provided incidental tail water and storm water drainage from surrounding fields and local roads; however, the ORDC is not legally bound to provide tail water or storm water drainage as part of the ditch's operation and maintenance.

3.4.1 No Action Alternative

Under the No Action Alternative, the Orchard Ranch Ditch would remain open, and no construction disturbance would occur on private properties within the ditch prism. Any seepage from the existing ditch into private properties would continue to occur. Any storm water or tail water drainage into the existing ditch from surrounding land use practices would continue to occur. No changes in rights-of-way or land use would occur under the No Action Alternative.

3.4.2 Proposed Action

Segments of the proposed alignment that would fall outside of the ORDC's current prescriptive easements for operation and maintenance of the Orchard Ranch Ditch would require an additional permanent easement. All permanent easements necessary for the implementation of the Proposed Project have been obtained and executed by the ORDC. No other temporary construction or permanent easements from private, local, state or Federal entities would be required for the implementation of the Proposed Project.

The Orchard Ranch Ditch would be piped and would no longer intercept tail water or storm water drainage from the surrounding land. Storm water runoff may be absorbed by the underlying soils, as the majority of the area around the ditch is unimproved and does not have impervious surfaces. Because the ORDC is not legally bound to provide tail water drainage as part of the ditch's operation and maintenance, tail water management would remain the purview of individual landowners and under the jurisdiction of the local or county governments.

3.5 Air Quality

The National Ambient Air Quality Standards (NAAQS) established by the U.S. Environmental Protection Agency (EPA) under the Clean Air Act (CAA) specifies limits for criteria air pollutants. Criteria pollutants include carbon monoxide, particulate matter (PM 10 and PM 2.5), ozone, sulfur dioxide, lead, and nitrogen. If the levels of a criteria pollutant in an area are higher than the NAAQS, the airshed is designated as a nonattainment area. Delta County meets the NAAQS for all criteria pollutants and is therefore in attainment.

3.5.1 No Action Alternative

There would be no change in air quality under the No Action Alternative.

3.5.2 Proposed Action

There would be no long-term impacts to air quality from the Proposed Action. Fugitive dust generation from construction activities would have a temporary, short-term effect on the air quality in the Proposed Project area. Fugitive dust would be generated by excavation activities and the movement of construction equipment on unpaved roads. BMPs would be implemented to minimize dust and would include measures such as watering the construction site and access roads, as appropriate. Impacts on air quality would be temporary and would cease once the project is completed.

3.6 Public Safety, Access and Transportation

Transportation resources in the Proposed Project area include SH-65, which travels north and south through Orchard City and Eckert; North Road, which is perpendicular to most of the Orchard Ranch Ditch; and several other small roads such as Running Deer Road that connect to small residential areas. The County and local roads provide access and mobility for residents traveling in and out of the Proposed Project area. Public safety and emergency services are located in the City of Eckert. The Delta County Sheriff's Department provides emergency services for the area of Orchard City and Eckert.

3.6.1 No Action Alternative

There would be no effect to public safety and transportation resources under the No Action Alternative.

3.6.2 Proposed Action

Implementation of the Proposed Action would not require any new access roads or improvements to existing roadways. There are no known bridges with weight restrictions that would be used by construction vehicles. Implementation of the Proposed Action may cause limited delays along roadways adjacent to the Proposed Project area from construction vehicles entering and exiting the local roadways. No road or access closures are anticipated during the implementation of the Proposed Project.

3.7 Vegetation Resources

The land use cover in the Proposed Project area is primarily agricultural, consisting of mixed grass and alfalfa hayfields. Native vegetation encountered in the Proposed Project area includes coyote willow (*Salix exigua*), rabbit brush (*Chrysothamnus nauseosus*), greasewood (*Sarcobatus vermiculatus)*, sagebrush (*Artemisia spp.*), four-winged saltbush (*Atriplex canescens*), narrow leaf cottonwood (*Populus angustifolia*), Fremont cottonwood (*Populus fremontii)*, sumac (*Rhus glabra and Rhus trilobata*), wild rose (*Rosa acicularis*), oak brush (*Quercus gambelii)*, and a number of bulrushes, sedges, small forbs and grasses.

Invasive weeds in the Proposed Project area include Russian olive (*Elaegnus angustifolia*), Canada thistle (*Cirsium arvense*), yellow clover (*Melilotus officinalis*), musk thistle (*Carduus nutans*), Russian knapweed (*Acroptilon repens*), whitetop (*Cardaria draba)*, chicory (*Cichorium intybus,)* cheatgrass (*Bromus tectorum*), kochia (*Kochia scoparia*), halogeton (*Halogeton glomeratus)*, showy milkweed (*Asclepias speciosa*), common burdock (*Arctium minus*), and tamarisk (*Tamarix ramosissima)*. Predominantly, vegetation within the Proposed Project area is disturbed by residential or agricultural practices and exhibits very little structure or diversity. Only small areas adjacent to the canal have three levels of vegetative stratification with established overstory trees, shrubs, and an herbaceous layer. The area primarily contains agricultural grasses and forbs with either sparse shrubs or a few established cottonwood, elm, or box elder trees interspersed along the ditch.

Within the HRS, many of the same plant species are present. At the northern end of the site, vegetative stratification includes trees, shrubs, and forbs and grasses. Cottonwoods are interspersed with buffaloberry, sagebrush, rabbit brush, Russian olive, sumac and sedges. The vegetation transitions to sagebrush dominance with sparse soil coverage and no trees. At the southern end of the site, coyote willow, sagebrush, Russian olive and small grasses and forbs dominate the area.

3.7.1 No Action Alternative

Under the No Action Alternative, existing vegetation or current land uses in the Proposed Project area would remain in their existing conditions.

3.7.2 Proposed Action

Approximately 25 acres would be temporarily disturbed by the Proposed Project, and the piping would result in the loss of approximately 2 acres of riparian habitat, including the removal of 3 to 4 trees. Construction activities would temporarily disturb grasses and forbs, and these areas would be reseeded. Most of the areas where construction would take place are previously disturbed from their natural state due to agricultural and residential land use activities. Areas disturbed during construction can be more vulnerable to non-native species and noxious weed infestation. As a part of the Proposed Project, the

HRP would be implemented to increase native plant species diversity and to reduce invasive plant species density within the HRS as discussed in Section 2.3.3. No groundbreaking activities beyond plantings would occur as part of the HRP.

BMPs would be implemented to reduce impacts to vegetation and to minimize invasive species colonization in disturbed areas (see Appendix G: Environmental Commitments). BMPs would include staging materials within the approved staging areas, and washing construction equipment to remove weed seeds and reduce the possibility of infestation by invasive species. Following construction, proper rehabilitation procedures would be followed to prevent infestation of invasive species. These procedures would include reseeding and placement of soil stabilization materials until vegetation has established. Cultivated lands disturbed during construction would be reseeded with an appropriate agricultural seed mix.

Piping the ditch and its laterals would result in a complete or nearly complete loss of the riparian vegetation that has been induced by seepage from the existing earthen ditch. Any vegetation (excluding agricultural areas) reliant on hydrological characteristics of the Orchard Ranch Ditch would be lost. The total, long-term habitat loss would be minimized by avoiding the removal of trees as much as possible when installing the pipeline, by properly reseeding disturbed soils with appropriate seed mixtures, and by implementing an effective weed control program in all disturbed areas. Potential removal of trees was incorporated into the habitat loss evaluation (as discussed in Section 3.8, below). Given the proximity of actively irrigated fields adjacent to several sections of the Proposed Project alignment, it is anticipated that seepage-reliant vegetation along those sections would only be partially lost. This partial loss of seepage-reliant vegetation was incorporated into the habitat losses calculation.

3.8 Fish and Wildlife Resources

The majority of the Proposed Project area contains cultivated agricultural lands interspersed with residential areas. Small areas of riparian vegetation exist along the ditch and its laterals. Vegetation along the ditch likely provides habitat for birds and small mammals. The adjacent irrigated fields provide hunting and foraging opportunities for wildlife, including migratory birds and mammals. Habitat supported by agricultural activities is subject to disturbance from periodic maintenance of the irrigation facilities and agricultural activities, residential areas, and roads. The Orchard Ranch Ditch does not support any suitable fish habitat. However, the fish habitat in the Gunnison and Colorado Rivers is threatened by elevated selenium levels, to which open, unlined irrigation ditches contribute through erosion and seepage. The Selenium Management Program was developed as a cooperative effort in response to the USFWS Gunnison Basin Programmatic Biological Opinion issued in 2009 (Reclamation, 2016a).

Colorado Parks and Wildlife (CPW) describes the area within the general vicinity of the Proposed Project as winter and severe winter range for elk. The CPW lists this area as a mule deer concentration area, winter range, winter concentration area, summer range, severe winter range, resident population area, and critical winter range (CPW, 2015). Elk and mule deer in the vicinity of the Proposed Project would primarily use the agricultural fields adjacent to the Orchard Ranch Ditch. These fields are surrounded by residential areas, and are actively farmed for much of the year. Within the HRS, elk and mule deer frequent the site to forage. Disturbance from agricultural activities is limited within the HRS, and the site is surrounded by agricultural fields.

This area is also described as a winter forage area for the bald eagle; however, no active raptor nests or roost sites have been recorded or observed within the Proposed Project area or the HRS.

Due to stipulations in the Salinity Control Act, all projects receiving funds through the Colorado River Basin Salinity Control Program are required to replace incidental fish and wildlife values (habitat) foregone due to implementation of salinity control projects. Reclamation has developed habitat evaluation procedures that assign a quantitative value to habitat losses or changes associated with implementation of salinity improvements (Reclamation, 2013).

3.8.1 No Action Alternative

Under the No Action Alternative, terrestrial and aquatic wildlife habitat would remain in their current conditions.

3.8.2 Proposed Action

During construction of the Proposed Action, there would be short-term wildlife displacement (approximately 3-6 months) from the immediate area surrounding the Proposed Project. Generally, wildlife would be able to move easily to find alternative areas for forage and cover, and would be expected to return after construction operations have been completed.

Impacts to small mammals, especially burrowing animals, could include direct mortality and displacement during construction activities. These species and habitats are relatively common throughout the area, and the assumed loss of a few individuals is not anticipated to have population level impacts. During construction, pipeline trenches would be covered with a durable cover to prevent wildlife entrainment.

Impacts to big game would include short-term disturbances and displacement of late summer and fall incidental use during the construction period. It is anticipated that little to no impact to wintering big game populations would occur due to the minor amount of habitat disturbance and the existing levels of disturbance in the area.

Impacts to raptors and other avian species would include minor short-term disturbance and displacement during construction, with no major, long-term impacts after construction. Given the absence of nesting bald or golden eagles in the area, violations to the Bald and Golden Eagle Protection Act would not occur. In order to minimize impacts to avian species, construction would occur outside of peak nesting season. Those species, including birds and amphibians, which are dependent on emergent riparian habitats would experience a long-term (greater than five years) loss of habitat from the immediate Proposed Action area. However, this loss of habitat would be mitigated through the implementation of the HRP.

The habitat loss and proposed replacement values were calculated using the procedures outlined in the March 2013 *Basinwide Salinity Control Program: Procedures for Habitat Replacement*. These procedures take into account ten separate categories (*e.g., vegetative diversity and stratification*) to rate habitat quality (scores range between 0 and 10), and use a standard formula to determine the Total Habitat Value (THV) in a given area. The formula equates to THV = Area (in acres) X Habitat Quality Score (HQS). This relative score is then multiplied by the habitat acreage to be lost, which equates to the Habitat Units that would be lost.

Table 3.1 details the results of the predicted habitat loss as determined through on-site inspections conducted for the Proposed Action. Appendix D contains the habitat loss scoring and required habitat replacement values for the Proposed Project.

Table 3.1 Predicted Habitat Loss for the ORDC Piping Project

Canal Segment	Feet of Canal	Width of Impact to Riparian Vegetation	Acres of Impact to Riparian Vegetation	Habitat Quality Score or Difference	Habitat Units Lost per Segment
H1	540	8	0.10	3.9	0.39
H2	683	8	0.13	2.9	0.38
H3	930	8	0.17	2.8	0.48
H4	1013	7	0.16	3.4	0.55
H5	201	6	0.03	4.2	0.12
H6	949	8	0.17	2.6	0.44
H7	700	8	0.13	3.1	0.40
H8	898	8	0.12	2.6	0.32
H9	843	8	0.15	0.8	0.12
H10	874	8	0.16	3.5	0.56
H11	805	8	0.15	1.6	0.24
H12	838	8	0.15	3.3	0.50
H13	974	8	0.18	0.8	0.14
H14	505	8	0.09	4.3	0.40
H15	1102	8	0.20	0.5	0.10
				Total Units Lost	**5.12**

Impacts to habitat from the Proposed Action were evaluated through a biological survey. According to the biological survey and application of the habitat evaluation procedures, the Proposed Project would result in the permanent loss of approximately two acres of riparian habitat along the existing ditch alignment. The overall project would be expected to cause a loss of 5.12 habitat units (Appendix D). Approximately three to four trees along the piping corridor (Russian olive, elm, or box elder) would be removed in the construction phase of the project. The ditch has created a narrow greenbelt of riparian vegetation along its length, which would largely disappear once the ditch has been piped. However, plant diversity and habitat value along the ditch is limited due to active farming practices and the proximity of county roads to the ditch. The Proposed Project would be anticipated to reduce selenium loading to the Gunnison and Colorado Rivers, providing an improvement to habitat conditions for sensitive fish species.

The permanent loss of riparian and wetland habitat would be mitigated through implementation of a HRP as part of the Proposed Action, as described in Chapter 2. The Orchard Ranch HRP, when fully successful, would provide 5.99 habitat credits to fully replace the habitat lost (Appendix D. Habitat Replacement Plan). Enhancement of the HRS would include removing invasive weeds and revegetating the area with native plants, trees, and shrubs to improve habitat structure and function for wildlife. Invasive weed removal at the HRS, particularly Russian olive, would be completed in the fall and winter, outside of nesting season for migratory birds.

3.9 Federally Listed Species

The Endangered Species Act (ESA) of 1973 protects federally listed endangered, threatened, and candidate plant and animal species and their critical habitats.

3.9.1 Federally Listed Species in Delta County

In order to identify federally-listed species or critical habitat which may be affected by the Proposed Project, a report was obtained from the USFWS Information, Planning, and Conservation (IPaC) system. According to the IPaC report (dated November 29, 2017), nine species listed as endangered, threatened, proposed, or candidate have the potential to occur within the Proposed Project area. No designated or proposed critical habitat protected under the ESA occurs within the Proposed Project area. Table 3.2 lists the species that may occur within Proposed Project area and the listing status. A general description of each species follows.

Table 3.2 Federally Listed Species in Delta County, Colorado

Common Name	Scientific Name	Listing Status
Bonytail chub	*Gila elegans*	Endangered
Clay-loving wild buckwheat	*Eriogonum pelinophilum*	Endangered
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered
Colorado hookless cactus	*Sclerocactus glaucus*	Threatened
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	Threatened
Humpback chub	*Gila cypha*	Endangered
North American wolverine	*Gulo gulo luscus*	Proposed Threatened
Razorback sucker	*Xyrauchen texanus*	Endangered
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened

Bonytail Chub

The bonytail chub is a large cyprinid fish endemic to the Colorado River, and is the rarest of the four big river endangered fishes in the Colorado River Basin. The fish can grow to over two feet long. Their coloration is usually darker dorsally and lighter ventrally, however, in very clear waters, they look almost completely black. During breeding season, males and females have distinct coloration. Mature males have bright red-orange lateral bands between their paired fins, while females have a more subdued coloration. Wild populations are considered nearly extinct. Early sampling and anecdotal information suggest the species was common in the Green and Colorado Rivers in the early 20th century (McAda, 2003). USFWS cited one capture in the Gunnison River near Delta by Jordan (1891), although identification of this specimen has been questioned. There is no known habitat for this species in the Proposed Project area.

Clay-loving Wild Buckwheat

The clay-loving wild buckwheat is a low growing, rounded, densely branched shrub. It has dark green leaves that roll inward and appear needle-like. It grows 6 to 8 inches tall and is known to live for more

than 18 years. It has small white to cream colored flowers with pink veins clustered at the end of each branch. Clay-loving wild buckwheat can be found in bloom from late May to early September. Clay-loving wild buckwheat is endemic to the rolling clay (adobe) hills and flats immediately adjacent to the communities of Delta and Montrose, Colorado (USFWS 2017). Species found in association with the clay-loving wild buckwheat include mat saltbrush, black sagebrush, shadscale, and Adobe Hills beardtongue. The unique soils that support clay-loving wild buckwheat populations are limited in their distribution. Clay-loving wild buckwheat was listed as an endangered species in 1984 because of the extremely limited range of its habitat and the high risk of habitat loss. Increasing urban, residential, and agricultural development threaten the species' limited habitat (USFWS 2017). A survey to identify clay-loving wild buckwheat species was conducted for the project alignment. Although the Proposed Project area is near known habitat areas of the clay-loving wild buckwheat, no habitat or specimens were found within or directly adjacent to the Proposed Project area.

Colorado Hookless Cactus

The Colorado hookless cactus is a barrel shaped cactus that typically grows 1.2 to 4.8 inches tall, with exceptional plants growing up to a foot tall. The cactus is cylindrical in shape. The stems of the plant have eight to 15 ribs that extend from the ground to the tip of the plant. Along the ribs are areoles with hooked spines radiating out. Two types of spines, radial and central, defined by their size and position on the plant. There are two to 12 radial spines surrounding areoles, which are up to 0.67 inches long. The central spines are generally longer than the radial spines at 0.5 to two inches, extending from the center of the areoles (USFWS 2017). The pink to violet flowers are usually funnel-shaped, but sometimes bell-shaped. The plant grows on exposed stretches of gravelly clay, including the alluvial benches above floodplains and on mesa slopes. No habitat or plant specimens were found within or directly adjacent to the Proposed Project area.

Colorado Pikeminnow

The Colorado pikeminnow is originally native to the Gunnison River system. Currently, the species' range is limited to the Upper Colorado River system. The near extinction of the Colorado pikeminnow can be linked to flow regulation or alterations of natural waterways, habitat loss, and competition and predation by non-native fish (USFWS 2017). Colorado pikeminnows are mainly piscivorous, meaning they eat fish. Younger pikeminnows also eat insects and other invertebrates. The species spawn in the spring and summer over gravel or smaller cobble substrate situated in riffle habitat. Adult Colorado pikeminnows prefer medium to large rivers while young prefer slow-moving backwaters. It is estimated that the pikeminnow no longer occurs in approximately 75 percent of its historic range. The species occurred in the Gunnison River and has probably never been totally extirpated from the river. Historical upstream limits on the Gunnison River are not known, but fish probably occurred at least as far upstream as the North Fork Confluence (USFWS 2017). There is no potential habitat for the Colorado pikeminnow in the Proposed Project area.

Greenback Cutthroat Trout

Greenback cutthroat trout are cold water fish belonging to the trout, salmon and whitefish family. They have dark, round spots on the sides and tail and two colorful blood-red stripes on each side of the throat under the jaw, hence the name "cutthroat". During the spring spawning season, the entire belly may become crimson red (USFWS 2017). 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. There is no potential habitat for the greenback cutthroat trout in the Proposed Project area.

Humpback Chub

The humpback chub is a federally listed endangered minnow that is originally native to the Upper Colorado River system. Humpback chub originally thrived in the fast, deep, whitewater areas of the Colorado River and its major tributaries. Man-induced flow alterations have changed the turbidity, volume, current speed, and temperature of those rivers and have contributed to the significant population declines. Humpback chub mainly eat insects and other invertebrates, and occasionally algae and fish. The species spawns during the spring and summer in shallow, backwater areas with cobble substrate. Younger individuals reside in shallower, turbid habitats until they are large enough to move into whitewater areas (Bosworth, 2003). The Gunnison River has never been confirmed as important habitat for this species. Only one specimen has been confirmed in the Gunnison River and it was found in a canyon area about 4 miles downstream from Bridgeport in 1995. There is no potential habitat for the humpback chub in the Proposed Project area.

North American Wolverine

The North American wolverine is approximately three feet long with a rather short tail, just one-quarter of the animal's the total length. They are stocky mammals, weighing 25 to 35 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 from higher elevation alpine areas. Until recently, the last confirmed wolverine sighting in Colorado was in 1919 (CPW 2017). Occasional reports of wolverine sightings were investigated, but wolverines were never officially documented. There is no known wolverine habitat in the Proposed Project area.

Razorback Sucker

The Razorback sucker is originally native to the Gunnison River system. The near extinction of the Razorback sucker can be linked to flow regulation or alterations, habitat loss, and competition and predation by non-native fishes (USFWS, 2017). Razorback suckers mainly eat algae, zooplankton, and other aquatic invertebrates. The species spawn between February and June. Reproductive populations remain only in the middle Green River in Utah and in an off-channel pond in the Colorado River near Grand Junction. The Proposed Project area does not contain any known habitat for the razorback sucker.

Yellow-billed Cuckoo

As the name suggests, this avian species has a yellow lower mandible. It has rufous wings that contrast against the gray-brown wing coverts and upperparts. The underparts are white and they have large white spots on a long black undertail (Alsop, 2001). It is a neotropical migrant, which winters in South America. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects (Erlich et al., 1992). Its incubation/nestling period is the shortest of any known bird because it is one of the last neotropical migrants to arrive in North America and chicks have very little rearing time before embarking on their transcontinental migration. Yellow-billed cuckoos arrive in Colorado in late May or early June and breed in late June through July. Cuckoos typically start their southerly migration by late August or early September (Parrish et al., 1999). Yellow-billed cuckoos are

considered a riparian obligate and are usually found in large tracts of cottonwood/willow habitats with dense sub-canopies (below 33 ft.). Based on historical accounts, the species was localized and uncommon along Colorado drainages while being locally common in other western areas. Although it is possible the yellow-billed cuckoo could exist along the ditches being piped, the lack of cottonwood thickets and dense habitat within the Proposed Project area makes it highly unlikely that the cuckoo inhabits this area.

3.9.2 No Action Alternative

There would be no change in effects to threatened, endangered, or candidate species under the No Action Alternative.

3.9.3 Proposed Action

No designated or proposed critical habitat exists within the Proposed Project area. Likewise, no suitable habitat for federally-listed species is present within the limits of the Proposed Project Area. The Proposed Project does not include additional water storage or irrigation of new lands, and would not result in new depletions. Historical and current water depletions caused by the operation of the ORDC's irrigation system are estimated at 581 acre-feet per year. This depletion rate is equivalent to the net annual average total crop consumptive use rate calculated using the Colorado Water Conservation Board's "StateCU" consumptive use modeling software. This depletion rate would remain unchanged as a result of implementation of the Proposed Project.

Given the previously disturbed nature of the Proposed Project area and the lack of suitable habitat, the Proposed Project would have no effect on the North American wolverine, the greenback cutthroat trout, the Colorado Basin hookless cactus, or the clay-loving wild buckwheat.

As determined by the Gunnison Basin Programmatic Biological Opinion (PBO) (USFWS 2009), the Proposed Project would adversely affect the bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker. ORDC entered into a Recovery Agreement with USFWS incorporating ORDC's historic depletions under the umbrella of the Gunnison Basin PBO. Acknowledging the historic depletion under the PBO would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for the endangered fishes, and ensure ORDC can continue to operate consistently with Section 7 of the Endangered Species Act.

Furthermore, the Proposed Project may affect, and is not likely to adversely affect, the yellow-billed cuckoo. Any effects to the yellow-billed cuckoo from minor vegetation removal in the Proposed Project area would be insignificant and discountable, given the existing lack of suitable habitat within the action area, as well as the construction timing being outside the cuckoo's migratory period.

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 historic significance.

In October 2016, Alpine Archaeological Consultants, Inc. conducted a Class III cultural resource inventory of the 16-acre Area of Potential Effect (APE) for the Proposed Action. The cultural resource survey identified one linear site, the Orchard Ranch Ditch. The Orchard Ranch Ditch (Site 5DT2067.1) was

determined to be eligible for listing on the National Register of Historic Places (NRHP). No other sites or isolated finds were discovered in the APE.

In August 2017, Grand River Institute conducted a Class III cultural resource inventory of the 3.4-acre APE for the HRS. The survey did not identify any cultural resources within the HRS.

3.10.1 No Action Alternative

The No Action Alternative would have no adverse effects on cultural or historic resources.

3.10.2 Proposed Action

As a result of the cultural resources inventories of the Proposed Action area, and in consultation with the Colorado State Historic Preservation Officer (Colorado SHPO), Reclamation determined that the Orchard Ranch Ditch is eligible for inclusion in the NRHP, and that the Proposed Project would have an adverse effect on the ditch (Harrison et al., 2016). To mitigate impacts, Reclamation recommended that Level 1 documentation be completed prior to construction. A Memorandum of Agreement (MOA) was executed to mitigate adverse effects of the Proposed Project. The Level I documentation has been prepared, and the SHPO has determined that the requirements of the MOA have been fulfilled. The executed MOA and confirmation letter from SHPO are included in Appendix F. 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.

3.11 Agricultural Resources and Soils

Land protected under the Farmland Protection Policy Act (FPPA) of 1981 is defined in Section 4201 of the FPPA as prime farmland, farmland of statewide or local importance, and unique farmland. Prime farmland soils are those that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber and oilseed crops, and are available for these land uses. Prime farmland can be either non-irrigated land or land that would be considered prime if irrigated. Unique farmland is land other than prime farmland used for production of specific high-value food and fiber crops. Farmland of statewide importance is land, other than prime and unique farmland, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops.

Information on soils was obtained from the NRCS to determine the presence of prime, unique, statewide, or locally important farmland within the project footprint (Appendix A. Soil Survey and Farmland Classification). The Proposed Project area contains land that is considered farmland of statewide importance, prime farmland if irrigated, and farmland of unique importance. Appendix A contains the soils map and farmland classification map from the NRCS Web Soil Survey. Table 3.3 summarizes the soil and farmland classifications for the Proposed Project area.

Table 3.3 Farmland Classification for the Orchard Ranch Piping Project

Map Symbol	Soil Type	Farmland Classification	Number of Acres	Percent Area
35	Fluvaquents, flooded	Statewide Importance	2.2	5.5%
54	Mesa loam, 3 – 6% slope	Prime if irrigated	25.9	65.1%
55	Mesa-Utaline stony loam, 3 - 12% slope	Farmland of unique importance	11.7	29.4%
Totals for Area of Interest			39.8	100.0%

3.11.1 No Action Alternative

The No Action Alternative would have no impact on current farmlands in the Proposed Project area. Existing maintenance on the ditch would continue at current levels of disturbance to surrounding agricultural lands.

3.11.2 Proposed Action

The Proposed Action may have short-term impacts on agricultural land protected by the FPPA from ground-disturbing activities during construction. Post-construction the canal prism would be filled, contoured and reseeded. The filled ditch area would not be used for agriculture. There would be no conversion of farmland to other uses, and no additional land would become available for agricultural uses because of the Proposed Project.

3.12 Recreation Resources

The Proposed Project area is located entirely on private lands and there are no recreation areas on or adjacent to the area. Recreation in the form of hunting on private lands may occur in the general project vicinity.

3.12.1 No Action Alternative

There would be no impact to recreation resources under the No Action Alternative. Existing conditions within the general vicinity of the Proposed Project would continue.

3.12.2 Proposed Action

The Proposed Action would have no long-term effect on recreation resources. Construction activities may present a temporary short-term impact on the use of big game access to the area, and therefore may present minor disruptions to hunting on those lands during construction. Coordination with private property owners would occur prior to construction to minimize potential impacts.

3.13 Visual Resources

The visual resources are generally related to the area's population, agricultural activities, and adjacent topographic features. Visual resources in the Proposed Project area include the agricultural fields, native and ornamental landscaping, and the skyline which includes distant mountain ranges. The Proposed Project area is located at approximately 5,500 feet above sea level in a narrow, relatively flat valley.

3.13.1 No Action Alternative

There would be no impacts to visual resources from the No Action Alternative.

3.13.2 Proposed Action

Visual impacts associated with construction activities would be temporary. During post-construction rehabilitation of the Proposed Project area, the excavated areas would be filled, graded, and re-vegetated to match the surrounding landscape. There are no anticipated long-term impacts to visual resources from the Proposed Action.

3.14 Cumulative Impacts

According to the CEQ, cumulative impacts are impacts on the environment, which result from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time (40 CFR 1508.7, 1996).

At this time, there are no known Federal, state, or local projects occurring within the Proposed Project area. The Proposed Action would comply with all relevant Federal, state, and local permits (detailed in the Chapter 4 Environmental Commitments). The disturbance associated with the implementation of the Proposed Action is not expected to increase cumulative adverse impacts to a significant level.

The analysis of cumulative impacts for the No Action Alternative and the Proposed Action considers both spatial (geographic) boundaries and temporal limits of impacts on an individual resource basis, as well as the impacts of future projects in the vicinity of the proposed project. Spatial limits of the Proposed Action are bounded within the canal prism, a 100-foot buffer surrounding the proposed pipe alignment, and the identified staging areas. The temporal limits of analysis were established as 50 years for each resource, which is a standard timeframe for a cumulative impacts analysis, except for resource types perceived to have only temporary impacts (impacts that end following construction of the Proposed Action or within a few seasons following construction completion).

There are three Federal programs that include the Proposed Project area on a basin-wide scale. The first program is the Colorado River Basin Salinity Control Program, which would provide the funding for implementation of the Proposed Action. Collectively, projects funded under the Colorado River Basin Salinity Control Program result in improved water quality with the goal of reducing salt and selenium loading to the Colorado River. The second program is the Gunnison Basin Selenium Management Plan, which was incorporated as a conservation measure in the Gunnison Basin Programmatic Biological Opinion (USFWS, 2009). Reclamation, in cooperation with entities in the Gunnison Basin, developed a plan to reduce selenium levels in the Gunnison River at Whitewater. The third program is the Upper Colorado River Endangered Fish Recovery Program. The Recovery Program involves Federal, state and private organizations and agencies in Colorado, Utah and Wyoming. Partners of the Recovery Program are reestablishing four species of endangered fish in the Colorado River and its tributaries while ensuring water use and development continues to meet human needs in compliance with interstate compacts and applicable Federal and state laws. When the Proposed Action is analyzed against components of these basin-wide programs, the cumulative beneficial effects on salinity and selenium levels and their effects on water quality are substantial.

