

RECLAMATION

Managing Water in the West

Final Environmental Assessment Sheep Creek Irrigation Company Antelope and North Laterals Salinity Control Project

PRO-EA-15-007

**Upper Colorado Region
Provo Area Office
Provo, Utah**



**U.S. Department of the Interior
Bureau of Reclamation
Provo Area Office
Provo, Utah**

December 2016

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

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**Upper Colorado Region
Provo Area Office
Provo, Utah**

Interdisciplinary Team Lead: *C. Shane Mower*
Provo Area Office



**U.S. Department of the Interior
Bureau of Reclamation
Provo Area Office
Provo, Utah**

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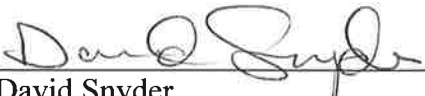
U.S. Department of the Interior
Bureau of Reclamation
Provo Area Office
Provo, Utah

FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment Sheep Creek Irrigation Company Antelope and North Laterals
Salinity Control Project
Daggett County, Utah

EA-15-007


Recommended by:



David Snyder
Fish and Wildlife Biologist

11 JAN 2017
Date

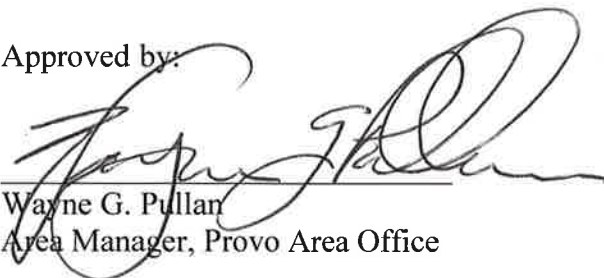
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Approved by:



Wayne G. Pullan
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11 JAN 2017
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Introduction

In compliance with the National Environmental Policy Act of 1969, as amended (NEPA), the Bureau of Reclamation - Provo Area Office has conducted an Environmental Assessment (EA) for a Proposed Action to provide funding to the Sheep Creek Irrigation Company (SCIC) for the piping of approximately 3.4 miles of unlined, open canals along the Antelope and North Laterals in the SCIC irrigation system. Reclamation is responsible for implementing salinity control projects for the Colorado River Basin and is the lead agency for the purposes of compliance with the NEPA for this Proposed Action.

The EA was prepared by Reclamation to address the impacts associated with replacing a section of the Antelope and North Laterals with a buried pipeline. The purpose of the Proposed Action is to increase the efficiency of the existing system and reduce the water lost to seepage, evaporation, and operational water losses. The need for this project is to reduce salt loading to the Colorado River System.

Alternatives

The EA analyzed the No Action Alternative and the Proposed Action of replacing 3.4 miles of the open canal with a buried pipeline.

Minimization Measures Incorporated into the Proposed Action

The minimization measures, along with other measures listed under each resource in Chapter 3 and Chapter 4 of the EA, have been incorporated into the Proposed Action to lessen the potential adverse effects.

- Staging areas would be located where they would minimize new disturbance of area soils and vegetation.
- Ground disturbance would be minimized to the extent possible.
- Construction vehicles and equipment would be inspected and cleaned prior to entry into the project area to ensure that they are free of weed seed.
- Newly disturbed sites would be monitored for impacts to native vegetation.
- Stockpiling of materials would be limited to those areas approved and cleared in advance.

Environmental commitments that are integral to the Proposed Action are as follows:

1. Standard Reclamation Best Management Practices (BMPs) - Standard Reclamation BMPs will be included in construction specifications and applied by the contractor during construction activities to minimize environmental effects. Such practices or specifications include sections in the present EA on public safety, dust abatement,

air pollution, noise abatement, water pollution abatement, waste material disposal, erosion control, archaeological and historical resources, vegetation, wildlife, and threatened and endangered species. In response to informal consultation, the project would adhere to mitigation measures required by the U.S. Fish and Wildlife Service (USFWS) in order to protect potential Ute ladies'-tresses. Excavated material and construction debris may not be wasted in any stream or river channel in flowing waters. This includes material such as grease, oil, joint coating, or any other possible pollutant. Excess materials must be wasted at a Reclamation approved upland site well away from any channel. Construction materials, bedding material, excavation material, etc. may not be stockpiled in riparian or water channel areas. Silt fencing will be appropriately installed and left in place until after revegetation becomes established, at which time the silt fence can then be carefully removed. Machinery must be fueled and properly cleaned of dirt, weeds, organisms, or any other possibly contaminating substances offsite prior to construction.

2. Additional Analyses - If the Proposed Action were to change significantly from that described in this EA because of additional or new information, or if other spoil, or work areas beyond those outlined in this analysis are required outside the defined project construction area, additional environmental analyses may be necessary.
3. Utah Pollutant Discharge Elimination System (UPDES) Permit - A UPDES Permit will be required from the State of Utah before any discharges of water, if such water is to be discharged as a point source into a regulated water body. Appropriate measures will be taken to ensure that construction related sediments would not enter any stream either during or after construction. Settlement ponds and intercepting ditches for capturing sediments would be constructed, and the sediment and other contents collected would be hauled off the site for appropriate disposal upon completion of the project.
4. Fugitive Dust Control Permit - The Utah Department of Air Quality regulates fugitive dust from construction sites, requiring compliance with rules for sites disturbing greater than one-quarter of an acre. Utah Administrative Code R307-205-5, requires steps be taken to minimize fugitive dust from construction activities. Sensitive receptors include those individuals working at the site or motorists that could be affected by changes in air quality due to emissions from the construction activity.
5. Cultural Resources - In the case that any cultural resources, either on the surface or subsurface, are discovered during construction, Reclamation's Provo Area Office archeologist shall be notified and construction in the area of the inadvertent discovery will cease until an assessment of the resource and recommendations for further work can be made by a professional archeologist.
6. Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, he/she must provide immediate

telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work will stop until the proper authorities are able to assess the situation onsite. This action will promptly be followed by written confirmation to the responsible Federal agency official, with respect to Federal lands. The Utah State Historic Preservation Office (SHPO) and interested Native American Tribal representatives will be promptly notified. Consultation will begin immediately. This requirement is prescribed under the Native American Graves and Repatriation Act (43 CFR Part 10) and Archaeological Resources Protection Act (16 U.S.C. 470).

7. A Memorandum of Agreement (MOA) will be executed to mitigate the adverse effect to sites 42DA002045 and 42DA002046. Mitigation for the adverse effects, set forth in the stipulations of the MOA, must be completed before construction activities associated with the Proposed Action begin.
8. Paleontological Resources - Should vertebrate fossils be encountered during ground disturbing actions, construction must be suspended until a qualified paleontologist can be contacted to assess the find.
9. Migratory Bird Protection - Any ground-disturbing activities or vegetation treatments would be performed before migratory birds begin nesting or after all young have fledged.
10. Previously Disturbed Areas - Construction activities would be confined to previously disturbed areas where possible for such activities as work, staging and storage, waste areas, and vehicle and equipment parking areas. Vegetation disturbance will be minimized as much as possible.
12. Public Access - Construction sites will be closed to public access. Temporary fencing, along with signs, will be installed to prevent public access. The project team will coordinate with landowners or those holding special permits and other authorized parties regarding access to or through the project area.
13. Disturbed Areas - All disturbed areas resulting from the Proposed Action will be smoothed, shaped, contoured, and rehabilitated to as near the pre-project construction condition as practicable. After completion of the construction and restoration activities, disturbed areas will be seeded at appropriate times with weed-free, native seed mixes having a variety of appropriate species to help hold the soil around structures, prevent excessive erosion, and to help maintain other riverine and riparian functions. The composition of seed mixes will be coordinated with wildlife habitat specialists and Reclamation biologists. Weed control on all disturbed areas is required. Successful revegetation efforts must be monitored and reported to Reclamation, along with photos of the completed project.
14. Habitat Replacement Plan - As required by the Colorado River Basin Salinity Control Act (43 U.S.C. 1571-1599), any fish and wildlife values lost as a result of

project implementation will be replaced by SCIC through a Habitat Replacement Plan (HRP) approved by Reclamation following coordination with Federal and State wildlife officials (Appendix D. Habitat Replacement Plan). A HRP has been developed and will be implemented as part of the proposed project. Replacement habitat will be of an equal or greater value to the wetland and riparian habitat lost by the proposed project, and will be managed to maintain its value for the life of the salinity control project (typically 50 years).

Related NEPA Documents

Environmental Assessments that are related to, but not part of the scope of this EA, include: SCIC South Valley Lateral Salinity Control Project, SCIC Cedar Hollow Lateral Salinity Control Project, People's Canal Salinity Control Project, and the Manila-Washam Project.

Decision and Finding of No Significant Impact

Based upon a review of the EA and supporting documents, I have 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 here from the EA.

Context

The affected locality is Daggett County, Utah. Affected interests include the SCIC, shareholders of the SCIC, and adjacent landowners.

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 considered in the EA.

1. **Impacts may be both beneficial and adverse.** The Proposed Action will impact resources as described in the EA. Environmental commitments to reduce impacts to cultural and biological resources were incorporated into the design of the Proposed Action. The following short-term effects of the Proposed Action are predicted: temporary traffic delays, noise, wildlife displacement, and ground disturbance along the canal alignment. Long-term predicted effects are wildlife habitat loss (mitigated for in the HRP). Beneficial effects include salt loading reduction to the Colorado River, and elimination of seepage losses to allow for a higher percentage of diverted water to reach points of use.

None of the environmental effects discussed in detail in the EA are considered significant.

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 community will be disproportionately affected by the Proposed Action.

3. **Unique characteristics of the geographic area.** Any wetlands or other wildlife habitat that will be impacted by the Proposed Action will be mitigated for through the HRP. There are no park lands, prime farmlands, wild and scenic rivers, or other ecologically critical areas that will be affected by the proposal.

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, Indian tribes, public and private organization, and individuals regarding the Proposed Action and its effects on resources. No comments were received. Based on the lack of responses received, the effects from 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.** When uncertainty about impacts to the human environment was identified in the EA, mitigation and monitoring measures were identified and included in the formulation of the alternatives. 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.** The Proposed Action will not establish a precedent for future actions with significant effects.
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 above; however, significant cumulative effects are not predicted, as described in the EA.
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 SHPO has concurred with Reclamation's determination of effect and a MOA is in place to mitigate any adverse effects to historic properties.
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.** There are no documented occurrences of federally listed threatened, endangered, or candidate species within the project area; however, Reclamation and USFWS staff determined that the Proposed Action may affect, but is not likely to adversely affect the Ute ladies'-tresses.
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 project does not violate any Federal, state, local, or tribal law, regulation, or policy imposed for the protection of the environment. In addition, this project is consistent with applicable land management plans, policies, and programs.

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Chapter 1 Purpose of and Need for Proposed Action

1.1 Introduction

This Environmental Assessment (EA) was prepared to examine the potential environmental impacts of the Antelope and North Laterals Salinity Control Project, proposed by the Sheep Creek Irrigation Company (SCIC) in Daggett County, Utah. If approved, the U.S. Bureau of Reclamation (Reclamation) would authorize the use of Federal funds to pipe approximately 3.4 miles of unlined, open canals along the Antelope and North Laterals in the SCIC irrigation system (Figure 1- Project Vicinity Map).

1.2 Background

1.2.1 Colorado River Salinity Control Program

The Colorado River Basin Salinity Control Act of 1974 was enacted to protect the Colorado River's water quality. Reclamation's Salinity Control Program seeks to provide cost effective regional solutions for reducing the salinity loading of the Colorado River. The Colorado River provides water for approximately 30 million people in the United States and the Republic of Mexico. Water from the Colorado River is currently used to irrigate 4 million acres of land in the United States and 500,000 acres of land in Mexico.

Controlling the salinity in the Colorado River remains one of the most important challenges facing Reclamation. Salinity levels in the Colorado River threaten agricultural, municipal, and industrial water users. High salinity levels make it difficult to grow agricultural crops. Salt deposition from high salinity water plugs and destroys municipal water delivery systems. Recent salinity levels in the lower portion of the Colorado River are typically about 700 mg/L, but in the future may range between 600 and 1,200 mg/L, depending upon the amount of water in the river system. Salinity damages in the United States' portion of the Colorado River Basin are currently approximately \$250 million per year, and are estimated to exceed \$1.5 billion per year if future increases in salinity are not controlled (Reclamation 2016).

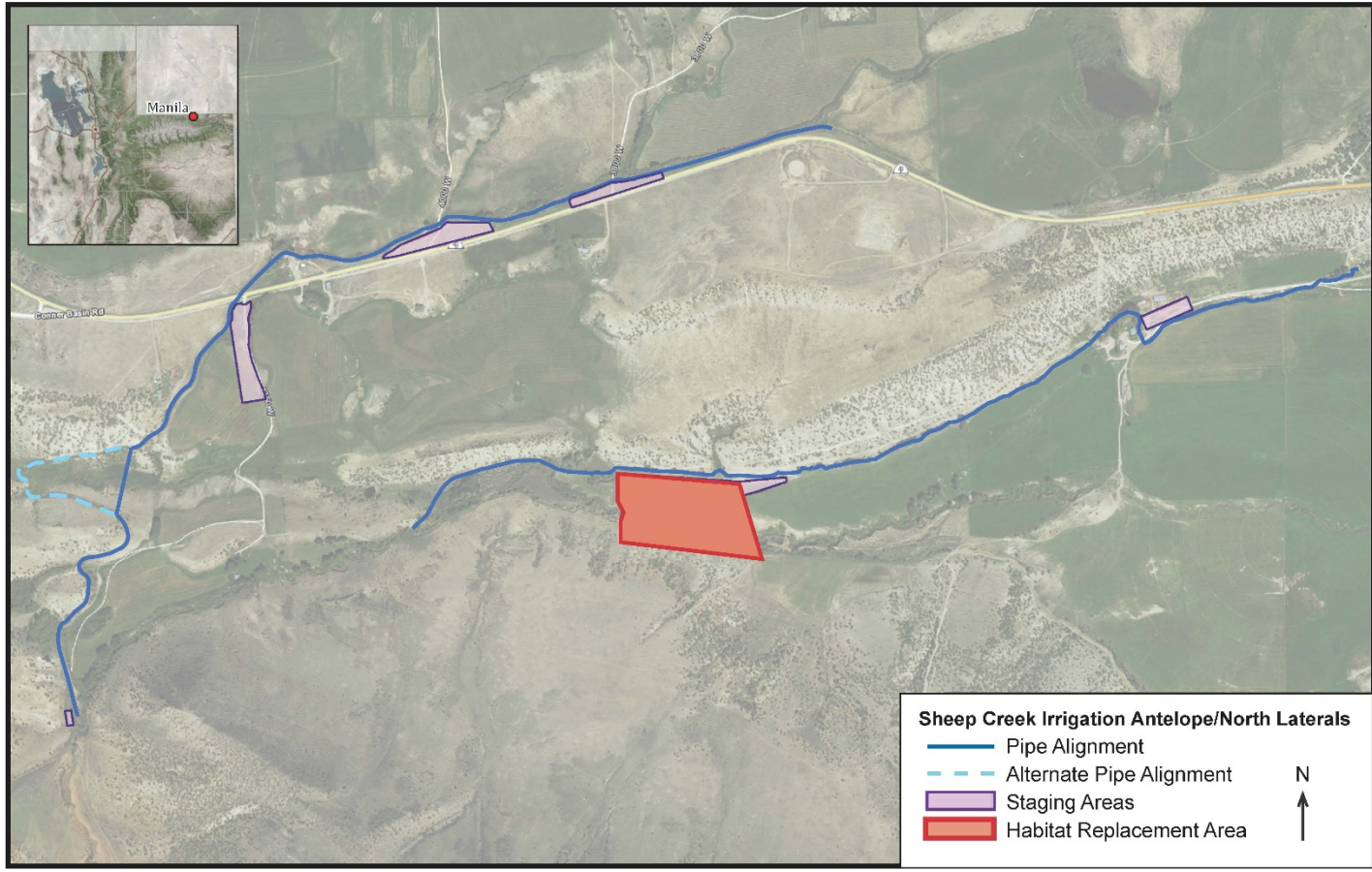


Figure 1 – Project Vicinity Map

1.2.2 The Sheep Creek Irrigation Company

The SCIC, established in 1899, is located on the north slope of the eastern Uinta Mountains in the town of Manila, Utah. The SCIC System consists of 22 miles of mountain canals from Tamarack, Jessen, Daggett and Spirit Lakes to the Long Park Reservoir located within the Ashley National Forest. Constructed in 1979, Long Park Reservoir has a storage capacity of 14,000 acre-feet. The SCIC System consists of Sheep Creek Canal and six main canal laterals: the Nebeker Lateral, the North Lateral, the Antelope Lateral, the South Valley Lateral, the Cedar Hollow Lateral, and the “Wash”/Birch Springs System.

Water from the SCIC System irrigates approximately 11,400 acres of agricultural lands with approximately 110 miles of canals and laterals in the valley that deliver water to individual stockholders. The majority of crops grown along the SCIC system are alfalfa, hay, and other pasture grasses. Previously implemented salinity control projects have piped the Cedar Hollow and South Valley Laterals. The remainder of the SCIC System is comprised of unlined earthen canals. The canal and lateral seepage in the unlined portion of the SCIC system is estimated to range from 25 to 30 percent, approximately 12 to 14 cubic feet per second (cfs) of water.

1.3 Purpose of and Need for Proposed Action

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 National Environmental Policy Act (NEPA) of 1969. If the EA shows no significant impacts associated with implementation of the proposed project, then a Finding of No Significant Impact (FONSI) will be issued by Reclamation. Otherwise, an Environmental Impact Statement (EIS) will be necessary prior to implementation of the Proposed Action.