3.15 Summary of Impacts

Effects of past actions are reflected in the current conditions described in each of the resource topics of Section 3. Table 3.4 lists predicted resource impacts of the No Action and Proposed Action for the Orchard Ranch Ditch Piping Project analyzed in this EA.

Table 3.4 – Cumulative Impacts Analysis - Spatial and Temporal Limits by Resource

Resource Issue	No Action	Proposed Action
Water Rights and Use	No Effects	No Effect
Water Quality	Long-term negative impacts from continued salt and selenium loading from the Project Area to the Colorado River Basin.	Long-term beneficial impact from the estimated annual reduction of 1,004 tons of salt loading to the Colorado River Basin. Potential selenium loading reductions to the Gunnison and Colorado Rivers.
Rights-of-Way and Land Use	No Effect	No Effect
Air Quality	No Effect	No long-term impacts. Minor short-term effects due to fugitive dust and equipment exhaust. Mitigate with BMPs.
Public Safety, Access, and Transportation	No Effect	No long-term impacts. Minor temporary disruptions to local roadways from construction traffic entering and exiting the roadways.
Vegetation Resources	No Effect	Short-term disturbance of vegetation and long-term loss of ditch-induced hydrophytic vegetation. The total, long-term vegetation loss would be minimized by avoiding tree removal as much as possible when installing the pipeline, by properly reseeding disturbed soils, and by implementing an effective weed control program in all disturbed areas. Given the proximity of actively irrigated fields adjacent to some sections of the piping alignment, it is anticipated that seepage-reliant vegetation along those sections would only be partially lost, which was included in the habitat loss calculations.
Fish and Wildlife Resources	Long-term negative impact from salt and selenium loading in the Gunnison and Colorado River basins.	Short-term, temporary impact to local wildlife during construction. Estimated loss of 5.12 habitat units from loss of habitat. The HRP would be implemented to replace the

Resource Issue	No Action	Proposed Action
		habitat lost from the Proposed Action.
ESA Federally Listed Species	Long-term negative impact from salt and selenium loading	Potential long-term beneficial effect to Gunnison River and Colorado River fish from the reduced salt loading of the Colorado River Basin. Adverse impact to bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker. The Proposed Project may affect, but would not be likely to adversely affect, the yellow-billed cuckoo. The Proposed Project would have no effect on the North American wolverine, the greenback cutthroat trout, the Colorado Basin hookless cactus, and the clay-loving wild buckwheat.
Cultural Resources	No Effect	Adverse impact to the NRHP-eligible Orchard Ranch Ditch. MOA between Reclamation, ORDC, and the SHPO has been implemented, and the stipulations have been fulfilled.
Agricultural Resources and Soils	No Effect	Short-term ground disturbance to agricultural lands directly within the ditch prism. There would be no conversion of farmland to other uses, and no additional land would become available for agricultural uses because of the Proposed Project.
Recreation Resources	No Effect	No Effect
Visual Resources	No Effect	Minor, temporary impacts from construction. No long-term effects from the Proposed Project.
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Wild and Scenic Rivers	No Effect	No Effect
Cumulative Impacts	No Effect	Beneficial effects related to the reduction of salt and selenium loading to the Gunnison and Colorado River Basins. Indirect and direct contributions to cumulative effects on other resources would be temporary and/or negligible in consideration with mitigation measures, such as BMPs and the HRP.

Chapter 4 – Environmental Commitments

4.1 Introduction

This chapter discusses the environmental commitments developed to protect resources and mitigate adverse impacts to a non-significant level. The cooperative agreement between Reclamation and ORDC requires that ORDC be responsible for "…implementing and/or complying with the environmental commitments contained in the NEPA/ESA compliance documents to be developed by Reclamation for the project." The following sections describe the environmental commitments that would be implemented as an integral part of the Proposed Action for the Orchard Ranch Ditch Piping Project. Appendix G contains the complete summary of environmental commitments associated with the Proposed Project.

4.2 Construction Access

All construction activities would be confined to the proposed pipeline alignments and construction staging areas that have been surveyed for resource impacts, including cultural, paleontological, and biological resources. Construction activities outside of this corridor would require additional review by Reclamation to determine if existing surveys are adequate to evaluate impacts outside these corridors. If additional borrow or waste areas are identified, the areas would be inventoried, surveyed, and evaluated prior to use. Additional NEPA and ESA compliance activities may be required as determined by Reclamation. Standard Reclamation BMPs would be applied during construction activities to minimize environmental effects and would be implemented by construction personnel and included in contract specifications.

- The ORDC shall provide an environmental briefing to the contractor and any sub-contractors in a pre-construction meeting. Such an environmental briefing shall include, at a minimum, a review of the environmental commitments described in Appendix G: Environmental Commitments Checklist of this EA.
- The ORDC shall provide a hard copy of the Final EA to the construction contractor prior to, or during, the pre-construction briefing.

4.3 Water Quality

The following standard BMPs and environmental commitments would be implemented to minimize erosion and protect water quality of downstream resources:

- Straw wattles, silt curtains, cofferdams (if necessary), straw bales, or other suitable erosion control measures shall be used to prevent erosion from entering water bodies during construction.
- Concrete pours shall occur in forms and/or behind cofferdams (if water is present) to prevent discharge into waterways. Any wastewater from concrete-batching, vehicle wash down, and aggregate processing shall be contained and treated or removed for off-site disposal.
- Fuels, lubricants, hydraulic fluids, and other petrochemicals shall be stored and dispensed in an approved staging area.

- Equipment shall be inspected daily and immediately repaired as necessary to ensure equipment is free of petrochemical leaks.
- Construction equipment shall be parked, stored, and serviced only at an approved staging area.
- A spill prevention and response plan shall be prepared in advance of construction by the contractor for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, shall be briefed and made familiar with the plan.
- A spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and onsite at all times.
- Onsite supervisors and equipment operators shall be trained and knowledgeable in the use of spill containment equipment.
- Appropriate Federal and Colorado authorities shall be notified immediately in the event of any contaminant spill.
- Section 402 Storm Water Discharge Permit compliant with NPDES would be obtained from CDPHE by the construction contractor prior to construction activities.

As part of the Proposed Project, the HRP would remove invasive species and establish native plantings. No impacts to water quality would be anticipated as ground disturbance associated with native plantings would be negligible.

4.4 Abandoned Irrigation Facilities and Structures

As required by Reclamation, the ORDC would permanently dewater and remove from irrigation service any open ditches abandoned as part of the Proposed Action. Abandoned ditches would be filled in, shaped, contoured, and reseeded with an appropriate seed mix.

4.5 Ground Disturbances

The following BMPs and environmental commitments would be implemented to minimize and mitigate ground disturbances (see Appendix G: Environmental Commitments):

- Ground disturbances shall be limited to only those areas necessary to safely implement the Proposed Action.
- Vegetation removal shall be confined to the smallest portion of the Proposed Project area (including staging areas) necessary for completion of the work.
- Construction limits shall be clearly flagged to avoid unnecessary plant loss or ground disturbance.
- Prior to construction, vegetative material shall be removed by mowing or chopping, and either hauled to a proposed staging area to be burned or chipped, or chipped and mulched onsite. If any trees or large shrubs are removed, stumps shall be grubbed and hauled to a proposed staging area to be burned.
- Topsoil shall be stockpiled and then redistributed after completion of the construction activities. Soil will be stockpiled onsite or at a staging area away from any water sources.
- Straw wattles, silt curtains, cofferdams (if necessary), straw bales, or other suitable erosion control measures shall be used at the edges of ground disturbance to minimize soil erosion and to prevent sediment from entering water bodies during construction.
- Following construction, all disturbed areas shall be smoothed, shaped, contoured and reseeded.

- Seeding shall occur at appropriate times within six months following construction completion with weed-free seed mixes developed in coordination with underlying landowners and Reclamation.
- Weed control shall be implemented by ORDC or selected contractor in accordance with current County weed control standards. Delta County Weed Management Plans are available at http://www.deltacounty.com.
- All construction easement/right-of-way agreements shall be executed by all parties prior to construction.

4.6 Wildlife Resources

The following BMPs and environmental commitments (see Appendix G: Environmental Commitments) would be implemented to minimize and mitigate disturbances to wildlife:

- Construction areas shall be confined to the smallest feasible area and within approved construction limits/right-of-way to minimize disturbance to wildlife within the Proposed Project area.
- Pipeline trenches left open overnight shall be kept to a minimum, and covered to reduce potential hazards to the public and to wildlife. Covers shall be secured in place and strong enough to prevent livestock or wildlife from falling through. Where trench covers would not be practical, wildlife escape ramps shall be utilized.
- Vegetation disturbing activities are currently not planned for implementation during the nesting season of migratory birds protected under the Migratory Bird Treaty Act. Nesting season is typically April 15 through August 1. However, if the schedule for the Proposed Action shifts, which is not anticipated, and vegetation disturbing activities would occur during the typical nesting season of migratory birds, additional conservation measures would be necessary to protect these species, such as pre-construction nest surveys. If an occupied raptor nest is discovered during construction, regardless of construction timing, the ORDC would stop construction activities until Reclamation has consulted with USFWS and/or CPW on appropriate protective measures to avoid or reduce impacts to nesting raptors.

4.7 Habitat Disturbance and Loss

A habitat replacement project would be implemented to replace the predicted fish and wildlife habitat lost due to implementation of the Proposed Action. ORDC is responsible for implementing the HRP to replace fish and wildlife values foregone, as required by the Salinity Control Act. The ORDC will be responsible for maintaining the HRS according to the HRP and ensuring the objectives of the HRP are met. Failure to implement concurrent habitat replacement may result in delays in obligating funding under the Cooperative Agreement. Habitat replacement would be implemented concurrently with the Proposed Action.

4.8 Federally-Listed Species

- The Proposed Project shall not include additional water storage or irrigation of new lands which would result in new depletions.
- The Proposed Action would take place during the fall and winter (November-March), with the exception of herbaceous noxious weed control, to avoid impacts to yellow-billed cuckoo.

4.9 Cultural Resources

Reclamation and the Colorado SHPO have entered into an MOA to mitigate the Proposed Action's adverse effects to cultural resources (Attachment F). 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. The SHPO will be consulted, and work will not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the attached MOA.

4.10 Agricultural Resources and Soils

The following BMPs and environmental commitments would be implemented to minimize and mitigate impacts to agricultural resources and soils:

- During construction, topsoil would be saved and then redistributed to return the site to original conditions after completion of construction activities.
- Straw wattles, silt curtains, cofferdams, dikes, straw bales, or other suitable erosion control measures would be used to minimize soil erosion and prevent soil erosion from entering adjacent water bodies during construction activities.
- All disturbed areas would be smoothed, shaped, contoured and reseeded to as near their pre-construction conditions as practicable.

4.11 Hazardous Materials, Waste Management and Pollution Prevention

During construction, the use, storage and disposal of hazardous materials and wastes within the Proposed Project area would be managed in accordance with all Federal, state, and local standards, including the Toxic Substances Control Act of 1976, as amended (15 USC 2601, et seq., 40 CFR Part 702-799, and 40 CFR 761.1-761.193). Any trash or solid wastes generated during the Proposed Action would be properly disposed of offsite.

The following BMPs and environmental commitments would be implemented with regard to hazardous materials, waste management, and pollution prevention:

- The construction contractor shall transport, handle, and store any fuels, lubricants, or other hazardous substances involved with the Proposed Action in an appropriate manner that prevents them from contaminating soil and water resources.
- Portable secondary containment shall be provided for any fuel or lubricant containers staged within the Proposed Project area. Any staging of fuel or lubricants, or fueling or maintenance of vehicles or equipment, shall not be conducted within 100 feet of any live water or drainage.
- The construction contractor shall prepare, prior to initiation of construction, a spill response plan for areas of work, where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, will be briefed and made familiar with this plan.
- A spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and onsite at all times.

- Onsite supervisors and equipment operators shall be trained and knowledgeable in the use of spill containment equipment.
- All spills, regardless of size, shall be cleaned up promptly and contaminated soil shall be disposed of at an approved facility.
- Appropriate Federal and Colorado authorities shall be immediately notified in the event of any contaminant spill. Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b.

4.12 Sequence and Timing of the Proposed Action

The Proposed Action would take place during the fall and winter (November-March). All construction activities would take place outside nesting season for migratory birds.

Sequencing of construction for the project would occur as follows:

- Survey and flagging of the construction area
- Simultaneous implementation of seasonally appropriate actions included in the Habitat Replacement Plan
- Mobilization of construction equipment
- Delivery of construction materials to staging areas
- Excavation of trenches
- Pipe fusing
- Pipe placement within the excavated trenches
- Backfill around the pipe and compaction of the backfill
- Restoration and clean-up activities, including planting and reseeding of disturbed areas

4.13 Permits, Licenses and Approvals Needed to Implement the Proposal

The following permits, licenses, or approvals would be obtained or have already been obtained:

- Right-of-way approvals from private landowners have been obtained by ORDC.
- Storm Water Management Plan, to be submitted to the CDPHE by the construction contractor prior to construction disturbance.
- CWA Section 402 Storm Water Discharge Permit compliant with the NPDES, to be obtained from CDPHE by the construction contractor prior to construction because the Proposed Project would encompass more than one acre of ground disturbance.
- Utility clearances to be obtained by the construction contractor, prior to construction activities, from Delta Montrose Electric Association, TDS Telecom, local water companies, and any other utility in the area.
- Orchard City clearance, to be obtained by the ORDC/construction contractor prior to crossing Orchard City roads with buried pipeline or installing buried pipeline in any town road corridor.
- Traffic control measures, to be coordinated by the contractor with the Delta County Sheriff and emergency services before working in the Orchard City right-of-way on North Road and Running Deer Road, if necessary.

Chapter 5 – Consultation and Coordination

5.1 Introduction

Reclamation's consultation and coordination process presents other agencies, interest groups, and the general public with opportunities to obtain information about a given project and allows interested parties to participate in the project through written comments. The key objective is to facilitate a well-informed, active public that assists decision-makers throughout the process, culminating in the implementation of an alternative. This section of the EA discusses consultation and coordination activities undertaken to date for the Orchard Ranch Ditch Piping Project.

The Orchard Ranch Ditch Piping Project was developed to implement the goals of the Colorado Salinity Control Program. Conceptual plans were developed by ORDC with assistance from J-U-B Engineers, Inc. ORDC prepared and submitted formal funding applications for the salinity funds through Reclamation's Funding Opportunity Announcement (FOA).

5.2 Agency Consultation

J-U-B Engineers, Inc. prepared this EA for the ORDC and Reclamation. Agencies and organizations consulted during the EA process include the following:

- U.S. Army Corps of Engineers, Grand Junction, CO
- Colorado Parks and Wildlife, Gunnison, CO
- U.S. Fish and Wildlife Service, Grand Junction, CO
- Colorado Office of Archaeology and Historic Preservation, Denver, CO
- Colorado Water Conservation Board, Denver, CO
- Orchard Ranch Ditch Company, Eckert, CO
- Delta County, CO
- Colorado Division of Water Resources, Denver Colorado

5.3 EA Comments

The Draft EA and Draft FONSI was released to Federal, State, and local agencies and other interested parties in December 2017. Notice of the public review period and availability of the Draft EA/FONSI was announced through a press release, posted on Reclamation's website and mailed to ORDC shareholders, private landowners adjacent to the Proposed Project area, and the agencies listed above and in Appendix B. No comments were received. The Final EA and FONSI is available on Reclamation's website. Publicly available, electronic versions of the Draft and Final EAs meet the technical standards of Section 508 of the Rehabilitation Act of 1973, so that documents can be accessed by people with disabilities using accessibility software tools.

5.4 List of Preparers

Table 5.1 lists the names of the consultants and Reclamation staff, who were involved in the preparation of this EA.

Table 5.1 List of Preparers

Name	Title/Position	Contributions
Agency Representatives		
Lesley McWhirter	Chief, Environmental and Planning Group, Reclamation Western Colorado Area Office	Environmental Oversight
Jennifer Ward	Environmental Protection Specialist, Reclamation Western Colorado Area Office	Environmental Documentation
Amanda Ewing	Biologist, Reclamation Western Colorado Area Office	Biological Resources and Habitat Replacement
Consultants		
Marti Hoge	Environmental Planner, J-U-B Engineers, Inc.	Environmental Oversight
Autumn Foushee	Ecologist and Environmental Planner, J-U-B Engineers, Inc.	Document Preparation
Tracy Allen, P.E.	Project Manager, J-U-B Engineers, Inc.	Project Management
Luke Gingrich, P.E.	Design Engineer, J-U-B Engineers, Inc.	Engineering Support
Abbie Harrison	Project Director, Alpine Archaeology	Cultural Resources
Jack Pfertsh	Principal Investigator, Alpine Archaeology	Cultural Resources
Carl Conner	Principal Investigator, Grand River Institute	Cultural Resources
Barbara Davenport	Archaeologist, Grand River Institute	Cultural Resources

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USFWS. (2017). *Species Profile for Colorado Pikeminnow*. http://ecos.fws.gov/.

USFWS. (2017). *Species Profile for Razorback Sucker*. http://ecos.fws.gov/.

USFWS. (2017). Species Profile for Greenback Cutthroat Trout. http://ecos.fws.gov/.

List of Environmental Assessment Appendices

Appendix A: Soil Survey and Farmland Classification

Appendix B: EA Distribution List

All landowners within a 0.5-mile radius of the project alignment were contacted regarding the release of the Draft Environmental Assessment. For a complete list of the property owners, please contact the Bureau of Reclamation, Western Colorado Area Office. The following agencies were sent copies of the Draft Environmental Assessment:

Mr. Mark Richman
District Wildlife Manager
Colorado Parks and Wildlife

Mr. Renzo DelPiccolo
Area Wildlife Manager
Colorado Parks and Wildlife

Mr. Douglas C. Atchley
Delta County Planning and Development
Delta, CO

Mr. Creed Clayton
Field Biologist
US Fish and Wildlife Service

Mr. Travis Morse
US Army Corps of Engineers
Colorado West Regulatory Branch

Mrs. Rebecca Mitchell
Colorado Water Conservation Board
Denver, CO

Mr. Dan Birch
Colorado Water Conservation District
Glenwood Springs, CO

Mrs. Suzie Bilberry
Delta Conservation District
Delta, CO

Appendix C: Wetland Resources

Appendix D: Habitat Replacement Plan

Appendix E: Threatened and Endangered Species Inventory

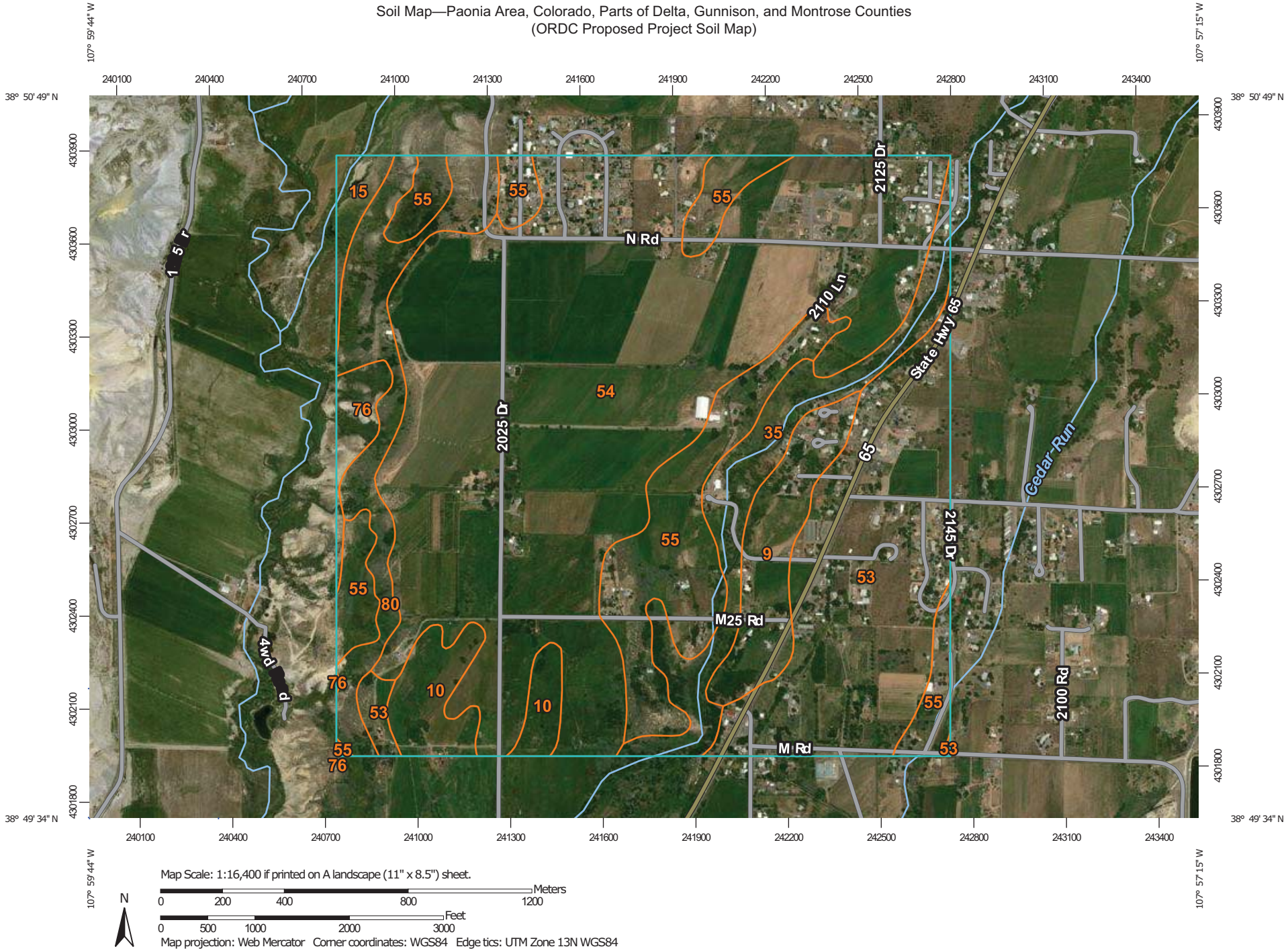
Appendix F: Cultural Resources

Appendix G: Environmental Commitments Checklist

List of Environmental Assessment Appendices

Appendix A: Soil Survey and Farmland Classification

Soil Map—Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties
(ORDC Proposed Project Soil Map)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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.

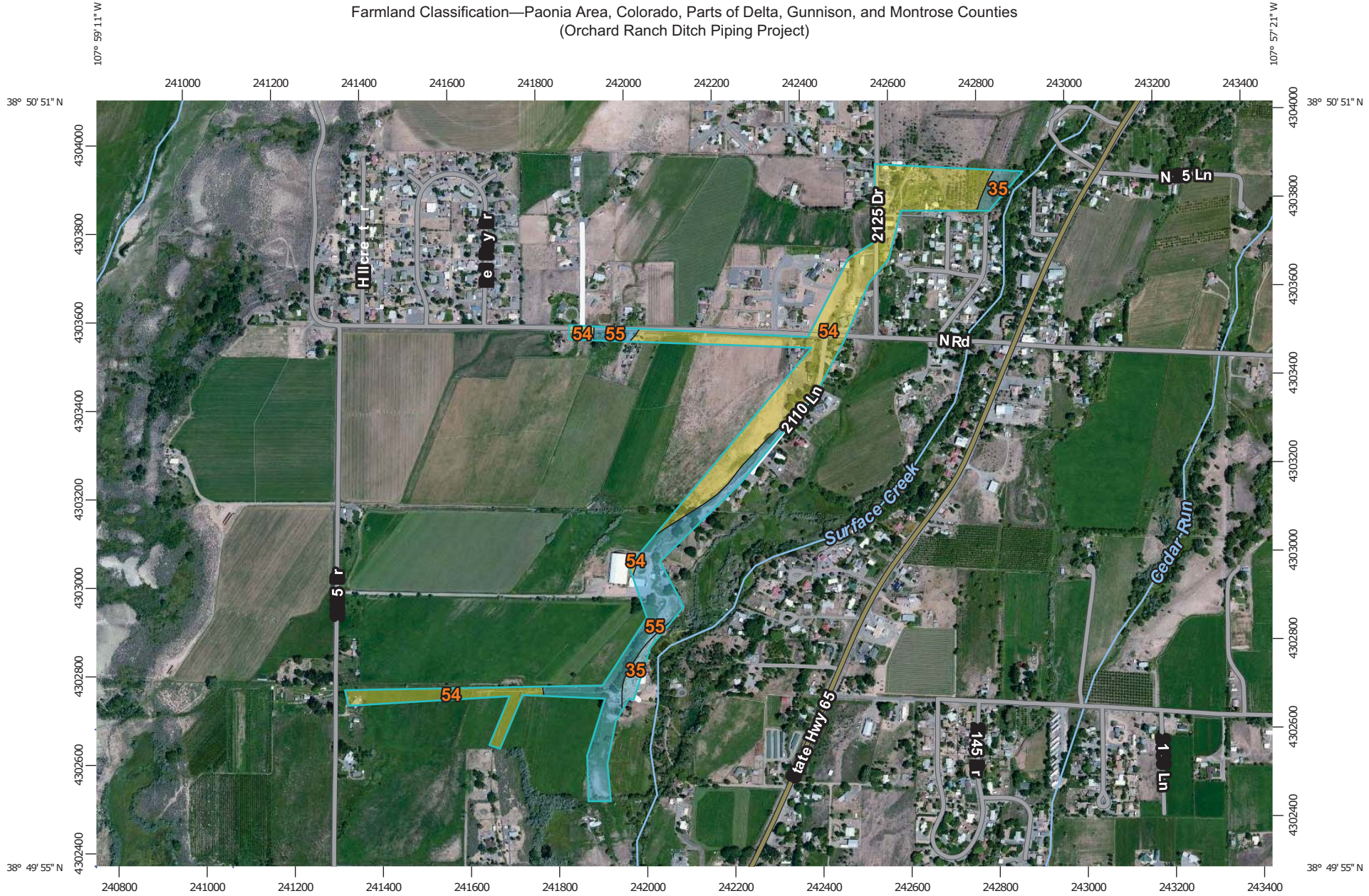
Date(s) aerial images were photographed: Aug 7, 2011—Aug 8, 2011

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.

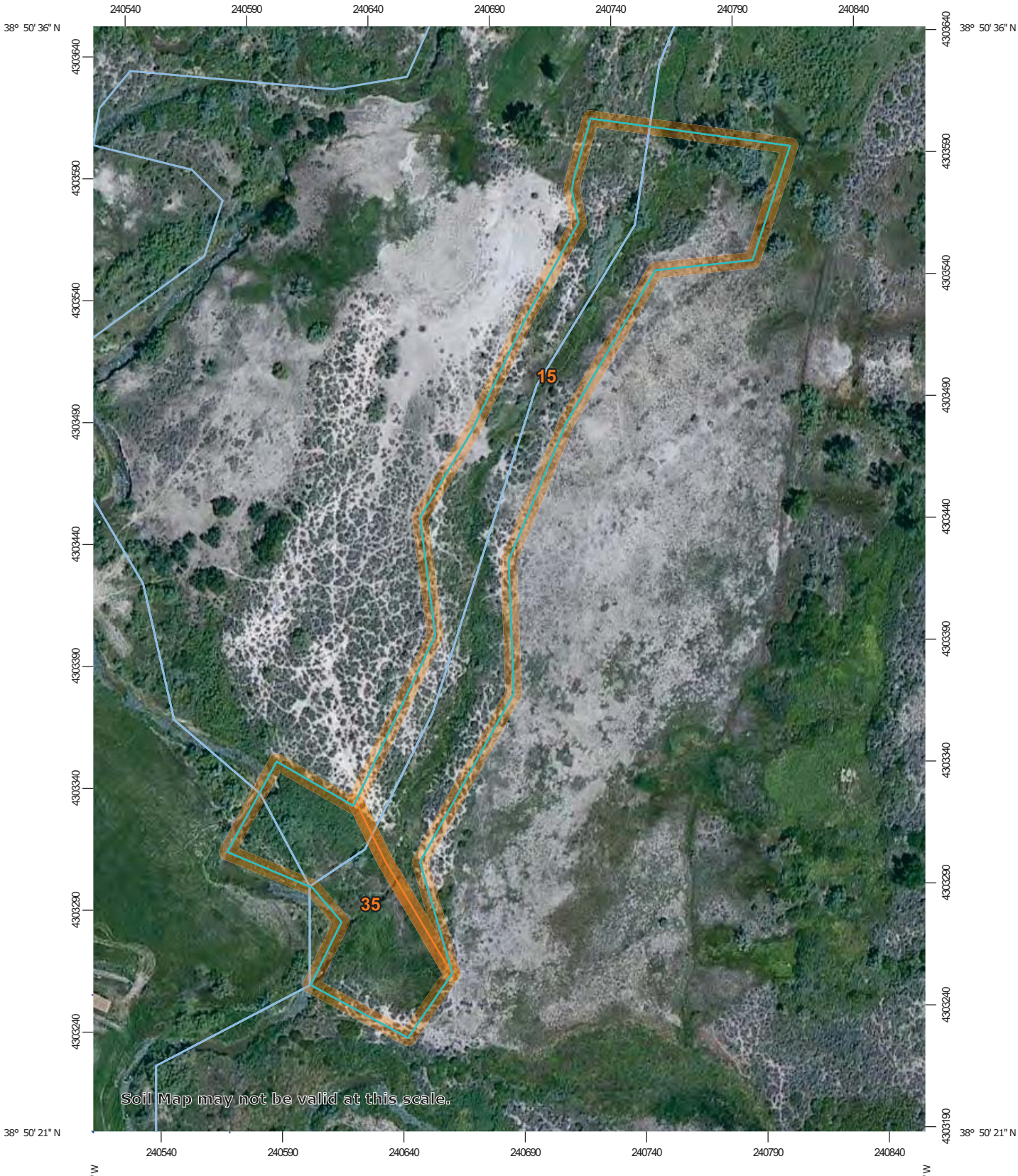
Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
9	Avalon loam, 0 to 3 percent slopes	42.0	4.4%
10	Avalon loam, 3 to 6 percent slopes	32.5	3.4%
15	Billings silty clay loam, 3 to 6 percent slopes	9.7	1.0%
35	Fluvaquents, flooded	59.7	6.3%
53	Mesa loam, 0 to 3 percent slopes	153.0	16.0%
54	Mesa loam, 3 to 6 percent slopes	463.4	48.5%
55	Mesa-Utaline stony loams, 3 to 12 percent slopes	121.8	12.7%
76	Torriorthents-Rock outcrop, shale, complex	12.4	1.3%
80	Utaline-Torriorthents complex	60.7	6.4%
Totals for Area of Interest		**955.2**	**100.0%**

Farmland Classification—Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties
(Orchard Ranch Ditch Piping Project)



Soil Map—Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties
(ORDC HRP Soils)



Map Scale: 1:2,210 if printed on A portrait (8.5" x 11") sheet.'

N

Meters'
0 30 60 120 180

Feet
0 100 200 400 600

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
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- US Routes
- Major Roads
- Local Roads

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- Aerial Photography

MAP INFORMATION

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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: Aug 7, 2011—Aug 8, 2011

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.

Map Unit Legend

Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties (CO679)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
15	Billings silty clay loam, 3 to 6 percent slopes	3.5	76.3%
35	Fluvaquents, flooded	1.1	23.7%
Totals for Area of Interest		**4.6**	**100.0%**

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
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- 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.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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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 8, Sep 23, 2015

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

Date(s) aerial images were photographed: Aug 7, 2011—Aug 8, 2011

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**
35	Fluvaquents, flooded	Farmland of statewide importance	2.2	5.5%
54	Mesa loam, 3 to 6 percent slopes	Prime farmland if irrigated	25.9	65.1%
55	Mesa-Utaline stony loams, 3 to 12 percent slopes	Farmland of unique importance	11.7	29.4%
Totals for Area of Interest			**39.8**	**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 B: EA Distribution List

All landowners within a 0.5-mile radius of the project alignment were contacted regarding the release of the Draft Environmental Assessment. For a complete list of the property owners, please contact the Bureau of Reclamation, Grand Junction Field Office. The following agencies were sent copies of the Draft Environmental Assessment:

Mr. Mark Richman
District Wildlife Manager
Colorado Parks and Wildlife

Mr. Renzo DelPiccolo
Area Wildlife Manager
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Mr. Douglas C. Atchley
Delta County Planning and Development
Delta, CO

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Field Biologist
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Mr. Travis Morse
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Mrs. Rebecca Mitchell
Colorado Water Conservation Board
Denver, CO

Mr. Dan Birch
Colorado Water Conservation District
Glenwood Springs, CO

Mrs. Suzie Bilberry
Delta Conservation District
Delta, CO

Appendix C: Wetland Resources

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

December 23, 2016

Regulatory Division (SPK-2016-00946)

J-U-B Engineers, Inc.
Attn: Ms. Autumn Foushee
2875 South Decker Lake Drive, Suite 575
Salt Lake City, Utah 84119
afoushee@jub.com

Dear Ms. Foushee:

I are responding to your submittal on behalf of the Orchard Ranch Ditch Company, concerning the Orchard Ranch Ditch Irrigation Improvement Project (the "Project"). This project will replace the existing Orchard Ranch Ditch headgate and convert 2.16 miles of open ditch to buried pipe. The Project extends from the Orchard Ranch Ditch headgate, west of Surface Creek and north of Pascal Road, within the NE ¼ SW ¼ of of Section 12, Township 14 South, Range 95 West, 6th Principal Meridian, near Latitude 38.846143°, Longitude -107.962287°, to the Orchard Ranch Ditch above agricultural fields west of Running Deer Road, within the SE ¼ NW ¼ of Section 14, Township 14 South, Range 95 West, 6th Principal Meridian, near Latitude 38.835816, Longitude -107.981295, in the neighborhood of Eckert, Orchard City, in Delta County, Colorado.

Based on the information you have provided, we have determined that the proposed work is the type of activity that is included in the Section 404(f) exemption found at 33 C.F.R. Part 323.4(a)(3) for the construction or maintenance of irrigation ditches. Discharges associated with diversion structures and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption. Therefore, a Department of the Army Permit is not required for this work. Measures should be taken to prevent construction materials and/or activities from entering any waters of the United States. Appropriate soil erosion and sediment controls should be implemented onsite to achieve this end.

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.

We have assigned identification number SPK-2016-00946 to this project. Please refer to this number in any correspondence concerning this project. If you have any questions, please contact me at the Colorado West Regulatory Branch, 400 Rood

Avenue, Room 224, Grand Junction, Colorado 81501, by email at w.travis.morse@usace.army.mil, or telephone at 970-243-1199 x1014. 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,

MORSE.WILLIAM.TRAVIS.1154253544

Digitally signed by MORSE.WILLIAM.TRAVIS.1154253544
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=MORSE.WILLIAM.TRAVIS.1154253544
Date: 2016.12.23 12:02:27 -07'00'

Travis Morse
Senior Project Manager
Colorado West Branch
Regulatory Division

cc:
Mr. Paul Kehmeier, Orchard Ranch Ditch Company, 12753 Running Deer Road, Eckert, Colorado 81418-8303, paul-kehmeier@msn.com
Ms. Jeanie McCulloch, Delta County Planning and Community Development, 501 Palmer Street, Suite 105, Delta, Colorado 81416, planning@deltacounty.com
Ms. Jennifer Ward, Bureau of Reclamation, Western Colorado Area Office, 445 West Gunnison Avenue, Suite 221, Grand Junction, CO 81501, jward@usbr.gov
Ms. Sarah Fowler, U.S. Environmental Protection Agency, Wetlands and Watershed Unit, 8 EPR-EP, 1595 Wynkoop Street, Denver, Colorado 80202-1129, fowler.sarah@epa.gov

U.S. Fish and Wildlife Service

National Wetlands Inventory

Orchard Ranch Ditch Piping Project

Aug 3, 2016

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

User Remarks:

U.S. Fish and Wildlife Service
National Wetlands Inventory

ORDC Habitat Replacement Site

June 8, 2017

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix D: Habitat Replacement Plan

Orchard Ranch Ditch Company
Salinity Control Project

Habitat Replacement Plan

November 2017

Prepared for:

U.S. Bureau of Reclamation
2764 Compass Drive #106
Grand Junction, CO 81506

Prepared by:

J-U-B Engineers, Inc.
2875 S Decker Lake Drive, Suite 575
West Valley City, UT 84119

Certification and Acceptance of the Orchard Ranch Ditch Company Habitat Replacement Plan

Authorizations		
Action	**Signature & Title**	**Date**
Prepared By: (contractor)		
Submitted By: (Irrigation Company)		
Reviewed and Accepted By: (Reclamation)		
Reviewed and Accepted By: (landowner, if applicable)		

Scheduled completion date of implementation is _____.

This habitat replacement project will be maintained to achieve the objectives of this plan for 50 years from approval of this Plan.

*Disclaimer: Reclamation's acceptance of the Habitat Replacement Plan does not constitute technical approval of the design. This habitat replacement project is projected to create _**5.99**__ habitat units. This scoring is an estimated projection, and is not a guarantee or a statement of habitat units available to the Orchard Ranch Ditch Company. These units are an estimation of the habitat project once it has reached its full potential, which can take multiple years depending on project objectives.

Contact Information:

Orchard Ranch Ditch Company
Paul Kehmeier—Project Manager and HRS Landowner
20490 North Road, Eckert, CO
Phone: 970-779-0723

Table of Contents

Introduction

The Orchard Ranch Ditch Company (ORDC) received funding under the Colorado River Basin Salinity Control Program to pipe approximately 2.16 miles of open ditches and canal laterals on the Orchard Ranch Ditch. As required by the Colorado River Basin Salinity Control Act (43 U.S.C. 1571-1599), which authorizes the Salinity Control Program, this project would replace incidental fish and/or wildlife values foregone in association with the implementation of the proposed Orchard Ranch Ditch piping project. The July 12, 2017, letter to the U.S. Bureau of Reclamation (Reclamation) from J-U-B Engineers, Inc. regarding the ORDC Salinity Control Project-Habitat Scoring, provided details on the potential loss of wildlife habitat value due to the proposed piping project. The total wildlife habitat units lost due to the proposed piping project would be 5.12 units as discussed in the Habitat Losses Letter in Appendix A.

The ORDC, in cooperation with the Reclamation and the U.S. Fish and Wildlife Service (USFWS), has identified a habitat improvement project at the Keh-Land Co. site. The successful implementation of this Habitat Replacement Plan (HRP) would offset wildlife habitat loss from the ORDC pipeline project by creating 5.99 habitat units of mitigation.

1.1 Project Overview

The goal of this HRP is to ensure that there is no net loss in wildlife habitat value by improving the ecological structure and function of the Keh-Land mitigation site. The implementation of the HRP would protect and improve wildlife habitat through cost effective measures that are viable and manageable for the 50-year life of the project.

The central components of this HRP are to remove non-native, invasive species and revegetate with native plants to improve the stratification and species diversity of the habitat replacement site (HRS) in order to enhance wildlife habitat value. ORDC would perform or contract out the habitat improvements outlined in this plan.

The habitat unit losses and replacement values were calculated using the standards outlined in the March 2013 *Basinwide Salinity Control Program: Procedures for Habitat Replacement* (Reclamation, 2013). These procedures take into account ten separate categories (*e.g. vegetative diversity and stratification*) to rate habitat quality (scores range between 0 & 10), and uses a standard formula to determine the Total Habitat Value (THV) in a given area. The formula equates to THV = Area (in acres) X Habitat Quality Score (HQS).

1.2 Habitat Site Existing Conditions

The habitat replacement site (HRS) is located along Tongue Creek approximately 1.5 miles west of Eckert, Colorado (See Appendix B). The site is located adjacent to the Forked Tongue/Holman Ditch Habitat Replacement Project at 38.841884 Latitude / -107.987801 Longitude. The HRS may be accessed with landowner permission from either Trap Club Road or North Road via the landowner's property. From Eckert, Colorado travel 1.5 miles west along North Road to the Landowner's property entrance on North Road, where the road sharply turns north.

The property that contains the HRS is primarily used for farming and ranching, and has been irrigated and may be irrigated in the future. The HRS is approximately 3.33 acres and consists of a section of riparian area along Hamilton Draw to the point of confluence with Tongue Creek. It contains a number of non-native and invasive species, including Russian olive (*Elaeagnus angustifolia*), Canada thistle (*Cirsium arvense*), and whitetop (*Cardaria draba*). The primary goal of the HRP is noxious weed removal and native plant revegetation. Appendix C shows the project area within a USGS topographic map. Pre-mitigation photographs of the area are located in Appendix D.

1.2.1 Soils

Quaternary terrace gravel and Cretaceous Mancos Shale characterize the geology of the area. Quaternary terrace gravel consists predominantly of ancient, alluvial deposits of present streams on one or more terrace levels. Cretaceous Mancos Shale is dominated by mudrock accumulated in ancient, offshore and marine environments. Mancos Shale typically fills the interval between the Dakota Group and the Mesaverde Formation Group (Chronic and Williams 2014).

According to the NRCS Soil Survey, soils in the area are dominated by Billings silty clay loam at 3 to 6 percent slopes, which are typical to alluvial fans and flood plains. Parent material consists of silty alluvium. These soils exhibit a depth-to-root restrictive layer greater than 60 inches. The natural drainage class is well-drained. These soils are rarely flooded. Additionally, fluvaquents share dominance within the drainage area of Tongue Creek and Hamilton Draw. Fluvaquents are floodplain soils, and are often flooded.

1.2.2 Hydrology

The elevation of the HRS is approximately 5,240 feet above sea level. Hamilton Draw runs through the center of the HRS and maintains a yearly flow with seasonal fluctuations. The Colorado Department of Public Health & Environment (CDPHE) identifies Hamilton Draw as impaired by selenium. Tongue Creek abuts a small section of the southern portion of the HRS. Tongue Creek is also impaired for selenium. Water is available year-round in Tongue Creek. Water supply through the site would not be anticipated to change. The project does not rely on water rights, irrigation return, or agricultural runoff. No changes in water rights or appropriations are necessary for the project. No new water features are planned.

1.2.3 Vegetation

The HRS is located in a riparian area that contains a number of native, as well as noxious invasive species. Native species include cottonwood (*Populus spp.*), sumac (*Rhus trilobata*), Hawthorn (*Crataegus rivularis*), Gambel's oak (*Quercus gambelii*), rabbitbrush (*Ericameria nauseosa*), and coyote willow (*Salix exigua*). The predominant weed species in the areas are Canada thistle, whitetop, Russian olive, and Siberian elm. Canada thistle is present largely around the edges of the site, and especially near seeps where soils have more moisture. The most dominant noxious weed species are Russian Olive, Canada thistle and whitetop (or hoary cress). These species are the focus of noxious weed removal in portions of the HRS.

1.2.4 Wildlife Resources

Current conditions of the site would be improved to better promote and provide enhanced wildlife habitat. The presence of invasive species and the lack of structure in the riparian vegetation are the primary elements limiting suitable wildlife habitat within the HRS. The project would benefit several types of wildlife, including migratory birds and waterfowl, small mammals, ungulates and pollinators.

1.2.5 Habitat Quality Score for HRS and Orchard Ranch Ditch

The 3.33-acre site is located adjacent to the existing Forked Tongue habitat replacement site. The Orchard Ranch HRS is comprised of Hamilton Draw, the immediate riparian buffer adjacent to the draw, and an average 150-foot riparian buffer surrounding the draw. Consistent with Reclamation's Habitat Assessment Protocol, the baseline and projected HQS for the HRS are summarized in Table 2.

Table 2. Baseline and Projected HQS for the HRS

Wildlife Habitat Value	Baseline HQS	Rationale for Baseline Score	Projected HQS	Rationale for Projected HQS
Vegetation Diversity	5	Moderate native vegetation diversity exists in one section of the site currently. Invasive species exist throughout the site.	7	The replacement plan focus would be to increase native species diversity in the overall site and decrease invasive species. Plants to be established in greater number include cottonwood, buffaloberry, coyote willow, native grasses and wildflowers.
Stratification	7	The overstory layer is largely missing from the majority of the site, and the midstory is missing or not functioning well in most areas.	10	By removing invasive plants, and improving structure with cottonwoods, sumac, buffaloberry and willow in more areas, the site's stratification would be anticipated to improve over time.
Native vs. Non-native	5	The site currently has Russian olive, whitetop, Canada thistle and bull thistle throughout.	7	Removal of these invasive plant patches, and establishment of larger numbers of native species would improve this ratio over time.
Noxious Weeds	0	Invasive plant species inhabit many sections of the site.	6	Removal of these species would reduce the area covered by noxious weeds.
Overall Vegetative Condition	8	Overall vegetation condition on the site is moderately good, with some pressure noted from browse or grazing.	9	By removing invasive species, native species established on the site would have less competition for water and nutrients.

Disease (addl scoring)	---	---	---	—
Interspersion of open water	1	Hamilton Draw runs through the center of the HRS, and Tongue Creek bounds the lower section of the site.	1	Hamilton Draw and Tongue Creek would not be altered. No new water features would be added.
Connectivity	10	The site is located next to the Forked Tongue Habitat Replacement Site.	10	The HRS will remain located next to the Forked Tongue Habitat Replacement Site.
Uniqueness or Abundance	4	Existing conditions in the site, especially in the northern section of the site, provide moderate value to wildlife.	6	By improving stratification and native species diversity and coverage, the site would be anticipated to provide increased value to diverse wildlife species.
Water Supply	8	Hamilton Draw and Tongue Creek are known to flow year-round.	8	Hamilton Draw and Tongue Creek are known to flow year-round.
Alteration	5	The site has been altered by agricultural uses, such as crop production and grazing.	7	New native vegetation plantings would be protected from browse and ground-disturbing activities, thus over time the area covered by vegetation and protected from alteration would increase.
Total (Average)	5.3		7.1	
Habitat Units Gained per Acre				1.8
Total Habitat Units Gained				5.99

A total of 2.1 acres of canal-induced, riparian vegetation would be lost along the Orchard Ranch Ditch due to the ORDC piping project. Per the scoring prepared for the ORDC habitat segments (see Habitat Losses Letter in Appendix A), this loss would constitute 5.12 habitat units. Once successfully implemented, the HRP would generate 5.99 habitat credits toward the habitat lost due to the ORDC piping project.

1.3 Desired Conditions

The existing conditions of the HRS have moderate value for wildlife habitat. The site contains invasive species, and much of the site is lacking stratification. The overstory layer and mid-story layers are not

functioning well through most of the site. No new water features are planned for the project. The objectives of the HRP are to:

- Decrease invasive species coverage across the site, such that no more than 20% of noxious weed cover exists within the site, and no single patch size exceeds 100 square feet.
- Increase native species diversity across the site.
- Improve stratification within the overall site through establishment of overstory and shrub-layer species, as well as through seeding of native grasses and forbs.

The success of the project toward these objectives would be measured by an 80% survivability rate for each planting zone and across the overall HRS (see Planting Schedule in Appendix C). Ocular measurements of invasive species coverage would be assessed and tracked over time to determine reduction of invasive species. Photos would be taken yearly at designated photo points to visually track the changes in structure and diversity over time. The following sections detail the process for invasive species removal and establishment of native species to improve diversity and stratification.

2.0 Mitigation Specifications

The following mechanical and chemical noxious weed treatments and removal plans for the HRS follow recommendations established by the Colorado Department of Agriculture (CDA). Noxious Weed Control Best Management Practices (BMPs) would be followed during all noxious weed treatments.

2.1 Methods, Timing & Sequence for Noxious Weed Removal

ORDC would implement the HRP concurrently with the Salinity Control Project as much as possible. Construction of the project is anticipated to be completed by April 2019, and Year 1 of habitat replacement activities would be completed by November 2018 (see Appendix H: Management Schedule).

Woody plant removal would be concentrated in periods after hard frosts in the fall and prior to the start of plant growth in late winter/early spring, typically before March 15th. Herbicide applications would be applied per recommended timing in Table 3.

Table 3 –Timing of Noxious Weed Control

Species Name	Timing of Noxious Weed Control
Canada thistle, bull thistle, Russian knapweed	April through June and September through November
Russian olive	August through March
Whitetop (Hoary Cress)	March through June

2.2 Methods to Control Noxious Weeds

Applying herbicide may be labor intensive as the weedy species at this site are spread out and mixed with many native plants, such as four-winged saltbush (*Atriplex canescens*), rabbit brush (*Ericameria nauseosa*), and willow. Weed treatments would follow the guidelines and standards set by Delta County (Delta County Colorado, 2010) and the State of Colorado (Colorado Department of Agriculture, 2015) as

detailed in the species fact sheets provided in Appendix K. All herbicides would be applied in accordance with the manufacturer label. Any herbicide used will be approved for use near water. Noxious weed control BMPs and spill prevention methods will be employed during all mechanical and chemical treatments.

ORDC may opt to contract with a local weed control company to conduct invasive weed management at any point during the project lifecycle, as weed control could be an ongoing maintenance requirement to prevent recolonization or spreading of invasive weeds. If contracted to perform the work, the company would provide a map of the areas treated each year.

2.2.1 Canada Thistle

Canada thistle (*Cirsium arvense*) is an aggressive, creeping perennial weed that infests croplands, pastures, rangeland and roadsides. Typically, infestations start on disturbed ground, including ditch banks and overgrazed pastures. Cattle typically will not graze near thistle infestations (Beck, 2013a). Milestone is an herbicide that works well in controlling many non-native, invasive species when it is applied correctly. According to the manufacture's label a rate of 5-7oz./acre of Milestone with a surfactant is suggested for spot spraying in the spring before flowering and again in the fall (Beck, 2013a). Milestone has less impact to the surrounding environment and is an herbicide to which many native species have shown tolerance. Milestone may be used up to the edge of ponds or streams. Retreatment will likely be necessary 1-2 years post initial treatment (Beck, 2013a).

2.2.2 Bull Thistle

Bull thistle (*Cirsium vulgare*) is native to Europe, Asia, and Africa. It is a biennial forb, reproducing and spreading entirely from seeds. It competes with desirable forage plants and has no significant value for livestock, and little value to wildlife. Close, repeated mowing (at least two times per season) will typically prevent seed production. Manually (e.g. using a shovel) breaking the plant's tap root at the rosette stage, can effectively control and reduce the spread of the plant. Chemical control is most effective when plants are in the rosette stage and least effective when thistles are flowering. Greater success results when native vegetation is planted immediately following removal of the weedy species (Utah, 2017). An herbicide such as Milestone is required for the eradication of bull thistle, and will be applied at 5-7 oz./acre in the spring at pre-bud and flowering stages, and in the fall. Retreatment will likely be necessary 1-2 years post initial treatment.

2.2.3 Russian olive

Russian olive (*Elaeagnus angustifolia*) is a perennial tree or shrub native to Europe and Asia. It reproduces by seed or root suckers. The key to effective control of Russian olive is preventing establishment. At the HRS, established Russian olive would be cut down and the stumps, root collar and soil above the roots then sprayed with one of the following: Pathfinder, or Garlon IV mixed at 20-30% ratio with basil bark oil; or, Glyphosate undiluted. Glyphosate must have the aquatic-approved label. Fall treatments have shown the most success, however treatments can be done in the summer also. Care must be taken to prevent damage to native trees or shrubs as these chemicals will kill any vegetation (Colorado Department of Agriculture, 2015b) If the Russian olive is very small, cutting before treatment would not be necessary, however all foliage must be covered by the herbicide in order to be effective.

The slash from larger cuttings may be placed into piles, which would provide some cover for small mammals and birds, as long as there are no viable fruiting bodies present on the cuttings and the piles are placed away from water sources. After initial treatments of the invasive species, fall applications of herbicide are usually more effective for a maintenance program. The treated areas will be monitored for 3-4 years and spot-treated to address any returning plants.

2.2.4 Whitetop

Hoary Cress, or Whitetop (*Lepidium draba*), is a creeping perennial that reproduces by seed, is a member of the mustard family and native to Europe. Effective management and eradication once established in a site includes preventing seed dispersal through monitoring and herbicide application, as well as minimizing grazing by livestock, who can subsequently spread the seeds. Chemical and mechanical treatment will be used for successful removal of whitetop. Treatment will include Metsulfuron (Escort XP) applied at a rate of 1 oz./acre plus 0.25% v/v non-ionic surfactant at the flowering stage (early spring to early summer), then followed by mowing throughout the summer if plants persist and by a final herbicide treatment in the fall. Repeated treatments may be necessary for 1-2 years beyond initial treatment (Colorado Department of Agriculture, 2015a).

2.3 Native Plant Restoration

In order to increase native plant diversity and coverage within the HRS, Fremont's cottonwood (*Populus fremontii)*, silver buffaloberry (*Shepherdia argentea*), and coyote willow (*Salix exigua*), would be planted in phases throughout the site. Additionally, a native wildflower and grass seed mix beneficial to pollinators would be sown in the riparian buffer to add pollinator and wildlife habitat value. Planting zones are shown on the Planting Schedule in Appendix C. The landowner will provide supplemental hydrology for the plantings through hand or truck watering. Supplemental water would be provided once weekly during the first growing season, and at the discretion of the landowner in consideration of weather and plant condition. The landowner would protect the new plantings from livestock grazing and herbivory by providing guards (or fencing at landowner's discretion) around the plantings until they are established. Protection from grazing and herbivory may be necessary for the duration of the project.

2.3.1 Prescribed Enhancements

The ORDC is proposing to enhance the HRS by removing invasive species and revegetating with native plant species in order to improve the site's stratification, function and species diversity. The site is currently used by a wide array of wildlife species, especially waterfowl, migratory birds, deer, elk, and small mammals. Enhancements will provide an even higher quality and diverse habitat for wildlife.

Planting Protection against Grazing and Herbivory

The HRS has been in agricultural use for many years. Cattle grazing has been the primary agricultural influence on the riparian site. The importance of a working landscape to the landowner and surrounding community is acknowledged by this HRP. The plan seeks to balance protection of water quality and wildlife habitat value of this increasingly uncommon natural community in Delta County, Colorado, with the agricultural needs for the land and community. All woody vegetation planted as part of the prescribed enhancements would receive biodegradable, diamond mesh guards to protect against

wildlife and cattle browse (see Typical Detail in Appendix C). The guards would be secured to bamboo poles or metal stakes to prevent movement. Fencing would be maintained as long as needed to ensure the plants remain viable and protected from grazing or herbivory.

Vegetation Restoration

Table 4 summarizes the plantings, which will include 75 cottonwood seedlings, 300 buffaloberry stake plantings, and 600 coyote willow stake plantings, as well as seeding of the High Desert Meadow seed mix (see Appendix L). Plantings of each species is intended to create structure through increased overstory and mid-story vegetation interspersed with existing native vegetation. In determining planting locations, consideration was given to current site conditions and availability of natural hydrology to support plant establishment. The aim of the HRP is to establish one mature cottonwood per approximately every 12,000 square feet to integrate the cottonwoods into native vegetation already established on the site and to improve the overall habitat structure in the HRS. A conservative assumption was made that the cottonwood seedlings would have a 2 in 10 (20%) survival rate. Based on this assumption, planting 75 seedlings at a 20 percent expected survivability with a goal of 80 percent survival of those remaining seedlings, would result in approximately 12 mature cottonwood trees across the HRS at the end of the project's lifespan.

Planting placements can be modified contingent on existing plant assemblages, but generally, the plantings will be dispersed between the existing vegetation assemblages, but not too close as to cause competition among the plants. Seeding the High Desert Meadow seed mix with blue flax, gooseberry globemallow, blue grama and western wheatgrass (see Appendix L), shall occur on the western and eastern edges of the riparian buffer in areas where vegetation cover is thin or missing.

Table 4. Plantings for the HRS

Common Name	Scientific Name	Quantities (size)
Fremont's cottonwood	*Populus fremontii*	75 (seedling stake plantings)
Silver buffaloberry	*Shepherdia argentea*	300 (stake plantings)
Coyote willow	*Salix exigua*	600 (stake plantings)
High Desert Meadow seed mix	*Various species*	5 lbs./year

Plantings will be installed in phases to allow an adaptive planting approach to encourage maximum regeneration potential, and to facilitate the assessment of annual planting success. During year 1, invasive species will be removed. During year 2, approximately 50% of the plantings will be installed. In year 3, the remaining 50% of the plants will be planted. In year 4, any replacement plantings will be completed to ensure 80% survivability within each planting zone of the HRS. Planting quantities and placement can be modified contingent to the success of the plantings installed in previous years coupled with successful regeneration of existing native assemblages after removal of noxious invasive species.

Table 5. Project Phases

Year	Project Enhancement
1	Invasive species removal: Russian olive cut and stumps sprayed or pulled out; whitetop and thistle sprayed and mowed.
2	50% of all plantings will be established and protected from grazing and herbivory. Native wildflower/grass seed mix will be broadcast sown. Invasive species will be retreated as necessary. Monitoring will be completed.
3	The remaining 50% of all plantings will be established and protected from grazing and browse. Native wildflower/grass seed mix will be broadcast sown. Invasive species will be retreated as necessary. Monitoring will be completed.
4	Any replacement plantings, as needed, will be completed to ensure 80% survivability. Plantings will be established and protected from grazing and browsing. Monitoring will be completed.
5	Plants guards will remain around plants established in previous years. Fencing or guards can be removed, if appropriate, given level of herbivory present. Invasive species will be retreated as necessary. Eighty percent survivability and planting implementation achieved to level anticipated for the fifth year of the project.

2.3.2 Planting Protocol

All plants will be laid out in their designated areas. Plant stock of mature size will be obtained, where feasible, to maximize survivability rates of transplants. Where mature stock is not available, the next best available age class of the species will be utilized. This plan assumes that all plants will be of the seedling age class. The ORDC can choose to establish plantings of mature age classes at their discretion.

To increase success rates, it is recommended that every stake planting receive two inches of water during or directly after planting is complete. Planting implementation success and number of plants established will be documented for site inspections. Specific instructions for the planting of stake plantings can be referenced on the Planting Detail Sheet (see Appendix C).

For placement zones of the various plantings and seeding, refer to the Planting Schedule (Appendix C). The cottonwood, willow and buffaloberry seedlings will be planted interspersed along the riparian area as depicted in the planting zones. The High Desert Meadow seed mix will be broadcast on the outer edges of the riparian area as illustrated by the Planting Schedule in Appendix C.

Vegetation will be planted in early spring or late fall. Supplemental water will be supplied to the plantings for the growing season via hand watering or by truck. Supplemental water, provided by hand watering or by truck, may be necessary in subsequent years as informed by weather trends, plant condition, and annual reporting observations.

2.4 As-Built Changes to Habitat Replacement Plan

This HRP details the goals and methods by which the ORDC will meet those goals in order to replace the wildlife habitat units foregone due to the ORDC Piping Project. This plan allows for flexibility on the part of the landowner. Should the plant species or age class of a species become unavailable within a reasonable distance from the HRS (~50 miles), the landowner can choose to change species or size of plants, however any changes to this HRP must be submitted to Reclamation for approval prior to implementation. Lastly, any tags or receipts from plants purchased for the HRP will be submitted to Reclamation with the annual report in the year the plants were purchased and planted.