The purpose of the proposed project improvements is to replace the existing unlined earthen Antelope and North Laterals with pipelines. The proposed 3.4 miles of pipeline are needed to increase the efficiency of the existing system and reduce the water lost to seepage, evapotranspiration, and operational water losses. Moreover, the project improvements are needed to reduce maintenance on the canal and reduce the salinity contributions resulting from the existing Antelope and North Laterals, consistent with the purposes of the Colorado River Basin Salinity Control Program. The project improvements are anticipated to reduce the salinity contributions to the Colorado River Basin by 1,474 tons annually.

1.4 Public Scoping and Involvement

The public involvement process for this EA presented the members of the public including other agencies, interest groups, and key stakeholders with opportunities

to obtain information about the proposed project and opportunities to participate in the project through written comments. Reclamation’s objectives during the public involvement process are to create and maintain a well-informed public and receive input on the project.

Members of the project team including the SCIC staff met with property owners located along the proposed project alignment. Coordination with interested agencies was performed throughout the EA process. Chapter 5 of this EA, describes in detail the public involvement and coordination completed during the development of this EA.

1.5 Permits, Licenses, and Authorizations

Implementation of the Proposed Action may require a number of authorizations or permits from state or Federal agencies. The SCIC would be responsible for obtaining all permits, licenses, and authorizations required for the project. Potential authorizations or permits may include those listed in Table 1-1.

**Table 1-1
Permits and Authorizations**

Agency/Department	Purpose
Utah Division of Water Quality	Utah Pollutant Discharge Elimination System (UPDES) Permit for projects that disturb more than one acre of land.
State of Utah Department of Natural Resources, Division of Water Rights (DWRi)	Stream Alteration Permit under Section 404 of the Clean Water Act (CWA) and Utah statutory criteria of stream alteration described in the Utah Code.
Utah State Historic Preservation Office	Consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470 USC 470.
U. S. Fish and Wildlife Service (UAFWS)	Consultation pursuant to Section 7 of the Endangered Species Act.
U. S. Army Corps of Engineers (USACE)	A USACE permit, in compliance with Section 404 of the CWA, would be required prior to the discharge of dredged or fill material into “waters of the United States”.

1.6 Related Projects and Documents

1.6.1 SCIC South Valley Lateral Salinity Control Project EA

Reclamation and the SCIC completed an EA in 2014 to evaluate impacts from the piping of the SCIC South Valley Lateral. The project, funded under Reclamation's Salinity Control Program, piped 7.4 miles of open unlined canals resulting in an estimated annual reduction of 3,373 tons of salt in the Upper Colorado River Basin.

1.6.2 SCIC Cedar Hollow Lateral Salinity Control Project EA

In 2014, Reclamation and the SCIC completed the SCIC Cedar Hollow Lateral Salinity Control Project EA. This EA evaluated the impacts from the proposed replacement of 5.42 miles of the Cedar Hollow Lateral with a pipeline to reduce the salinity contributions to the Upper Colorado River Basin. This project, located in Sweetwater County, Wyoming, and Daggett County, Utah, reduced the annual salt contribution to the Upper Colorado River Basin by approximately 2,220 tons.

1.6.3 Peoples Canal Salinity Control Project EA

Reclamation completed the Peoples Canal Salinity Control Project EA and issued a FONSI in 2010. This EA analyzed impacts from the proposed replacement of 9.1 miles of the Peoples Canal with a pipeline to reduce the salinity contributions to the Upper Colorado River Basin. This project was located in Sweetwater County, Wyoming, and Daggett County, Utah.

1.6.4 Manila-Washam Project EA

In 2006, the Natural Resources Conservation Service (NRCS) completed an EA and issued a FONSI for the Manila-Washam Project. This EA evaluated on-farm improvements for 11,000 water right acres in Daggett County, Utah, and Sweetwater County, Wyoming, to reduce salt loading in the Upper Colorado River Basin. Development of this salinity control project started in 2007.

All aforementioned projects were separate and complete projects with independent utility. These projects have been implemented to meet the goals of Reclamation's Salinity Control Program and in conjunction with the Proposed Action are expected to have a cumulative positive impact on the water quality in the Upper Colorado River Basin.

1.7 Scope of Analysis

The purpose of this EA is to determine whether or not Reclamation should authorize, provide funding, and enter into an agreement with the SCIC for the piping of the Antelope and North Laterals, consistent with Reclamation's Salinity Control Program. That determination includes consideration of whether there would be significant impacts to the human and natural environment. In order to pipe the Antelope and North Laterals, this EA must be completed and a FONSI

issued. Analysis in the EA includes temporary impacts from construction activities and permanent impacts as a result of proposed piping project.

Chapter 2 Alternatives

2.1 Introduction

The Proposed Action evaluated in this EA is Reclamation's authorization of Federal funds for the improvements deemed most appropriate for the Antelope and North Laterals under present day conditions. Information contained within this EA will be used to determine the potential effects on the human and natural environment. This document will guide Reclamation's decision on the implementation of the Proposed Action. The Proposed Action is analyzed in comparison with a No Action Alternative in order to determine potential effects to the existing/baseline conditions.

If Reclamation chooses to implement the Proposed Action, the SCIC would be authorized to proceed with piping the Antelope and North Laterals to reduce the salinity contributions to the Upper Colorado River Basin. If Federal funds are authorized for the project, the SCIC would construct, operate and maintain these new pipeline features in place of the existing open laterals. The new pipelines, existing easements and newly acquired easements would become a feature of the SCIC irrigation system.

2.2 No Action

Under the No Action Alternative, Reclamation would not authorize the use of Federal funds to pipe the Antelope and North Laterals. The open, unlined laterals would continue to deliver irrigation water with no improvements to reduce seepage. Up to approximately 30 percent of the irrigation water (14 cfs) would continue to be lost to seepage, evapotranspiration, and other operational losses. Seepage from the laterals would continue to dissolve into the sandy soils and lead to an increase in the salt loading of the Upper Colorado River Basin. Currently, seepage from these two open laterals contribute an estimated 1,474 tons of salt annually to the Upper Colorado River Basin (Appendix A. Salt Worksheet).

2.3 Proposed Action

Under the Proposed Action Alternative, Reclamation would authorize the use of Federal funds to pipe the SCIC Antelope and North Laterals. The proposed piping would reduce the amount of water lost along these laterals by up to 30 percent and would reduce the salt loading of the Upper Colorado River Basin by approximately 1,474 tons annually (Appendix A. Salt Worksheet). Piping these laterals would reduce the amount of required ongoing system maintenance such as

debris removal, vegetation clearing and replacing outdated valves and gates. The Proposed Action would include approximately 3.4 miles of new pipeline, 1.8 miles along the Antelope lateral and 1.6 miles along the North Lateral. Pipe sizes would range from 30 to 16 inches, with larger pipes being used at the start of the pipelines and reducing in size towards the end of the lines.

2.3.1 Easements

Easements would be required where the proposed pipeline alignments deviate from the existing lateral alignments. Where deviations occur, an approximate 30-foot-wide easement would be acquired to account for the pipelines and associated operation and maintenance. The construction of the pipeline would result in approximately 3,000 linear feet of newly acquired easements. A 100-foot-wide temporary easement would be required for construction in areas where the proposed alignments deviate from the existing lateral alignments. A 50-foot-wide construction easement would be required for construction activities that take place along the existing canal alignments. No easements from publicly owned local, state or Federal land is anticipated for the proposed project. Construction of the Proposed Action (including staging areas and the habitat replacement site) is anticipated to temporarily disturb approximately 58.9 acres of land. All easements would be acquired in the name of the SCIC.

2.3.2 Turnouts, Drains, Services, and Meters

Under the Proposed Action, the existing Antelope diversion would be replaced with a new structure that would include a screening device to prevent debris from entering the pipelines. The main pipelines would have splitter boxes that would deliver water to individual farms. Gates and valves would also be installed to allow operators to control water allocation along the pipelines.

2.3.3 Construction Schedule

The proposed project is anticipated to begin in the winter of 2016, pending environmental approval. Construction activities would take place outside of the typical irrigation season, with construction occurring between October 1 through April 1. The project is anticipated to be completed by April 2018.

2.3.4 Construction Procedures

2.3.4.1 Pipeline Construction

Construction of pipelines are anticipated to occur in the following sequence: mobilization of construction equipment, delivery of pipe to identified construction staging areas, excavation of the trenches, fusing of the pipelines, backfill over the pipe, compaction of the backfill, and restoration and reseeding of the disturbed areas. Excavation activities would be performed with the use of appropriately sized construction equipment to minimize disturbance to surrounding areas. All excavated material would be stockpiled to the side of trenches within the construction easement, and used as backfill around the new pipeline.

2.3.4.2 Construction Staging Areas

Staging areas would be used to stockpile pipe and other construction materials, to house equipment, and to park vehicles. Staging areas have been identified and analyzed as part of this EA to determine potential project impacts throughout implementation of the Proposed Action (Figure 2 - Project Alignment). These impacts are discussed in Chapter 3.

2.3.4.3 Land Disturbance

The proposed pipeline alignments total approximately 3.4 miles in length and would require a maximum construction easement of 100 feet (50 feet of the centerline of the lateral/pipeline alignments). Land disturbance would be confined to identified staging areas, the habitat replacement site, and the 100-foot-wide construction easement along the lateral/pipeline alignment. Transportation to the project would follow existing access roads, wherever possible to minimize disturbance. If necessary, any new access roads would be within the proposed 100 width construction easement.

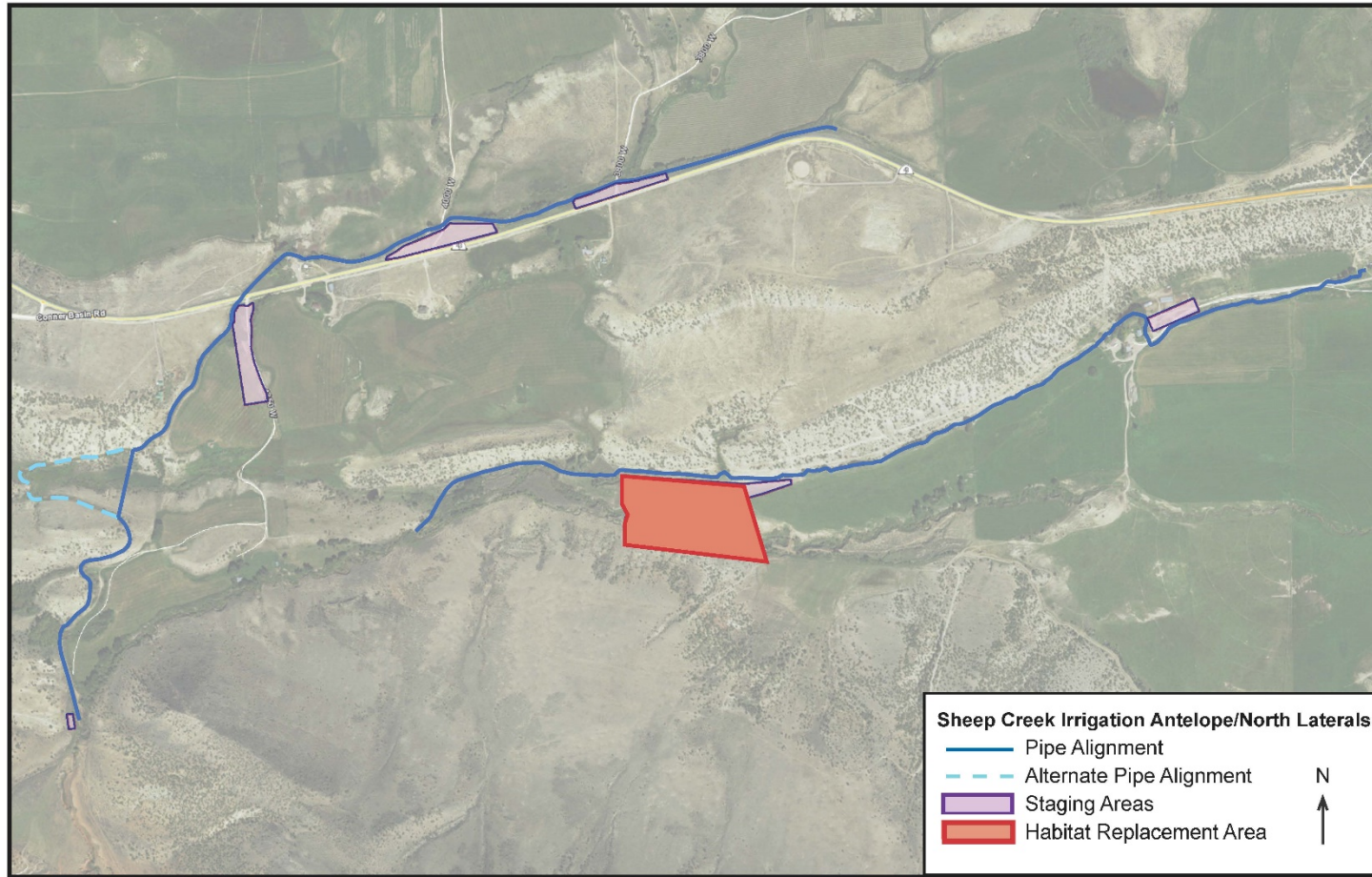


Figure 2 – Project Alignment

2.4 Alternatives Considered and Eliminated from Further Study

The following alternative was evaluated but eliminated because it did not meet the purpose of or need for the project.

2.4.1 Membrane Lining

Under the Membrane Lining Alternative, a liner would be placed in the Antelope and North Laterals to reduce the amount of seepage occurring along the open canal laterals. As part of this alternative, the laterals would remain open and would still require maintenance to remove debris and trash that enters the laterals. The membrane lining would be susceptible to damage from livestock, wildlife or equipment that enters the open laterals.

This alternative does not meet the purpose of and need for the project because it would keep the water in an open environment, thus allowing evaporation of irrigation waters. Damage to the liner from livestock and maintenance vehicles entering the open lateral would likely lead to seepage, which would reduce the efficiency of the laterals and contribute to the salt loading of the Upper Colorado River Basin. This alternative was determined not to meet the project purpose and need for improving water quality, reducing maintenance, and preventing trash from entering the lateral. Therefore, the alternative was eliminated from further evaluation in this EA.

2.5 Comparison of Alternatives

The suitability of the No Action Alternative and Proposed Action (the preferred alternative as described in Section 2.3) were compared based on potential environmental impacts (detailed in Chapter 3) and five objectives identified for the project. The objectives are:

- Reduce salt traveling to the Upper Colorado River Basin;
- Prevent seepage and evaporation;
- Improve water quality;
- Reduce maintenance; and
- Prevent trash and debris from entering the waterway.

As shown in Table 2-1, the No Action Alternative did not meet any of the project's objectives, while the Proposed Action met all five objectives. The Proposed Action was selected for evaluation in this EA.

**Table 2-1
Comparison of Alternatives**

Project Objective	Does the No Action Alternative Meet the Objective?	Does the Proposed Action Meet the Objective?
Reduce salt traveling to Upper Colorado River Basin	No	Yes
Prevent seepage and evaporation	No	Yes
Improve water quality	No	Yes
Reduce maintenance	No	Yes
Prevent trash and debris from entering the waterway	No	Yes

2.6 Minimization Measures Incorporated into the Proposed Action

The minimization measures have been determined throughout the creation of this EA to lessen the potential adverse effects to sensitive resources. The minimization measures listed below, along with other measures listed under each resource in Chapter 3 and Chapter 4, have been incorporated into the Proposed Action. These minimization measures include, but are not limited to, the following:

- Staging areas would be located where they would minimize new disturbance of area soils and vegetation.
- Ground disturbance would be minimized to the extent possible.
- Construction vehicles and equipment would be inspected and cleaned prior to entry into the project area to ensure that they are free of weed seed.
- Newly disturbed sites would be monitored for impacts to native vegetation.
- Stockpiling of materials would be limited to those areas approved and cleared in advance.

Chapter 3 Affected Environment and Environmental Consequences

3.1 Introduction

This chapter describes the environment that could be affected by the Proposed Action. These impacts to the environment are discussed under the following: geology and soils resources; visual resources; cultural resources; paleontological resources; wilderness and wild and scenic rivers; hydrology; water quality; system operations; health, safety, air quality and noise; prime and unique farmlands; flood plains; wetlands, riparian, noxious weeds, and existing vegetation; fish and wildlife resources; threatened, endangered, and sensitive species; recreation resources; socioeconomics; access and transportation; water rights; Indian Trust Assets (ITAs); environmental justice, and cumulative effects. The present condition and characteristics of each resource are discussed first, followed by a discussion of the predicted impacts caused by the Proposed Action. The environmental effects are summarized in Section 3.7.

3.2 Resources Considered and Eliminated from Further Analysis

The following resources in Table 3-1 were considered but eliminated from further analysis because they did not occur in the project area or because the potential effect to the resource is so minor (negligible) that it was discounted.

**Table 3-1
Resources Eliminated from Analysis**

Resource	Rationale for Elimination from Further Analysis
Recreation Resources	There are no recreation resources within or directly adjacent to the project area.
Wilderness and Wild and Scenic Rivers	There are no designated Wilderness Areas or Wild and Scenic Rivers within or adjacent to the project area.
Water Rights	Existing water rights would not change under the Proposed Action.

3.3 Affected Environment and Environmental Consequences

This chapter describes the affected environment (baseline conditions) and environmental consequences (impacts as a result of the Proposed Action) on the quality of the human and natural environment and that could be impacted by Reclamation authorizing the use of Federal funds for the construction and operation of the Proposed Action, as described in Chapter 2. The human and natural environment is defined in this study as the environmental resources, including social and economic conditions occurring in the impact area of influence.

3.3.1 Geology and Soils Resources

Minor to moderate soil erosion is common within the project area, especially in areas surrounding existing ditches and in areas that receive periods of heavy wind. Information obtained from the Natural Resources Conservation Service (NRCS) indicates that most of the project area has a moderate soil erosion rating. A few areas, particularly those with higher slopes, have a severe soil erosion rating (NRCS Soil Survey 2016). According to the NRCS soil survey, the soils in the project area are primarily comprised of sandy loams and outcrop complexes with slopes ranging from 0 to 30 percent. The composition of the soil in the project area is detailed in Table 3-2, and a map showing the composition of the soil found in Appendix B. Soil Survey.

**Table 3-2
Composition of Soils within the Project Area**

Soil Type	Percent of Project Area
Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes	23 percent
Blackhall-Kappes-Rentsac complex, 0 to 8 percent slopes	21 percent
McFadden fine sandy loam, 6 to 10 percent slopes	17 percent
Blackhall-Rentsac complex, 6 to 25 percent slopes	14 percent
Brownston-Luhon-McFadden complex, 3 to 15 percent slopes	12 percent
Kappes-McFadden fine sandy loams, 2 to 6 percent slopes	8 percent
McFadden fine sandy loam, 0 to 6 percent slopes	2 percent
Poposhia loam, 3 to 6 percent slopes	2 percent
Blazon-Delphill complex, 6 to 30 percent slopes	1 percent

3.3.1.1 No Action Alternative

Under the No Action Alternative, there would be no adverse effects to soil erosion and sedimentation. Soil erosion from water and wind would continue in the area at the current rate, with those areas exposed to high winds and located on slopes experiencing the most erosion.

3.3.1.2 Proposed Action

Under the Proposed Action, soil would be excavated, compacted and re-graded during construction. In the short-term period during and immediately following construction, erosion and sedimentation may increase. The Best Management Practices (BMPs) would be employed to minimize the potential for impacts from erosion and sedimentation. The proposed pipeline alignment would be reseeded, and over the long-term, the soil would return to a pre-project condition once vegetation is established. The Proposed Action would have no long-term, negative impact on soil erosion in the area.

3.3.2 Visual Resources

The visual resources within the project area are related to the area’s agricultural activities and adjacent topographic features. The elevation of the project area ranges from 6,880 to 7,220 feet above sea level. Most of the project area has been previously disturbed and converted to agricultural or residential uses. The project area is located in a valley within adjacent hillsides with slopes ranging from 2 to 35 percent.

3.3.2.1 No Action Alternative

There would be no new structures or changes to the existing view shed under the No Action Alternative. The visual resources in the project area would remain

unaltered. Therefore, there would be no impact to visual resources from the No Action Alternative.

3.3.2.2 Proposed Action

Under the Proposed Action, the proposed pipeline would be buried and the site would be restored to its original condition. Visual impacts associated with construction activities would be temporary. There would be no long-term impacts to the visual resources within the project area.

3.3.3 Cultural Resources

Cultural resources are defined as physical or other expressions of human activity or occupation that are over 50 years in age. Such resources include culturally significant landscapes, prehistoric and historic archaeological sites as well as isolated artifacts or features, traditional cultural properties, Native American and other sacred places, and artifacts and documents of cultural and historic significance.

Section 106 of the NHPA, mandates that Reclamation take into account the potential effects of a proposed Federal undertaking on historic properties. Historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NRHP). Potential effects of the described alternatives on historic properties are the primary focus of this analysis.

The affected environment for cultural resources is identified as the Area of Potential Effects (APE), in compliance with the regulations to Section 106 of the NHPA (36 CFR 800.16). The APE is defined as the geographic area within which Federal actions may directly or indirectly cause alterations in the character or use of historic properties. The APE for this Proposed Action includes the area that could be physically affected by any of the proposed project alternatives (the maximum limit of disturbance).

A Class I records search and a Class III cultural resource inventory were completed for the APE by Certus Environmental Solutions, LLC. (Certus) in December 2015 (Appendix C. Cultural and Paleontological Resources). Additional survey occurred in June 2016 to include staging areas and the habitat replacement site. A total of 58.9 acres were inventoried during the Class III cultural resource inventory to identify any cultural resources within the APE. Certus identified six cultural resource sites including the two canals (site 42DA2045 and 42DA2046) and four prehistoric archaeological sites (42DA2041, 42DA2042, 42DA2403, and 42DA2044). Three isolated prehistoric artifacts were also identified.

In accordance with 36 CFR 800.4, the sites were evaluated for significance in terms of the NRHP eligibility. The significance criteria applied to evaluate cultural resources are defined in 36 CFR 60.4 as follows:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and:

- That are associated with events that have made a significant contribution to the broad patterns of our history; or
- That are associated with the lives of persons significant in our past; or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- That have yielded, or may be likely to yield, information important in prehistory or history.

Reclamation and Certus recommend that both the Antelope Lateral (42DA2045) and the North Lateral (42DA2046) possess those characteristics that render them eligible for the NRHP under Criterion A. Piping of the now-open canal channels would constitute an adverse effect to these historic properties.

Reclamation and Certus recommend that site 42DA2044 be found eligible for the NRHP under Criterion D due to its potential to yield information important in understanding prehistoric land uses in the Lucerne Valley area. Piping of the North Lateral would create limited areas of ground disturbance inside the southern boundary of site 42DA2044. This portion of the site has already been disturbed by construction of the canal, creation and use of a gravel farm/maintenance road, and agricultural crop cultivation. This disturbance has been, for the most part, relatively shallow. Limiting further disturbance for the piping of the canal to the previously disturbed soils (both horizontally and vertically) would likely avoid adverse effects to site 42DA2044. Reclamation recommends that an archaeological monitor be present during ground-disturbing activities within the site boundaries.

Reclamation and Certus recommend that the other prehistoric lithic scatters (sites 42DA2041, 42DA2042, and 42DA2043) lack sufficient integrity due to substantial movement of artifacts from storm water runoff to be considered eligible for the NRHP under any criteria.

In compliance with 36 CFR 800.4(d)(2) and 36 CFR 800.11(e), a copy of the Class III cultural resource inventory report and a determination of historic properties affected were submitted to the Utah State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP), and tribes which may attach religious or cultural significance to historic properties possibly affected by the Proposed Action for consultation.

Pursuant to 36 CFR 800.6(c), a Memorandum of Agreement (MOA) will be developed to resolve the adverse effects to sites 42DA2045 and 42DA2046.

Signatories to the MOA would include all parties that assume a responsibility under the agreement, including, but not limited to, Reclamation, Utah SHPO, SCIC, and if they choose to participate, the ACHP and tribes.

3.3.3.1 No Action Alternative

Under the No Action Alternative, there would be no foreseeable impacts to cultural resources. There would be no need for ground disturbance for pipe installation or staging areas. The existing conditions would remain intact and would not be affected.

3.3.3.2 Proposed Action

Under the Proposed Action, the open, earthen irrigation laterals would be replaced with a buried pipeline and would result in an adverse effect to the Laterals (sites 42DA2045 and 42DA2046). Mitigation measures for the adverse effects to the Laterals would be outlined in a MOA in accordance with 36 CFR 800.6(c).

Piping of the North Lateral canal would create limited areas of ground disturbance inside the southern boundary of site 42DA2044. Monitoring of construction-related excavation near site 42DA2044 by a qualified archaeologist with an approved discovery plan would be recommended to ensure avoidance of adverse effects to site 42DA2044.

3.3.4 Paleontological Resources

Paleontological resources are defined as any fossilized remains, traces, or imprints of organisms, preserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth. Any materials associated with an archaeological resource as defined in Section 3(1) of the Archaeological Resources Protection Act (ARPA) (16 U.S.C. 470bb(1)) and any cultural item as defined in Section 2 of the Native American Graves and Repatriation Act (NAGPRA) (25 U.S.C. 3001) are not considered paleontological resources. Section 6302 of the Paleontological Resources Preservation Act (PRPA) of 2009 (Sections 6301-6312 of the Omnibus Land Management Act of 2009 [Public Law 111-11 123 Stat. 991-1456]) requires the Secretary of the Interior to manage and protect paleontological resources on Federal land using scientific principles and expertise.

The potential impact area for paleontological resources is consistent with the APE for cultural resources, as described in Section 3.3.3.

3.3.4.1 No Action Alternative

Under the No Action Alternative, there would be no foreseeable impacts to paleontological resources. There would be no need for ground disturbance for any pipe installation or staging areas. The existing conditions would remain intact and would not be affected.

3.3.4.2 Proposed Action

Under the Proposed Action, there would be ground-disturbing activities which have the potential to disturb subsurface fossil material. There are, however, no known paleontological localities within the potential impact area. Therefore, the Proposed Action is not anticipated to have an impact on paleontological resources.

3.3.5 Hydrology

There are no natural lakes or rivers within the project area. The irrigation water travelling through the Antelope and North Laterals comes from the Long Park Reservoir. The laterals receive supplemental hydrology in the form of run-off from adjacent hillsides and other higher elevations.

An estimated annual average of 1,474 tons of salt reaches the Upper Colorado River Basin due to deep percolation of water conveyed by the Antelope and North Laterals (Appendix A. Salt Worksheet). The salt is transported through seepage from the laterals. The water from the laterals leaches salt from the gypsum-rich saline marine shale as it travels subsurface to adjacent waterways.

3.3.5.1 No Action Alternative

The hydrology in the project area would remain unaltered in its current state under the No Action Alternative. A greater demand for water from the natural hydrological resources in the area may be required as seepage and operational losses continue in the SCIC system.

3.3.5.2 Proposed Action

The Proposed Action would prevent seepage and increase the efficiency of water delivery through the Antelope and North Laterals. This would result in an estimated 25 to 30 percent increase in water traveling to agricultural users along the laterals. The increased efficiency of the piped lateral would not result in any new depletions to the water traveling to the Upper Colorado River Basin. The water would continue to be used for agricultural purposes and would not alter the water rights, water usage or amount of water in the current system. Run-off that was previously collected by the open laterals would sheet flow over the piped laterals and percolate into the surface or be collected by other waterways in the general area. The Proposed Action would not impact the hydrology of natural water resources within the vicinity of the project area.

3.3.6 Water Quality

The Antelope and North Laterals are classified as Class 4 waterways by the State of Utah. Class 4 waterways are protected for agricultural uses including irrigation of crops and stock watering (Utah Department of Environmental Quality 2016). The Antelope and North Laterals provide flood irrigation to agricultural users. Flood irrigation causes excess soil moisture, infiltration of water vertically downward through the soil to a shale layer, and horizontal movement of water downstream. Irrigation seepage into shallow aquifers is the source of many saline seeps. As the water migrates through the soil, it dissolves salts thus increasing the

salinity of the water. The seeps and springs within the Sheep Creek Drainage area contribute to an estimated 13,000 tons of salt per year to the Colorado River Basin (NRCS 2006). The Antelope and North Laterals are estimated to contribute 1,474 tons of salt per year (Appendix A. Salt Worksheet). This salt loading degrades the water quality of the Upper Colorado River Basin.

3.3.6.1 No Action Alternative

Under the No Action Alternative, there would be long-term minor to moderate adverse impacts to the water quality in the area. Salt loads from the deep percolation of seepage from the laterals would continue to degrade water quality in the area. Furthermore, water resources would be strained as up to 30 percent of the water traveling along the laterals would be lost to seepage potentially causing the need to release additional water from Long Park Reservoir to meet water user's needs.

3.3.6.2 Proposed Action

The Proposed Action would reduce seepage from the Antelope and North Laterals. The reduced seepage would result in an estimated 1,474 fewer tons of salt from annually reaching the Upper Colorado River Basin (Appendix A. Salt Worksheet). Piping the open, unlined laterals would also prevent debris and pollution from runoff entering the irrigation system. This would result in minor long-term reduced salinity in the local waterways and improvements to the long-term water quality of the Upper Colorado River Basin.

3.3.7 System Operations

The SCIC canal system consists of 22 miles of canals from Tamarack, Jessen, Daggett and Spirit Lake. The water in the SCIC system is diverted from the Long Park Reservoir which has a storage capacity of 14,000 acre feet (NRCS 2006). The Antelope and North laterals are components of the SCIC irrigation system. The Antelope lateral serves approximately 3,155 acres of agricultural land, and delivers approximately 39 cfs. The North Lateral delivers approximately 10 cfs of irrigation water to users along the approximate 10,000 feet of the unlined lateral.

3.3.7.1 No Action Alternative

Under the No Action Alternative, the SCIC system would continue to operate under current conditions. Existing water losses in the system would continue and potentially increase as the canal laterals continue to deteriorate over time. To compensate for water loss, additional water may need to be diverted and/or the irrigation season would need to be shortened which would likely result in economic losses to agricultural users in the project area. Maintenance requirements associated with the open laterals would continue to increase due to open laterals.

3.3.7.2 Proposed Action

The Proposed Action would increase the efficiency of the system operations by reducing the amount of water lost through the open laterals. System operations

would also improve under the proposed action as maintenance would be greatly reduced. The Proposed Action would therefore result in a long-term beneficial impact on the operations of the SCIC irrigation system.

3.3.8 Health, Safety, Air Quality and Noise

3.3.8.1 Health and Safety

The project is located in an agricultural area of Daggett County, Utah. Safety concerns in the area are generally related to traffic along Highway 43 which is located in the northern portion of the project area. Safety concerns include those related to typical vehicle and truck traffic occurring along the highway. There are no other safety or public health concerns in the project area.

Public safety resources in the general vicinity of the project area include the Manila Police and Fire Department, both of which are located approximately one mile outside of the project area.

3.3.8.2 Air Quality

Air quality in the project area is regulated by the U.S. Environmental Protection Agency (EPA) and the Utah Division of Air Quality. The National Ambient Air Quality Standards (NAAQS) established by the EPA under the Clean Air Act (CAA) specify limits of air pollutants for carbon monoxide, particulate matter (PM 10 & PM 2.5), ozone, sulfur dioxide, lead, and nitrogen. If the levels of a criteria pollutant in an area are higher than the NAAQS, then the area is designated as a “nonattainment area.” Areas that meet the NAAQS for criteria pollutants are designated as “attainment areas.” The project area is located in Daggett County which is in attainment for all criteria pollutants.

3.3.8.3 Noise

The ambient noise within the project area includes a combination of natural sounds (wind, bird and insect calls) and mechanical sounds (cars, trucks, tractors, etc.). In general noise levels are consistent with rural communities, likely averaging from 42 to 65 dBA based on the proximity of the state highway that runs through the northern portion of the project area.

3.3.8.4 No Action Alternative

Existing public health, safety, air quality and noise conditions in the project area would be maintained under the No Action Alternative. Therefore, the No Action Alternative would have no effect on public health, air quality or noise.

3.3.8.5 Proposed Action

The Proposed Action would have no impacts on public health and safety in the project area. Emergency dispatch services, including the local fire and police, would not be impacted by the Proposed Action. Although no temporary road closures are planned, any temporary road or access closures would be coordinated with local law enforcement and emergency services. The Proposed Action is anticipated to have short-term noise and air quality impacts during active

construction. Noise levels would be elevated during construction, but no new noise would be generated from the Proposed Action after construction. Air quality impacts from land disturbance activities such as excavation and compaction of soils along the project alignment would be short-term. Noise and air quality impacts would be mitigated through the implementation of the BMPs throughout construction. The BMPs would include a dust mitigation plan and proper maintenance of construction equipment.

3.3.9 Prime and Unique Farmlands

The project area is comprised primarily of agricultural lands. However, a review NRCS's Soil Survey indicates that the project area does not contain any prime, unique or statewide important farmland (Appendix B. Soil Survey).

3.3.9.1 No Action Alternative

The No Action Alternative would continue to allow salts to accumulate in the irrigation laterals that deliver water to agricultural users in the area. Furthermore, under the No Action Alternative up to 30 percent of irrigation water would be lost to seepage resulting in less water available for agricultural use. While there is no protected farmland in the project area, the No Action Alternative may result in long-term negative impacts on farmland in the general vicinity of the project area.

3.3.9.2 Proposed Action

A review of the NRCS Soil Survey indicates that there is no prime, unique or statewide important farmland in the project area. Given the nature of the project (piping an existing canal) and the fact that no permanent right-of-way would be required for project implementation, there would be no impact to farmland from the Proposed Action.

3.3.10 Floodplains

Executive Order 11988: Floodplain Management (E.O. 11988) (May 24, 1977) established Federal policy for each agency to take action to reduce the risk of flood loss. The E.O. 11988 defines a floodplain, as lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year. Encroachment onto floodplains can reduce the flood-carrying capacity of the floodplain and extend the flooding hazard beyond the encroachment area.

According to information obtained from the Federal Emergency Management Agency's Flood Insurance Mapping system, the project is located outside of a mapped floodplain area (FEMA 2016). There are no known floodplains, rivers or other flood hazards in the project area.

3.3.10.1 No Action Alternative

Under the No Action Alternative, the existing conditions of the project area would be maintained and there would be no impacts to the floodplain or the potential for flooding.

3.3.10.2 Proposed Action

The Proposed Action would not create any new structures or flooding hazards in the project area. Precipitation and other water that is currently collected in the open laterals would sheet flow and percolate into the ground after the laterals are piped. Therefore, the Proposed Action would have no impact on floodplains or the potential for flooding in the project area.

3.3.11 Wetlands, Riparian Vegetation, Noxious Weeds and Existing Vegetation

3.3.11.1 Wetlands and Riparian Vegetation

Riparian vegetation exists along both laterals and is contained primarily within and intermittently along the laterals. Vegetation consists predominantly of willows (*Salix* spp.), wire rush (*Juncus balticus*), and narrowleaf cottonwood (*Populus angustifolia*). Reed canarygrass (*Phalaris arundinacea*) and Canada thistle (*Cirsium arvense*) are also found in locations within the project area.