2.5 Maintenance and Monitoring Requirements

The ORDC or a qualified representative, in conjunction with Reclamation, will use methods and measurements outlined herein to determine the progress and success toward meeting the HRP's objectives. The objective of this HRP is the long-term reduction of noxious weeds and revegetation with native plant species within the HRS. The plan is designed to increase the site's plant species diversity and add multi-layered ground cover (stratification). Although the project scope is limited to noxious weed removal of the aforementioned species and native species plantings, additional anticipated benefits would include recovery of ecosystem structure and function, and improvement of a habitat area that supports the return of native biotic communities by increasing native plant diversity and density. To promote successful establishment of the plantings, the landowner will provide supplemental hydrology for the first growing season of the project. Supplemental water will be provided weekly by hand watering or by truck at the discretion of the landowner, taking into consideration current weather trends and plant condition.

2.5.1 Maintenance

Ongoing maintenance and management of invasive species and established native plants will be necessary to ensure the goals of the project are met by the end of the project's lifecycle—50 years. It is likely that continued spot treatment efforts would be required for invasive and noxious weed species over time due to the presence of these species in nearby areas, and given seeds can remain viable in the soil for numerous years. Noxious weed cover over the entire site cannot exceed 20% of HRS area, with no single patch size exceeding 100 square feet.

Additionally, the ORDC will be required to remove plants that die, and to replace those plants with the same species within the same planting zone, allowing for the appropriate spacing. The plant does not have to be in the exact same location as the expired plant. The ORDC is responsible for meeting the goals of the project as discussed in Section 1.3, and for maintaining those standards for the life of the project—50 years. Each planting zone identified within the Planting Schedule (Appendix C) must have 80% survivability of the plants established.

2.5.2 Monitoring and Reporting

For the purposes of this HRP, *Monitoring* is defined as a yearly site visit to complete a site inspection. The site inspection will include photographs at each of the identified Photo Points (see Appendix D),

ocular estimates of noxious weed cover and patch size, a plant count of Russian olive throughout the HRS, and a count of plant species established and expired within each planting zone. Data collected during the site inspection will be logged on the Monitoring Report Forms included in Appendix J. In years 1-5 of the project, the site inspection will be conducted with representatives from Reclamation and USFWS, as scheduling allows. Yearly monitoring site inspections will be conducted during the growing season to best determine the condition of the habitat area.

For the purpose of this HRP, *Reporting* is defined as a summary of the data collected during the site visit and the date of the site inspection. It will include the photos taken during the site visit, as well as copies of the Monitoring Report Forms, and tags or receipts for seed or plants established during the growing season of that year. The yearly monitoring report will be provided to Reclamation by December 1st of each calendar year for the first five years after initial project implementation. After five years, if the project is meeting or progressing toward the desired conditions, the frequency of inspections can be adjusted to three to five years for the remaining life of the project, upon Reclamation's concurrence.

Enhancements to the HRS are designed to be measurable, allowing the ORDC and Reclamation to track the progress of the actions year-to-year, and over the full life of the project. The progress of the ORDC HRP will be measured through the following monitoring activities:

- Yearly site visit with Reclamation and USFWS, as scheduling allows, for the first five years of the project.
- Ocular estimates of invasive species coverage and patch size.
- Survival rates for the plantings established in each planting zone identified on the Planting Schedule in Appendix C must be at least 80 percent.
- Photo points will be visited each year after noxious weed removal is complete. Each year, photos will be taken in the same location, encompassing the same view in the same compass direction, to document changes in species composition and structure.
- Noxious weed patch size will be determined using an ocular estimation of size during annual monitoring visits.
- Noxious weed patch size will be reported on Monitoring Forms provided in Appendix J. The estimated patch size of each identified noxious weed will be recorded every year after removal has occurred to document patch size decrease over time.
- Russian olive plants will be counted and reported annually.
- The number of individual native plants established every year will be recorded. After establishment, each year in late spring the number of individuals surviving from the previous year would be assessed to determine the rate of survival. The project goal is to establish an 80% survival rate within each of the HRS planting zones within the first five years of the project.
- Plants that die will be replaced as needed throughout the life of the project to meet the goals of improved structure and species diversity through an 80% survivability rate in the entire HRS.

2.5.3 Monitoring Duration

ORDC would complete mitigation work in the first five years according to the schedule (Appendix H), at which time if the HRP has been successfully implemented, the project improvements will be part of the

natural landscape or obviously progressing towards desired conditions. The ORDC will continue inspecting the HRP for the life of the project—50 years (until 2068). For the first five years, the ORDC (or a contracted qualified biologist) will conduct annual monitoring site inspections coordinated with representatives from Reclamation and USFWS. After the first five years, HRS inspections may be reduced to every three to five years, at Reclamation's discretion. Over the next 45 years of the project, ORDC would complete and submit the monitoring report forms (provided in Appendix J) to Reclamation with a report summary by December 1st of each year. At ORDC's discretion, they may contract an independent, qualified biologist to complete the annual monitoring site inspection and monitoring report on their behalf.

Upon acceptance of this Plan by Reclamation and the ORDC, the aforementioned general monitoring and maintenance measures discussed would be entirely budgeted for, financed, and implemented by the ORDC. The ORDC is committed to long-term monitoring and maintenance of the site for the life of the project or 50 years (until 2068).

3.0 Final Comparison – Current Conditions vs. Anticipated Design

In accordance with Reclamation's established evaluation protocol, Table 6 illustrates the HQS before and the anticipated HQS after the ORDC HRP improvements are implemented. Scoring comparisons for each of the habitat evaluation parameters are provided below. The enhancements would create 5.99 habitat credits toward the loss of 5.12 habitat credits due to the piping of the Orchard Ranch Ditch. The overall functional score of the HRS will increase based on the establishment of the following characteristics: an increased native species diversity, improved habitat stratification, and the removal of invasive species. Table 7 provides a summary of the predicted THV for the impacted project area, as well as, the HRS.

Table 6. Summary of Habitat Quality Scores; pre- and post-construction of the HRS

Habitat Quality Status	Vegetative Diversity	Stratification	Native Species vs. Non-native Species	Noxious Weeds	Overall Vegetative Condition/Health	Interspersion of Open Water with Vegetation	Connectivity	Uniqueness or Abundance	Water Supply	Alteration	Overall HQS
Before	5	7	5	0	8	1	10	4	8	5	5.3
After	7	10	7	6	9	1	10	6	8	7	7.1

Table 7. Summary of Calculated Values for Habitat Quality Score and Total Habitat Values

Feature	Area (in acres)	HQS before project (baseline score)	Anticipated HQS 5 years post-project implementation	Net HQS	Net Effect to the THV (HQS increase per acre)
Piping Project Disturbance Area	2.1	5.12	NA	NA	5.12 loss
Habitat Replacement Site	3.33	5.3	7.1	1.8	5.99

In terms of THV, the project impacts equate to a 5.12 habitat unit loss, whereas the HRP enhancements would produce a THV of 5.99. Based on the estimated THV illustrated in Table 7, the HRP would produce 0.87 habitat credits above the lost habitat value of 5.12 units.

Likelihood of Long-term Success

Habitat values would be increased based on vegetative stratification enhancements, increases in overall richness of native herbaceous and woody plant species, and the decrease of undesired weedy species. Based upon previous designs of similar extent and the existing habitat quality of the site, the enhancements have a high probability of successfully promoting higher functioning habitats for waterfowl, migratory birds, resident birds, ungulates, small mammals and pollinators.

4.0 Conclusion

This HRP has been developed consistent with Reclamation's Salinity Control Program requirements. The plan proposes to enhance a riparian site that encompasses approximately 3.33 acres. The HRS is estimated to yield a THV increase of 5.99 (five years after initial project implementation), which would be more than what is required for the ORDC Salinity Control Project.

The additional native species, increased stratification, and the removal of invasive and noxious weed species will provide a more ecologically rich site. The HRS will increase the wildlife habitat potential, providing improved habitat for migratory birds, waterfowl, ungulates, small mammals, and pollinators. This project would help to enhance and restore a natural community that is increasingly uncommon in Delta County, Colorado. It should be noted that J-U-B Engineers, Inc., on behalf of ORDC and at their request, prepared this report. The acceptance and implementation of these enhancements, as described herein, is agreed to by ORDC upon their signing of this HRP.

References

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Appendices

Appendix A: Habitat Losses Letter

Appendix B: Site Maps

Appendix C: Planting Details

Appendix D: Permanent Photo Points

Appendix E: Invasive Weed Inventory Plots and Map

Appendix F: NWI Survey

Appendix G: NRCS Soil Survey

Appendix H: Management Schedule

Appendix I: Biological Cost Estimate

Appendix J: Monitoring Report Form Templates

Appendix K: Invasive Species Fact Sheets

Appendix L: High Desert Meadow Seed Mix

Appendix M: Colorado State Forest Service Seedling Nursery

Appendix A: Habitat Losses Letter

July 12, 2017

U.S. Department of Interior
Bureau of Reclamation
445 W Gunnison Ave
Grand Junction, CO 81501
ATTN: Jennifer Ward, Environmental Specialist, WCAO

RE: Orchard Ranch Ditch Company Salinity Control Project – Habitat Scoring

Mrs. Ward:

Thanks again for meeting with us at the proposed Orchard Ranch Ditch Company (ORDC) habitat replacement site, and for the input offered regarding the replacement plan. The purpose of this letter is to provide for your review: (1) a detailed project narrative for the proposed ORDC piping project; and (2) a summary of the project's habitat losses scoring and anticipated replacement needs.

Project Narrative:

The proposed ORDC Salinity Control Project would pipe approximately 2.16 miles of the existing Orchard Ranch Ditch and multiple-user laterals with high-density polyethylene (HDPE) pipe. The proposed pipeline would follow the existing ditch right-of-way. Salinity improvements would not include new storage facilities or irrigation of new lands. The irrigation system would continue to divert water from Surface Creek. Habitat surveys were conducted by Michael Zeman of Wildlife and Natural Resource Concepts & Solutions, LLC in July 2016 and field-checked by J-U-B Engineers, Inc. in May 2017. The average width of riparian vegetation that will be affected by the piping project is 8 feet for a total of 2.1 acres of affected area. The proposed project would be estimated to reduce salinity loading to the Colorado River Basin by a total of 1,029 tons annually (U.S. Bureau of Reclamation 2015).

Piping would begin at the existing diversion and predominantly follow the existing ditch alignment. Installation of the piping would include removal of all existing ditch structures, excavation, backfilling, and surface restoration. Existing turnouts will be maintained along the new pipeline. The existing ditch and laterals will be backfilled with native materials, re-graded to match site contours, and all disturbed soils will be seeded with a native upland seed mix at a rate of approximately 40 lbs. of seed per acre.

Habitat Scoring:

The anticipated action area was surveyed in July 2016 and field-checked in May 2017 by Michael Zeman, and Autumn Foushee respectively, to score the existing habitat conditions along the ditch alignment and to assess the potential loss of wildlife habitat value due to the proposed piping project. The ditch alignment was broken into sections (See attached Segment Map), which were surveyed separately, and the subsequent habitat losses were added together to represent the entire alignment. Using Reclamation's habitat assessment protocol, the ditch and habitat replacement site were evaluated on ten metrics to score existing habitat quality. A total loss of habitat value was assumed for all ditch sections, except for three segments where supplemental hydrology from irrigation practices in adjacent fields would persist after piping completion.

Table 1 summarizes the habitat quality score for the ditch segments. The affected area within the ditch alignment was calculated based on the length of the proposed piping multiplied by the width of the

riparian vegetation buffer. The total wildlife habitat units lost due to the proposed piping project would be 5.12 units.

Table 1. Habitat Quality Score

Ditch Habitat Segment	Feet of Ditch	Width of Impact to Riparian Vegetation (feet)	Acres of Impact to Riparian Vegetation	Habitat Quality Score	Habitat Units Lost per Segment
H1	540	8	0.10	3.9	0.39
H2	683	8	0.13	2.9	0.38
H3	930	8	0.17	2.8	0.48
H4	1013	7	0.16	3.4	0.55
H5	201	6	0.03	4.2	0.12
H6	949	8	0.17	2.6	0.44
H7	700	8	0.13	3.1	0.40
H8	898	8	0.12	2.6	0.32
H9	843	8	0.15	0.8	0.12
H10	874	8	0.16	3.5	0.56
H11	805	8	0.15	1.6	0.24
H12	838	8	0.15	3.3	0.50
H13	974	8	0.18	0.8	0.14
H14	505	8	0.09	4.3	0.40
H15	1102	8	0.20	0.5	0.10
				Total Units Lost	**5.12**

Segments H9, H13, and H15 were not considered total losses due to supplemental hydrology from irrigation (See attached habitat scoring). Segment H16 was not included because this would be a new alignment and there is currently no riparian vegetation present, therefore no loss was assumed. Staging Areas were surveyed and no riparian vegetation was found within their boundaries, therefore no loss was assumed for these areas. Any disturbance to existing vegetation and soils within the Staging Areas would be reclaimed and reseeded with a native seed mix. No adjacent wetlands were identified that would be impacted by the proposed project. Based on the habitat evaluation protocol, the ORDC piping project should require 5.12 units to be replaced as part of the Habitat Replacement Plan.

If Reclamation concurs with the calculated habitat quality score and losses for the proposed ORDC piping project, please offer the ORDC and J-U-B Engineers, Inc. (the project consultant) a brief letter to this effect.

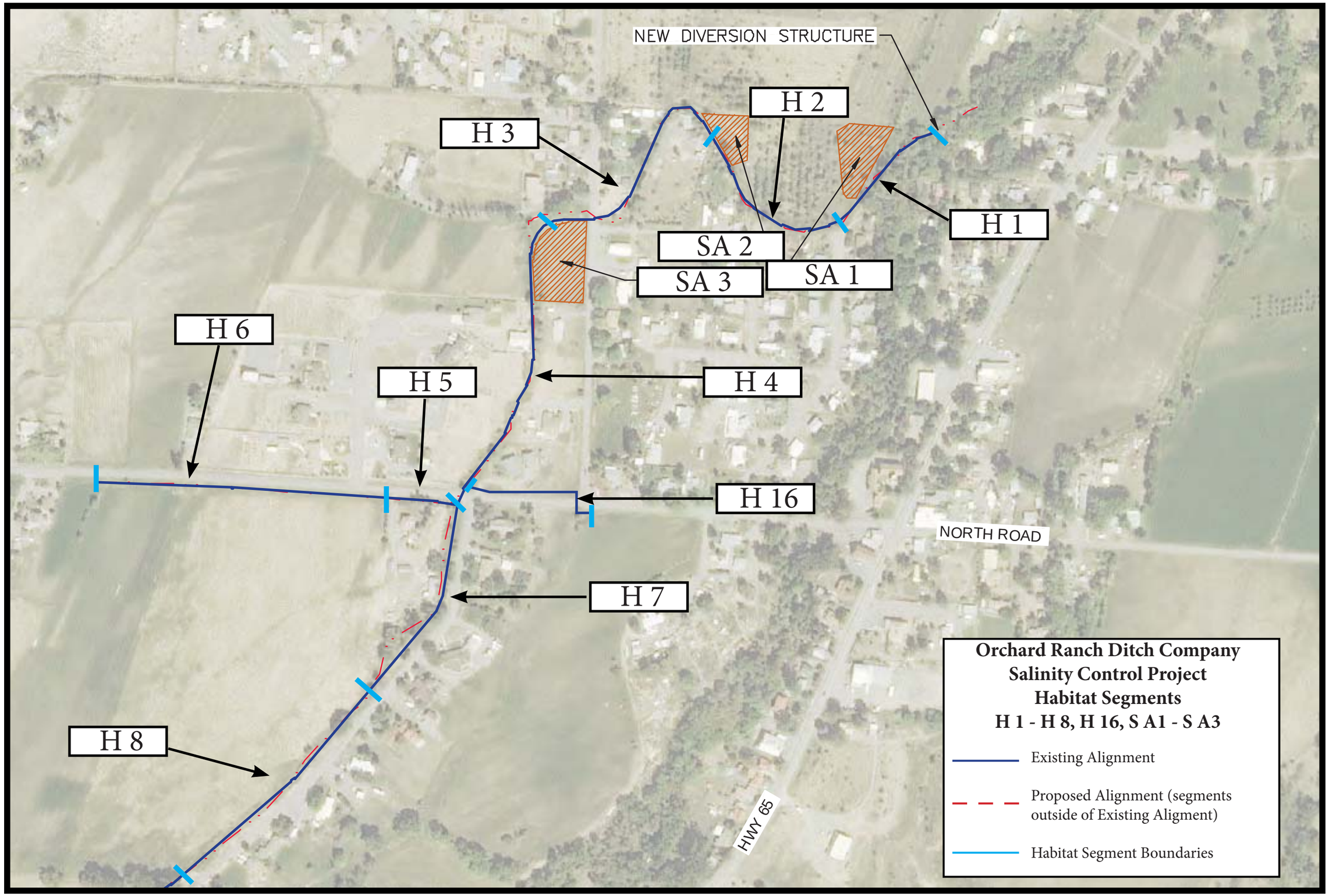
We appreciate your expertise and assistance in this matter. If you have any questions, please feel free to contact me at afoushee@jub.com or via my office phone at 801-886-9052.

Sincerely,

Autumn Foushee, Ecologist & Environmental Planner
J-U-B Engineers, Inc.

encl


NEW DIVERSION STRUCTURE
H 1
H 2
H 3
H 4
H 5
H 6
H 7
H 8
H 9
H 10
H 11
H 12
H 13
H 14
H 15
H 16
SA 1
SA 2
SA 3
SA 4
SA 5
RUNNING DEER ROAD
NORTH ROAD
HWY 65
MYERS ROAD
MARBLE ROAD
Orchard Ranch Ditch Company
Salinity Control Project
Habitat Segments
Existing Alignment
Proposed Alignment (segments outside of Existing Aligment)
Habitat Segment Boundaries


NEW DIVERSION STRUCTURE
H 1
H 2
H 3
H 4
H 5
H 6
H 7
H 8
H 16
SA 1
SA 2
SA 3
NORTH ROAD
HWY 65
Orchard Ranch Ditch Company
Salinity Control Project
Habitat Segments
H 1 - H 8, H 16, S A1 - S A3
Existing Alignment
Proposed Alignment (segments outside of Existing Aligment)
Habitat Segment Boundaries

H 9

H 15

H 13

H 11

H 10

SA 4

H 14

H 12

SA 5

MARBLE ROAD

Orchard Ranch Ditch Company
Salinity Control Project
Habitat Segments
H 9-H 15, SA 4 & SA 5

Existing Alignment

Proposed Alignment (segments outside of Existing Aligment)

Habitat Segment Boundaries

Location: H1 Segment ORDC Canal Fringe		
Habitat Type: Tree/Grass		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is missing mid-story and herb layer is dominated by a few species.	4
Native vs. Non-native	Site is 50% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle.	5
Noxious Weeds	Cheatgrass, Russian Olive, and whitetop cover nearly 10% of the riparian area.	6
Vegetative Condition/Health	There are few to no readily visible signs of disease or distress in the existing plants.	9
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to an abandoned agriculture field that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 70% of the site has been altered by canal placement, residential use, or agricultural practices.	2
THV		39
Acres of Impact		0.10
Habitat Units Lost		0.39

Location: H2 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is missing mid-story and herb layer is dominated by a few species.	4
Native vs. Non-native	Site is 60% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle. Native plants include prickly pear cactus, *Carex nebraskensis* , *Carex aquatilis* , and *Juncus articus* .	4
Noxious Weeds	Cheatgrass, Russian Olive, and whitetop cover nearly 20% of the riparian area.	2
Vegetative Condition/Health	There is moderate signs of stress in the existing plants, as the site is dry and open.	5
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to an abandoned agriculture field that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 75% of the site has been altered by canal placement, residential use, or agricultural practices.	1
THV		29
Acres of Impact		0.13
Habitat Units Lost		0.38

Location: H3 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is largely missing the mid-story and overstory. The herb layer is dominated by a few species.	2
Native vs. Non-native	Site is 50% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle. Native plants include *Carex nebraskensis* , *Carex aquatilis* , and *Juncus articus* .	5
Noxious Weeds	Cheatgrass, Russian knapweed, and quack grass cover nearly 20% of the riparian area.	2
Vegetative Condition/Health	There is moderate signs of stress in the existing plants, as the site is dry and open.	5
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 75% of the site has been altered by canal placement, residential use, or agricultural practices	1
THV		28
Acres of Impact		0.17
Habitat Units Lost		0.48

Location: H4 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is largely missing the mid-story and overstory. The herb layer is dominated by a few species.	4
Native vs. Non-native	Site is 50% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle. Native plants include *Carex nebraskensis* , *Carex aquatilis* , and *Juncus balticus.*	5
Noxious Weeds	Cheatgrass, Russian knapweed, medusahead, and quack grass cover nearly 12% of the riparian area.	5
Vegetative Condition/Health	There is moderate signs of stress among the existing plants, as the site is dry and open.	5
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 75% of the site has been altered by canal placement, residential use, or agricultural practices.	2
THV		34
Acres of Impact		0.16
Habitat Units Lost		0.55

Location: H5 Segment ORDC Canal Fringe		
Habitat Type: Grass/Shrub		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	4
Stratification	Site is largely missing the mid-story and overstory. The herb layer is dominated by a few species.	4
Native vs. Non-native	Site is 30% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle. Native plants include *Carex nebraskensis* , *Carex aquatilis* , *Juncus balticus,* and *Acer negundo.*	8
Noxious Weeds	Cheatgrass, Russian knapweed, medusahead, and quack grass cover approximately 8% of the riparian area.	7
Vegetative Condition/Health	There is little to no signs of stress or disease among the existing vegetation.	9
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	More than 80% of the site is altered by canal placement, residential development and agricultural use.	0
THV		42
Acres of Impact		0.03
Habitat Units Lost		0.12

Location: H6 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is missing the mid-story and overstory. The herb layer is dominated by a few species.	1
Native vs. Non-native	Site is 50% non-native with species such as cheatgrass, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.*	5
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 20% of the riparian area.	2
Vegetative Condition/Health	There are moderate signs of stress in the existing plants, as the site is dry and open along the road.	5
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife.	1
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 75% of the site has been altered by canal placement, roadway, residential use, or agricultural practices.	1
THV		26
Acres of Impact		0.17
Habitat Units Lost		0.44

Location: H7 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	6
Stratification	Site is missing the mid-story and overstory. The herb layer is dominated by a few species.	3
Native vs. Non-native	Site is 50% non-native with species such as cheatgrass, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.*	5
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 20% of the riparian area.	1
Vegetative Condition/Health	There are moderate signs of stress in the existing plants, as the site is dry and open along the road.	4
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 70% of the site has been altered by canal placement, roadway, residential use, or agricultural practices.	2
THV		31
Acres of Impact		0.13
Habitat Units Lost		0.40

Location: H8 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is largely missing the mid-story and overstory. The herb layer is dominated by a few species.	2
Native vs. Non-native	Site is 50% non-native with species such as cheatgrass, elm, whitetop, and Canada thistle. Native plants include *Carex nebraskensis* , *Carex aquatilis* , and *Juncus balticus.*	5
Noxious Weeds	Cheatgrass, Russian knapweed, medusahead, and quack grass cover approximately 22% of the riparian area.	1
Vegetative Condition/Health	There is moderate signs of stress among the existing plants, as the site is dry and open.	3
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site.	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place.	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife.	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year.	4
Alteration	At least 70% of the site has been altered by canal placement, residential use, or agricultural practices.	2
THV		26
Acres of Impact		0.12
Habitat Units Lost		0.32

Location: H9 Segment ORDC Canal Fringe			
Habitat Type: Tree/Shrub			
Relative Loss: Partial			
Criterion	Rationale	HQS	HQS-Post
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	5	4
Stratification	Site is missing the midstory and the overstory is not consistent along the site. The herb layer is dominated by a few species. After the canal is piped, the adjacent, irrigated fields will likely provide enough supplemental water to keep the overstory cottonwood, elm and box elder trees alive, as well as maintain the *Juncus balticus* presence in the fringes of the irrigated fields along the edge of the old canal.	3	3
Native vs. Non-native	Site is 40% non-native with species such as cheatgrass, Russian olive, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.* Without a plan to eradicate non-native species and with the supplemental irrigation water, it would be expected that this ratio would not alter significantly.	6	6
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 25% of the riparian area. Without an eradication plan, this would not be expected to change after piping the canal.	0	0
Vegetative Condition/Health	There are few signs of stress in the existing plants. Wth the supplemental water from irrigation, the overall vegetative conditions may not change dramatically, but an increase in stress may develop over time for some of the larger trees or shrubs.	9	7
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site. After the canal is piped, there will be no interspersion of open water.	1	0
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place. The proximity to these fields will not change post construction.	3	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife. After construction, the site will still exhibit very low wildlife value.	2	1
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year. After construction, there will still be supplemental water from the adjacent irrigated agricultural fields.	4	3
Alteration	At least 70% of the site has been altered by canal placement, roadway, residential use, or agricultural practices. After the canal is piped, at least 80% or more of the site would be altered.	2	0
THV	Supplemental hydrology would justify partial loss	35	27
Acres of Impact			0.15
Habitat Units Lost			0.12

Location: H10 Segment ORDC Canal Fringe		
Habitat Type: Tree/Shrub		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	5
Stratification	Site is largely missing the mid-story and overstory. The herb layer is dominated by a few species	3
Native vs. Non-native	Site is 40% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle. Native plants include *Carex nebraskensis* , *Carex aquatilis* , *Juncus balticus,* and *Acer negundo.*	6
Noxious Weeds	Cheatgrass, Russian knapweed, medusahead, and quack grass cover approximately 25% of the riparian area.	0
Vegetative Condition/Health	There is little to no signs of stress among the existing vegetation.	9
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site	1
Connectivity	The site is near to agriculture fields that may be used by wildlife, but no agreement is in place	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year	4
Alteration	More than 70% of the site is altered by canal placement, residential development and agricultural use	2
THV		35
Acres of Impact		0.16
Habitat Units Lost		0.56

Location: H11 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	2
Stratification	Site is missing the mid-story and overstory. The herb layer is dominated by a few species	2
Native vs. Non-native	Site is largely dominated by non-native species such as cheatgrass, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.*	0
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 25% of the riparian area	0
Vegetative Condition/Health	There are moderate signs of stress in the existing plants, as the site is very dry and open with patches of bare ground.	1
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year	4
Alteration	At least 75% of the site has been altered by canal placement, roadway, residential use, or agricultural practices	1
THV		16
Acres of Impact		0.15
Habitat Units Lost		0.24

Location: H12 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is missing the mid-story and overstory. The herb layer is dominated by a few species	3
Native vs. Non-native	Site is 50% non-native with species such as cheatgrass, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.*	5
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 20% of the riparian area	4
Vegetative Condition/Health	There are moderate signs of stress in the existing plants, as the site is highly altered by agricultural uses.	7
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of consistent mid-story and over-story cover, the site exhibits low value for wildlife	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year	4
Alteration	At least 75% of the site has been altered by canal placement, roadway, residential use, or agricultural practices	1
THV		33
Acres of Impact		0.15
Habitat Units Lost		0.50

Location: H13 Segment ORDC Canal Fringe			
Habitat Type: Shrub/Grass			
Relative Loss: Partial			
Criterion	Rationale	HQS	HQS-Post
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common. With supplemental water from adjacent irrigation, this would not be expected to change.	4	4
Stratification	Site is missing the midstory and the overstory is not consistent along the site. The herb layer is dominated by a few species. After the canal is piped, the adjacent, irrigated fields will likely provide enough supplemental water to keep the overstory cottonwood, elm and box elder trees alive, as well as maintain the *Juncus balticus* presence in the fringes of the irrigated fields along the edge of the old canal.	3	3
Native vs. Non-native	Site is 40% non-native with species such as cheatgrass, Russian olive, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.* Without a plan to eradicate non-native species and with the supplemental irrigation water, it would be expected that this ratio would not alter significantly.	8	8
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 25% of the riparian area. Without an eradication plan, this would not be expected to change after piping the canal.	8	8
Vegetative Condition/Health	There are few signs of stress in the existing plants. Wth the supplemental water from irrigation, the overall vegetative conditions may not change dramatically, but an increase in stress may develop over time for some of the larger trees or shrubs.	9	7
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site. After the canal is piped, there will be no interspersion of open water.	1	0
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place. The proximity to these fields will not change post construction.	3	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife. After construction, the site will still exhibit very low wildlife value.	4	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year. After construction, there will still be supplemental water from the adjacent irrigated agricultural fields.	4	3
Alteration	At least 70% of the site has been altered by canal placement, roadway, residential use, or agricultural practices. After the canal is piped, at least 80% or more of the site would be altered.	2	0
THV	Supplemental hydrology would justify partial loss	46	38
Acres of Impact			0.18
Habitat Units Lost			0.14

Location: H14 Segment ORDC Canal Fringe		
Habitat Type: Grass/Forb		
Relative Loss: Total		
Criterion	Rationale	HQS
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common.	3
Stratification	Site is largely missing the mid-story and overstory. The herb layer is dominated by a few species	2
Native vs. Non-native	Site is 20% non-native with species such as Russian Olive, cheatgrass, elm, whitetop, and Canada thistle. Native plants include *Carex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.*	8
Noxious Weeds	Cheatgrass, Russian knapweed, and quack grass cover approximately 5% of the riparian area	9
Vegetative Condition/Health	There are few signs of stress in the existing plants.	8
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site	1
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place	3
Uniqueness or Abundance	With moderate to low native vegetation diversity, and a lack of mid-story cover, the site exhibits low value for wildlife	3
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year	4
Alteration	At least 70% of the site has been altered by canal placement, residential use, or agricultural practices	2
THV		43
Acres of Impact		0.09
Habitat Units Lost		0.40