The USFWS's National Wetlands Inventory (NWI) database was consulted to evaluate the presence of wetland features in the vicinity of the project area. A field survey was performed by a qualified wetland specialist in spring 2016. The NWI map (found in Appendix D. Habitat Replacement Plan) and the information obtained during the field assessment indicates that there are areas of freshwater emergent wetland vegetation located in the canal prisms. This wetland vegetation is irrigation-induced and found in low-lying areas within the canal laterals and adjacent to agricultural. A small seasonal wetland was observed during the field survey near the proposed new section of pipeline that will cut off what is currently a tight bend in the Antelope lateral. This very small wetland (< 0.02 acres) was dominated by the wetland grass, spreading bent grass (*Agrostis stolonifera*). A small ephemeral drainage was also observed at the low point of the valley. The surrounding vegetation is comprised of upland species such as sage (*Artemisia tridentate*), juniper (*Juniperus* sp.), rabbitbrush (*Ericameria nauseosa*), alfalfa (*Medicago sativa*), and blue wild rye (*Elymus glaucus*).

3.3.11.2 Noxious Weeds

Noxious weeds and nonnative species exist throughout the project area, specifically along roadways, canals and other highly disturbed areas. Noxious weeds present in the project area include Scotch thistle (*Onoprodum acanthium*), spotted knapweed (*Centaurea maculosa*) and Dyer's Woad (*Isatis tinctoria*).

3.3.11.3 Existing Vegetation

The majority of the land in the project area is comprised of human-altered vegetation as a result of agricultural uses. Agricultural activities have replaced native upland vegetation with alfalfa and pasture grasses. Non-agricultural vegetation such as cheatgrass (*Bromus tectorum* L.) and thistle (*Cirsium* spp.) are more common in disturbed areas along roadways.

In addition to the plant species associated with the human-altered environment, the project area contains some native upland vegetation species, such as big sagebrush (*Artemisia tridentata*), rabbit brush (*Chrysothamnus* spp. and *Ericameria nauseosa*), juniper (*Juniperus* spp.) and wheatgrass (*Agropyron* spp.).

3.3.11.4 No Action Alternative

The existing vegetation in the project area would remain in its current condition, experiencing minor fluctuations in quantity and quality, as naturally occurring precipitation patterns vary. Routine canal maintenance would continue to disturb riparian vegetation that exists along the canal. The area is likely to see an increase in the composition and infestation of noxious and non-native species, due to their ability to thrive in disturbed areas. Though periodically removed within the laterals during maintenance, nonnative and noxious plant species would likely increase their dominance within the project area, resulting in degradation of habitat quality. Therefore, the No Action Alternative may result in a minor, long term negative impact to riparian vegetation in the project area.

Under the No Action Alternative, heavy equipment used during routine maintenance of the canals would continue to have minor impacts on the upland vegetation in the project area. These plant communities would remain in their current condition, and are not anticipated to experience sizeable gains or losses from maintenance activities.

3.3.11.5 Proposed Action

Under the Proposed Action, irrigation-induced wetlands and riparian vegetation would be permanently impacted by the piping of the laterals. Piping the laterals would result in a total loss of irrigation-induced wetlands and riparian vegetation caused by seepage from the laterals. Areas of wetland and riparian vegetation loss may experience an increase in nonnative species including tamarisk and Russian olive, which may be able to out-compete native species for limited water supplies when irrigation flows cease. As required by the Colorado River Basin Salinity Control Act (43 U.S.C. 1571-1599), any fish and wildlife values lost as a result of project implementation (including the loss of the riparian vegetation) would be replaced by the SCIC through a habitat replacement plan, approved by Reclamation, following coordination with Federal and state wildlife officials. Replacement habitat must be of an equal or greater value to the wetland and riparian habitat lost by the proposed project, and must be managed to maintain its value for the life of the salinity control project (typically 50 years). After viewing the entire lateral alignments, the habitat quality score (HQS) for the existing habitat was evaluated onsite by Trent Toler, Biologist from J-U-B Engineers, Inc. (Appendix D. Habitat Replacement Plan).

According to the USACE, the replacement of open channel irrigation with a pipe is considered an irrigation exemption under RGL No. 07-02 Exemption for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches under Section 404 Part 323.4(a)(3) of the CWA. Under this exemption, no USACE permitting is required for impacts to irrigation-induced wetlands.

Consultation with the USACE is warranted prior to construction of the Proposed Action to confirm whether the proposed project qualifies for an irrigation exemption. The Proposed Action would avoid the small wetland located next to the new portion of alignment along the Antelope Lateral. This area would be fenced off prior to construction to prevent any construction equipment from entering the area. Therefore, no wetlands are anticipated to be affected by the Proposed Action.

Upland areas would experience short-term losses of vegetation. Brush and grasses would be impacted during construction by the operation of equipment, excavation, and the staging of materials. All areas disturbed by construction activities would be re-contoured and reseeded. After completion of the re-contouring and reseeding, relatively little native habitat would be permanently lost when compared to the current condition. Upland vegetation communities would likely be reestablished, and some previously disturbed areas may see an increase in native species composition after reseeding. Areas that are disturbed may be more vulnerable to non-native species and noxious weed infestation. These non-native species typically recover more quickly after a disturbance than native species. To minimize impacts to native vegetation, previously disturbed areas would be used for construction activities, where possible. Cultivated lands that are disturbed by construction activities would be reseeded with an appropriate agricultural mix approved by a Reclamation biologist.

The BMPs would be followed to reduce impacts to native vegetation, including staging materials outside of sensitive areas, such as streams and wetlands. Construction materials and equipment would be washed prior to entering the project area to remove dirt, seeds from weeds, and to reduce the possibility of infestation by nonnative species. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive species. This would include seeding mixtures of desirable native species and agricultural grasses where appropriate, and post-construction treatment to control noxious and invasive species.

3.3.12 Fish and Wildlife Resources

Fish and wildlife in the general vicinity of the project area include large mammals, small mammals, raptors, waterfowl, migratory songbirds, upland game birds, and a small number of reptiles and amphibians. It is likely that all animals in the vicinity of the project area rely to some extent on the Antelope and North Laterals for water. However, with several other open canals in the immediate vicinity, enclosing the Antelope and North Laterals should have little-to-no effect on the animals' ability to find adequate water resources. The Antelope and North Laterals do not contain any viable fish habitat (Appendix E. Biological Evaluation).

3.3.12.1 Fish

There is no viable fish habitat in the project area as the laterals do not serve as fish habitat and there are no natural waterways in the project area.

3.3.12.2 Wildlife

The areas surrounding the proposed project area provide year-round habitat to several species of big game, such as mule deer (*Odocoileus hemionus*) and elk (*Cervus elaphus nelsoni*). In addition, many small mammals frequent the general vicinity of the proposed project area. These species include, coyote (*Canis latrans*), pocket gopher (*Thomomys talpoides*), raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*).

3.3.12.3 Birds

Various raptors, water fowl and upland game bird species may be found in and near project area. Red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), turkey vulture (*Cathartes aura*), Canada goose (*Branta Canadensis*), mallard (*Anas platyrhynchos*), mourning dove (*Zenaida macroura*), and California quail (*Callipepla californica*) are all known to frequent the general area.

3.3.12.4 Reptiles and Amphibians

Reptiles and amphibians that may occur in the project area include the tiger salamander (*Ambystoma tigrinum*), Great Basin rattlesnake (*Crotalus viridis*), northern sagebrush lizard (*Sceloporus graciosus graciosus*), and prairie rattlesnake (*Crotalus viridis*).

3.3.12.5 No Action Alternative

Under the No Action Alternative, fish and wildlife habitat would remain in its current condition, and there would be no gains or losses to these resources. Salinity loading of the Colorado River Basin would continue at current rates, which may affect water quality within the drainage, thereby impacting the wildlife using the area.

3.3.12.6 Proposed Action

The Proposed Action may result in minor short-term impacts to wildlife species present in the project area. There would be some upland habitat temporarily lost due to pipeline construction but similar habitat is available in the surrounding areas and the area would be restored post-construction.

After construction, areas disturbed by construction would be re-contoured, replanted, and reseeded with native vegetation except in agricultural fields, where appropriate crop seeds would be used. The BMPs would be followed to minimize impacts, including placing staging sites and access roads in previously disturbed areas. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive weed species. This would include seeding the disturbed areas with mixtures of desirable native species, including grasses, shrubs, and forbs.

During pipeline construction and maintenance there could be a short-term displacement (approximately 3 to 6 months) of wildlife that normally occupy the immediate area. All construction activities would occur within a 100-foot-wide area along the proposed pipeline alignment. Generally, wildlife would move easily and find alternative areas for forage and cover, and may return after construction and maintenance operations have been completed. Some upland habitats would experience short-term disturbance until native vegetation components within these areas are restored (2 to 3 growing seasons).

Impacts to small mammals, especially burrowing animals, could include direct mortality and displacement during construction activities. Small mammal species may experience reduced populations in direct proportion to the amount of disturbed habitat. These species and habitats are relatively common throughout the area and any losses would be minor.

Impacts to big game would include short-term disturbances and displacement of incidental use during the construction period. It is anticipated, due to the minor amount of habitat disturbance, that minor to no impact to wintering big game populations would occur.

Impacts to raptors and other avian species would include minor short-term disturbance and displacement during construction, with no long-term impacts after construction. Any vegetative clearing would take place outside of the migratory bird nesting season and therefore should not impact breeding or nesting.

Those species, including avian and amphibian species, which are dependent on wetland and riparian habitats, would experience a long-term (greater than 5 years) loss of habitat as described above. The total habitat value that would be lost long-term would be mitigated through the implementation of a habitat replacement plan that has been approved by Reclamation (Appendix D. Habitat Replacement Plan).

The Proposed Action would result in a decrease in salinity, which would improve water quality in the Colorado River Basin and potentially indirectly benefit fish within the Colorado River System.

3.3.13 Threatened, Endangered, and Sensitive Species

The Endangered Species Act (ESA) lists for the proposed project area include four endangered species and three threatened species. Species listed as endangered include the bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and razorback sucker (*Xyrauchen texanus*). The yellow-billed Cuckoo (*Coccyzus americanus*), Canada lynx (*Lynx Canadensis*) and Ute ladies'-tresses (*Spiranthes diluvialis*) are listed as

threatened species (Appendix E. Biological Evaluation). These species and the status of documented occurrences in the project area are detailed in Table 3.3.

**Table 3-3
Federally Listed Species with Potential to Occur within the
Proposed Project Area**

Species	ESA Status	Documented Occurrence in Proposed Project Area
Bonytail chub (<i>Gila elegans</i>)	Endangered	No
Colorado pikeminnow (<i>Ptychocheilus lucius</i>)	Endangered	No
Humpback chub (<i>Gila cypha</i>)	Endangered	No
Razorback sucker (<i>Xyrauchen texanus</i>)	Endangered	No
Yellow-billed Cuckoo (<i>Coccyzus americanus</i>)	Threatened	No
Canada lynx (<i>Lynx Canadensis</i>)	Threatened	No
Ute ladies'-tresses (<i>Spiranthes diluvialis</i>)	Threatened	No

The Utah Division of Wildlife Resources (UDWR) maintains a central database for Species of Concern in Utah. On February 9, 2016, the UDWR provided a response letter regarding information on State Species of Concern with documented occurrences in the vicinity of the proposed project area. The UDWR response letter identified two State Species of Concern with records of occurrence within a 2 mile radius of the proposed project action area: the bald eagle (*Haliaeetus leucocephalus*) and the white-tailed prairie dog (*Cynomys leucurus*). The UDWR response letter did not list any documented occurrences of the Federally listed species listed within a 2 mile radius of the proposed project area (Appendix E. Biological Evaluation).

A biological evaluation was conducted in the spring of 2016 (Appendix E. Biological Evaluation). Information obtained during the biological site assessment indicates that there is no suitable habitat for any of the threatened Colorado River fish or the yellow billed cuckoo. Information obtained during site visits by Reclamation biologists performed in August 2015 and August 2016 suggest that there may be limited amounts of suitable habitat for the Ute ladies'-tresses in and adjacent to the project area.

3.3.13.1 No Action Alternative

Salinity loading of the Upper Colorado River Basin would continue at current rates due to seepage from the Antelope and North Laterals, which would impact water quality within the drainage, thereby impacting wildlife using the area.

3.3.13.2 Proposed Action

There are no documented occurrences of federally listed threatened, endangered, or candidate species within the project area. Biological site surveys completed in August 2015 and August 2016 determined that the Proposed Action would have no effect on six of the seven federally listed species identified as potentially occurring within the proposed project area. Reclamation and the USFWS staff determined that the Proposed Action may affect, but is not likely to adversely affect the Ute ladies'-tresses (Appendix E. Biological Evaluation).

3.3.14 Socioeconomics

Information obtained from the 2010 U.S. Census, indicates that Manila, Utah has a total population of 331 residents. Data regarding the economic standing of residents located along the project corridor was not available at the time that this EA was prepared. However, 2010 U.S. Census data indicates that 8.3 percent of Daggett County residents' incomes were below the poverty level. Therefore, a low-income population may exist in the general vicinity of the project area.

3.3.14.1 No Action Alternative

The No Action Alternative would have no effect on the socioeconomic conditions or activities of those living in the project area.

3.3.14.2 Proposed Action

The project area lies on privately owned land in Daggett County, Utah. After a review of the 2010 Census information, populations that could potentially be affected by the project were evaluated. There are only two residences within the project action area, the economic standing of those living in these residences is unknown. However, the implementation of the Proposed Action is not anticipated to have any impact on the socioeconomic conditions in project area or the general area. The Proposed Action would not involve population relocation, property takings, or substantial economic impacts.

3.3.15 Access and Transportation

One major transportation resource, Utah State Highway 43, runs through the proposed project area alongside the Antelope Lateral for approximately one mile. Local and county roads are located in and adjacent to the project area.

3.3.15.1 No Action Alternative

Access and transportation resources would not be impacted by the No Action Alternative.

3.3.15.2 Proposed Action

The Proposed Action may cause limited delays along State Highway 43 due to construction vehicles entering and exiting the highway. Although no temporary road closures are planned, any temporary road or access closure would be coordinated with local law enforcement and emergency services. Therefore, there are no anticipated long-term impacts to access or transportation resources from the Proposed Action.

3.4 Indian Trust Assets

Indian Trust Assets are legal interests in property held in trust by the United States for federally recognized Indian Tribes or Indian individuals. Assets can be real property, physical assets, or intangible property rights, such as lands, minerals, hunting and fishing rights, and water rights. The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to such tribes or individuals by treaties, statutes, and executive orders. These rights are sometimes further interpreted through court decisions and regulations. This trust responsibility requires that all Federal agencies take all actions reasonably necessary to protect trust assets. Reclamation carries out its activities in a manner which protects these assets and avoids adverse impacts when possible. When impacts cannot be avoided, Reclamation would provide appropriate mitigation or compensation. Implementation of the Proposed Action would have no foreseeable negative impacts on Indian Trust Assets.

3.5 Environmental Justice

Executive Order 12898, established Environmental Justice as a Federal agency priority to ensure that minority and low-income groups are not disproportionately affected by Federal actions.

Information obtained from the 2010 U.S. Census, indicates that Manila, Utah has a total population of 331 residents. Of these residents, 8 residents identify as an ethnic minority. Data regarding the economic standing of residents located along the project corridor was not available at the time this EA was prepared. The 2010 U.S. Census data indicates that 8.3 percent of Daggett County residents' incomes were below the poverty level. Therefore, a minority and/or low-income population may exist in the general vicinity of the project area. However, implementation of the Proposed Action would not disproportionately (unequally) affect any low-income or minority communities within the project area. The Proposed Action would not involve population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts. This action would therefore, have no adverse human health or environmental effects on minority or low-income populations.

3.6 Cumulative Effects

In addition to project-specific impacts, Reclamation analyzed the potential for significant cumulative impacts to resources affected by the project and by other past, present, and reasonably foreseeable activities within the watershed.

According to the Council on Environmental Quality's (CEQ) regulations for implementing NEPA (50 CFR §1508.7), a “cumulative impact” is an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. It focuses on whether the Proposed Action, considered together with any known or reasonably foreseeable actions by Reclamation, other Federal or state agencies, or some other entity combined to cause an effect.

The Proposed Action would comply with all relevant Federal, state and local permits. The proposed area and duration of disturbance under the Proposed Action would be minimal and short-term. Long-term impacts are not expected to create negative cumulative impacts to environmental resources. Several other salinity control projects related to the lateral systems of the Upper Colorado River Basin have been implemented by Reclamation over the past 10 years (see Section 1.6). These salinity control projects should result in a positive cumulative impact on water quality. Based on Reclamation’s review of the Proposed Action, Reclamation has determined that this action would not have a significant adverse cumulative effect on any resources.

3.7 Summary of Environmental Effects

Table 3-4 summarizes environmental effects under the No Action Alternative and the Proposed Action. This table does not include resources that were eliminated from analysis (detailed in Table 3-1).

**Table 3-4
Summary of Environmental Effects**

Project Resource	No Action	Proposed Action
Geology and Soil Resources	No Effect	Minor short-term effects during and shortly after construction. Mitigate with the BMPs.
Visual Resources	No Effect	No long-term impacts. Minor temporary impacts from construction activities.
Cultural Resources	No Effect	Adverse Effect to the Laterals (sites

Project Resource	No Action	Proposed Action
		42DA2045 and 42DA2046). A MOA outlining mitigation measures for the adverse effect would be signed and implemented prior to the commencement of construction activities.
Paleontological Resources	No Effect	No Effect
Hydrology	Water lost to seepage will continue at a rate of up to 30 percent annually. Long-term minor to moderate impacts.	Long-term benefit due to increased efficiency of the water delivery system and reduction of salt in the adjacent waterways.
Water Quality	Continued salt loading of the Colorado River Basin. Long-term minor to moderate impacts.	Long-term benefits to water quality from the decreased salinity.
System Operations	Long-term minor to moderate impacts from deteriorating system and maintenance requirements.	Long-term benefits from increased efficiency and decreased maintenance.
Health, Safety, Air Quality and Noise	No Effect	Minor short-term effects due to fugitive dust and equipment exhaust from construction activity. Mitigate with the BMPs.
Prime and Unique Farmlands	No Effect	No Effect
Wetlands, Riparian, Noxious Weeds, and Existing Vegetation	No Effect	There would be permanent loss of irrigation-induced wetlands and riparian vegetation along the laterals. The loss would be mitigated through the Habitat Replacement Plan (Appendix D). Short-term upland vegetation loss with the potential for an increase in invasive plants. The

Project Resource	No Action	Proposed Action
		BMPs would be employed to decrease the likelihood of invasive species.
Fish and Wildlife Resources	No Effect	Minor short-term disturbance and displacement during construction. Downstream fish habitat may be improved as a result of long-term increased water quality. There would be permanent loss of riparian areas once the laterals are piped. A Habitat Replacement Plan would be implemented to replace foregone wildlife values (Appendix D).
Threatened, Endangered, and Sensitive Species	No Effect	May affect but not likely to adversely affect determination for the Ute ladies'-tresses. The project would adhere to mitigation measures required for the Ute ladies'-tresses determined through informal consultation with USFWS.
Socioeconomics	No Effect	No Effect
Access and Transportation	No Effect	Minor temporary disruptions are possible along Highway 43 due to construction traffic entering and exiting the roadway.
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Cumulative Effects	No Effect	Cumulative effects from the Proposed Action and related actions were assessed during the

Project Resource	No Action	Proposed Action
		<p>resource evaluation. This analysis determined that there were no adverse cumulative impacts. Instead, there are beneficial long term effects from the numerous salinity control projects that have taken place in the general area.</p>

Chapter 4 Environmental Commitments

This chapter outlines the environmental commitments have been developed, along with the minimization measures detailed in Section 2.6, to lessen the potential adverse effects of the Proposed Action.

4.1 Environmental Commitments

The following environmental commitments would be implemented as an integral part of the Proposed Action.

1. Standard Reclamation Best Management Practices - Standard Reclamation BMPs would be applied during construction activities to minimize environmental effects and would be implemented by construction forces, or included in construction specifications. Such practices or specifications include sections in the present EA on public safety, dust abatement, air pollution, noise abatement, water pollution abatement, waste material disposal, erosion control, archaeological and historical resources, vegetation, wildlife and threatened and endangered species. The project would adhere to mitigation measures required for the Ute ladies'-tresses determined through informal consultation with the USFWS. Excavated material and construction debris may not be wasted in any stream or river channel in flowing waters. This includes material such as grease, oil, joint coating, or any other possible pollutant. Excess materials must be wasted at a Reclamation approved upland site well away from any channel. Construction materials, bedding material, excavation material, etc. may not be stockpiled in riparian or water channel areas. Silt fencing would be appropriately installed and left in place until after revegetation becomes established, at which time the silt fence can then be carefully removed. Machinery must be fueled and properly cleaned of dirt, weeds, organisms, or any other possibly contaminating substances offsite prior to construction.
2. Additional Analyses - If the Proposed Action were to change significantly from that described in this EA because of additional or new information, or if other spoil, or work areas beyond those outlined in this analysis are required outside the defined project construction area, additional environmental analyses may be necessary.
3. UPDES Permit - A UPDES Permit would be required from the State of Utah before any discharges of water, if such water is to be discharged as a

point source into a regulated water body. Appropriate measures would be taken to ensure that construction related sediments would not enter the stream either during or after construction. Settlement ponds and intercepting ditches for capturing sediments would be constructed, and the sediment and other contents collected would be hauled off the site for appropriate disposal upon completion of the project.

4. Fugitive Dust Control Permit - The Utah Division of Air Quality (UDAQ) regulates fugitive dust from construction sites, requiring compliance with rules for sites disturbing greater than ¼ of an acre. Utah Administrative Code R307-205-5, requires steps be taken to minimize fugitive dust from construction activities. Sensitive receptors include those individuals working at the site or motorists that could be affected by changes in air quality due to emissions from the construction activity.
5. Cultural Resources - In the case that any cultural resources, either on the surface or subsurface, are discovered during construction, Reclamation's Provo Area Office archaeologist shall be notified and construction in the area of the inadvertent discovery would cease until an assessment of the resource and recommendations for further work can be made by a professional archaeologist.
6. Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, he/she must provide immediate telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work would stop until the proper authorities are able to assess the situation onsite. This action would promptly be followed by written confirmation to the responsible Federal agency official, with respect to Federal lands. The Utah SHPO and interested Native American Tribal representatives would be promptly notified. Consultation would begin immediately. This requirement is prescribed under the NAGPRA (43 CFR Part 10) and ARPA (16 U.S.C. 470).
7. A MOA would be executed to mitigate the adverse effect to sites 42DA2045 and 42DA2046. Mitigation for the adverse effects, set forth in the stipulations of the MOA, must be completed before construction activities associated with the Proposed Action begin.
8. Paleontological Resources - Should vertebrate fossils be encountered during ground disturbing actions, construction must be suspended until a qualified paleontologist can be contacted to assess the find.
9. Migratory Bird Protection - Any ground-disturbing activities or vegetation treatments would be performed before migratory birds begin nesting or after all young have fledged.

10. Previously Disturbed Areas - Construction activities would be confined to previously disturbed areas where possible for such activities as work, staging, and storage, waste areas and vehicle and equipment parking areas. Vegetation disturbance would be minimized as much as possible.
11. Public Access - Construction sites would be closed to public access. Temporary fencing, along with signs, would be installed to prevent public access. The project team would coordinate with landowners or those holding special permits and other authorized parties regarding access to or through the project area.
12. Disturbed Areas - All disturbed areas resulting from the Proposed Action would be smoothed, shaped, contoured, and rehabilitated to as near the pre-project construction condition as practicable. After completion of the construction and restoration activities, disturbed areas would be seeded at appropriate times with weed-free, native seed mixes having a variety of appropriate species to help hold the soil around structures, prevent excessive erosion, and to help maintain other riverine and riparian functions. The composition of seed mixes would be coordinated with wildlife habitat specialists and Reclamation biologists. Weed control on all disturbed areas would be required. Successful revegetation efforts must be monitored and reported to Reclamation, along with photos of the completed project.
13. Habitat Replacement Plan - As required by the Colorado River Basin Salinity Control Act (43 U.S.C. 1571-1599), any fish and wildlife values lost as a result of project implementation would be replaced by the SCIC through a habitat replacement plan approved by Reclamation following coordination with Federal and state wildlife officials (Appendix D. Habitat Replacement Plan). A habitat replacement plan would be developed and implemented as part of the proposed project. Replacement habitat would be of an equal or greater value to the wetland and riparian habitat lost by the proposed project, and would be managed to maintain its value for the life of the salinity control project (typically 50 years).

Chapter 5 Consultation and Coordination

5.1 Introduction

This chapter details consultation and coordination between Reclamation and other Federal, state, and local government agencies, Native American Tribes, and the public during the preparation of this EA. Compliance with NEPA, is a Federal responsibility that involves the participation of all of these entities in the planning process. The NEPA requires full disclosure about major actions taken by Federal agencies and accompanying alternatives, impacts, and potential mitigation of impacts.

5.2 Public Involvement

Scoping letters were sent to agencies at the commencement of the EA. No agency scoping comments were received. Reclamation also sent the Draft EA to interested individuals, groups, municipalities, and agencies for a comment period which ended on November 2, 2016. No comments were received.

5.3 Native American Consultation

Reclamation conducted Native American coordination. Consultation letters and copies of the Class III cultural resource inventory report were sent to the Shoshone-Bannock Tribes of the Fort Hall Reservation of Idaho, Shoshone Tribe of the Wind River Reservation, and Ute Tribe of the Uintah and Ouray Reservation on October 12, 2016.

5.4 Utah Geological Survey

A paleontological file search was requested from the Utah Geological Survey (UGS) to determine the nature and extent of the paleontological resources within the Proposed Action disturbance area. In a letter dated December 5, 2016, the UGS noted that: Quaternary and Recent alluvial deposits that are exposed here have a low potential for yielding significant fossil localities (PFYC Class 2). Unless fossils are discovered as a result of construction activities, this project should have no impact on paleontological resources.

5.5 Utah State Historic Preservation Office

Copies of the Class III cultural resource inventory reports and a determination of historic properties affected for the Proposed Action were submitted to the Utah SHPO. The SHPO concurred with Reclamation's recommendations on November 7, 2016. A MOA is being developed to mitigate adverse effects.

5.6 U.S. Fish and Wildlife Service

Coordination with the USFWS took place throughout the development of the EA. The USFWS provided comments and guidance on the Habitat Replacement Plan, species occurrence and the potential impacts on Ute ladies'-tresses. In a letter dated December 6, 2016, the USFWS concurred with Reclamation's determination that the Proposed Action "may affect, but is not likely to adversely affect" the threatened Ute ladies'-tresses. The mitigation measures required for the Ute ladies'-tresses were determined through informal consultation with the USFWS (see Appendix E).

Chapter 6 Preparers

The following provides a list of the agency representatives and consultants who participated in the preparation of this EA.

**Table 6-1
Environmental Summary Preparers**

Name	Title	Company
Seth Coleman	Biologist	J-U-B Engineers, Inc.
Ryan Cosby	GIS Specialist	Gateway Mapping, Inc.
Brian Deeter	Project Manager	J-U-B Engineers, Inc.
Sheri Murray Ellis	Archaeologist	Certus Environmental Solutions, LLC.
Jon Frazier	Design Engineer	J-U-B Engineers, Inc.
Marti Hoge	Senior Environmental Planner	J-U-B Engineers, Inc.
Trent Toler	Biologist	J-U-B Engineers, Inc.

**Table 6-2
Reclamation Team Members**

Name	Title	Company
Linda Morrey	Secretary	Bureau of Reclamation
Rick Baxter	Water, Environmental, & Lands Division Manager	Bureau of Reclamation
Peter Crookston	Environmental Group Chief	Bureau of Reclamation
Dale Hamilton	Resource Management Division Manager	Bureau of Reclamation
Gary Henrie	Hydrologist	Bureau of Reclamation
C. Shane Mower	Fish & Wildlife Biologist	Bureau of Reclamation
Zachary Nelson	Archaeologist	Bureau of Reclamation
Ben Radcliffe	Engineer	Bureau of Reclamation
Prashant Singh	Economist	Bureau of Reclamation
David Snyder	Fish & Wildlife Biologist	Bureau of Reclamation

Chapter 7 Acronyms and Abbreviations

Acronym/Abbreviations	Meaning
ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
ARPA	Archaeological Resource Protection Act
BIA	Bureau of Indian Affairs
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DEQ	State of Utah Department of Environmental Quality
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
HQS	Habitat Quality Score
ITA	Indian Trust Assets
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PM	Particulate Matter
PRPA	Paleontological Resources Preservation Act
Reclamation	U.S. Bureau of Reclamation
SCIC	Sheep Creek Irrigation Company
SHPO	Utah State Historic Preservation Office
UDAQ	Utah Division of Air Quality
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Service
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers

Acronym/Abbreviations	Meaning
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

Chapter 8 References

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Utah Department of Environmental Quality. Utah's Water Resources, Planning for the Future. May 2001. Accessed June 2, 2016 at http://www.water.utah.gov/planning/swp/ex_swp.htm.

Chapter 9 Appendices

Appendix A. Salt Worksheet

UC-240
ADM-13.00

Appendix F-1 -

Mr. Boyd Pallesen, President
Sheep Creek Irrigation Company
P.O. Box 274
Manila, UT 84046

Subject: Funding Opportunity Announcement (FOA) No. R15AS00037 – Colorado River Basinwide and Basin States Salinity Control Programs – Salt Load Reduction Estimate for the Antelope and North Laterals Project.

Dear Mr. Pallesen:

Thank you for submitting the Salt Load Reduction Worksheet and the relevant appendices. We understand your project will involve replacing approximately 23,012 feet of earthen lateral with an irrigation pipeline system. Based on the accepted salinity studies in the Manila/Washam area, the annual salt load reduction estimate for your proposed irrigation delivery system improvements is 1,474 tons. Salt load reduction estimates for the individual components of the proposed project are listed in the enclosed table.

The salt load reduction estimates provided in this letter are based on the best and current available updated and re-interpreted and thus these estimates may change. If these estimates change after receipt of this you will be notified by a similar letter by no later than July 1, 2015. The salt load estimates provided during this FOA are only valid for this FOA. In future FOAs, current salt load estimates will need to be requested.

The salt load reduction estimate must be reported in the application as the off-farm estimated salt load reduction in Part III, item C.2 and Part I, item F. It must also be used to calculate the cost effectiveness of the project in Part III, item C.4; the cost effectiveness also must be reported in Part I, item G. This letter and the enclosed table must be attached to the project proposal as Appendix F.

As stated in Section IV.B of the FOA, your final application must be received by 3 p.m. MDT, July 17, 2016. It is important that you provide the requested information for all applicable sections of the required format in a brief and concise manner in the spaces provided for your responses. The required electronic format for the project proposal can be downloaded from websites; www.grants.gov and www.usbr.gov/uc/progact/salinity.

We strongly encourage you to read the OMB Circulars that apply to your organization. The circulars can be found at http://www.whitehouse.gov/omb/grants/grants_circulars.html.

Funding agreements resulting from this solicitation will reimburse your organization of the actual allowable costs you incur to complete the project, up to the amount of the award. Successful applicants will be required to utilize competitive processes for the acquisition of materials and construction subcontracts. Sole source subcontracts will not be allowed except for engineering design, accounting, and legal services.

Cost allowability is governed by Office of Management and Budget (OMB) Circulars A-87, A-110, and A-122, depending upon the type of organization. Any cost incurred for the project in excess of the agreement amount is the responsibility of your organization.

It will be a requirement of the funding agreements executed with successful applicants that all facilities (i.e., earthen canals and laterals and diversion structures) being replaced, shall be rendered unusable by removal of the structures and refilling the prisms in order to assure the proposed salinity reduction. Costs for removing structures and refilling the prisms should be included in the cost of the salinity project.

False claims or mistakes made in the application that are discovered during the agreement award process will require that application to be re-rated, re-ranked and could result in the application not being awarded or termination of the agreement award.

If you have any questions, please contact me at 801-524-3753, Brad Parry at 801-524-3723 or, Ben Radcliffe at 801-379-1213.

Sincerely,



Kib Jacobson
Colorado River Basin Salinity Control
Program Manager

Enclosures – 2

bc: UC-240, UC-242, UC-823, UC-826
PRO-211, WCG-JSottolare

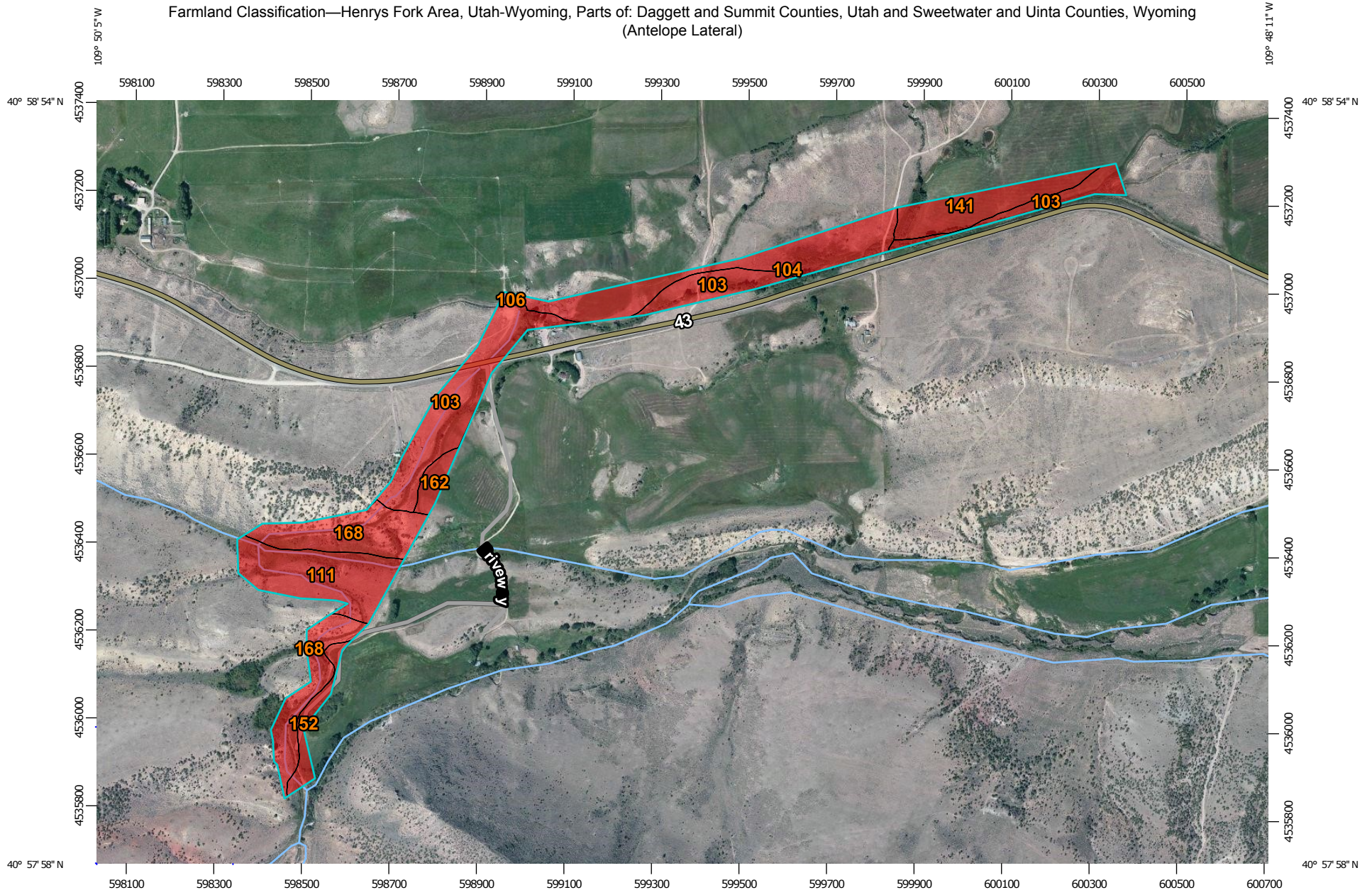
Salt Load Reduction Basis & Estimate

Item	Units	Identify individual canal, lateral, or ditch				
		Antelope Lateral	North Lateral			
Canal/Lateral Name						
Length of existing canal/lateral/ditch	feet	12,984	10,198			
Irrigated acreage served	acres	3,155				
Irrigation season						
Avg. daily diversion	cfs	32.8	5.9			
Average seasonal diversion	ac-ft					
Average no. of days water carried	days	128	128			
Non-irrigation season (winter water)						
Average daily diversion	cfs	0	0			
Average seasonal diversion	ac-ft	0	0			
Average no. of days water carried	days	0	0			
Length of ditch carrying winter water	miles	0	0			
Describe EXISTING lined or piped sections						
Lined length	miles	0	0			
Liner type (concrete, earth, etc)	See Note 1	NA	NA			
Year installed	year	NA	NA			
Liner condition	See Note 2	NA	NA			
Piped length (see Note 3)	feet	170	NA			
Remaining unlined/unpiped length	feet	12,814	NA			
Length to be replaced/improved	feet	12,814	10,198			23,012 ft.
Proposed replacement material	pipe or liner	Pipe	Pipe			
Estimated Salt Reduction	Tons/yr.	971	503			1,474 T/yr.