Location: H15 Segment ORDC Canal Fringe			
Habitat Type: Grass/Forb			
Relative Loss: Partial			
Criterion	Rationale	HQS	HQS-Post
Vegetative Diversity	*Carex spp* , *Juncus balticus* , and *Elymus repens* are common. With supplemental water from adjacent irrigation, this would not be expected to change.	2	2
Stratification	Site is missing the midstory and the overstory is not consistent along the site. The herb layer is dominated by a few species. After the canal is piped, the adjacent, irrigated fields will likely provide enough supplemental water to keep the overstory cottonwood, elm and box elder trees alive, as well as maintain the *Juncus balticus* presence in the fringes of the irrigated fields along the edge of the old canal.	3	3
Native vs. Non-native	Site is 20% non-native with species such as cheatgrass, Russian olive, whitetop, medusahead and Canada thistle. Native plants include C*arex nebraskensis* , *Carex aquatilis,* and *Juncus balticus.* Without a plan to eradicate non-native species and with the supplemental irrigation water, it would be expected that this ratio would not alter significantly.	8	8
Noxious Weeds	Cheatgrass, Russian knapweed, Canada thistle, medusahead and quack grass cover nearly 25% of the riparian area. Without an eradication plan, this would not be expected to change after piping the canal.	7	7
Vegetative Condition/Health	There are moderate signs of stress in the existing plants. With supplemental water from irrigation, the overall vegetative conditions may not change dramatically, but an increase in stress may develop over time for some of the larger trees or shrubs.	6	5
Interspersion of Open Water	The canal currently runs as a single thread of open water through the site. After the canal is piped, there will be no interspersion of open water.	1	0
Connectivity	The site is adjacent to agriculture fields that may be used by wildlife, but no agreement is in place. The proximity to these fields will not change post construction.	3	3
Uniqueness or Abundance	With low native vegetation diversity, and a lack of mid-story and over-story cover, the site exhibits low value for wildlife. After construction, the site will still exhibit very low wildlife value.	3	2
Water Supply	The canal is a non-natural seasonal flow, and the volume of flow is uncertain during the year. After construction, there will still be supplemental water from the adjacent irrigated agricultural fields.	4	3
Alteration	At least 70% of the site has been altered by canal placement, roadway, residential use, or agricultural practices. After the canal is piped, at least 80% or more of the site would be altered.	1	0
THV	Supplemental hydrology would justify partial loss	38	33
Acres of Impact			0.20
Habitat Units Lost			0.10

Photo Inventory: Representative of ORDC Ditch Segments

Segment 1-2 intersection

Segment 5-7 intersection

Segment 7

Segment 7-8 intersection

Photo Inventory: Representative of ORDC Ditch Segments

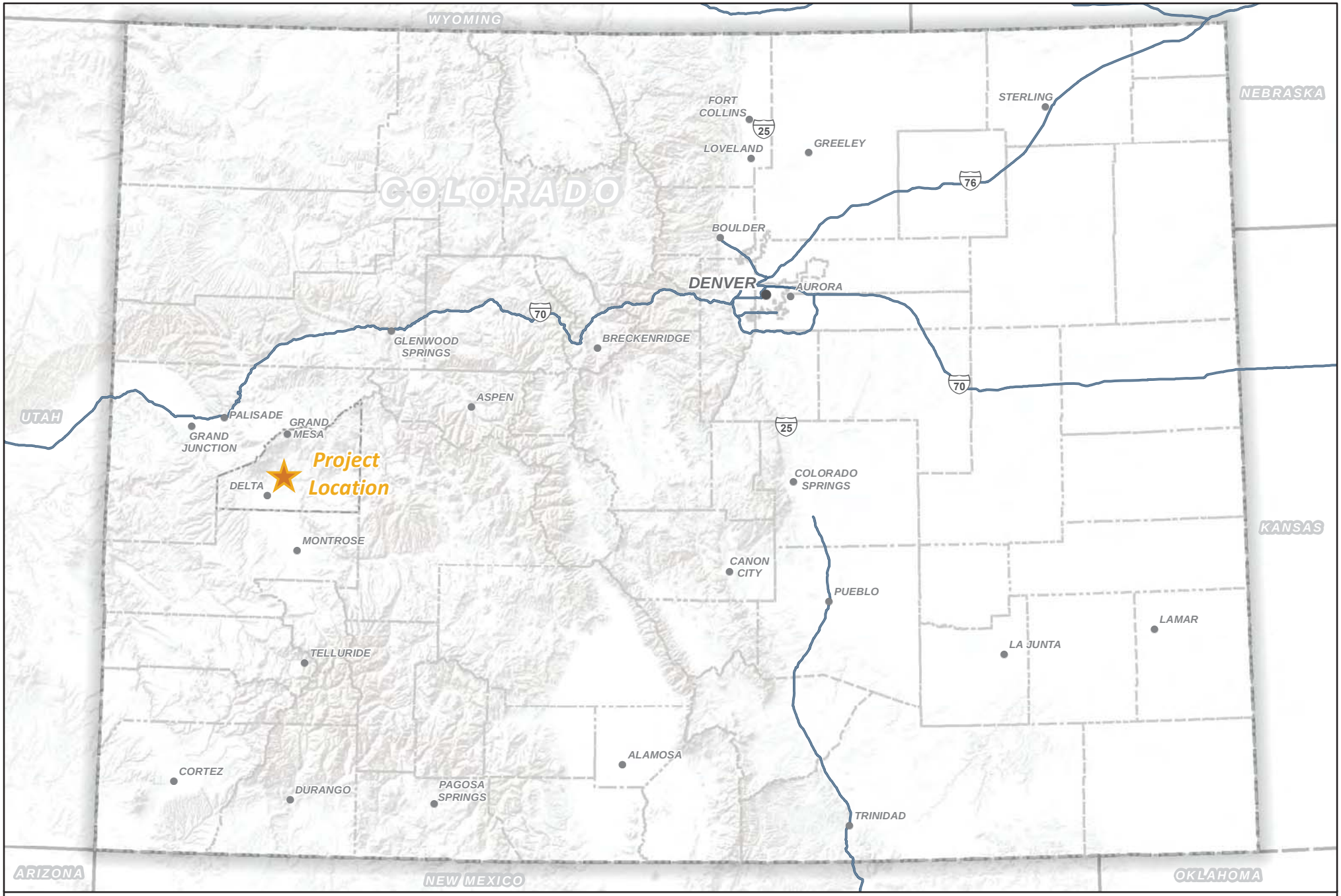
Segment 8

Segment 8-9 intersection

Segment 15

Staging Area 3

Appendix B: Site Map, Vicinity Map & Topographic Map

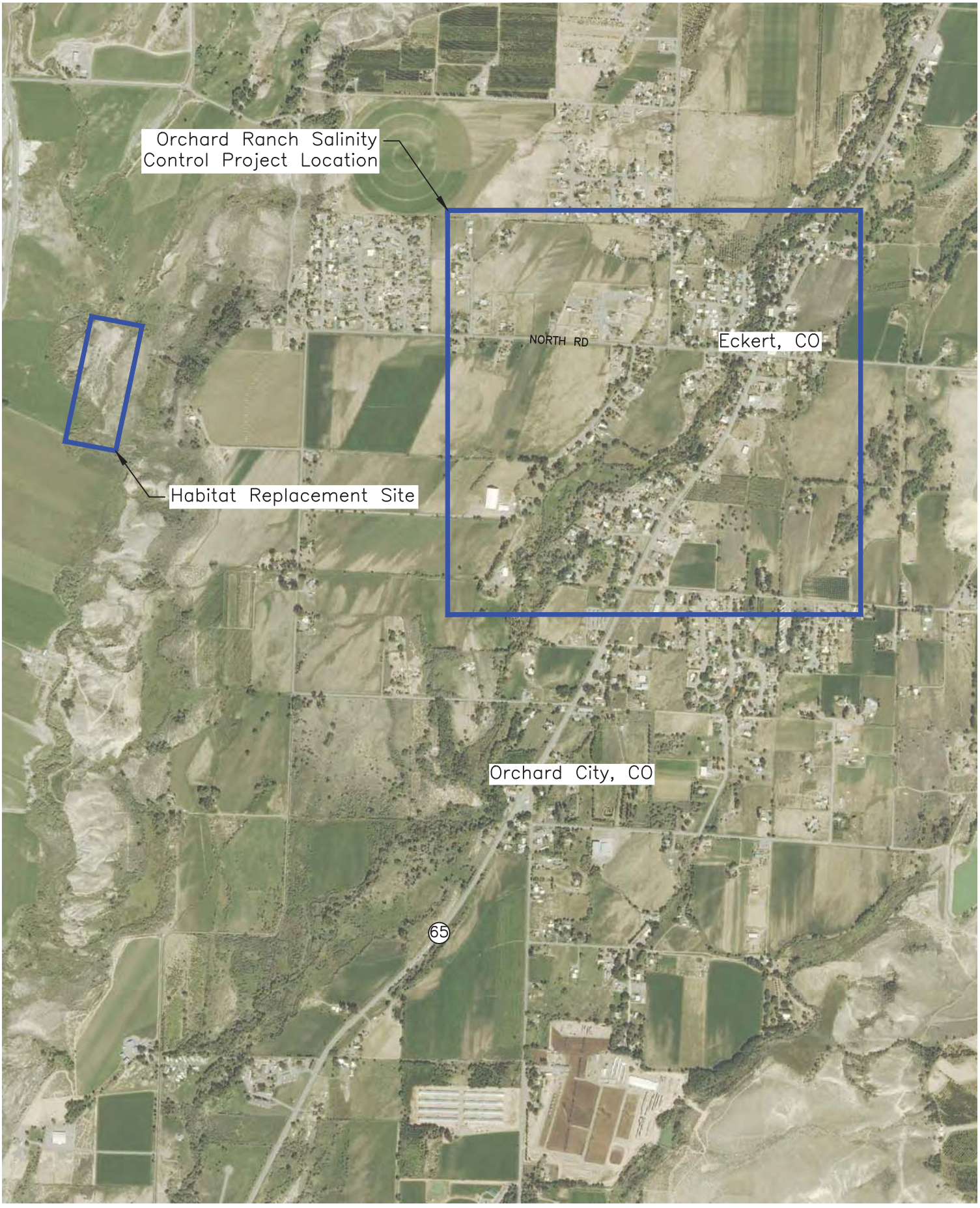


GATEWAY MAPPING INC.
a J-U-B Company

Project Vicinity Map

ORCHARD RANCH DITCH PIPING PROJECT

ECKERT, COLORADO

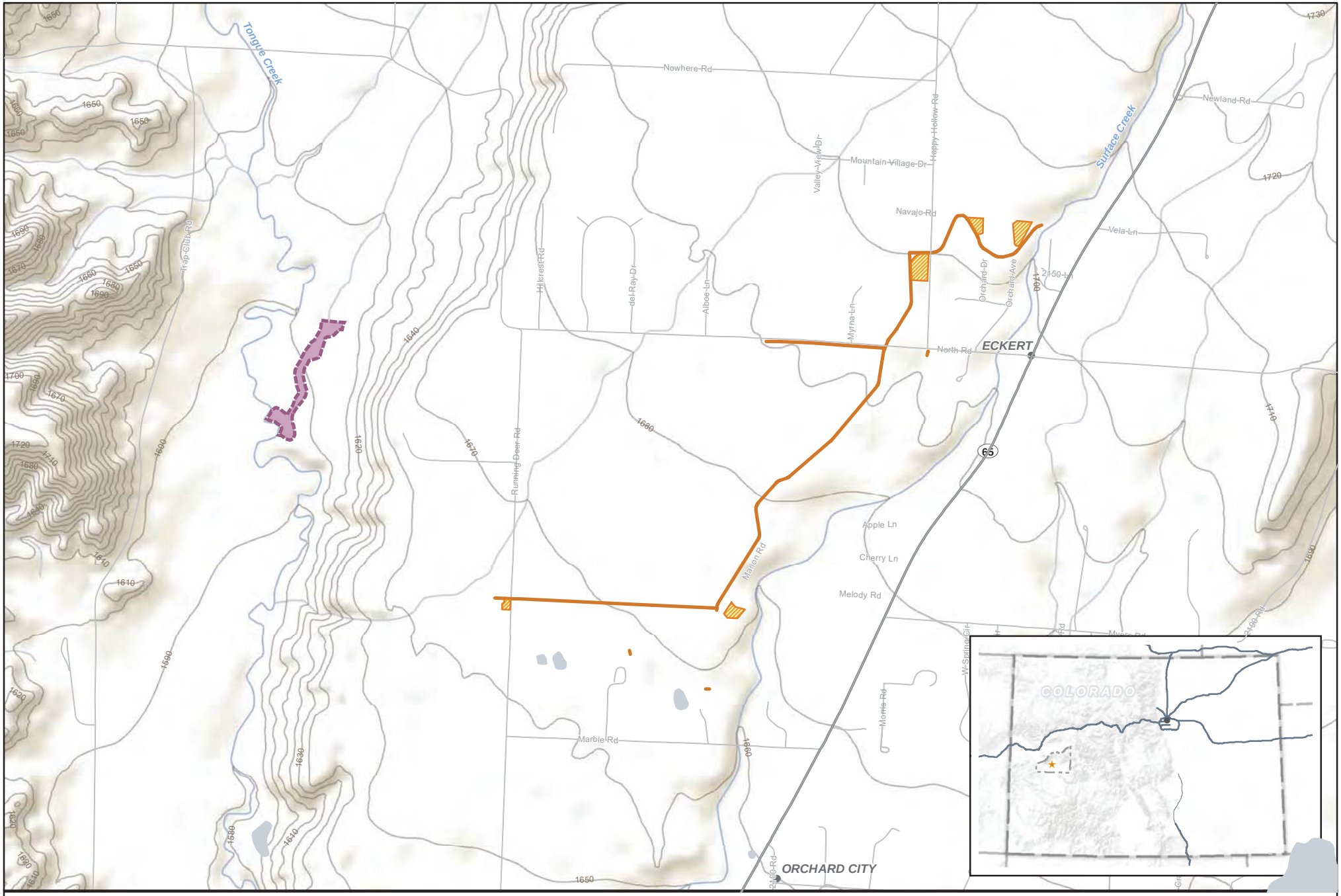


ORCHARD RANCH SALINITY CONTROL PROJECT VICINITY MAP

J-U-B ENGINEERS, INC.

LAST UPDATED: 10/10/2017
PLOT DATE: 10/10/2017
FILE: E-101

Plot Date:10/10/2017 2:50 PM Plotted By: Marcos Hernandez
Date Created:8/14/2017 \\KAYS\PUBLIC\PROJECTS\JUB\ORCHARD RANCH\55-15-037-ORCHARD RANCH PIPING PROJECT\TEXT\REPORTS\ENVIRONMENTAL\ORDC HABITAT LOSS - HRP\UPDATED HABITAT LOSS AND HRP SCORING AND REPORTS\CAD\SHEET\E-101.DWG

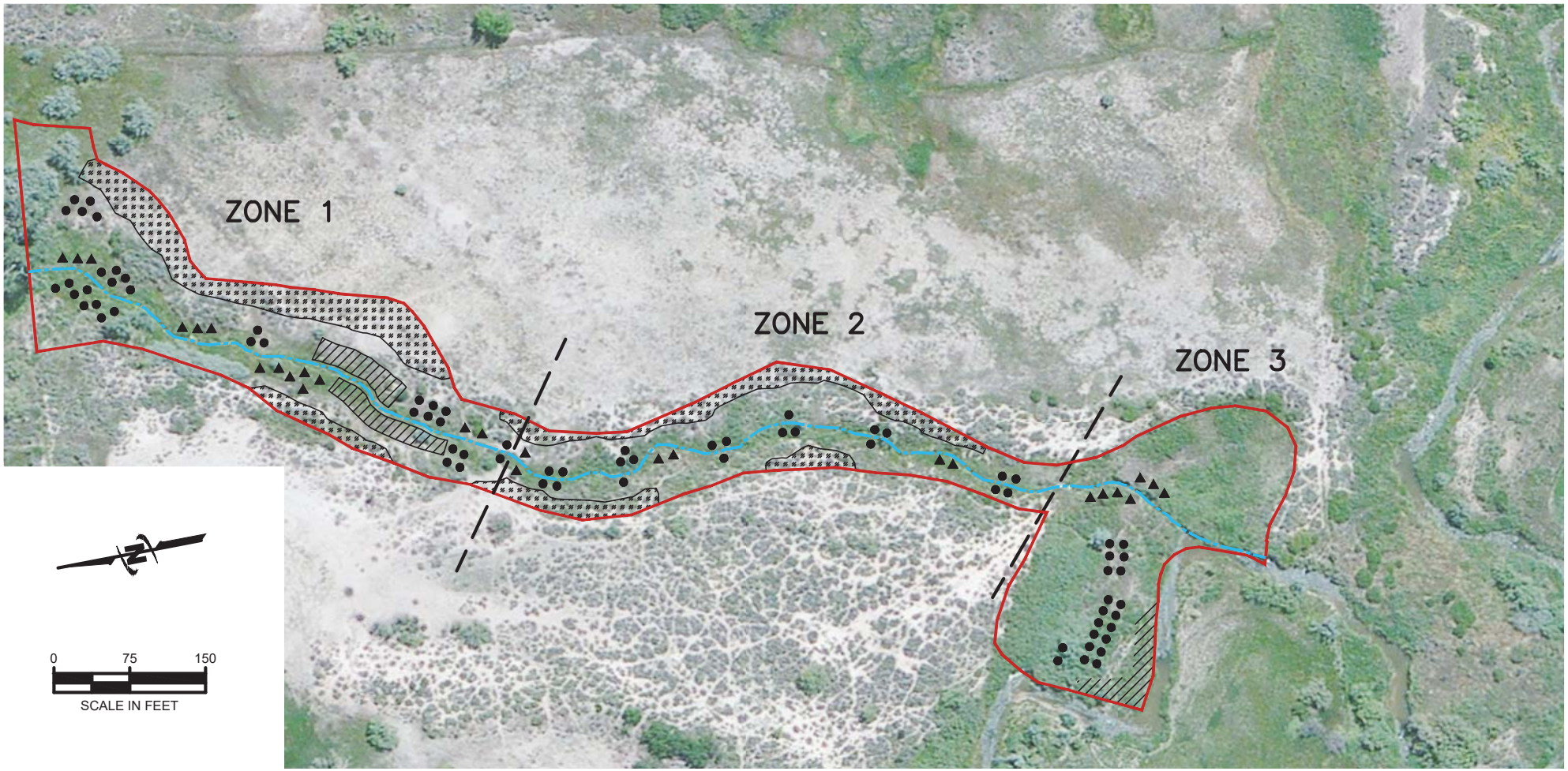


GATEWAY MAPPING INC.
a J-U-B Company

ORCHARD RANCH DITCH PIPING PROJECT

Topographic Map

Appendix C: Planting Details



LEGEND

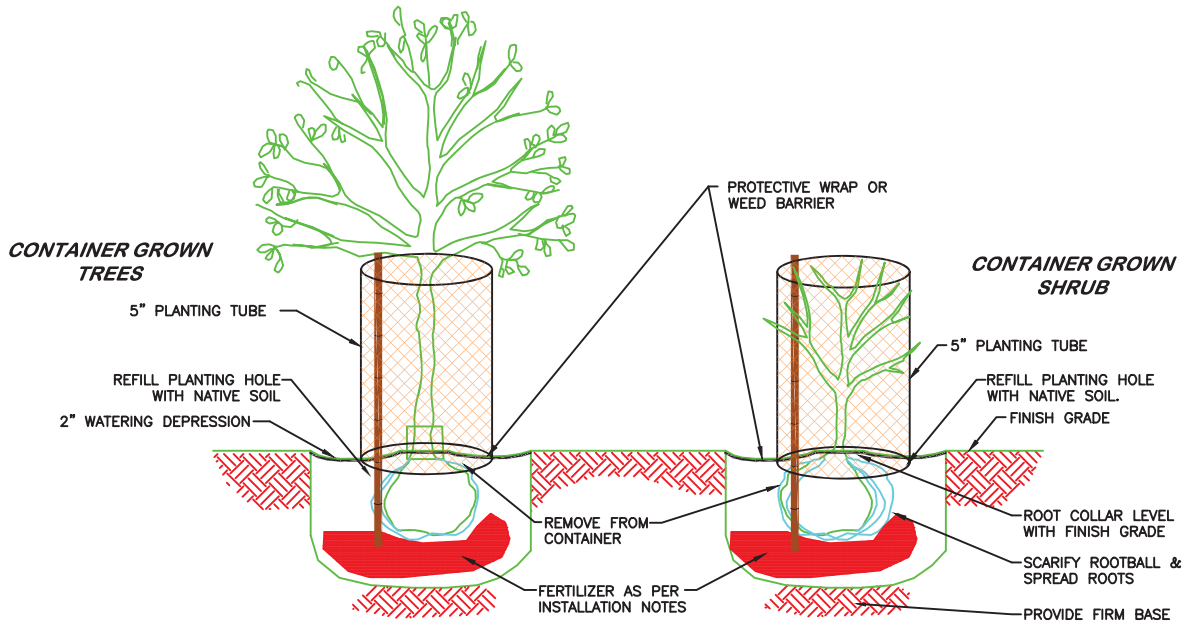
- Habitat Replacement Area to be Replanted with Native Vegetation (3.33 Acres)
- Hamilton Draw Wetted Channel
- Zone Boundary

PLANT SCHEDULE:

SYMBOL	PLANT NAME	APPROXIMATE TOTAL QTY	SPACING
	Stake Plantings		
	Coyote Willow *(Salix exigua)*	600	Random 1–3 ft. apart
	5 lbs. High Desert Meadow Seed mix broadcast on barren soil at edges of riparian area.	5 lbs/yr	Broadcast sown
●	Cottonwood *(Populus spp.)*	75	Random 8–16 ft. apart
▲	Buffaloberry *(Shepherdia argentea)*	300	Random 1–3 ft. apart

JUB
J-U-B ENGINEERS, INC.
CAD FILE: E-101

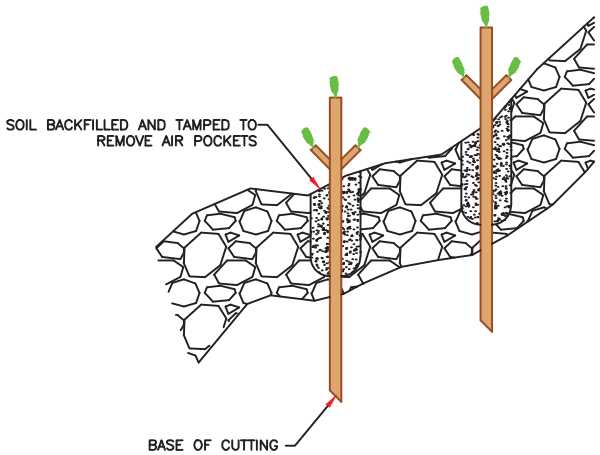
ORDC
Habitat Replacement Plan
Planting Detail



PLANTING DETAIL
NOT TO SCALE

INSTALLATION NOTES:

1. ALL PLANTING AND SITE PREPARATION OPERATIONS SHALL BE CONDUCTED ACCORDING TO AMERICAN NURSERYMAN'S ASSOCIATION GUIDELINES.
2. ALL PLANT MATERIALS SHALL BE NATIVE TO THE DELTA COUNTY, COLORADO REGION. PLANT MATERIAL SHALL BE FROM NATIVE STOCK, NO CULTIVARS OR HORTICULTURAL VARIETIES WILL BE ALLOWED.
3. ALL PLANT MATERIAL SCHEDULED FOR INSTALLATION WILL BE IDENTIFIED IN THE PLANT SCHEDULE FOR THIS PROJECT. PROPOSALS FOR SUBSTITUTIONS REQUIRE THE APPROVAL OF THE RECLAMATION BIOLOGIST.
4. THE REQUIREMENTS OF ALL NURSERY GROWN PLANT MATERIALS ARE IDENTIFIED IN THE PLANT SCHEDULE. ALL PLANTS SHALL BE GROWN IN CONTAINERS. ONLY SOUND, HEALTHY, VIGOROUS PLANTS, FREE OF DEFECTS, DISEASE, AND ALL FORMS OF INFESTATIONS WILL BE ACCEPTED.
5. DIG, PACK, TRANSPORT, AND HANDLE ALL PLANTS WITH CARE TO ENSURE PROTECTION FROM INJURY. STORE PLANTS IN THE MANNER NECESSARY TO ACCOMMODATE THEIR HORTICULTURAL REQUIREMENTS. HEEL–IN PLANTS IF NECESSARY TO KEEP THEM FROM DRYING OUT.
6. SHRUBS AND TREES SHALL BE KEPT SATURATED AND SHADED UNTIL THE ACTUAL TIME OF INSTALLATION. DO NOT ALLOW PLANTINGS TO DRY OUT OR SIT IN THE SUN PRIOR TO OR DURING INSTALLATION. IMMEDIATELY SATURATE SHRUBS AND TREES AFTER PLANTING TO AVOID CAPILLARY STRESS.
7. A PROTECTIVE WRAP OR WEED BARRIER SHALL BE PLACED IN A 3 FT RADIUS AT THE SHRUB/TREE TRUNK.
8. INSTALL TRANSPLANTER TYPE FERTILIZER, SUCH AS OSMOCOTE SLOW RELEASE FERTILIZER (16–16–16 ANALYSIS) OR EQUAL, TO SHRUB AND TREE PITS. APPLICATION RATE SHALL BE AS SPECIFIED BY THE MANUFACTURER. FERTILIZER WILL BE ALLOWED IN PLANTING PITS ONLY.
9. 5" VEXAR OR PLANTING TUBES WOULD BE INSTALLED AT THE BASE OF SHRUBS/TREES ALONG WITH BAMBOO STAKES FOR STABILITY.

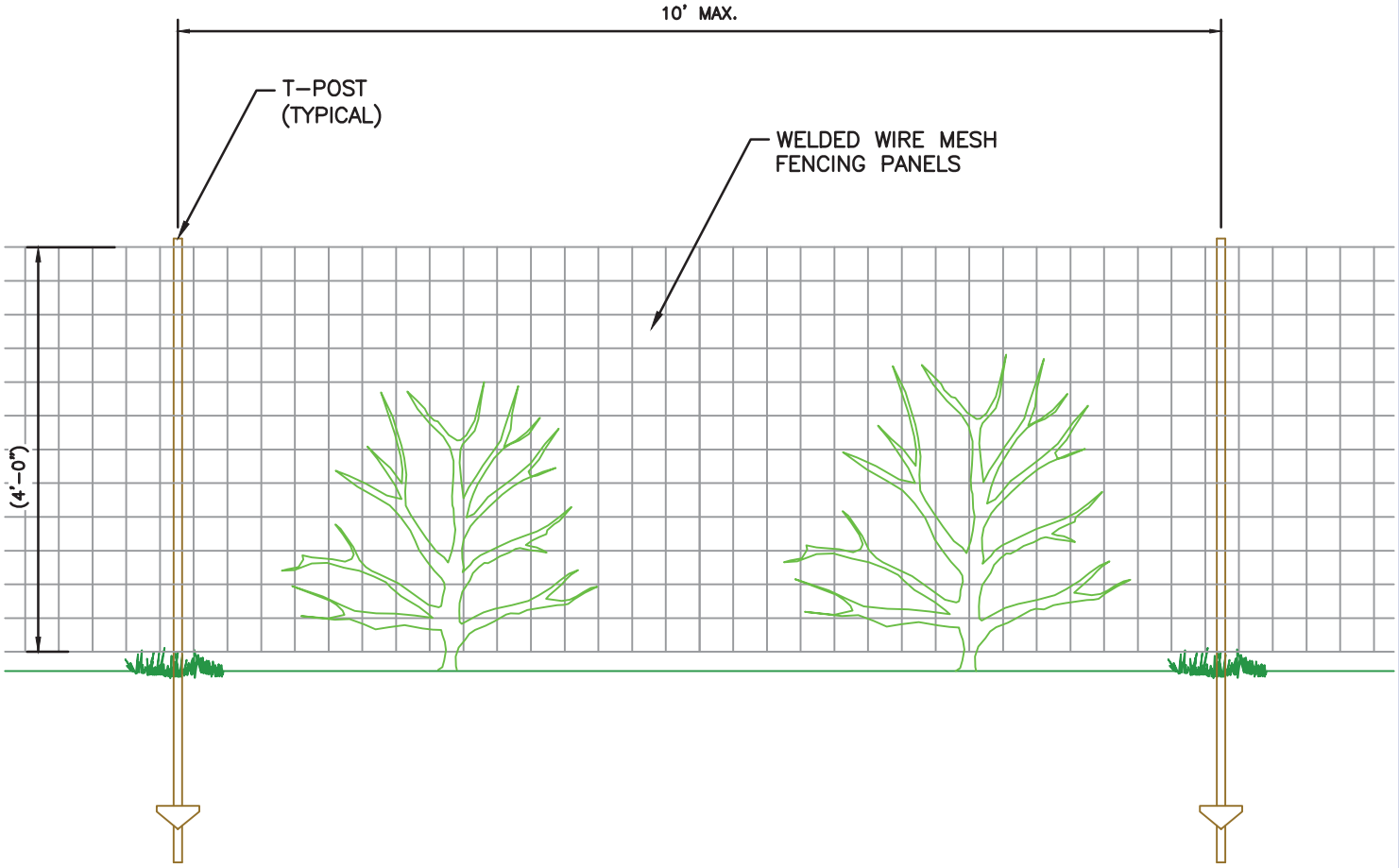


WILLOW STAKE PLANTING DETAIL

NOT TO SCALE

INSTALLATION NOTES:

1. LARGE DIAMETER CUTTINGS OR STAKES SHOULD BE AT LEAST 1/2" IN DIAMETER.
2. TERMINAL BUD ON EACH CUTTING SHALL BE REMOVED.
3. CUTTING SHALL HAVE 2/3 OF TOTAL LENGTH PLANTED BELOW GROUND. 4 TO 6 BUDS SHALL BE UNDERGROUND AND 2 TO 3 BUDS ABOVE GROUND ON EACH CUTTING. BASE OF CUTTING SHALL EXTEND INTO GROUNDWATER.
4. SOIL SHALL BE TAMPED AROUND EACH CUTTING TO ENSURE NO AIR POCKETS REMAIN AROUND CUTTING.
5. CUTTINGS OR STAKES SHALL BE SOAKED AT LEAST 24 HOURS, BUT NOT MORE THAN 7 DAYS, PRIOR TO PLANTING.