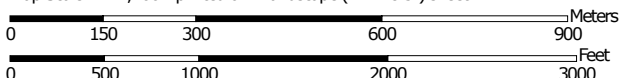
- Notes: 1. Type of liner may be concrete, earth (clay), membrane or other (please specify).
 2. Condition of liner should be rated as poor, satisfactory, good.
 3. Disregard dispersed pipe segments with individual lengths of less than 100 feet

Appendix B. Soil Survey

Farmland Classification—Henry's Fork Area, Utah-Wyoming, Parts of: Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming
(Antelope Lateral)



Map Scale: 1:12,200 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

Farmland Classification—Henry Fork Area, Utah-Wyoming, Parts of: Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming
(Antelope Lateral)









MAP LEGEND








Area of Interest (AOI)

 Area of Interest (AOI)




Soils








Soil Rating Polygons






-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of local importance
-  Farmland of unique importance
-  Not rated or not available







Soil Rating Lines










-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained

-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of local importance
-  Farmland of unique importance
-  Not rated or not available

Soil Rating Points

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

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

Water Features

MAP INFORMATION

 Streams and Canals

Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

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

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: <http://websoilsurvey.nrcs.usda.gov>
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: Henry Fork Area, Utah-Wyoming, Parts of: Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming
Survey Area Data: Version 13, Sep 22, 2015

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

Date(s) aerial images were photographed: Jun 27, 2010—Sep 7, 2010

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 — Henrys Fork Area, Utah-Wyoming, Parts of: Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming (WY638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
103	Blackhall-Kappes-Rentsac complex, 0 to 8 percent slopes	Not prime farmland	18.5	28.5%
104	Blackhall-Rentsac complex, 6 to 25 percent slopes	Not prime farmland	11.8	18.2%
106	Blazon-Delphill complex, 6 to 30 percent slopes	Not prime farmland	0.2	0.4%
111	Brownsto-Luhon-McFadden complex, 3 to 15 percent slopes	Not prime farmland	10.2	15.8%
141	Kappes-McFadden fine sandy loams, 2 to 6 percent slopes	Not prime farmland	6.7	10.3%
152	McFadden fine sandy loam, 0 to 6 percent slopes	Not prime farmland	2.3	3.6%
162	Poposhia loam, 3 to 6 percent slopes	Not prime farmland	1.7	2.6%
168	Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes	Not prime farmland	13.4	20.6%
Totals for Area of Interest			64.8	100.0%

Description

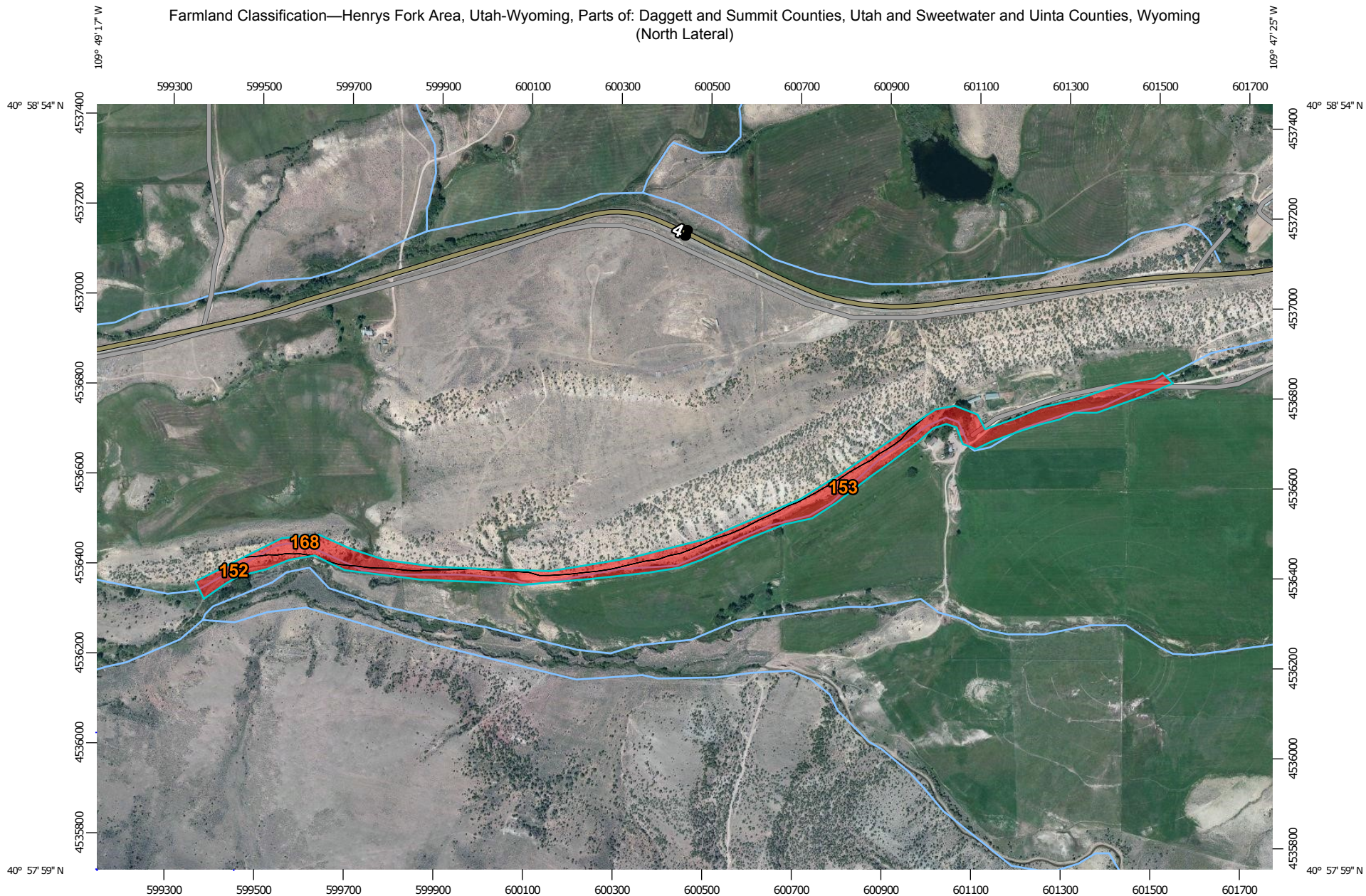
Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime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

Rating Options

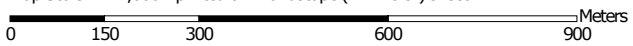
Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Farmland Classification—Henry's Fork Area, Utah-Wyoming, Parts of: Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming
(North Lateral)



Map Scale: 1:12,000 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84











MAP LEGEND








Area of Interest (AOI)

 Area of Interest (AOI)




Soils








Soil Rating Polygons






-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of local importance
-  Farmland of unique importance
-  Not rated or not available







Soil Rating Lines










-  Not prime farmland
-  All areas are prime farmland
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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








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

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-  Prime farmland if irrigated and reclaimed of excess salts and sodium
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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.

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.

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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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Survey Area Data: Version 13, Sep 22, 2015

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

Date(s) aerial images were photographed: Jun 27, 2010—Sep 7, 2010

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Farmland Classification— Summary by Map Unit — Henrys Fork Area, Utah-Wyoming, Parts of: Daggett and Summit Counties, Utah and Sweetwater and Uinta Counties, Wyoming (WY638)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
152	McFadden fine sandy loam, 0 to 6 percent slopes	Not prime farmland	1.8	8.4%
153	McFadden fine sandy loam, 6 to 10 percent slopes	Not prime farmland	14.5	66.0%
168	Redcreek-Blackhall-Rock outcrop complex, 6 to 35 percent slopes	Not prime farmland	5.7	25.7%
Totals for Area of Interest			22.0	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 C. Cultural and Paleontological Resources



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Julie Fisher
Executive Director
Department of
Heritage & Arts



Brad Westwood
Director

ORIGINAL

November 7, 2016

Wayne G. Pullan
Area Manager
Bureau of Reclamation
Provo Area Office
302 East 1860 South
Provo, Utah 84606-7317

RE: Antelope and North Laterals Improvement Project, Manila, Daggett County, U-15-HY-0838
BOR Project No. PRO-EA-15-007 - Salinity Grant, Daggett County, Utah

For future correspondence, please reference Case No. 16-1294

Dear Mr. Pullan:

The Utah State Historic Preservation Office received your request for our comment on the above-referenced undertaking on October 17, 2016 and report addenda on November 2, 2016.

We concur with your determinations of eligibility and effect for this undertaking. We agree that sites 42DA2045 (Antelope Lateral) and 42DA2046 (North Lateral) are historic properties that would be adversely effected by this undertaking. We further concur with your determinations of "not eligible" to the National Register of Historic Places (NRHP) for prehistoric lithic scatters, sites 42DA2041, 42DA2042, and 42DA2403, and eligible with No Adverse Effect for prehistoric site 42DA2044.

We look forward to working with your agency on developing a Memorandum of Agreement that will mitigate adverse effects to these historic properties. If we can be of any assistance or if you have any questions, please contact me at 801-245-7241 or by email at ehora@utah.gov.

Sincerely,


Elizabeth Hora-Cook (for Chris Merritt)
Cultural Compliance Reviewer

PRO Official File Copy
Received

NOV 14 '16

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Project 61en
Classification ENV-3.00
Control SL11141605
Folder

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Appendix D. Habitat Replacement Plan



Snyder, David <dsnyder@usbr.gov>

Approval of HRP for SCIC Antelope & North Laterals Project

1 message

Snyder, David <dsnyder@usbr.gov>

Mon, Dec 5, 2016 at 2:14 PM

To: Marti Hoge <mhoge@jub.com>

Cc: Trent Toler <ttoler@jub.com>

Marti,

Will you please forward this email along to Boyd and whoever else at Sheep Creek Irrigation Company may need this information? Thank you.

The Bureau of Reclamation (Reclamation) has reviewed the Habitat Replacement Plan (HRP) for the Sheep Creek Irrigation Company (SCIC) Antelope and North Laterals Project dated October 2016, and concurs with the HRP as proposed. The principal components outlined in this plan include:

- Enhancement of the existing 13.55-acre South Valley Habitat Replacement Site (HRS) located in Section 29, Township 3 North, and Range 19 East in Daggett County, Utah, owned by Boyd Pallesen.
- A few local springs that currently drain into the North Lateral will be conveyed to the HRS once the North Lateral has been piped. This will increase the water available for new plantings and will provide a natural, perennial source of water to the HRS, in addition to the current irrigation system installed.
- Planting 230 five-gallon trees and shrubs and 50 pole plantings to further diversify the HRS.
- Biodegradable erosion control mats will be staked down on the south slope of Birch Springs Creek and a wildflower seed mix will be planted to help stabilize the soil and prevent further slope erosion.
- The HRS is estimated to yield a net increase in total habitat value (THV) of 8.1 points (approximately five years post project implementation) to compensate for the THV loss of 6.2 points through the implementation of the piping project. This ensures no net loss of habitat.
- All of the general installation, enhancement, and maintenance measures discussed within the HRP will be entirely budgeted for, financed, and implemented by the SCIC for the life of the project or 50 years.

As a result of the implementation of the HRP, it is understood that the following benefits will occur within the HRS:

- Increased native vegetation diversity, density, overall health, and stratification with specific emphasis upon riparian and pollinator species.
- A natural, perennial water source will be added to the HRS.
- The enhancements will provide a higher quality diverse habitat for wildlife including deer, elk, cottontail rabbits, quail, wild turkeys, birds of prey, small migratory birds, and small mammals.

Monitoring and photo documentation of selected points within the HRS needs to occur annually for a minimum of five years, with corresponding annual documentation being submitted to Reclamation's Provo Area Office Environmental Group no later than December 15th of each year.

Reclamation appreciates SCIC's conformance to the Basinwide Salinity Control Program requirements for habitat replacement. Please keep us informed as this site develops. If you have any questions, please contact Mr. David Snyder via e-mail at dsnyder@usbr.gov or by phone at 801-379-1185.

Thank you,

--

David Snyder

Fish & Wildlife Biologist, Environmental Group

12/5/2016

DEPARTMENT OF THE INTERIOR Mail - Approval of HRP for SCIC Antelope & North Laterals Project

Bureau of Reclamation
Provo Area Office
302 East 1860 South
Provo, Utah 84606
(801) 379-1185

Habitat Replacement Plan for the Sheep Creek Irrigation
Company
Antelope and North Laterals Project - Daggett County, Utah



October 2016

Prepared by: Trent Toler, Biologist
J-U-B ENGINEERS, Inc.
2875 S. Decker Lane Dr., Suite 575
West Valley City, UT 84119
Office: (801) 886-9052
ttoler@jub.com

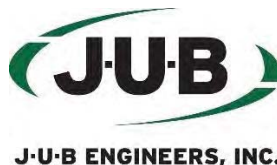


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Antelope Lateral - North.....	5
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Habitat Replacement Site Prescribed Enhancements	6
Planting Protocol.....	8
General Monitoring and Maintenance	8
Final Comparison - Current Conditions vs. Anticipated Design	9
Conclusion	11
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Appendices

- Appendix A - South Valley HRP
- Appendix B - Project Summary Exhibit
- Appendix C - Planting Detail

INTRODUCTION

The Bureau of Reclamation (Reclamation) has programmed the use of federal funds, under their Salinity Program, to allow the project proponent Sheep Creek Irrigation Company to replace approximately 3.5 miles (18,770 linear feet) of the Antelope and the North Laterals with a pipeline. The proposed Salinity Control Project is scheduled to commence during the winter of 2016/2017. Construction is anticipated to over two construction seasons with construction wrapping up in spring 2018. This irrigation infrastructure project is estimated to reduce the salinity loading in the Colorado River Basin by a cumulative total of 1,474 tons annually. Replacing the two open, unlined, earthen canals with high density polyethylene (HDPE) pipe would also reduce the amount of water lost through seepage along these canals, improving the efficiency of the water delivery system in the project service area.

This report was authorized by the project sponsor, Sheep Creek Irrigation Company, to develop a Habitat Replacement Plan (HRP) for the Antelope and North Laterals Salinity Control Project located in Daggett County, Utah. The development of an approved HRP is a requirement of Reclamation's Salinity Program, in accordance with Public Law 98-569. The objective of this HRP is to meet or exceed the Reclamation's requirements for habitat replacement.

In June 2014, Reclamation approved the Habitat Replacement Plan for the Sheep Creek Irrigation Company's South Valley Lateral Salinity Control Site (Appendix A. South Valley HRP). The land that was used for the implementation of the South Valley HRP has been selected as the site for Antelope and North Laterals HRP. This report details the habitat enhancements (e.g., installing and restoring native woody vegetation and seeding with a native wildflower mix) proposed to be incorporated into the existing habitat replacement strategy for the South Valley Habitat Replacement Site. The enhancement proposed under this plan are meant to augment and strengthen the HRP site.

The primary goal of this HRP is to provide sufficient data to applicable regulatory agencies to enable them to make informed decisions regarding the viability of the proposed site improvements. As part of this process, a site assessment was conducted during the establishment of the South Valley Habitat Replacement Site to determine the original physical characteristics of the site. Now that the South Valley HRP has been initiated, the characteristics of the HRP site under the completed South Valley plan were evaluated and a set of new enhancement were proposed for the Antelope and North Laterals HRP. The work culminated in the formulation of specific prescriptive measures aimed toward enhancing the existing site plan, thereby, improving the Total Habitat Value (THV) of the Habitat Replacement Site (HRS). This HRP illustrates the proposed implementation of improvement measures that will result in the enhancement of a biologically capable and enhanced HRS to provide further value to wildlife species.

HABITAT ASSESSMENT AND SCORING

Reclamation has developed a standardized habitat assessment protocol the "Basin-wide Salinity Control Program: Procedures for the Habitat Replacement" (USBR 2013).

Reclamation’s protocol takes into account ten separate categories (e.g. vegetative diversity and water supply) to rate habitat quality (scores range between 0 and 10) and generate a THV. The habitat quality scores (HSQs) were generated based on site visits conducted by Trent Toler (project consultant/biologist with JUB) on May 21 and November 5, 2015.

Scoring for each of the segments in the Antelope and North Laterals are summarized in Tables 1 and 2. The Antelope Lateral was divided into twelve segments, including the proposed alternative new alignment section for the cutoff. The North Lateral was divided into fourteen segments, including the proposed new alignment section shortly before the east terminus by the Pallesen Farm.

Table 1. Total Habitat Value Scoring for Antelope Lateral.

Segment	Habitat Quality Score (HQS)	Acreage	Total Habitat Value (THV)^a
A1	3	0.054	0.16
A2	5.4	0.013	0.07
A3	3	0.049	0.15
A4	3	0.102	0.31
A5	No loss	--	--
A6	3	0.026	0.08
A7	5	0.072	0.36
A8	4.7	0.013	0.06
A9	4.4	0.098	0.43
A10	4.1	0.109	0.45
A11	4.4	0.029	0.13
A12	4.1	0.207	0.85
	Total	0.772	3.05

^a THV = Habitat Quality Score x Acreage

Antelope Lateral - South

Most of the vegetation along the banks of the canal through this portion of the Antelope Lateral has been cleared, but a few scattered shrubs remain. The Antelope Lateral varies in width from 8 to 12 feet. The habitat type for this area is disturbed riparian shrub. Due to the cutting and clearing associated with regular canal maintenance the vegetation generally achieved low scores (HQS of 3.0) with a few exceptions (Photos 1 and 2). In some sections (segments A3, A4, and A6), one bank of the canal is tall and nearly vertical, with no riparian vegetation (Photos 2 and 3). The only other habitat type along this stretch is shrubby riparian. Most of this habitat type is found in two stretches, one by a wet area above the canal (segment A2) and the other near SR 43 (segment A7). The shrubby riparian (segment A2) is less disturbed so it scored much higher (5.4) (Photo 4). This section of the Antelope Lateral where the canal turns sharply as it passes through a shallow valley contains wet areas both upslope and downslope from the canal. There is a known spring upslope and west of the canal that supports these wet areas. The water appears to be used for irrigation by the landowner on the other side of the canal. The other shrubby riparian segment by SR 43 (segment A7) has had some disturbance on the east bank of the canal, but the vegetation is generally intact on the west bank (Photo 5).

One section of the Antelope Lateral may be abandoned (segment A4) where the canal had previously traversed the slopes of a steep valley. That loop of the canal may be cut off and the pipeline placed across the valley (segment A5) (Photo 6). As the habitat along this new alignment is not currently supported by the canal water, this new section was scored as “no loss”. The valley does contain some mesic and possibly wetland habitats where groundwater and precipitation concentrates in the lower parts of the valley (Photo 7). Although the canal currently crosses through this valley, the vegetation in the valley appears to have hydrological support independent of the canal. Any potential wetland areas would be avoided by the new alignment through the center of the valley.

Antelope Lateral - North

Conditions are similar in the section of the Antelope Lateral north of SR 43, with the same two primary habitat types as the south portion of the lateral. However, the disturbed riparian shrub was in better condition (generally HQS of 4.1 to 4.7) than in Antelope Lateral - South area, with some banks partially cleared of vegetation but other short sections without recent clearing (Photos 8 and 9). The short wooded riparian sections were also somewhat disturbed (HQS of 4.4) (Photos 10 and 11). No wetland areas appeared to be a part of this section, though there were some parallel smaller distribution ditches (Photo 11).

Table 2. Total Habitat Value Scoring for North Lateral.

Segment	Habitat Quality Score	Acreage	Total Habitat Value (THV) ^a
N1	No loss	--	--
N2	5.2	0.019	0.10
N3	4.8	0.013	0.06
N4	5.4	0.144	0.78
N5	5	0.009	0.05
N6	No loss	--	--
N7	5	0.173	0.86
N8	4.8	0.013	0.06
N9	4.8	0.050	0.24
N10	4.9	0.047	0.23
N11	4.7	0.020	0.09
N12	4.7	0.121	0.57
N13	4.5	0.019	0.08
N14	No loss	--	--
	Total	0.628	3.12

^a THV = Habitat Quality Score x Acreage

North Lateral

The North Lateral is much narrower and a little shorter than the Antelope Lateral, generally with a width of approximately 3 ft. As this lateral has not been maintained by cutting or removing vegetation, it still retains most of its vegetation, even though some disturbance from the agricultural operations has occurred in these areas. Where all the vegetation

surrounding the canal for some distance has been cleared and grubbed a total of 5 habitat types were observed. Two segments were scored as “no loss” as no habitat currently exists that would be lost from pipe installation (segments N1 and N6) (Photos 12 and 13). The shrubby riparian segments (segments N2, N4, N9, and N12) contains a mix of an herbaceous layer and a minor willow-cottonwood sapling and small tree layer of varying widths (Photos 14, 15, and 16). Disturbance to these sections originates from the agricultural operations in the area. The herbaceous riparian (segments N3, N5, N8, and N11) was of a medium value but mostly contained grasses, forbs, and other herbaceous species (Photos 17 and 18). The wooded riparian areas (segments N7 and N10) contain a medium quality habitat because of some cutting and disturbance around farm buildings and operations (Photos 19 and 20). Lastly, the disturbed riparian shrub (segment N13) was a mix of vegetation layers but all affected by livestock use or limited ditch maintenance (clearing) (Photo 21). There is also a new section (segment N14) where the pipe would be placed not in the original ditch but on the Pallesen farm property and along the farm road (also scored as “no loss”). The section that would be abandoned (segments N11 and N12) because of the new pipe would be left open. Although some surface runoff or precipitation could collect in the open section, irrigation water would no longer flow as it previously did.

When added together, the Antelope Lateral and the North Laterals, contain a combined THV score of **6.2 THV units**. This represents the “artificial riparian habitat” that could be potentially lost with the completion of the Antelope and North laterals project piping work. The calculated THV baseline for the Antelope and North laterals project was submitted to and approved by Reclamation in September 2016.

EXISTING CONDITIONS AT THE HABITAT REPLACEMENT SITE

The 13.55-acre HRS is located in Section 29, Township 3 North, and Range 19 East in Daggett County, Utah. The elevation of the site is approximately 7,000 feet above sea level, in the foothills along the northeastern flank of the Uinta Mountains. Birch Springs Creek, a perennial fish-bearing stream, flows through the HRS. Soils throughout the HRS consist of sandy loams and silty clays.

Currently, the South Valley HRS has been constructed as planned with the proposed grading, fencing, and irrigation (See Appendix A). The first year’s plantings have also been implemented, with more to come in the following two years. However, for comparison purposes, the final proposed established conditions were used as the baseline for the comparison to any further enhancements to the HRS.

The HRS is approximately ten miles from the nearest sage grouse management area and twelve miles from the nearest known lek. The Utah Natural Heritage Program has no records of any greater sage-grouse observations within two miles of the HRS; therefore, it has been determined that the perching pole will still be installed to benefit birds of prey.

HABITAT REPLACEMENT SITE PRESCRIBED ENHANCEMENTS

The Sheep Creek Irrigation Company is proposing to further enhance the South Valley HRS to increase its function as a riparian area and buffer zone. The HRS will continue to provide

suitable habitat for many wildlife species, and the proposed additional enhancements should provide an even higher quality diverse habitat for wildlife including deer, elk, cottontail rabbits, quail, wild turkeys, birds of prey, small migratory birds, and small mammals. From the original HRP (See Appendix A), the HRS has now been properly fenced to exclude cattle grazing on the young vegetation, noxious weed control is ongoing, a dedicated water supply has been installed and operating, earthwork to reduce the incised creek has been completed, and plantings of native trees and shrubs has occurred. The additional plantings proposed should further expand and diversify the available forage, refuge, and nesting habitats for wildlife species, and further increase the value to wildlife.

An addition to the water supply for the HRS has also be secured. A few local springs that currently drain into the North Lateral are now being proposed to be conveyed to the HRS once the North Lateral has been piped. This will increase the water available for new plantings and will provide a natural, perennial source of water to the HRS, in addition to the current irrigation system installed.

To accomplish the goal of further increasing the value of the HRS to wildlife, further diverse plant species plantings and seeding are proposed; 230 five-gallon trees and shrubs and 50 pole plantings (Table 3). Planting placements will be modified contingent on existing plantings and location of water sources, but generally the additional plants will be dispersed between the existing plantings but not too close as to cause competition among the plants. Seeding of the wildflower mix (such as a intermountain pollinator blend that includes sunflower, blue flax, alfalfa, clover, yarrow, butterfly weed, and mountain lupine) shall occur on the south side slope of Birch Spring Creek as that area has low cover of herbaceous vegetation and is watered by a sprinkler system. As the slope is still somewhat steep and some erosion has been observed, biodegradable erosion control mats will also be staked down to help prevent erosion. The pole plantings are the only work happening within the riparian zone along Birch Springs Creek, and those will add further stratification within the riparian zone.

Table 3. Recommended Plantings for the HRS.

Common Name	Scientific Name	Quantities (size)
Black cottonwood	<i>Populus balsamifera</i>	30 (5-gallon or other large nursery sized)
Black hawthorn	<i>Crataegus douglasii</i>	30 (5-gallon or other large nursery sized)
Saskatoon serviceberry	<i>Amelanchier ainifolia</i>	40 (5-gallon or other large nursery sized)
Winterfat	<i>Krascheninnikovia lanata</i>	50 (2-gallon or other large nursery sized)
Peachleaf willow	<i>Salix amygdaloides</i>	40 (5-gallon or other large nursery sized)
Bebb's willow	<i>Salix bebbiana</i>	40 (5-gallon or other large nursery sized)
Narrowleaf cottonwood	<i>Populus angustifolia</i>	50 pole plantings (1" minimum diameter)

Intermountain wildflower seed mix	Various species	100 lbs. (1-2 lbs. per acre)
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Planting Protocol

All plants should be laid out in their designated areas. Holes should be dug in a square shape that measures twice the size of the plant's container. The sides of the hole must be scored so that the roots have an increased chance of traveling outside the hole. The roots of the plant should be loosened slightly, and then placed in the hole in an upright position that is level with the ground surface. A fertilizer packet should then be applied to each root ball. It is highly recommended that the plant stock of mature size be obtained, where feasible, to maximize the survivability of the transplant.

Every nursery sized planting should receive two inches of water applied, by hand, directly after planting is complete. When these steps have been completed, a representative from J-U-B ENGINEERS, Inc. or Sheep Creek Irrigation Company will visit the site for a final walk through (as-built) inspection and will document the success of the implementation. Specific instructions for the planting of the nursery-sized trees and shrubs and the pole plantings can be referenced on the Planting Detail Sheet (see Appendix C).

For placement zones of the various plantings and seedlings, refer to Project Summary Exhibit (Appendix B). The black cottonwood, black hawthorn, and Saskatoon serviceberry should be planted amongst the existing plantings of other riparian trees and shrubs in the northern portion of the HRS. However, some of the Saskatoon serviceberry can also be planted in the far southern portion, between the irrigation line and the south boundary fence, as this species can tolerate less water at times. The cottonwood pole plantings should be placed in wide clusters of 10 poles at five locations along the banks of the Birch Spring Creek. This should mimic small cottonwood groves along the creek to provide nesting and shelter close to the creek. The two willow species should be planted on either side of the existing riparian area, close to the riparian area boundary. The winterfat should be planted in the far southern portion of the HRS, but generally where ever less irrigation water observed to flow as these plants can take drier conditions. These additional species should provide increased diversity, stratification, and valuable habitat for large game forage, migratory bird nesting habitat, and small mammal refuge and forage.

GENERAL MONITORING AND MAINTENANCE

To maintain a healthy living environment for the plantings, the irrigation system and the anticipated perennial input from the local springs will provide a reliable source of water to establish the plantings. The goal is to establish an 80% survival rate for the first five years after planting. Plants that die during this period will be removed and replaced.

To ensure a higher probability of the success for the new plantings, a minimum of five years monitoring efforts is recommended. An initial photo inventory of the constructed site should be recorded from four to six representative photo points. The status of the property should be summarized in a yearly report, with photos taken annually from the established photo

points. Sheep Creek Irrigation Company or their designated authorized agent shall produce an annual monitoring report and submit it to the Reclamation's Environmental Group no later than December 15th of each applicable year. These monitoring activities would occur concurrently with the existing monitoring and reporting activities for the South Valley HRP.

After the trees and shrubs have been established for a period of no less than five years, the site will be considered part of the zero landscape area, meaning additional monitoring or maintenance efforts will no longer be warranted. At the applicable time, a detailed as-built plan shall be completed and submitted with the subsequent annual report to Reclamation.

Noxious weeds onsite will be identified and eliminated using the recommended herbicide protocol outlined for Aquamaster™ herbicide. Aquamaster™ herbicide (by Monsanto) is the herbicide selected for this specific application. Aquamaster™ is a non-selective, glyphosate [N-(phosphonomethyl) glycine], aquatic herbicide that controls emerged vegetation in environments where water is present. Aquamaster™ is highly effective on more than 190 species of emerged weeds, including a wide range of annual and perennial grasses, broadleaf weeds, and sedges. It works in most aquatic settings better than other weed control options, because it offers application flexibility and has favorable environmental characteristics. Further, when Aquamaster™ is applied according to the label directions, water use restrictions are limited to applications within ½ mile of potable surface water sources. Aquamaster™ must be purchased and applied by a Utah State Licensed Applicator. Treatment applications must be in accordance to the labeled directions, established by Monsanto. Areas where noxious weeds are eliminated in large areas (>1,000 square feet) will be re-seeded with native grass seed mix towards the end of the growing season.

A formal conservation easement agreement has been secured with Boyd Pallesen, private property owner working in cooperation with Sheep Creek Irrigation Company. The conservation easement agreement will be structured for a fifty (50) year time frame, ending in 2065 (agreement began in 2015).

Once this plan has been approved by the Reclamation, the aforementioned general monitoring and maintenance measures discussed within the final plan will be entirely budgeted for, financed, and implemented by Sheep Creek Irrigation Company. Sheep Creek Irrigation Company is committed to five years of monitoring and long-term maintenance measures for the life of the project or 50 years (until 2065).

FINAL COMPARISON - CURRENT CONDITIONS VS. ANTICIPATED DESIGN

In accordance with Reclamation's established evaluation protocol, by rating the existing 13.55-acre property's anticipated functions when the South Valley HRP is established and comparing it to the anticipated improvements from the Antelope and North Laterals HRP, the HRS should endure a modest HQS increase of 0.6 points. The overall functional score of the enhanced area will increase based on the establishment of the following characteristics: an increased native vegetation diversity, vegetation stratification, and the addition of a dedicated spring-fed water supply.

Table 4 illustrates the HQSs before and after the Antelope and North Laterals HRP proposed improvements to the HRS. Scoring comparisons for each of the Habitat Evaluation parameters are provided below.

Table 4. Summary of Habitat Quality Scores; pre- and post-construction of the HRS.

Habitat 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
Pre-Construction	6	7	7	7	7	4	10	8	8	6	7.0
Post-Construction	8	9	8	7	7	4	10	8	9	6	7.6

Table 5 illustrates the net effect in terms of HQSs and provides a summary of the predicted THV for the impacted project area, as well as, the HRS.

Table 5. Summary of Calculated Values: Net Effect of HQSs and THV.

Feature	Area (in acres)	HQS before project (baseline score)	Anticipated HQS 5 years post-project implementation	Net HQS	Net Effect to the THV
Project Disturbance Area	1.4	4.4 (average of both laterals)	NA	NA	6.2
Habitat Replacement Site	13.55	7.0	7.6	0.6	8.1

In terms of THV, the project impacts equate to 6.2 whereas the project enhancements equate to 8.1. Based on the estimated THV illustrated in Table 5, the HRP would produce a THV increase at the HRS of 8.1, which equals 1.9 above the lost habitat value of 6.2.

Likelihood of long-term success

Based upon previous designs of similar nature, the proposed enhancement plan has a high probability of successfully promoting a higher functioning habitat for waterfowl, migratory birds, and ungulates. Generally speaking, habitat values would be increased based on

vegetative structure enhancements, increases in overall richness of native herbaceous, shrub, and tree species, and the decrease of undesired weedy and non-native species. Dedicated spring and irrigation waters will help to ensure the success of the proposed new native plantings.

CONCLUSION

This HRP has been developed consistent with Reclamation's Salinity Control Program Requirements. The plan proposes to further enhance an area improved in a previous HRP that encompasses approximately 13.55 acres. The HRS is estimated to yield a THV increase of 8.1 (five years' post-project implementation), which is 1.9 more than what is required for the proposed Sheep Creek Irrigation Antelope and North Laterals Salinity Control.