NOTE:
TYPICAL FENCE DESIGN YIELDS PANELS WITH WIRE DIAMETER (3–6mm) AND MESH (50–80mm x 50–80mm).

J-U-B ENGINEERS, INC.

CAD FILE: Exclustionary Fence

ORDC
HABITAT REPLACEMENT PLAN
TYPICAL EXCLUSIONARY FENCE DESIGN

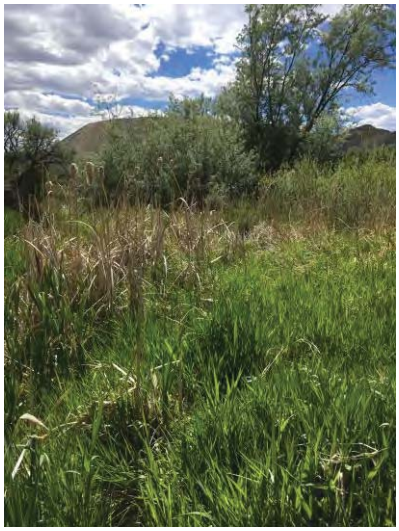
Appendix D: Permanent Photo Points - Baseline Photographs

Table 1: Species List and Permanent Photo Points, and Date Sampled*

Photo Point	Photo Directional Bearing	GPS Location		Date
		Latitude	Longitude	
PP1	SW	38.843044	-107.986401	5/23/2017
PP2	W	38.842852	-107.986692	5/23/2017
PP3	N	38.842620	-107.986901	5/23/2017
PP4	N	38.842215	-107.987262	5/23/2017
PP5	W	38.842023	-107.987328	5/23/2017
PP6	SW	38.841823	-107.987467	5/23/2017
PP7	SW	38.841241	-107.987634	5/23/2017
PP8	W	38.839959	-107.987991	5/23/2017
PP9	S	38.840317	-107.988294	5/23/2017
PP10	W	38.840311	-107.988577	5/23/2017
PP11	NW	38.840416	-107.988802	5/23/2017
PP12	NE	38.840852	-107.988028	5/23/2017
PP13	NE	38.841256	-107.987859	5/23/2017
PP14	NE	38.842088	-107.987690	5/23/2017
PP15	NE	38.842504	-107.987268	5/23/2017

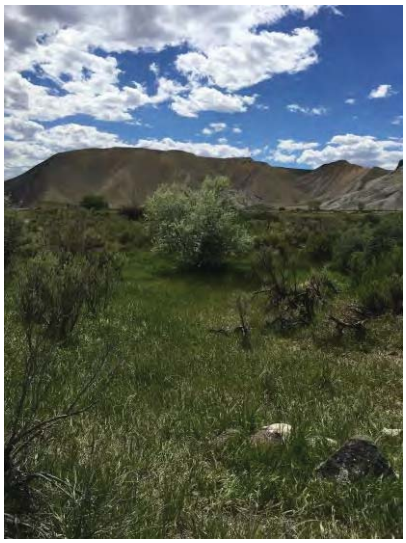
*At each photo point, change in structure over time will also be noted.

PP1



PP2

PP3



PP4

PP5

PP6

PP7

PP8

PP9

PP10

PP11

PP12

PP13

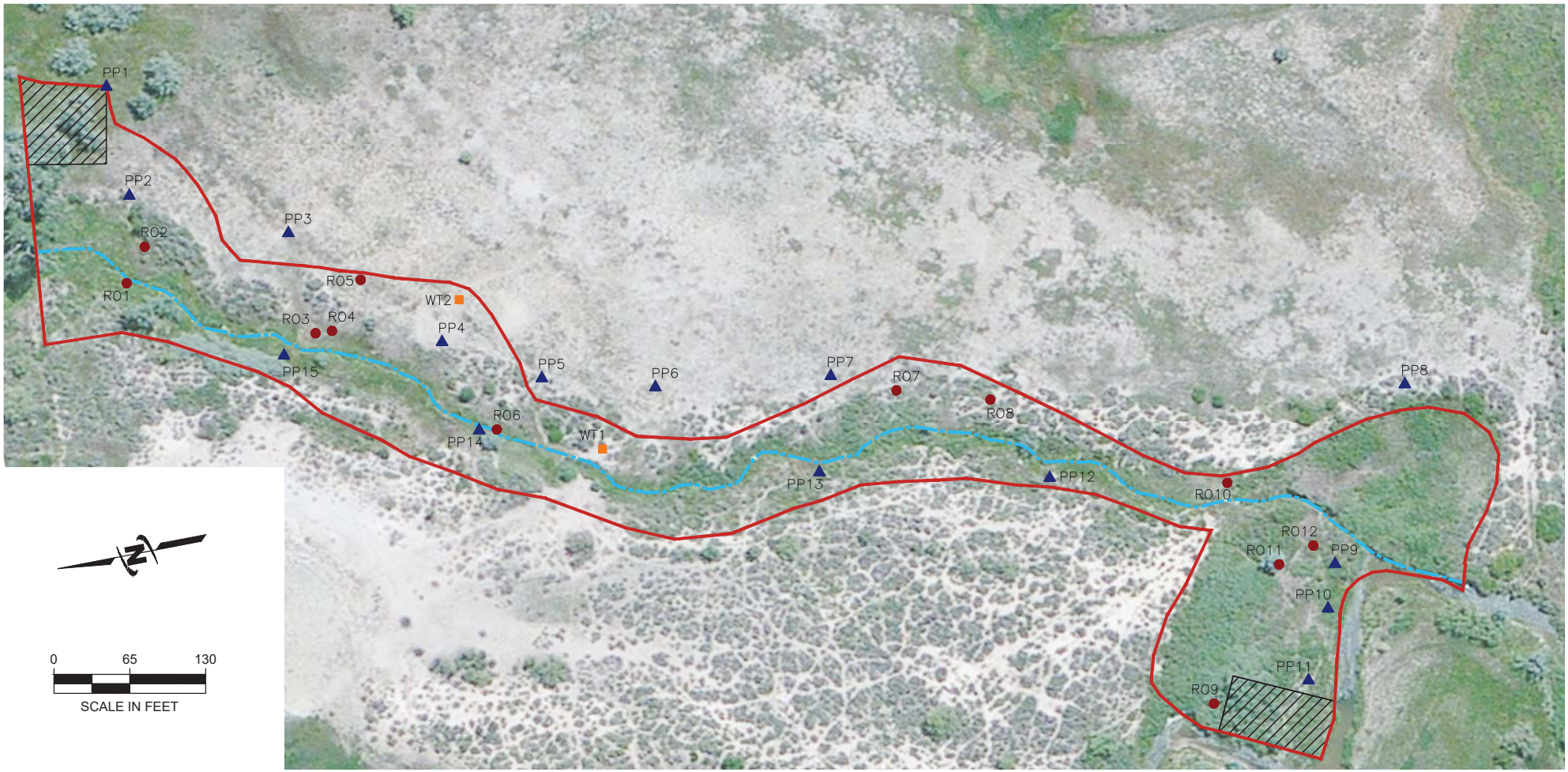
PP14

PP15

Appendix E: Invasive Weed Inventory Plots and Map

Table 1: Noxious Weed Polygons

Noxious Species Patch Label	Species	Approximate Area (Sq Ft) or Age Class	Number of Plants	Photo Point
RO1	Russian Olive	mature	1	PP2
RO2	Russian Olive	mature	1	PP2
RO3	Russian Olive	mature	1	PP3
RO4	Russian Olive	mature	1	PP3, PP15
RO5	Russian Olive	mature	1	PP3, PP15
RO6	Russian Olive	mature	1	PP5, PP14
RO7	Russian Olive	mature	1	PP7, PP13
RO8	Russian Olive	mature	1	PP12
RO9	Russian Olive	mature	1	PP11
RO10	Russian Olive	mature	1	PP9
RO11	Russian Olive	mature	1	PP9, PP10
RO12	Russian Olive	mature	1	PP9
ROP1	Russian Olive/Whitetop/Thistle/Tamarisk	50’ x 50’	10 Russian Olive plants	PP1
ROP2	Russian Olive/Whitetop/Thistle/Tamarisk	80’ x 80’	6 Russian Olive plants	PP11
WT1	Whitetop	10’ x 10’	--	PP6
WT2	Whitetop	10’ x 30’	--	PP4
Total		**10,648**	**26 Russian Olive stems**	



LEGEND

Habitat Replacement Area to be Replanted with Native Vegetation (3.33 Acres)

Hamilton Draw Wetted Channel

Photo Points and Invasive Species Polygons	
SYMBOL	
	Russian Olive Areas
	Individual Russian Olive
	Whitetop and Thistle Areas
	Photo Points

J-U-B ENGINEERS, INC.

CAD FILE: E-101

ORDC
Habitat Replacement Plan
Photo Points and Invasive Species Polygons

Appendix F: NWI Wetlands

U.S. Fish and Wildlife Service
National Wetlands Inventory

ORDC Habitat Replacement Site

June 8, 2017

Wetlands

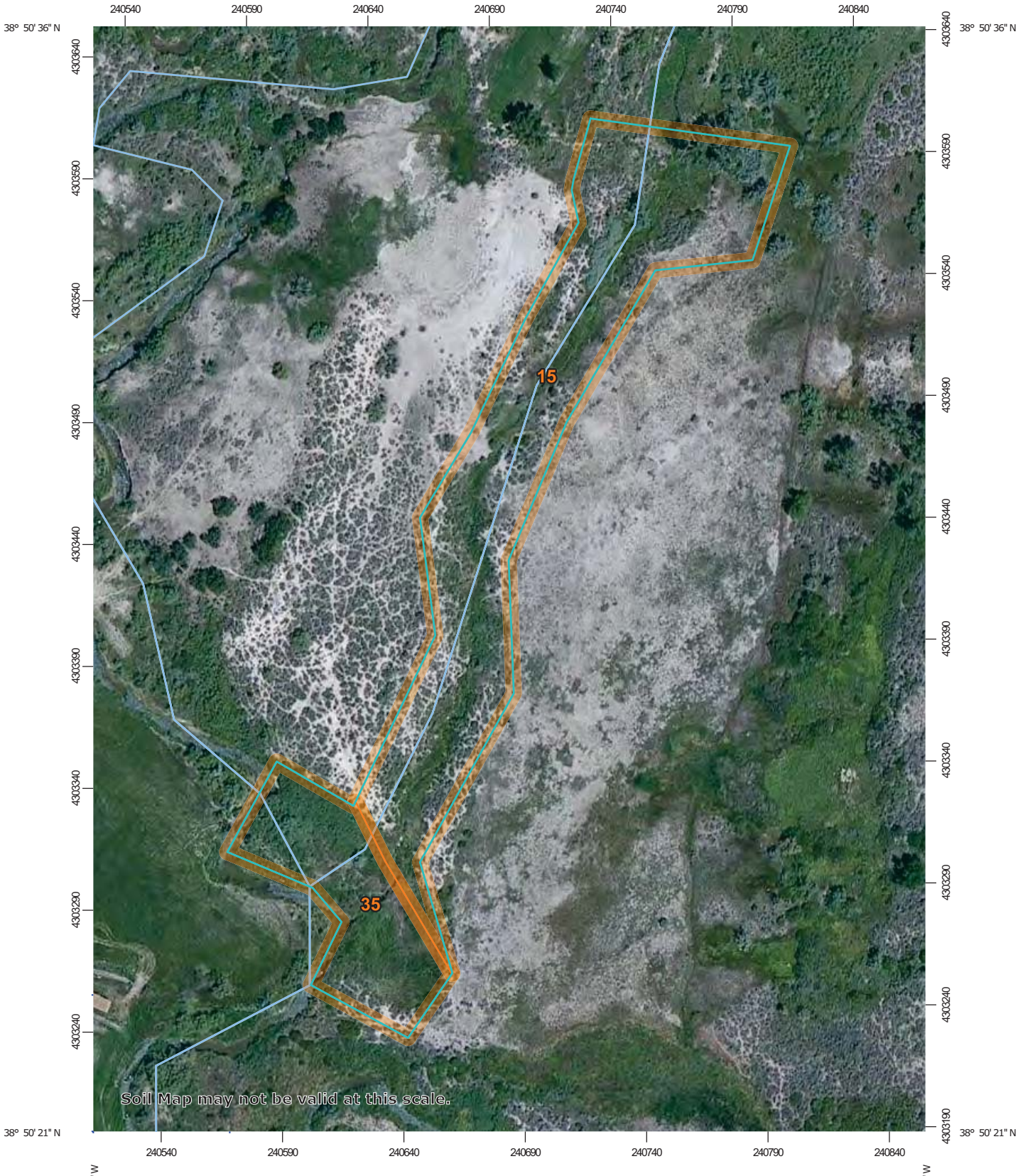
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Appendix G: NRCS Soil Survey

Soil Map—Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties
(ORDC HRP Soils)



Map Scale: 1:2,210 if printed on A portrait (8.5" x 11") sheet.'

N

Meters'
0 30 60 120 180

Feet
0 100 200 400 600

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 Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Aug 7, 2011—Aug 8, 2011

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.

Map Unit Legend

Paonia Area, Colorado, Parts of Delta, Gunnison, and Montrose Counties (CO679)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
15	Billings silty clay loam, 3 to 6 percent slopes	3.5	76.3%
35	Fluvaquents, flooded	1.1	23.7%
Totals for Area of Interest		**4.6**	**100.0%**

Appendix H: Management Schedule

Dates	Enhancement Activity and Monitoring
2018	
May 23, 2017	Site Visit with BOR & USFWS; Photos taken at photo pts.
Sept. - Nov. 2018	Russian olive in habitat area removed and treated as needed.
Oct. - Nov. 15, 2018	Russian knapweed, whitetop, and Canada thistle treated
2019	
March - Mid April 2019	Plant 50% of trees and shrubs; Plant native wildflower and grass seed mix
May- June 2019	Check for and treat non-native noxious weeds as necessary
July 1, 2019 - July 31, 2019	Photos of habitat site taken and site inspections completed with ORDC, BOR & USFWS as available
August 1, 2019 - October 31, 2019	Follow up treatment on invasive weeds (Canada thistle, whitetop, Russian olive, etc.)
2020	
March 1, 2020 - May 15, 2020	Plant remaining 50% of trees and shrubs; Plant native wildflower and grass seed mix
April 15, 2020 - June 30, 2020	Check for and treat non-native noxious weeds as necessary
July 1, 2020 - July 31, 2020	Photos of habitat site taken and site inspections completed with ORDC, BOR & USFWS as available
August 1, 2020 - October 31, 2020	Follow up treatment on invasive weeds (Canada thistle, whitetop, Russian olive, etc.)
2021	
March 1, 2021 - May 15, 2021	Additional plantings of tree or shrub as needed if 80% survivability has not been met
July 1, 2021 - July 31, 2021	Photos of habitat site taken and inspections completed with ORDC, BOR & USFWS as available
August 1, 2021 - October 31, 2021	Follow up treatment on invasive weeds (Canada thistle, whitetop, Russian olive, etc.)
2022	
March 1, 2022 - May 15, 2022	Additional plantings of tree or shrub as needed if 80% survivability has not been met
July 1, 2022 - July 31, 2022	Photos of habitat site taken and site inspections completed with ORDC, BOR & USFWS as available
2022 - 2068	Photos of habitat site taken and site inspections completed with ORDC, BOR, & USFWS every 3-5 years

Appendix I: Habitat Replacement Implementation Cost Estimate for Years 1-5

Enhancements	Year(s)	Quantity	Estimated Cost per Unit	Total Cost
Mesh tree/shrub guards 5-inch diameter	1-2	1,050	$0.95	$997.50
Weed barrier for plantings	1-2	1,200 sq. ft.	--	$90.00
Bamboo stakes for willow, buffaloberry and cottonwood seedling guards	1-2	1,050	$0.20	$210.00
Willow Stake Plantings and installation labor	1-2	600 (12 trays)**	$50.00/tray of seedlings	$600.00
Buffaloberry stake plantings and installation labor	1-2	300 (6 trays)**	$50.00/tray of seedlings	$300.00
Cottonwood seedlings and installation labor	1-2	75 (2 trays)**	$50.00/ tray of seedlings	$100.00
High Desert Meadow seed mix	1-5	5 lbs./year for 5 years	$25.00 / pound	$625.00
Invasive Species Removal (annual for Years 1-5) – Materials and Labor	1-5	5 years	$2,000/year	$10,000.00
Biological Monitoring and Yearly Report (Development Completed by Contractor, at the discretion of ORDC [Years 1-5])	1-5	5 years	$2,000/year	$10,000.00
Supplemental water delivered by hand or truck	1-2	---	NA	$4,000.00
Grand Total Implementation Cost				**$26,922.50.00***
Ongoing Maintenance Costs	**6-50**	**45 years**	**--**	**--**
Ongoing Invasive Species Maintenance	**6-50**	**Varied**	**$1,000/year**	**$45,000**
Replanting Contingency	**1-50**	**Varied**	**(Estimate ~20% of total planting budget)**	**$200.00**
Estimated Total Ongoing Maintenance Costs				**$45,200.00**

** Estimated cost opinion – actual costs may vary.*

*** Pricing based on estimates from Colorado State Forest Service Seedling Nursery—Grand Junction District*

Appendix J: Monitoring Report Forms

Photo Point Report Form

Site inspection instructions: An annual monitoring report form will be submitted to Reclamation by December 1st of each calendar year for the first five years after project construction. After five years, if the project is meeting or progressing towards the desired conditions, the frequency of inspections can be adjusted to three to five years for the remaining life of the project, upon Reclamation's concurrence. **Site inspections will be conducted during the growing season to best determine the condition of the habitat area. Refer to the Photo Point and Invasive Species Map and the Plant Schedule Map when completing habitat site inspections.**

**Reports may be submitted to Amanda Ewing at aewing@usbr.gov.

Project Name _____

Photo Point Name _____

Date _____

Compass Direction of Photo _____

Observer Name: _____

Note Dominant Species

_____

_____

_____

_____

_____

_____

_____

Note Wildlife or Wildlife Signs Observed (if any)

_____

_____

Noxious Weed Patch Size or Plant Count

Project Name _____

Patch Name _____
(see invasive species map)
Species _____

Collection Date _____

Photo Taken (Circle): Yes No

Recorder Name: _____

Invasive Species Patch Area Estimated: _____

Russian Olive Plant Count: _____

Dominant Plant Species _____

_____

Protocol

1) Individual Russian olive plants shall be counted yearly. Progress toward removal of all existing individual plants will be noted yearly.
2) Whitetop and thistle patch size will be measured by visual estimate.

Management Actions Taken since Last Inspection (e.g. Whitetop sprayed in June at patch WT1):

_____

_____

Adaptive Management Actions Planned (e.g. additional spraying needed at WT1 patch):

_____

Other Notes (e.g. Wildlife or Wildlife Signs Observed, Reclamation met on-site, etc.):

_____

_____

Planting Distribution and Survival

Project Name _____

Planting Zone _____
(See Planting Schedule Map)

Species _____

Collection Date _____

Recorder Name: _____

Plantings

Species	Number Planted to Date	Year Planted	Number Alive Currently	Plant Condition (vigorous, normal, stressed)
Cottonwood				
Buffaloberry				
Coyote Willow				
Planting Zone Survivability Rate (Number alive /Number Planted)*100				

Seeding

Seed Mix	Pounds sewn to Date	Ocular Estimate of Percent Coverage of Area	Condition of Established Plants (vigorous, normal, stressed)
High Desert Meadow Seed Mix			
*			

***Any alternative seed mix used, if approved by Reclamation.**

Notes (Please note any additional observations of plant conditions or needs)

_____

_____

_____

Appendix K: Invasive Species Fact Sheets

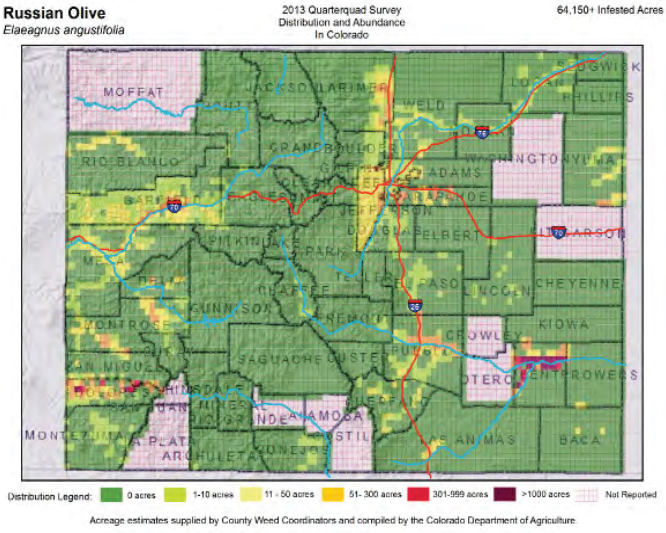
Russian Olive Identification and Management

List B

Russian olive (*Elaeagnus angustifolia*) is a perennial tree or shrub that is native in Europe and Asia. The plant has olive-shaped fruits, silver color at first then becoming yellow-red when mature. Russian olive can reproduce by seed or root suckers. Seeds are readily spread by birds and can remain viable for up to 3 years. Spring moisture and slightly alkaline soil tend to favor seedling growth. The plant's extensive root system sprouts root suckers frequently. The tree can reach up to 30 feet in height with branches that have 1 to 2 inch thorns. Leaves are 2 to 3 inches long, alternate, narrow, and have simple blades with smooth edges. The leaf's lower surface is silvery white, while the upper surface is light green in color. Flowers are 4 small sepals in light yellow clusters, fragrant, and appear May through June. Fruits mature from September to November. Russian olive twigs are flexible, reddish, and have surfaces coated with gray and scaly pubescence, becoming smooth.

Once thought to be a beneficial windbreak tree, it since has been deemed detrimental to the environment. Russian olive can grow in a variety of soil and moisture conditions, but prefers open, moist, riparian zones. It is shade tolerant and can be found along streams, floodplains, fields and open areas up to approximately 8,000 feet in elevation. Russian-olive can outcompete native plants, interfere with natural plant succession and nutrient cycling, and tax water reserves. Because Russian olive is capable of fixing nitrogen in its roots, it can grow on bare, mineral substrates and dominate riparian vegetation. Although Russian olive provides a plentiful source of edible fruits for birds, ecologists have found that bird species richness is actually higher in riparian areas dominated by native vegetation.

The key to effective control of Russian olive is preventing establishment of the trees or shrubs. If plants are already present, control options include cut-stump treatments and mechanical mowing. These treatments depend on size and location of the plant. Details on the back of this sheet can help you create a management plan compatible with your site ecology.



Russian olive is designated as a "List B" species in the Colorado Noxious Weed Act. It is required to be either eradicated, contained, or suppressed depending on the local infestations. or more information visit www.colorado.gov/ag/weeds and click on the Noxious Weed Management Program. Or call the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division, 303-239-4100.

Key ID Points

1. Leaves are silvery white.
2. Branches have 1 to 2 inch thorns.
3. Yellow red fruits on mature plants.
4. Mature trees have shedding, reddish-brown bark.

Russian olive

Elaeagnus angustifolia

List B

Integrated Weed Management Recommendations

Integrated weed management offers the most effective combination of control efforts through the "cut stump" treatment. Trees are cut down with a hatchet or chainsaw, then immediately treated with an approved herbicide on the surface of the cut stump. The most effective timing is late summer/early fall for herbicide transfer into the roots.

Russian olive

Elaeagnus angustifolia

© John Randall, TNC

© James Miller, USFS

© Chris Ness, Adams County

© Scott Peterson, USDA

CULTURAL

Replace Russian olives with native trees. Prevent establishment of new trees by removing seedlings and saplings before they mature. Contact your local Natural Resources Conservation Service for recommendations of other possible trees or shrubs.

BIOLOGICAL

Tubercularia canker is an unapproved biocontrol. However, it overwinters on infected stems and spreads via rain-splash, animals, or pruning implements to open wounds in the bark. Infected tissue becomes discolored or sunken. Entire stems may be girdled and killed, and the disease can deform or kill stressed plants over time.

MECHANICAL

Saplings can be pulled with a weed-wrench or cut with brush-cutters. Trees can be girdled or cut with chainsaws. However, stump sprouting commonly occurs after cutting down the tree; and stump excavation without removing all parts of the roots can result in root sprouting. Treating cut-stumps with an herbicide can eliminate sprouting. Stump burning is practical when conditions support a long, hot fire and most effective in summer or early fall. Saplings are most sensitive to mechanical treatment.

CHEMICAL

The table below includes recommendations for herbicides that can be applied to range and pasturelands. Always read, understand, and follow the label directions. The herbicide label is the LAW!

Herbicide	Rate	Application Timing
Triclopyr (Garlon 4, Remedy)	20-30% solution in basal bark oil. The herbicide Pathfinder comes pre-mixed in oil and does not require dilution.	Cut-Stump Treatment: Apply to the cambial layer of the tree immediately after the cut-stump treatment and to roots above soil surface. (Summer to fall; fall treatments showed fewer re-growth) Basal Bark Treatment: Spray till wet but not dripping; the roots above soil surface, root collar, and lower trunk to a height of 12-15 inches above ground (Late summer to fall)
Glyphosate* (Rodeo - approved aquatic label)	Undiluted (100% solution) or 50% solution in basil bark oil	Cut-Stump Treatment: Apply to the cambial layer of the tree immediately after the cut-stump treatment and to roots above soil surface. Diluted solutions requires regular agitation. Treat summer to fall; fall treatments showed fewer re-growth.
Note: *These products are non-selective and will kill any vegetation contacted.		
Additional herbicide recommendations for this and other species can be found at: www.colorado.gov/agconservation/CSUHerbicideRecommendations.pdf		

Colorado Department of Agriculture - Conservation Services
305 Interlocken Parkway
Broomfield, CO 80021
303-869-9030
www.colorado.gov/ag/weeds

Updated:
07/2015

Canada Thistle Identification and Management

List B

Canada thistle (*Cirsium arvense*) is a non-native, deep-rooted perennial that spreads by seeds and aggressive creeping, horizontal roots called rhizomes. Canada thistle can grow 2 to 4 feet in height. The leaves are oblong, spiny, bright green, and slightly hairy on the undersurface. Unlike other noxious biennial thistles which have a solitary flower at the end of each stem, Canada thistle flowers occur in small clusters of 1 to 5 flowers. They are about 1 cm in diameter, tubular shaped, and vary from white to purple in color.

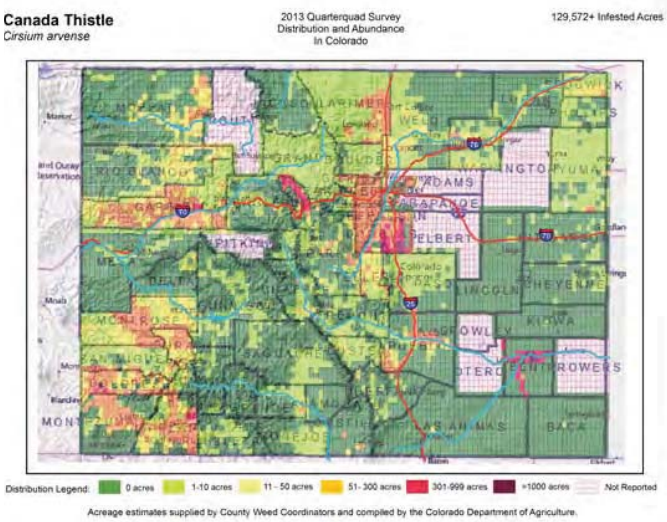
Canada thistle emerges from its root system from late April through May. It flowers in late spring and throughout the summer. It produces about 1,000 to 1,500 seeds per plant that can be wind dispersed. Seeds survive in the soil for up to 20 years. Additionally, Canada thistle reproduces vegetatively through its root system, and quickly form dense stands. Each fragmented piece of root, 0.25 inch or larger, is capable of forming new plants. The key to controlling Canada thistle is to eliminate seed production and to reduce the plant's nutrient reserves in its root system through persistent, long-term management.

Canada thistle is one of the most troublesome noxious weeds in the U.S. It can infest diverse land types, ranging from roadsides, ditch banks, riparian zones, meadows, pastures, irrigated cropland, to the most productive dryland cropland. Large infestations significantly reduce crop and cattle forage production and native plant species. It is a host plant to several agricultural pests and diseases. Canada thistle prefers moist soils, but it can be found in a variety of soil types. It has been found at elevations up to 12,000 feet.

Effective Canada thistle control requires a combination of methods. Prevention is the most important strategy. Maintain healthy pastures and rangelands, and continually monitor your property for new infestations. Established plants need to be continually stressed. Management options become limited once plants begin to produce seeds. Details on the back of this sheet can help to create a management plan compatible with your site ecology.

Canada thistle is designated as a "List B" species as described in the Colorado Noxious Weed Act. It is required to be either eliminated, contained, or suppressed depending on the local infestations. For more information visit www.colorado.gov/ag/weeds and click on the Noxious Weed Program link or call the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division, (303) 869-9030.

2013 Quarter Quad Survey



Key ID Points

1. Cluster of 1-5 white to purple flowers on a stem.
2. Floral bracts are spineless.
3. Small flowers that are 1 cm in diameter.
4. Perennial, rhizomatous plant with spiny, oblong, green leaves.

Canada thistle

Cirsium arvense

List B

Integrated Weed Management Recommendations

Integrated weed management is imperative for effective Canada thistle control. This weed needs to be continually stressed, forcing it to exhaust root nutrient stores, and eventually die. Mowing or grazing can be followed up with herbicide application. Avoid hand-pulling and tilling which can stimulate the growth of new plants.

Canada thistle

Cirsium arvense

CULTURAL

Prevention is the best control strategy. Maintain healthy pastures , riparian areas, and rangelands. Prevent bare ground caused by overgrazing, and continually monitor your property for new infestations. Establishment of select grasses can be an effective control.

BIOLOGICAL

Cattle, goats, and sheep will graze on Canada thistle when plants are young and succulent in the spring. Follow up grazing with a fall herbicide application. Insects are available, and provide limited control. Currently, collection and distribution methods for Canada thistle rust (*Puccinia punctiformis*) are being refined. For more information on Canada thistle biocontrol, contact the Colorado Department of Agriculture - Palisade Insectary at (970) 464-7916.

MECHANICAL

Due to Canada thistle's extensive root system, hand-pulling and tilling create root fragments and stimulate the growth of new plants. Mowing can be effective if done every 10 to 21 days throughout the growing season. Combining mowing with herbicides will further enhance Canada thistle control.

CHEMICAL

The table below includes recommendations for herbicides that can be applied to rangeland and some pastures. Treatments may be necessary for an additional 1 to 3 years because of root nutrient stores. Always read, understand, and follow the label directions.

Herbicide	Rate	Application Timing
Aminopyralid* (Milestone)	5-7 oz. product/acre + 0.25% v/v non-ionic surfactant OR 1 teaspoon product/gal water + 0.32 oz./gal water	Apply in spring at the pre-bud growth stage until flowering and/or to fall regrowth. Can also add chlorsulfuron (Telar) at 1 oz./acre to the mix.
Clopyralid + Triclopyr (Prescott; Redeem; others)	3 pints product/acre + 0.25% v/v non-ionic surfactant OR 1.25 oz. product/gal water + 0.32 oz./gal water	Apply until flowering and/or fall regrowth.
Aminocyclopyrachlor + chlorsulfuron (Perspective)*	5.5 oz. product/acre + 0.25% v/v non-ionic surfactant	Apply to spring rosette to flower bud growth stage; or fall. IMPORTANT: Applications greater than 5.5 oz. product/acre exceeds the threshold for selectivity. DO NOT treat in the root zone of desirable trees and shrubs. Not for use on grazed or feed forage.
Note: *Product not permitted for use in the San Luis Valley.		
Additional herbicide recommendations for this and other species can be found at: www.colorado.gov/agconservation/CSUHerbicideRecommendations.pdf		

Colorado Department of Agriculture - Conservation Services
305 Interlocken Parkway
Broomfield, CO 80021
(303) 869-9030
www.colorado.gov/ag/weeds

Updated:
07/2015

Hoary cress

Colorado Department of Agriculture

305 Interlocken Pkwy
Broomfield, CO 80021

(303) 869-9030
weeds@state.co.us

Hoary cress
Identification and Management

Identification and Impacts

Hoary cress *(Cardaria draba),* commonly known as whitetop, is a creeping perennial that is a member of the mustard family and native to Europe. The stems, in the rosette stage, may grow up to 2 inches in height and produce grayish-green leaves that are lance shaped. The leaves are alternate and 3/4 to 4 inches long. The upper leaves have 2 lobes that clasp the stem. The plant has numerous small, white flowers with 4 petals on stalks radiating from a stem. Seed capsules are heart-shaped with two small, flat, reddish brown seeds. One plant can produce from 1,200 to 4,800 seeds. The plants emerge in early spring with stems emerging from the center of each rosette in late April. Hoary cress flowers from May to June and plants set seed by mid-summer.

Habitats for Hoary Cress include: fields, waste places, meadows, pastures, croplands and along roadsides. It is typically found on unshaded, generally open areas of disturbed ground. It generally does better with moderate amounts of precipitation and grows well on alkaline soils.

Key ID Points

1. White flowers.
2. Grows erect 10-24” in height.
3. Leaf is 3/4-4” long with blunt end and fine white hairs.

The key to effective control of Hoary cress is prevention. Preventing the encroachment of these weeds is the most cost-effective management. Preventing invasions by limiting seed dispersal, monitoring and using weed free hay, and quarantine animals that may have grazed in infested areas. Beyond prevention, the key is early detection when infestations are small, and aggressive management. Integrated Weed Management is required for proper control. Details on the back of this sheet can help to create a management plan compatible with your site ecology.

Hoary cress is designated as a “List B” species in the Colorado Noxious Weed Act. It is required to be either eradicated, contained, or suppressed depending on the local infestations. For more information visit www.colorado.gov/ag/weeds and click on the Noxious Weed Management Program. Or call the State Weed Coordinator at the Colorado Department of Agriculture, Conservation Services Division,

Photos © Kelly Uhing, Colorado Department of Agriculture; Mark Schwarzlander, University of Idaho, Above map: Crystal Andrews, Colorado Department of Agriculture,

Cardaria draba

Updated on:
07/2015

Management Recommendations

http://www.colorado.gov/ag/weeds

Hoary cress

CULTURAL
Prevent the establishment of new infestations by minimizing disturbance and seed dispersal, eliminating seed production and maintaining healthy native communities. Contact your local Natural Resources Conservation Service for seed mix recommendations. Planting competitive legumes, such as alfalfa, can reduce Hoary cress in crop rotations.

BIOLOGICAL
There is no biological control avaiable for Hoary cress. Since biological control agents take years to research, develop and release, no releases are expected in the foreseeable future. For more information, contact the Palisade Insectary of the Colorado Department of Agriculture at 970-464-7916.

MECHANICAL
Mowing several times before the plants bolt stresses Hoary cress and forces the plant to use nutrient reserves stored in the root system. Combining mowing with herbicides will further enhance control of this weed. Mow repeatedly during the summer, then apply a herbicide in the fall.

Integrated Weed Management:

No single treatment provides effective, long term control. The best and first defense is always prevention. Once established, integrate a variety of combinations of competitive planting, crop rotations, and herbicides. This can reduce Hoary cress to manageable levels.

HERBICIDES

NOTE: The following are recommendations for herbicides that can be applied to range and pasturelands. Rates are approximate and based on equipment with an output of 30 gal/acre. Please read label for exact rates. Always read, understand, and follow the label directions. The herbicide label is the LAW!

Herbicide	Rate	Application Timing
Chlorsulfuron* (Telar)	1 oz. product/acre + 0.25% v/v non-ionic surfactant	Apply at flowering. (Early spring to early summer)
Metsulfuron (Escort XP)	1 oz. product/acre + 0.25% v/v non-ionic surfactant	Apply at flowering. (Early spring to early summer)
Imazapic (Plateau, Panoramic)	12 oz./acre + 2 pints/acre methylated seed oil or crop oil concentrate	Apply at late flower to post-flower growth stage. (Late spring to mid-summer)
Note: *This herbicide has residual soil activity that will affect all broadleaf seedlings germinating after application has occurred.		
Additional herbicide recommendations for other species can be found at: www.colorado.gov/agconservation/CSUHerbicideRecommendations.pdf		

Top to bottom photos, © R. Old, XID Servisces; A. Sparks Jr., University of Georgia; and Kelly Uhing

Colorado State University

CDA CO

Appendix L: High Desert Meadow Seed Mix

Western Native Seed sells the High Desert Meadow Seed Mix (www.westernnativeseed.com). The seed mix contains a blend of 70% High Desert grasses and 30% High Desert wildflowers. The blend contains the following species:

High Desert Wildflowers:

Sphaeralcea grossulariaefolia (Gooseberryleaf Globemallow)
Helianthus annuus (Annual Sunflower)
Linum perenne lewisii (Blue Flax)
Gaillarida pulchella (Indian Blanket)
Cleome serrulata (Rocky Mt Bee Plant)
Thelesperma filifolium (Greenthread)
Eriogonum umbellatum (Sulfurflower)
Ratibida columnifera (Prairie Coneflower)
Ratibida columnifera pulchra (Mexican Hat)
Stanleya pinnata (Prince's Plume)
Mirabilis multiflora (Wild Four O'Clock)

High Desert Grasses:

Pascopyrum smithii (Western Wheatgrass)
Achnatherum hymenoides (Indian Ricegrass)
Bouteloua gracilis (Blue Grama)
Poa secunda (Sandberg's Bluegrass)
Sporobolus cryptandrus (Sand Dropseed)
Poa fendleriana (Muttongrass)

The suggested seeding rate is 1 pound per 1,000 square feet. Only the outer edge would have seed broadcast over it. Given some native vegetation already exists in the outer edge of the riparian boundary; 5 pounds of seed would cover this area appropriately. Seeds will be sown in early spring after snowmelt. Spring rains and snow melt should provide supplemental water to establish seeds, as these plants are adapted to high desert conditions. It may be necessary to seed for the first 5 years of the project in order to begin to establish a seed bank of the species included in the seed mix. Over 5 years, the seed would cost $625, or $125/year.

Appendix M: CSFS Seedling Nursery

Colorado State Forest Service Nursery

Container Size Reference Guide

To view a full list of available inventory please visit:

http://csfs.colostate.edu/seedling-tree-nursery/seedling-nursery-inventory/

If you have any questions please contact us at:

(970) 491-8429

Small Tray

Sold in lots of 50 trees for **$50.00**

- 21” x 11” x 6”

Individual Cell Size

- 6” x 2”
- 190 ml
- 20 ci

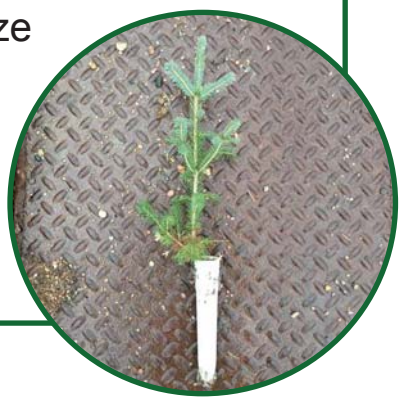
Small Tube

Sold in lots of 30 trees for **$65.00**

- 24” x 12” x 8”

Individual tube Size

- 8” x 1.5”
- 164 ml
- 14 ci



Large Tube

Sold in lots of 30 trees for **$76.00**

- 24” x 12” x 8”

Individual tube Size

- 7” x 2”
- 262 ml
- 10 ci

Tall Potted

Sold individually for **$10.00**

Trees are typically 2 to 3 years old

- 4.5” x 4.5” x 14”
- 3.98 L
- 284 ci

Extra Large Potted

Sold individually for **$9.00**

Trees are typically 2 years old

- 6” x 7”
- 2.84 L
- 232 ci

Appendix E: Threatened and Endangered Species Inventory

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
Mail Stop 65412
Denver, Colorado 80225-0486

Western Slope:
445 W. Gunnison Avenue
Suite 240
Grand Junction, Colorado 81501-5711

ES/GJ-6-CO-09-F-001-GP035
TAILS 06E24100-2018-F-0090

February 2, 2018

Memorandum

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

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

Subject: Request for Consultation under Section 7 of the Endangered Species Act for the Orchard Ranch Ditch Piping Project

This responds to your December 4, 2017, request for formal consultation under section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.). Your request is for the Orchard Ranch Ditch Piping Project located in Delta County, Colorado, in two distinct locations: 1) near the town of Eckert, approximately 0.25 miles west of State Highway 65 (irrigation ditch to be piped), and 2) along Hamilton Draw and Tongue Creek approximately 1.5 miles west of the town of Eckert (habitat replacement). The subject project involves a historic average annual depletion of 581 acre-feet/year (AF/yr) to the Gunnison River, which may affect the endangered Colorado pikeminnow (*Ptychocheilus lucius*), razorback sucker (*Xyrauchen texanus*), humpback chub (*Gila cypha*), bonytail (*Gila elegans*), and their designated critical habitat.

The Bureau of Reclamation (Reclamation) has entered into a contract with the Orchard Ranch Ditch Company (ORDC) to provide funding assistance to pipe the entire Orchard Ranch Ditch irrigation system in order to reduce salt loading into the Colorado River (proposed action). The proposed action will replace the entire unlined earthen Orchard Ranch Ditch and its associated laterals (approximately 2.16 linear miles of ditch) with high-density polyethylene pipe, which will eliminate seepage and reduce salinity in the Colorado River Basin by an estimated 1,004 tons of salt per year. An additional beneficial effect of the proposed action is the reduction of dissolved selenium, which would have flowed into downstream endangered fish critical habitats. In addition to the piping, a habitat replacement project will enhance approximately 3.3 acres of privately owned riparian habitat. This will be done by removing nonnative and invasive species and revegetating the area with native plants to improve the stratification and species diversity.

You have 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 outside of proposed critical habitat and habitat know to be occupied by this species and there is no suitable breeding or nesting habitat in the project area. The project is also timed such that project activities, other than herbaceous weed treatment, will avoid the breeding season for the cuckoo (June 1- September 1). We concur with your determinations for the western yellow-billed cuckoo.

You have determined that the proposed project would have no effect on the greenback cutthroat trout (*Oncorhynchus clarkii stomias)*, the North American wolverine (*Gulo gulo luscus*), the clay-loving wild buckwheat (*Eriogonum pelinophilum*), or the Colorado hookless cactus (*Sclerocactus glaucus*). However, neither section 7(a)(3) of the ESA, nor implementing regulations under section 7(a)(2) of the ESA require the Service to review or concur with projects where no effect determinations have been made for species potentially affected by a project. Therefore, the Service will not address these species further but we do appreciate you informing us of your analysis.

As stated above and in your consultation request letter, the proposed project is likely to adversely affect the endangered Colorado River fish and their critical habitats due to historic water depletions. The proposed action will result in no new water depletions but does involve the continued use of ORDC's historic water depletions of 581 acre feet per year. We are transmitting this correspondence to serve as the final biological opinion (BO) for the Orchard Ranch Ditch Piping Project.

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 (attached). The depletions associated with this project are 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.

Attachment: Recovery Agreement

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

GUNNISON BASIN RECOVERY AGREEMENT

This RECOVERY AGREEMENT is entered into this 24 day of January, 2018, by and between the United States Fish and Wildlife Service (Service) and the Orchard Ranch Ditch 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 of the Orchard Ranch Ditch (Water Project), which causes or will cause 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 follows:

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 User's Water Project. Any consultations under section 7 regarding Water Project's 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 Project's 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 User's 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 Project's 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 User's 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

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.

Robert E. Morris
Water User Representative

January 24, 2018
Date

Ann Tub
Western Colorado Supervisor
U.S. Fish and Wildlife Service

2/2/18
Date

MEMORANDUM

DATE: November 30, 2017
TO: Jennifer Ward and Amanda Ewing, U.S. Bureau of Reclamation—Western Colorado Area Office
CC: Marti Hoge, Environmental Lead, J-U-B Engineers, Inc.
FROM: Autumn Foushee, Ecologist & Environmental Planner, J-U-B Engineers, Inc.
SUBJECT: Threatened and Endangered Species Inventory for Orchard Ranch Ditch Company Piping Project, Delta County, Colorado

Introduction

This document provides the results of a threatened and endangered species inventory completed for the Orchard Ranch Ditch Company Piping Project (Proposed Project). Wildlife and Natural Resource Concepts & Solutions, LLC, in conjunction with J-U-B Engineers, Inc. prepared the inventory for the Orchard Ranch Ditch Company (ORDC) and the U.S. Department of the Interior's Bureau of Reclamation (Reclamation). This memo serves as supporting documentation for the Environmental Assessment for the Proposed Project, and as rationale for effect determinations on any necessary consultations under the Endangered Species Act (ESA). Reclamation, with authorization by the Colorado River Basin Salinity Control Act, is proposing to provide funding assistance for the Proposed Project, under an Assistance Agreement (No. R16AC00011).

Background & Updated Information

To complete the inventory for the Proposed Project, a species list from the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) system was generated. Table 1 summarizes the species identified by the IPaC Report, and the effect determinations for each species relative to the proposed project action. According to the IPaC Report, no designated or proposed critical habitats for the identified species exist within the Proposed Project Action Area.

Table 1. Federally Listed & Candidate Species Effect Determination Summary

Common Name	Scientific Name	Listing Status	Effect Determination
Fish			
Bonytail chub	*Gila elegens*	Endangered	Adversely Affect
Colorado pikeminnow	*Ptychocheilus lucius*	Endangered	Adversely Affect
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	Threatened	No Effect
Humpback chub	*Gila cypha*	Endangered	Adversely Affect
Razorback sucker	*Xyrauchen texanus*	Endangered	Adversely Affect
Birds			
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened	May Affect, Not Likely Adversely Affect
Mammals			
North American wolverine	*Gulo gulo luscus*	Proposed Threatened	No Effect
Plants			
Clay-loving wild buckwheat	*Eriogonum pelinophilum*	Endangered	No Effect
Colorado Basin hookless cactus	*Sclerocactus glaucus*	Threatened	No Effect

Proposed Action

The Proposed Project involves completely piping an irrigation ditch system centrally located in Delta County, Colorado, west of the town of Eckert (see attached Project Location Map), in the Gunnison River watershed of the Upper Colorado River Basin. The Proposed Project would pipe approximately 2.16 miles of the existing unlined earthen ditch and its associated laterals with high-density polyethylene (HDPE) pipe. Screens would be placed to remove debris at the head of the pipeline. The Proposed Project alignment would largely follow the existing alignment. Backhoes, excavators, haul trucks, and other smaller construction vehicles and equipment

would be used to complete the project. Construction would be anticipated to begin in fall 2018 and finish by March 2020. Best Management Practices would be employed. These would include, but are not limited to, soil erosion control devices, noxious weed prevention and control methods, construction timing to avoid nesting season for migratory birds, and Standard Operating Procedures required by Reclamation. To mitigate for the loss of riparian habitat associated the Proposed Project, a Habitat Replacement Project would be implemented in a Reclamation-approved site along Hamilton Draw. The site is approximately 2 miles from the Proposed Project location. Habitat structure and native species diversity and density would be increased through plantings and invasive species removal (see attached Project Location Map). Salinity improvements associated with the Proposed Project do not include new storage facilities or irrigation of new acreage, and the irrigation system would continue to be fed by Surface Creek and by water from Grand Mesa Reservoir.

General Project Location and Habitat Descriptions

The Proposed Project is located in Sections 12, 13 & 14, Township 14S, Range 95W in Delta County, Colorado. Land use within the project vicinity is primarily agricultural. The elevation of the project area is approximately 5,500 feet above sea level and is located 0.25 miles west of State Highway 65. The Orchard Ranch Ditch parallels the highway in most locations, starting near the town of Eckert and flows west about a mile toward the town of Orchard City. The Proposed Project would be constructed along county roads, and through several subdivisions, largely staying within the existing ditch alignment. Coyote willows, rabbitbrush, sagebrush and four-winged saltbrush comprise the prevalent vegetation found along the piping corridor. Other observed plant species include narrow leaf and Fremont cottonwoods, sumac, wild rose, Gambel oak, bulrushes, sedges, and a number of small forbs and grasses. Invasive weeds encountered include species such as Russian olive, Canada thistle, Russian knapweed, whitetop, chicory, cheatgrass, common burdock, and occasionally tamarisk.

Segments of the project alignment are adjacent to irrigated fields. Soil types typically found along, and adjacent to, the ditch alignment include fluvaquents, Mesa loam 3-6% slopes, and Mesa-Utaline stony loams 3-12% slopes. The proximity of irrigated fields as indirect water sources would help to lessen the effect on existing vegetation in some locations once the open ditch is replaced with underground irrigation pipe. A few trees along the ditch (such as cottonwoods, elms, and Russian olives) may be lost during the construction phase of the project. Plant diversity and wildlife habitat along the ditch is limited because of residential development, existing roadways, and current farming practices. Fish-bearing habitat is not present within the ditch prism. As a result of the Proposed Project, salinity loading of the Gunnison River and larger Colorado River basin, down-watershed of the proposed project action area would be reduced by 1,004 tons. This reduction in salt loading would ultimately help to improve fish habitat downstream of the Proposed Project.

Species Dismissed from Further Evaluation

Greenback Cutthroat Trout: The greenback cutthroat trout is found in clear, swift-flowing mountain streams with overhanging banks and vegetative cover. No known or suitable habitat for the greenback cutthroat trout is located within or downstream of the Proposed Project. Therefore, it is reasonable to determine that there would be no effect to the greenback cutthroat trout, and it is dismissed from further evaluations.

Clay-loving Wild Buckwheat: The Proposed Project is within the known range of the clay-loving wild buckwheat, however no specimens were found along the proposed piping corridor during an on-site inspection, and the soils represented along the ditch are not the species' preferred soils. Its preferred soils are adobe clay, badland hills and flats, which are not present within the Proposed Project Action Area. Therefore, it is reasonable to determine that the Proposed Project would have no effect to the clay-loving wild buckwheat.

Colorado Basin Hookless Cactus: The Colorado hookless cactus is 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. The Colorado hookless cactus is not considered further in this inventory because the Proposed Project is within an agricultural and residential setting, where the soils are continually disturbed, and no specimens were observed during field inspection.

North American Wolverine: The wolverine is not considered further in this inventory given the lack of suitable habitat in or near the Proposed Project. In Colorado, nearly all historical and recent reports of wolverine are from higher elevation, alpine areas. There are no viable populations of wolverine in western Colorado.

Species Descriptions & Determinations

Colorado River Endangered Fishes: The Upper Colorado River Basin is home to four federally listed endangered fish: bonytail, Colorado pikeminnow, humpback chub, and razorback sucker. Decline of the four endangered species is due, in part, to habitat destruction (diversion and impoundment of rivers), as well as competition and predation from introduced fish species. In 1994, USFWS designated critical habitat for the four endangered species at 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.

Water depletions in the Gunnison 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 extents and quality of their designated critical habitat. Water depletion caused by the operation of the ORDC's irrigation system is estimated at 581 acre-feet per year. This estimated depletion rate is equivalent to the net annual average total crop consumptive use rate calculated using the Colorado Water Conservation Board's "StateCU" consumptive use modeling software. This depletion rate is expected to remain unchanged if the Proposed Project is implemented.

Based on previously issued biological opinions that all depletions within the Upper Colorado River Basin may adversely affect these four fishes, it is expected that the Proposed Project may affect, and is not likely to adversely affect, the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub. The Upper Colorado River Endangered Fish 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. 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 USFWS determined that the Recovery Program had 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, 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. No change to the ORDC'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 Project. However, the Proposed Project would result in the reduction of salt loading to the Colorado River Basin by approximately 1,004 tons per year, and a potential (unquantified) reduction in selenium loading to the lower Gunnison basin.

Western Yellow-billed Cuckoo: The western yellow-billed cuckoo is listed as threatened under the ESA. As the name suggests, this avian species has a yellow lower mandible. It has rufous wings that contrast against the gray-brown wing coverts and upperparts. The underparts are white, and large white spots speckle a long, black undertail (Alsop 2001). It is a neotropical migrant, which winters in South America and breeds predominantly in the southern regions of western North America. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects (Ehrlich et al. 1992). Its incubation and nestling period is the shortest of any known bird because it is one of the last migrants to arrive in North America, thus the chicks have little rearing time before embarking on their southward migration.

Yellow-billed cuckoos typically arrive in southwest Colorado in mid-May or early June, and breed in late June through July. Cuckoos begin their southerly migration by late August or early September (Wiggins 2005). Yellow-billed cuckoos are considered a riparian obligate, and are usually found in large, dense tracts of cottonwood-willow habitat, though dense stands of alder or box elder assemblages may also be favored for shelter, nesting, and feeding habits. Branches of willow are favored for nest construction, and tree branches with foliage cover are preferred perches for feeding activities (Wiggins 2005).

Based on historical accounts, the species was localized and uncommon along Colorado drainages while being locally common in other western areas. The species may never have been common in western Colorado, and is now extremely rare (Kingery 1998). In 1998, 242 miles of riparian habitat were surveyed along six rivers in west-central Colorado with one cuckoo detected (Dexter 1998). However, in 2008, breeding was confirmed along the North Fork of the Gunnison River (Beason 2008), and cuckoo have been observed along the Gunnison River near Tongue Creek, approximately 5-6 miles from the Proposed Project Action Area (written communication with Amanda Ewing, BOR Biologist, 2017).

The project area is outside of yellow-billed cuckoo proposed critical habitat. The nearest habitat is over 8.5 miles away; therefore, the proposed action would not modify any proposed critical habitat for the cuckoo. It is possible that the yellow-billed cuckoo could utilize the project area during migration, but the lack of suitable habitat, such as cottonwood-willow thickets and dense willow or tree stands, make it highly unlikely that the cuckoo inhabits this area during breeding or nesting activities. Additionally, all proposed project actions, other than herbaceous noxious weed treatments, would take place prior to April and after October 15th, which would be outside of the time period when the yellow-billed cuckoo would potentially be present in the vicinity of the Proposed Project Action Area. Therefore, it is reasonable to determine that the Proposed Project may affect the yellow-billed cuckoo, but it would be unlikely to have an adverse effect to the species.

Conclusion

This analysis was prepared to summarize the Proposed Project's potential effects on species listed as endangered, threatened, proposed, and candidate, as well as designated and proposed critical habitat protected under the ESA. The IPaC Report identified nine ESA-listed species with the potential to occur within the Proposed Project Action Area. No critical habitat exists within the proposed Action Area. As described in this analysis, suitable habitat for the identified species is not present within the limits of the Action Area. Given the previously disturbed nature of the Action Area and the lack of suitable habitat, it is reasonable to determine that the Proposed Project would have no effect to the North American wolverine, the greenback cutthroat trout, the Colorado Basin hookless cactus, and the clay-loving wild buckwheat. As determined by previous programmatic biological opinions issued by the USFWS, the Proposed Project would be expected to have an adverse effect on the bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker. Lastly, it is determined that the Proposed Project may affect, but would not be likely to have an adverse effect to the yellow-billed cuckoo. Any effects to the yellow-billed cuckoo from minor vegetation removal in the Proposed Project Action Area would be anticipated to be insignificant and discountable, given the existing lack of suitable habitat within the Action Area, as well as the timing of the Proposed Project to be outside of the migrant's typical period of occurrence in the project vicinity.

If additional species are listed or proposed, or if critical habitat is designated prior to completion of construction, and the species or designated habitat occur within the Proposed Project Action Area, or may be affected by the Proposed Project actions, construction would be paused and a species evaluation would be prepared. Species for which a no effect determination has been previously prepared would not be readdressed. It should be noted that the final authority rests with the appropriate regulatory agency.

Respectfully submitted by: Date: 11-30-2017

Autumn Foushee
Ecologist & Environmental Planner
J-U-B Engineers, Inc.

List of Attachments:

1. Project Location Map
2. Habitat Segments Map
3. Photo Inventory
4. IPaC Report: Habitat Replacement Site
5. IPaC Report: ORDC Alignment

REFERENCES

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Dexter, C. 1998. River survey of west-central Colorado for yellow-billed cuckoo and riparian weeds. Report prepared for the Bureau of Land Management. 26 pp.

Ehrlich, P.R., D.S. Dobkin, and D. Wheye. 1992. Birds in Jeopardy: the Imperiled and Extinct Birds of the United States and Canada, including Hawaii and Puerto Rico. Stanford University Press, Stanford, California. 259 pp.

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U.S. Fish & Wildlife Service. 2011. Memorandum re: Final 2010-2011 Assessment of "Sufficient Progress" under the Upper Colorado River Endangered Fish Recover Program in the Upper Colorado River Basin, and of Implementation Action Items in the December 20, 2009 "15-Mile Reach" Programmatic Biological Opinion and December 4, 2009 "Gunnison River Basin Programmatic Biological Opinion—June 13, 2009."

U.S. Fish & Wildlife Service. 2016. Threatened and Endangered Species report for Delta County, Colorado. Downloaded from: http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=08029.

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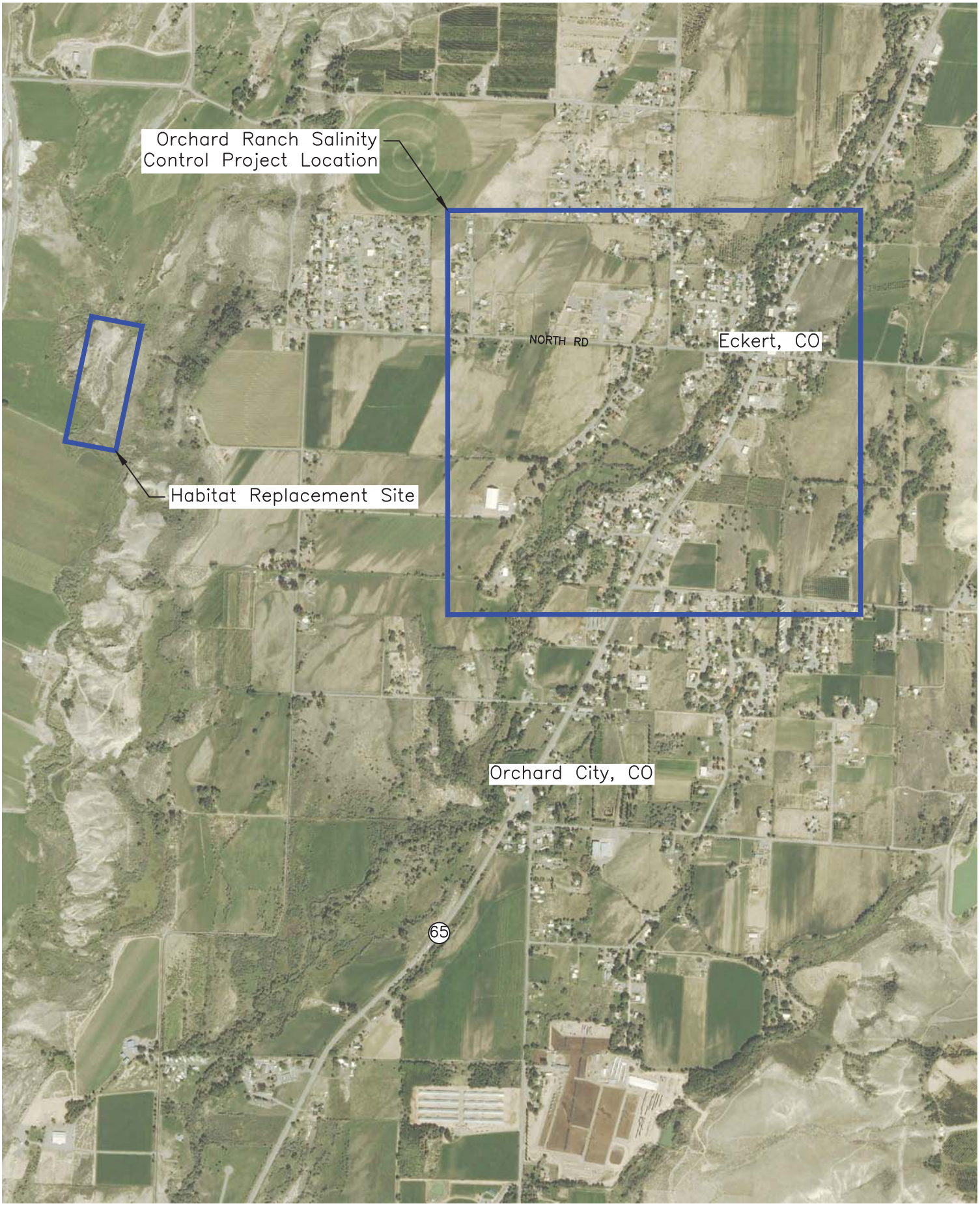

ORCHARD RANCH SALINITY CONTROL PROJECT VICINITY MAP

J-U-B ENGINEERS, INC.

LAST UPDATED: 10/10/2017
PLOT DATE: 10/10/2017
FILE: E-101

Plot Date:10/10/2017 2:50 PM Plotted By: Marcos Hernandez
Date Created:8/14/2017 \\KAYS\PUBLIC\PROJECTS\JUB\ORCHARD RANCH\55-15-037-ORCHARD RANCH PIPING PROJECT\TEXT\REPORTS\ENVIRONMENTAL\ORDC HABITAT LOSS - HRP\UPDATED HABITAT LOSS AND HRP SCORING AND REPORTS\CAD\SHEET\E-101.DWG


NEW DIVERSION STRUCTURE
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H 2
H 3
H 4
H 5
H 6
H 7
H 8
H 9
H 10
H 11
H 12
H 13
H 14
H 15
H 16
SA 1
SA 2
SA 3
SA 4
SA 5
RUNNING DEER ROAD
NORTH ROAD
HWY 65
MYERS ROAD
MARBLE ROAD
Orchard Ranch Ditch Company
Salinity Control Project
Habitat Segments
Existing Alignment
Proposed Alignment (segments outside of Existing Aligment)
Habitat Segment Boundaries

NEW DIVERSION STRUCTURE

H 1

H 2

H 3

H 4

H 5

H 6

H 7

H 8

H 16

SA 1

SA 2

SA 3

NORTH ROAD

HWY 65

Orchard Ranch Ditch Company
Salinity Control Project
Habitat Segments
H 1 - H 8, H 16, S A1 - S A3

Existing Alignment

Proposed Alignment (segments outside of Existing Aligment)

Habitat Segment Boundaries

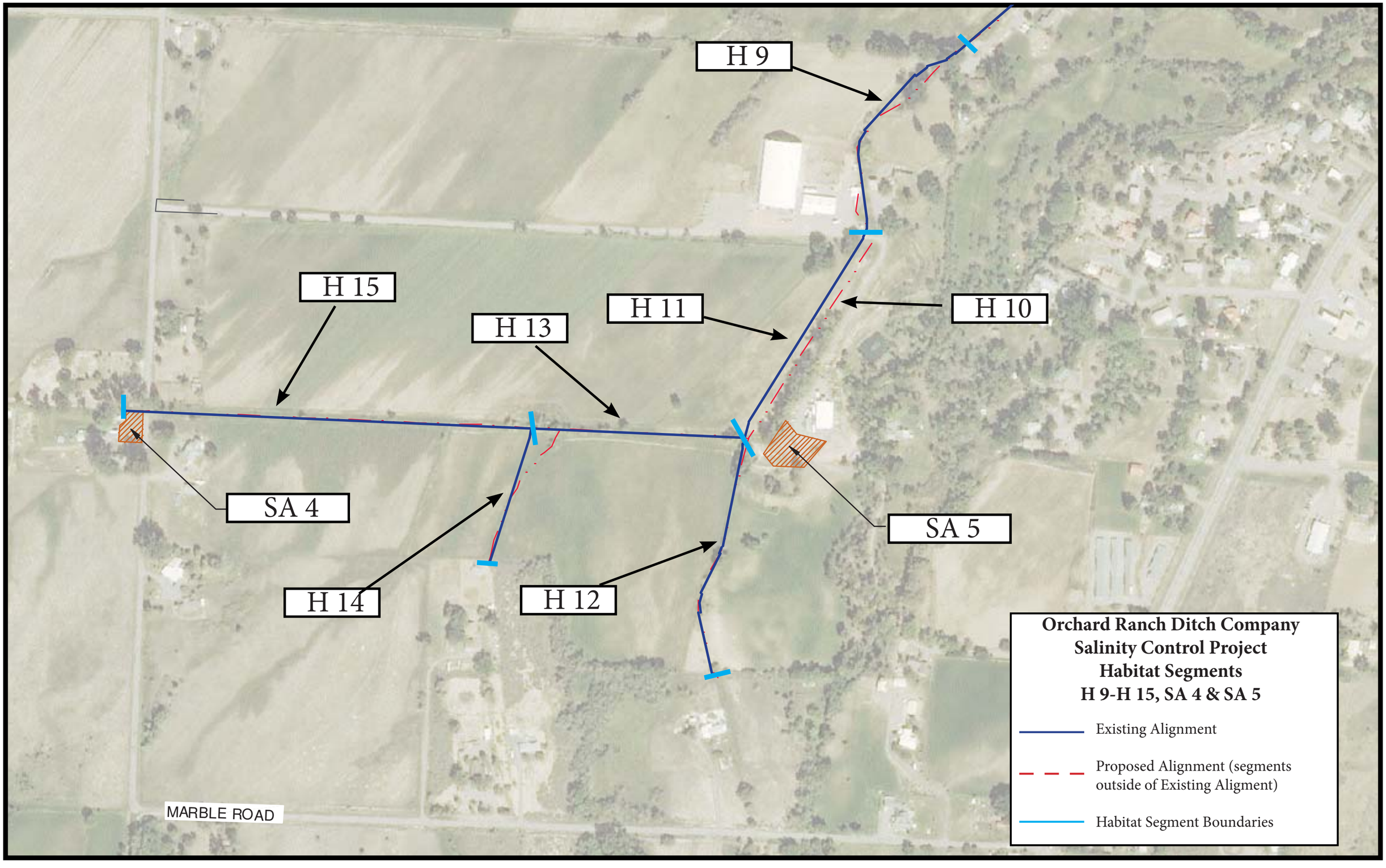
H 9
H 15
H 11
H 10
H 13
SA 4
SA 5
H 14
H 12
MARBLE ROAD
Orchard Ranch Ditch Company
Salinity Control Project
Habitat Segments
H 9-H 15, SA 4 & SA 5
Existing Alignment
Proposed Alignment (segments outside of Existing Aligment)
Habitat Segment Boundaries

Photo Inventory: Representative of ORDC Ditch Segments

Segment 1-2 intersection

Segment 5-7 intersection

Segment 7

Segment 7-8 intersection

Photo Inventory: Representative of ORDC Ditch Segments

Segment 8

Segment 8-9 intersection

Segment 15

Staging Area 3

United States Department of the Interior

FISH AND WILDLIFE SERVICE
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http://www.fws.gov/mountain-prairie/es/Colorado/
http://www.fws.gov/platteriver/

In Reply Refer To: November 29, 2017
Consultation Code: 06E24100-2018-SLI-0080
Event Code: 06E24100-2018-E-00147
Project Name: ORDC Habitat Replacement Project

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Western Colorado Ecological Services Field Office
445 West Gunnison Avenue, Suite 240
Grand Junction, CO 81501-5711
(970) 243-2778

Project Summary

Consultation Code: 06E24100-2018-SLI-0080

Event Code: 06E24100-2018-E-00147

Project Name: ORDC Habitat Replacement Project

Project Type: VEGETATION MANAGEMENT

Project Description: Habitat replacement project associated with the ORDC Salinity Control Piping Project.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.8414583088546N107.98780694050569W

Counties: Delta, CO

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bonytail Chub *Gila elegans* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1377	Endangered
Colorado Pikeminnow (=squawfish) *Ptychocheilus lucius* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3531	Endangered
Greenback Cutthroat Trout *Oncorhynchus clarki stomias* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2775	Threatened
Humpback Chub *Gila cypha* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3930	Endangered
Razorback Sucker *Xyrauchen texanus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/530	Endangered

Flowering Plants

NAME	STATUS
Clay-loving Wild Buckwheat *Eriogonum pelinophilum* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3348	Endangered
Colorado Hookless Cactus *Sclerocactus glaucus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2280	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

MIGRATORY BIRD INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

FRESHWATER EMERGENT WETLAND

- PEMC

FRESHWATER FORESTED/SHRUB WETLAND

- PSSA

RIVERINE

- R3UBH

United States Department of the Interior

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http://www.fws.gov/mountain-prairie/es/Colorado/
http://www.fws.gov/platteriver/

In Reply Refer To: November 29, 2017
Consultation Code: 06E24100-2017-SLI-0267
Event Code: 06E24100-2018-E-00145
Project Name: Orchard Ranch Salinity Control Project

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having

similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Migratory Birds
- Wetlands

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Western Colorado Ecological Services Field Office
445 West Gunnison Avenue, Suite 240
Grand Junction, CO 81501-5711
(970) 243-2778

Project Summary

Consultation Code: 06E24100-2017-SLI-0267

Event Code: 06E24100-2018-E-00145

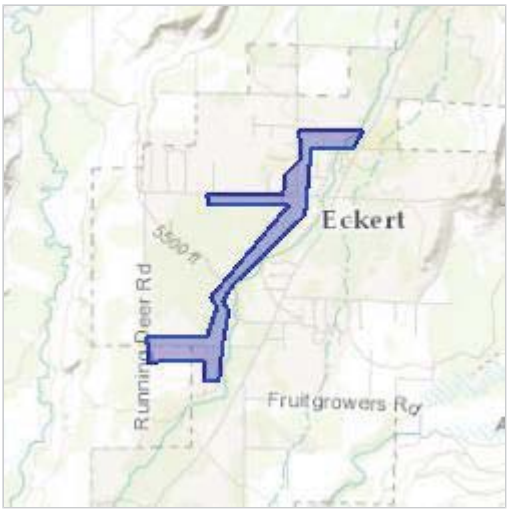
Project Name: Orchard Ranch Salinity Control Project

Project Type: WATER SUPPLY / DELIVERY

Project Description: Pipe existing canal to reduce salinity loading to the Colorado River Basin

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/38.83838666802641N107.97012148319361W



Counties: Delta, CO

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
North American Wolverine *Gulo gulo luscus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Fishes

NAME	STATUS
Bonytail Chub *Gila elegans* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1377	Endangered
Colorado Pikeminnow (=squawfish) *Ptychocheilus lucius* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3531	Endangered
Greenback Cutthroat Trout *Oncorhynchus clarki stomias* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2775	Threatened
Humpback Chub *Gila cypha* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3930	Endangered
Razorback Sucker *Xyrauchen texanus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/530	Endangered

Flowering Plants

NAME	STATUS
Clay-loving Wild Buckwheat *Eriogonum pelinophilum* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3348	Endangered
Colorado Hookless Cactus *Sclerocactus glaucus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2280	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

USFWS National Wildlife Refuge Lands And Fish Hatcheries

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any activity that results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service[3]. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured. Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

The birds listed below are USFWS Birds of Conservation Concern that might be affected by activities in this location. The list does not contain every bird you may find in this location, nor is it guaranteed that all of the birds on the list will be found on or near this location. To get a better idea of the specific locations where certain species have been reported and their level of occurrence, please refer to resources such as the E-bird data mapping tool (year-round bird sightings by birders and the general public) and Breeding Bird Survey (relative abundance maps for breeding birds). Although it is important to try to avoid and minimize impacts to all birds, special attention should be given to the birds on the list below. To get a list of all birds potentially present in your project area, visit the E-bird Explore Data Tool.

NAME	BREEDING SEASON
Brown-capped Rosy-finch *Leucosticte australis* **Bird of Conservation Concern (BCC)**	Breeds Jun 15 to Sep 15
Black Rosy-finch *Leucosticte atrata* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/9460	Breeds Jun 15 to Aug 31
Black Swift *Cypseloides niger* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Brewer's Sparrow *Spizella breweri* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/9291	Breeds May 15 to Aug 10
Burrowing Owl *Athene cunicularia* **Bird of Conservation Concern (BCC)**	Breeds Mar 15 to Aug 31

https://ecos.fws.gov/ecp/species/9737

Clark's Grebe *Aechmophorus clarkii* **Bird of Conservation Concern (BCC)**	Breeds Jan 1 to Dec 31
Golden Eagle *Aquila chrysaetos* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/1680	Breeds Apr 1 to Aug 31
Gray Vireo *Vireo vicinior* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/8680	Breeds May 10 to Aug 20
Grace's Warbler *Dendroica graciae* **Bird of Conservation Concern (BCC)**	Breeds May 20 to Jul 20
Long-billed Curlew *Numenius americanus* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/5511	Breeds Apr 1 to Jul 31
Long-eared Owl *asio otus* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Lewis's Woodpecker *Melanerpes lewis* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Lesser Yellowlegs *Tringa flavipes* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Marbled Godwit *Limosa fedoa* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Olive-sided Flycatcher *Contopus cooperi* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pinyon Jay *Gymnorhinus cyanocephalus* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15
Rufous Hummingbird *selasphorus rufus* **Bird of Conservation Concern (BCC)** https://ecos.fws.gov/ecp/species/8002	Breeds elsewhere
Snowy Plover *Charadrius alexandrinus* **Bird of Conservation Concern (BCC)**	Breeds Mar 5 to Sep 15

Virginia's Warbler *Vermivora virginiae* — Breeds May 1 to Jul 31
Bird of Conservation Concern (BCC)
https://ecos.fws.gov/ecp/species/9441

Willow Flycatcher *Empidonax traillii* — Breeds May 20 to Aug 31
Bird of Conservation Concern (BCC)
https://ecos.fws.gov/ecp/species/3482

Willet *Tringa semipalmata* — Breeds elsewhere
Bird of Conservation Concern (BCC)

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeas

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

FRESHWATER EMERGENT WETLAND

- PEMB
- PEMC
- PEMCh

FRESHWATER FORESTED/SHRUB WETLAND

- PSSA

FRESHWATER POND

- PABFh
- PABF

RIVERINE

- R3UBH

Appendix F: Cultural Resources

HISTORY Colorado

2016 NOV 18 PM 2:

November 15, 2016

Ed Warner
Area Manager
Bureau of Reclamation
Upper Colorado Region
Western Colorado Area Office
445 West Gunnison Avenue, Suite 221
Grand Junction, CO 81501

Re: Orchard Ranch Ditch Pipeline Project, Salinity Control Program; Delta County, Colorado (HC #71184)

Dear Mr. Warner:

Thank you for your correspondence dated October 21, 2016 and received on October 24, 2016, regarding the above referenced project under Section 106 of the National Historic Preservation Act (36 CFR 800).

After review of the provided documentation, we do not object with the proposed Area of Potential Effect. We concur with the recommendation that the Orchard Ranch Ditch (5DT.2067) is eligible to the National Register of Historic Places (NRHP). We also concur that linear site segment 5DT.2067.1 supports eligibility of NRHP eligible 5DT.2067. We concur with your determination that the proposed project will result in an adverse effect [36 CFR 800.5(d)(2)] under Section 106 to NRHP eligible 5DT.2067 linear site supporting segment 5DT.2067.1.

The submitted draft Memorandum of Agreement (MOA) proposes to mitigate project effects with archival quality Level I Documentation. We recommend that a narrative history accompany the Level I Documentation, if feasible, incorporating relevant oral history. We recommend that you consider increasing the public benefit of the mitigation plan with an interpretation component. Interpretation could be as simple as coordinating with a local community organization to add information to their website or as complex as developing an educational program for local schools. Interpretation would increase the public visibility of the Bureau of Reclamation's work and would not hinder the project timeline; ground breaking and interpretation could proceed simultaneously once Level I Documentation is completed.

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.

If we may be of further assistance, please contact Katie Arntzen, our Section 106 Compliance Manager, at (303) 866-4608.

Sincerely,

for:
Steve Turner, AIA
State Historic Preservation Officer

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: Paul Kelmeier

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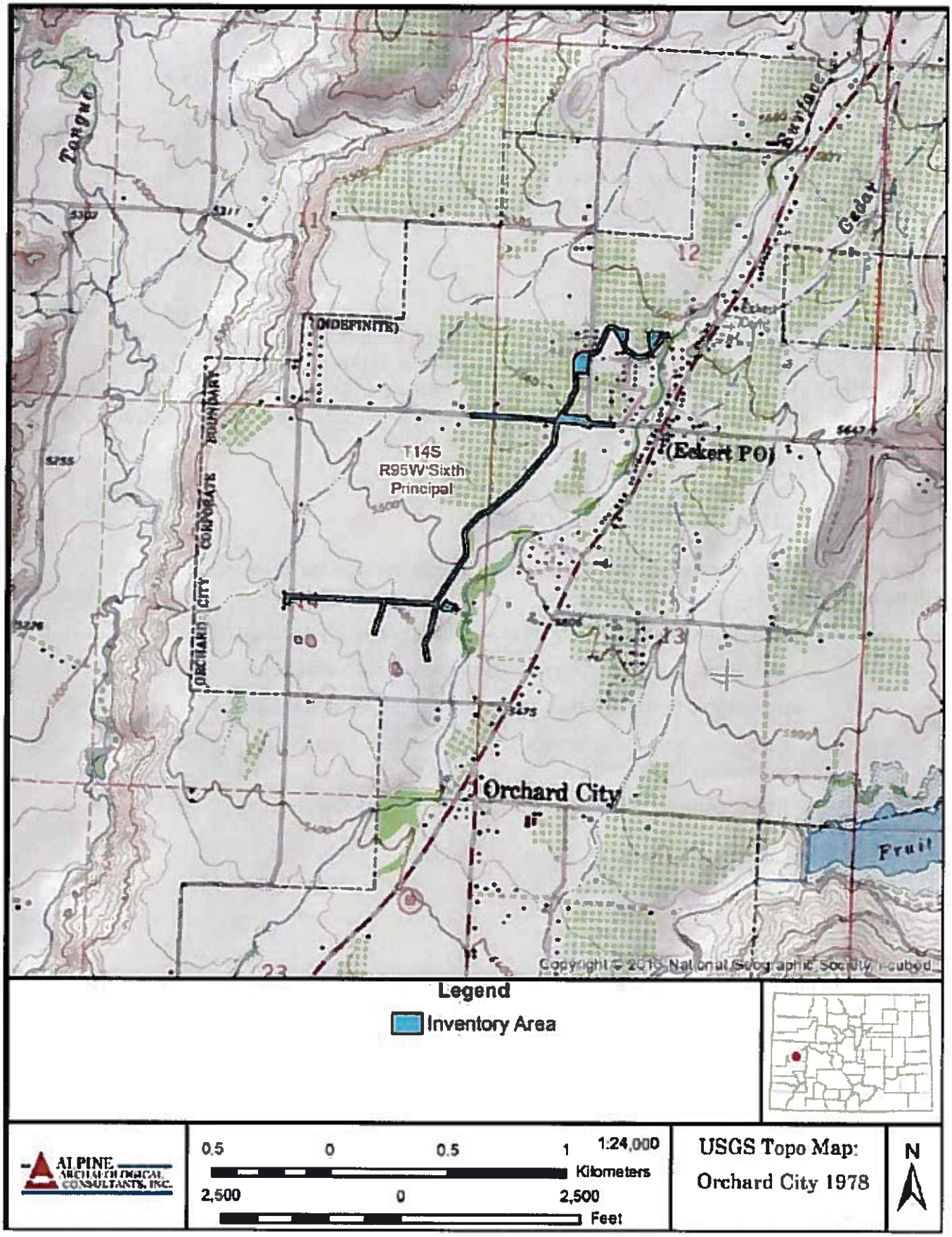
ATTACHMENT A – AREA OF POTENTIAL EFFECT



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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, ORDC 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.

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Appendix G: Environmental Commitments Checklist

Orchard Ranch Ditch Piping Project Environmental Checklist

This Environmental Checklist (Checklist) has been prepared to ensure that the environmental commitments are met, as set forth in the Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) completed for the Orchard Ranch Ditch Piping Project ("Project") pursuant to the National Environmental Policy Act (NEPA). The Bureau of Reclamation is the lead federal agency with primary responsibility for complying with the NEPA on the Project, and the Orchard Ranch Ditch Company ("Company") is responsible for implementing the environmental commitments contained in the EA and FONSI for the Project. The environmental commitments represent mitigation measures to avoid, minimize, rectify, reduce, eliminate or compensate for impacts caused by implementation of the Project. The Company shall utilize this Checklist to document compliance with each commitment, and shall submit the relevant component of the completed Checklist to Reclamation with each required performance report.

Environmental Commitments: Pre-Construction		
#	**Mitigation Measure or Project Design Feature**	**Date of Compliance**
A.01	Habitat loss shall be mitigated in accordance with the Habitat Replacement Plan prepared for the Project to mitigate fish and wildlife values that will be forgone as a result of the Project. The Company is responsible for implementing the Habitat Replacement Plan prior to or concurrently with the implementation of the Project.	
A.02	The Company shall provide an environmental briefing to the contractor and any sub-contractors in a pre-construction meeting. Such an environmental briefing shall include, at a minimum, a review of the environmental commitments described in this Checklist.	
A.03	All construction easements/right-of-way agreements shall be executed by all parties prior to construction (including agreements with private landowners, and clearances from Delta County)	
A.04	A spill response plan shall be prepared in advance of construction by the contractor for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, shall be briefed and made familiar with this plan.	
A.05	Onsite supervisors and equipment operators shall be trained and knowledgeable in the use of spill containment equipment.	

Orchard Ranch Ditch Piping Project Environmental Checklist

Environmental Commitments: Pre-Construction		
#	**Mitigation Measure or Project Design Feature**	**Date of Compliance**
A.08	The construction contractor shall submit Stormwater Management Plan to the Colorado Department of Public Health and Environment (CDPHE) prior to construction disturbance.	
A.09	The construction contractor shall obtain CWA Section 402 Storm Water Discharge Permit compliant with the National Pollutant Discharge Elimination System (NPDES) from CDPHE prior to construction disturbance.	
A.10	Traffic control measures shall be coordinated by the construction contractor with the Delta County Sheriff and emergency services prior to working in the Orchard City right-of-way on North Road and Running Deer Road, if necessary.	
A.11	Utility clearances shall be obtained by the construction contractor prior to construction activities.	
A.12	Construction limits shall be clearly flagged onsite to avoid unnecessary plant loss or ground disturbance.	
A.13	Prior to construction, the construction contractor shall remove vegetative material by mowing or chopping. Vegetation shall be either hauled to a proposed staging area to be burned or chipped, or chipped and mulched onsite. Stumps of any shrubs or trees removed shall be grubbed and hauled to a proposed staging area to be burned.	
A.14	Topsoil shall be stockpiled and then redistributed after completion of construction activities.	
A.15	If the schedule for the Project shifts, and vegetation disturbing activities along the pipeline alignment would occur during the typical nesting season for migratory birds (April 15-August 1), further conservation measures may be necessary to protect these species, such as pre-construction nest surveys. Reclamation shall be notified as soon as possible if the pipeline component of the Project schedule is expected to shift into migratory bird nesting season.	

Orchard Ranch Ditch Piping Project Environmental Checklist

Environmental Commitments: During Construction		
#	**Mitigation Measure or Project Design Feature**	**Date of Compliance**
B.01	Habitat loss shall be mitigated in accordance with the Habitat Replacement Plan prepared for the Project in order to mitigate fish and wildlife values that will be foregone as a result of the Project. The ORDC is responsible for implementing the Habitat Replacement Plan prior to or concurrently with implementation of the Project.	
B.02	All construction activities shall be confined to rights-of-way negotiated between the ORDC and the landowners.	
B.03	Construction staging (for pipe and equipment) shall take place only in staging/borrow areas identified for the project.	
B.04	Existing roads shall be used to access the construction, staging, borrow, and habitat replacement areas. No new roads shall be constructed.	
B.05	All environmental commitments included in CDOT, Delta County, or Orchard City authorizations and agreements with landowners shall be honored.	
B.06	Ground disturbances shall be limited to only those areas necessary to safely implement the Proposed Action.	
B.07	Vegetation removal shall be confined to the smallest portion of the Proposed Action Area necessary for completion of work.	
B.08	Pipeline trenches left open overnight shall be kept to a minimum and covered to reduce potential for hazards to the public and to wildlife. Covers shall be secured in place and strong enough to prevent livestock or wildlife from falling through. Where trench covers would not be practical, wildlife escape ramps shall be utilized.	
B.09	The construction contractor shall utilize straw wattles, silt curtains, cofferdams (if needed), straw bales, or other suitable erosion control measures to prevent erosion from entering water bodies during construction.	
B.10	The construction contractor shall pour concrete in forms and/or behind cofferdams (as needed) to prevent discharge into waterways. Any wastewater from concrete-batching, vehicle was down, and aggregate processing shall be contained and treated or removed for off-site disposal.	
B.11	The construction contractor shall store and dispense fuels, lubricants, hydraulic fluids, and other petrochemicals in an approved staging area.	
B.12	The construction contractor shall inspect equipment daily and conduct repairs as necessary to ensure equipment is free of petrochemical leaks.	
B.13	Construction equipment shall be parked, stored, and serviced only at an approved staging area.	

B.14	A spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and onsite at all times.	
B.15	The construction contractor shall transport, handle, and store any fuels, lubricants, or other hazardous substances involved with the Project in an appropriate manner that prevents them from contaminating soil and water resources.	
B.16	Portable secondary containment shall be provided for any fuel or lubricant containers staged within the Project Action Area. Any staging of fuel or lubricants, or fueling or maintenance of vehicles or equipment, shall not be conducted within 100 feet of any live water or drainage.	
B.17	All spills, regardless of size, shall be cleaned up promptly and contaminated soil shall be disposed of at an approved facility.	
B.18	Appropriate federal and Colorado authorities shall be immediately notified in the event of any contaminant spill. Any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b.	
B.19	In the event of discovery of threatened or endangered species, all ground-disturbing activities in the area shall immediately cease, and Reclamation shall be notified. Work shall not be resumed until Reclamation has consulted with U.S. Fish & Wildlife Service to ensure that adequate measures are in place to avoid or reduce impacts to the species.	
B.20	If an occupied raptor nest is discovered during construction, regardless of construction timing, the ORDC shall stop construction activities until Reclamation has consulted with the U.S. Fish & Wildlife Service and/or Colorado Parks & Wildlife on appropriate protective measures to avoid or reduce impacts to nesting raptors. As of May 2017, no raptor nests were known within the Project Action Area.	
B.21	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. The SHPO will be consulted, and work will not be resumed until consultation has been completed, as outlined in the Unanticipated Discovery Plan in the attached MOA.	
B.22	The ORDC shall permanently dewater, remove from irrigation service, and render incapable of irrigation water delivery those open ditches abandoned as part of the Project.	
B.23	The ORDC shall remove any decommissioned irrigation structures (head gates, drops, etc.) by methods described in the construction specifications provided to the contractor.	

Orchard Ranch Ditch Piping Project Environmental Checklist

Environmental Commitments: Post-Construction		
#	**Mitigation Measure or Project Design Feature**	**Date of Compliance**
C.01	Following construction, all disturbed areas shall be smoothed, shaped, contoured and reseeded.	
C.02	Seeding shall occur at appropriate times within six months following construction completion with weed-free seed mixes developed in coordination with underlying landowners and Reclamation.	
C.03	The ORDC or the ORDC's contractor, in accordance with current County weed control standards, shall implement weed control within the Proposed Action Area.	
C.04	Any lands previously in agricultural production prior to the Proposed Project implementation shall be returned to agricultural production following construction.	
C.05	Implementation of the Habitat Replacement Plan shall be complete. The ORDC ensures that it has the necessary resources to monitor and maintain the Habitat Replacement Site to meet the objectives of the Habitat Replacement Plan for at least 50 years.	

(PBO), the USFWS identified the Upper Colorado River Endangered Fishes Recovery Program as the reasonable and prudent alternative to avoid jeopardy to endangered Colorado River fishes and to avoid adverse modification to designated critical habitat. Reclamation consulted with USFWS on Colorado River Basin historic water depletions caused by operation of the ORDC system (USFWS File No. 06E24100-2018-F-0090). As a result of that consultation, the ORDC executed a Recovery Agreement with the USFWS for its historic depletions, in order to fit under the umbrella of the PBO. The annual depletion rate would not change from historic annual depletion rates as a result of the Proposed Action. Therefore, the Proposed Action would not destroy or adversely modify designated critical habitat for the Colorado River endangered fishes.

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, the Proposed Action is consistent with applicable land management plans, policies, and programs. State, local, and interested members of the public were given the opportunity to participate in the environmental analysis process.

Environmental Commitments

Pursuant to the funding agreement between the ORDC and Reclamation, the ORDC shall permanently dewater, remove from irrigation service, and render incapable of irrigation water delivery those open ditches abandoned as part of the Proposed Action.

Best Management Practices (BMPs) shall be implemented, as specified in the EA, to protect water quality and soils; to minimize ground and vegetation disturbance; to protect wildlife resources; to protect recreation, visual, agricultural, and grazing resources; and to minimize the spread of weeds (Chapter 4 of the EA is incorporated here by reference).

Required permits, licenses, clearances, and approvals shall be acquired prior to implementation of the Proposed Action (see Section 4.13 of the EA).

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.

In the event that threatened or endangered species are discovered during construction, construction activities shall halt until consultation is completed with USFWS, and protection measures are implemented. Additional surveys shall be required for threatened or endangered species if construction plans or proposed disturbance areas are changed.

Approved by:

Ed Warner
Area Manager, Western Colorado Area Office

4-A-18
Date