The addition of six more woody tree and shrub species plantings, seeding of a native wildflower mix, and the addition of a spring-fed perennial water source will provide an even more ecologically rich site with a more diverse native vegetative community. The 13.55-acre site will increase the wildlife habitat potential, ultimately providing habitat for migratory birds, waterfowl, ungulates, small mammals, and other native plant species.

By summing the aforementioned project attributes it is evident that this project will yield beneficial effects to the natural environment, specifically to the vegetative communities and the Birch Springs Creek riparian area that currently exists. If you have any further questions or concerns, please contact me at 801-886-9052 or via email at ttoler@jub.com.

Respectfully submitted by:

Trent Toler, Biologist

J-U-B ENGINEERS, Inc.

REFERENCES CITED

U.S. Bureau of Reclamation (USBR). March 2013. Basin-wide Salinity Control Program: Procedures for Habitat Replacement. U.S. Department of the Interior.

Appendix A

Habitat Replacement Plan for the Sheep Creek Irrigation Company

South Valley Lateral Project – Daggett County, Utah



June, 2014

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APPENDICES

Appendix A – Maps, Diagrams, and Supporting Information

1. Vicinity Map
2. Project Summary Exhibit
3. Planting Details
4. Typical Perimeter Fence (4-wire) Design
5. Exclusionary Fencing Design
6. Perching Pole Detail

Appendix B – Habitat Replacement Evaluation and Supplementary Information

1. Reclamation Habitat Assessment Protocol
2. Total Habitat Value (THV) Letter Report [dated 9-3-13]
3. USBR verification letter [dated 9-11-13]

Appendix C – Photo Inventory

Appendix D – Record of Agency Consultation

1. Project Review Comment/Response Matrix

Introduction

The Bureau of Reclamation (USBR) has programmed the use of federal funds, under their Salinity Program, to allow the project proponent Sheep Creek Irrigation Company to replace approximately 7.4 linear miles (39,130 linear feet) of the South Valley Irrigation Lateral with a pipeline. The proposed Salinity Control Project is scheduled to commence during October 2014 and should be completed May 2015. This irrigation infrastructure project is estimated to reduce the salinity loading in the Colorado River Basin by a cumulative total of 3,373 tons annually. Replacing this open, unlined, earthen canal with high density polyethylene (HDPE) pipe would also reduce the amount of water lost through seepage along this canal, improving the efficiency of the water delivery system in the project service area.

This report was authorized by the project sponsor, Sheep Creek Irrigation Company, to develop a Habitat Replacement Plan (HRP) for the South Valley Lateral Salinity Control Project located in Daggett County, Utah. The development of an approved HRP is a USBR requirement under their Salinity Program, in accordance with Public Law 98-569. The objective of this HRP is to meet or exceed the USBR's requirements for habitat replacement.

The crux of this report is to detail some of the potential habitat enhancements (e.g. creation of gradually sloped banks; installation of wildlife friendly fencing; installation of a perching pole; allocating a permanent water supply; installing and restoring native woody vegetation/re-planting; and noxious weed management) that can be incorporated into the habitat replacement strategy. The primary goal of this HRP is to provide sufficient data to applicable regulatory agencies to enable them to make informed decisions regarding the viability of the proposed site improvements. As part of this process, a site assessment was conducted to determine the current physical characteristics of the site. These characteristics were then contrasted with a set of enhancement and improvement alternatives. The work culminated in the formulation of specific prescriptive measures geared toward enhancing the natural site conditions, thereby, improving the Total Habitat Value (THV) of the Habitat Replacement Site (HRS). This HRP illustrates the proposed implementation of well-planned restoration measures that will result in the development of a biologically capable and enhanced HRS that can provide viable wildlife habitat.

Habitat Assessment and Scoring

The USBR has developed a standardized habitat assessment protocol named "Basin-wide Salinity Control Program: Procedures for Habitat Replacement (USBR 2013)." USBR's protocol takes into account ten separate categories (e.g. vegetative diversity and water supply) to rate habitat quality (scores range between 0 and 10) and generate a THV. The habitat quality scores (HQSs) were generated based on site visits conducted by Vincent Barthels (project consultant/biologist with JUB) and USBR environmental group staff, on March 14th and 15th, 2013.

During the site visits two distinct habitat types were identified along the South Valley lateral. The lower 30% of the canal alignment and the upper 20% of the canal alignment were grouped together and characterized as the "TYPE A Segment." The TYPE A Segment contains a fairly established woody vegetative community. The middle 50% of the canal alignment is characterized as the "TYPE B Segment," which contains little to no woody vegetation. The canal AREA was calculated based on the length of the canal proposed to be piped, multiplied by the average channel width below the ordinary high water mark (OHWM). The calculated total AREA was 8.52 acres, see below.

The total “Area” for the proposed project = 39,130’ x 9.48’= 370,952.4 square feet = 8.52 acres.

The “Area” for each Segment (TYPE A & TYPE B) = (39,130/2) x 9.48 = 185,476.2; 185,476.2/43,560 = 4.26 acres.

Consistent with USBR’s Habitat Assessment Protocol (discussed above), the AREA and the HQSs for the 2 identified segments of the South Valley lateral are presented in Table 1.

Table 1: AREA and HQSs for the South Valley lateral.

South Valley Lateral Feature	AREA (in acres)	Baseline Habitat Quality Score (HQS)
Type A Segment	4.26	4.5
Type B Segment	4.26	3.0

THV scores represent overall habitat health and diversity within the project site. USBR’s standard formula for THV = AREA (in acres) x HQS. Based on the numbers presented in Table 1, the baseline THV for this proposed project equates to:

$$\text{Baseline THV} = (4.26 \times 4.5) + (4.26 \times 3.0) = 31.95$$

The 31.95 THV units are linked to “artificial riparian habitat,” associated with the South Valley lateral. The calculated THV baseline for the South Valley lateral project was submitted to the USBR. USBR issued a letter of concurrence dated September 11th, 2013 (see Appendix B).

Existing Conditions at the Proposed Habitat Replacement Site

The first two exhibits (located in Appendix A) illustrate the proposed 13.55 acre HRS that is located in Section 29, Township 3 North, and Range 19 East in Daggett County, Utah. *Descriptions of the Eco-regions of the United States* describes the proposed HRS as being situated in an Intermountain Semi-desert Province (Bailey 1995). Birch Springs Creek, a perennial fish bearing stream, flows through the HRS. Soils throughout the HRS consist of sandy loams and silty clays.

The proposed HRS has been grazed by cattle for several consecutive years, which has damaged a large percentage of the woody vegetation assemblages and herbaceous vegetation that had historically existed within the HRS. Intensive cattle grazing in this area is likely a contributing factor to weedy species recruitment (e.g. poison hemlock, thistle, white-top and knapweed), as well as to the trampling/stressing of the herbaceous understory and woody vegetative cover.

This site in its entirety, can be characterized as “somewhat disturbed” and containing low to moderate quality functioning habitat due to the observed degradation of vegetative assemblages. The ecological value and functions of the proposed HRS could easily be enhanced by implementing prescriptive measures discussed in later portions of this document.

Habitat Replacement Site Prescribed Enhancements

The Sheep Creek Irrigation Company is proposing to enhance the HRS into a functioning riparian area and buffer zone. The HRS could provide suitable habitat components for many wildlife species. This site is planned to be modified to provide a diverse habitat for wildlife, including: birds of prey (raptors), California quail, cottontail rabbits, deer, elk, wild turkey, and many small mammals. The elimination of grazing coupled with noxious weed control, the implementation of dedicated irrigation waters and native replantings will allow for the establishment of higher quality forage opportunities and overall habitat.

This site should serve to provide refuge for an increased number of individual species that are currently being driven out by the current agricultural land use. As part of this proposed action, wildlife habitat on the property will be enhanced and preserved, which will help attenuate habitat losses associated with the proposed piping project within the general vicinity.

Baseline existing conditions are discussed throughout this document and are illustrated in the photo inventory (see Appendix C). The existing conditions have been compared to a series of enhancement alternatives. The following recommended enhancement measures are intended to better support viable habitat within the HRS.

The following seven activities are expected as part of the proposed HRS improvements:

1. Finalization and USBR approval of this HRP;
2. Earthwork to reslope and reshape existing banks of Birch Springs Creek in the HRS;
3. Installation of wildlife-friendly fencing surrounding the perimeter of the HRS and a perching pole near the southwest corner of the HRS;
4. Allocation of a dedicated water supply;
5. Implementation of weed control measures;
6. Restoration of a native plant community including eradication of Russian olives; and,
7. Data collection and annual biological monitoring for the first 5 years post implementation of the HRS.

A feasible construction window for this type of site development activity is estimated at 30 days. Development of the HRS would not occur over a continual 30-day period, but in stages over several years, to allow for the site's successional development and to reduce the impact on wildlife.

The subsequent portions of this HRP provide detail centered on the individual enhancement elements or components.

Earthwork

The first work done within the HRS will be to reslope (i.e. lay back) and reshape the existing banks of Birch Springs Creek. Generally speaking, the new banks will have a 3:1 or 4:1 slope and intermittent shelving. A total of approximately 25,000 CY will be moved in order to create the new bank of Birch Springs Creek. A gradual slope will decrease bank sloughing and thus will decrease sediment delivery into the Creek. In addition, creating a bank with a more moderate slope will allow for native vegetative communities to establish and diversify. The replanted vegetative communities will also function to stabilize the banks from erosion.

Fencing

The perimeter fencing efforts should be completed in Year 1 of this project. Approximately 3,280 linear feet of wildlife friendly fence and 2 gates will be installed surrounding the entire HRS. Based on the preferences of the land owners, 4-wire wildlife friendly fence will be installed around the perimeter of the HRS [see Typical Perimeter Fence (4-wire) Designs in Appendix A]. These wildlife friendly fences are designed to prohibit cattle from entering and grazing this area. Should livestock inadvertently enter the HRS, they should be removed immediately by directing the livestock to one of the two gates as a means of exit.

In addition to the more permanent perimeter fencing, temporary wire mesh exclusion fencing will be placed around dense clusters of woody vegetation plantings to prohibit excessive wildlife browsing, and to aid in the acclimation and survival of the plantings (see Exclusionary Fence Designs in Appendix A). The exclusionary fencing can be utilized and shifted throughout the site as needed.

Perching Pole

A perching pole designed for birds of prey should be installed during Year 1. The installation of the pole should follow the specifications outlined in the detail sheet (see Perching Pole Detail in Appendix A).

Dedicated water supply

This plan involves the dedication and installation of an irrigation system. The landowner will design and install the irrigation system. Generally speaking, the irrigation system will include three parallel two-inch irrigation lines (see Project Summary Map in Appendix A). The irrigation waters will be supplied by an existing water claim located immediately northeast of the HRS, stemming from the North Valley Lateral. Additionally, yearly maintenance for the water system will be accounted for by Sheep Creek Irrigation Company.

Signage

Signage will be installed surrounding the HRS to inform the adjacent private landowners that this area is designated as a HRS, and that off-road vehicles are prohibited within the site.

Restoration of a native vegetative community

This project implements 600 re-plantings. Four specific species are recommended for the re-plantings; all of which are native to Daggett County. The planting schedule prescribes 320 stake plantings and 280 five-gallon shrubs or trees (Table 2). The re-planting enhancement recommendations are intended to create a functioning riparian area and adjacent buffer zone.

Prior to installing any of the re-plantings on this site, the plan is to install the perimeter fencing and dedicated irrigation system. In addition, the first year will include extrication of the existing Russian olives. Approximately 8 Russian olives are planned for removal from the site. One of the overarching goals of this HRP is to limit Russian olive recruitment in the HRS and to encourage the establishment of native vegetation.

It should be noted that the re-plantings should be installed in phases to minimize the amount of mortality, maximum regeneration potential, and to assess annual planting success. During Year 1, approximately 50% of the proposed plantings should be installed; then, in Year 2 an additional 30% of the plants should be installed; and, finally, in Year 3 the remaining 20% of the total recommended plantings should be

installed on site. It is expected that the plant diversity be maintained throughout the replanting process. Planting quantities, placement and species selection will be modified contingent on the success of the plantings installed in previous years, coupled with the regeneration of the existing vegetative assemblages. The Project Summary Exhibit illustrates the general location of the prescribed re-plantings (see Appendix A).

Table 2: Recommended Plant Schedule for the HRS.

Common Name	Scientific Name	Quantities (Size)
Buffaloberry	<i>Shepherdia argentea</i>	80 (5-gallon or large nursery sized)
Narrow-leaf cottonwood	<i>Populus angustifolia</i>	120 (5-gallon or large nursery sized)
Coyote willow	<i>Salix exigua</i>	320 stake plantings (1/2" minimum diameter)
Wood's rose	<i>Rosa woodsii</i>	80 (5-gallon or large nursery sized)
These species are recommended based on native flora documented adjacent to the project area. Only native plants should be utilized.		

Due to potential drought in this area, the vegetation should be planted late in the growing season (mid-September to late-October).

Planting protocol

All plants should be laid out in their designated areas. Holes should be dug in a square shape that measures twice the size of the plant's container (see Appendix A – Planting Details). The sides of the hole must be scored so that the roots have an increased chance of traveling outside the hole. The roots of the plant should be loosened slightly, and then placed in the hole in an upright position that is level with the ground surface. A fertilizer packet should then be applied to each root ball. The shrub re-plantings are to be no smaller than 5-gallon nursery size. It is highly recommended that plant stock of mature size be obtained, where feasible, to maximize the survivability of the transplant.

Groupings of installed 5-gallon nursery sized plantings shall receive temporary exclusionary fencing (see Typical Detail in Appendix A), which should offer some protection from wildlife browsing for the first few years after the plantings are installed. After at least one year post installation, and after the plants are given an opportunity to acclimate to the new setting, the temporary exclusionary fencing may be taken down, reused on the site, and/or removed from the site.

Every 5-gallon nursery sized planting should receive two inches of water applied, by hand, directly after planting is complete. When these steps have been completed, a representative from J-U-B ENGINEERS, Inc. or Sheep Creek Irrigation Company will visit the site for a final walk through (as-built) inspection and will document the success of implementation.

Specific instructions for the planting of the 5-gallon shrub trees and stake plantings can be referenced on the Planting Detail Sheet (see Appendix A).

Post-construction, an as-built report shall be developed. For this project, five continuous years of annual monitoring is recommended post construction. Monitoring efforts are discussed in further detail in a later section of this report.

Limitations Established For the Habitat Replacement Site

The following access limitations have been established to minimize damages by outside forces to the habitat enhancements set forth in this plan. In order to achieve the net effect to the HQS and the THV we recommend the following measures be implemented:

1. Motorized vehicles will be prohibited in the HRS. Posted signs detailing this limitation will be installed near the two gates that provide access into the HRS.
2. Livestock grazing is prohibited within the HRS, except for utilizing specific livestock (e.g. goats) to target weedy species removal (e.g. white-top or knapweed).

General Monitoring and Maintenance

To maintain a healthy living environment for re-plantings, the irrigation system will provide a reliable source of water. The goal is to establish an 80% survival rate for the first five years after planting. Plants that die during this period will be removed and replaced.

To ensure a higher probability of the success for the new plantings, a minimum of five years of monitoring efforts is recommended. An initial photo inventory of the constructed site should be recorded from four to six representative photo points. The status of the property should be summarized in a yearly report, with photos taken annually from the established photo points, beginning one year after the completion of the fencing component of this plan. Sheep Creek Irrigation Company or their designated authorized agent shall produce an annual monitoring report and submit it to the USBR's Environmental Group no later than December 15th of each applicable year.

After the trees and shrubs have been established for a period of no less than five years, the site will be considered part of the zero landscape area, meaning additional monitoring or maintenance efforts will no longer be warranted. At the applicable time, a detailed as-built plan shall be completed and submitted with the subsequent annual report.

Noxious weeds onsite will be identified and eliminated using the recommended herbicide protocol outlined for Aquamaster™ herbicide. Aquamaster™ herbicide (by Monsanto) is the herbicide selected for this specific application. Aquamaster™ is a non-selective, glyphosate [N-(phosphonomethyl) glycine], aquatic herbicide that controls emerged vegetation in environments where water is present. AquaMaster™ is highly effective on more than 190 species of emerged weeds, including a wide range of annual and perennial grasses, broadleaf weeds and sedges. It works in most aquatic settings better than other weed control options, because it offers application flexibility and has favorable environmental characteristics. Further, when Aquamaster™ is applied according to label directions, water use restrictions are limited to applications within ½ mile of potable surface water sources. Aquamaster™ must be purchased and applied by a Utah State Licensed Applicator. Treatment applications must be in accordance to the labeled directions, established by Monsanto. Areas where noxious weeds are eliminated in large areas (i.e. > 1,000 square feet) will be re-seeded with native grass seed mix (e.g., salt grass) towards the end of the growing season.

Aquamaster™ herbicide shall also be used in concert with the eradication of the Russian olive trees. Russian olive trees shall be cut down with a chain saw. Immediately following the cutting, Aquamaster™ herbicide shall be applied to the remaining stump of the trunk. Cut portions of the Russian olives shall be hauled away from the HRS. Removal of the cut trees should be completed in a fashion that limits any portions (especially seeds) from remaining on the HRS.

A formal conservation easement agreement will be secured with Boyd Pallesen, private property owner working in cooperation with Sheep Creek Irrigation Company, prior to implementation of this HRP. The conservation easement agreement will be structured for a fifty (50) year time frame, ending in 2065.

Once this plan has been approved by the USBR, all of the aforementioned general monitoring and maintenance measures discussed within the final plan will be entirely budgeted for, financed, and implemented by Sheep Creek Irrigation Company. Sheep Creek Irrigation Company is committed to five years of monitoring and long-term maintenance measures for the life of the project or 50 years (until 2065).

Final Comparison - Current Conditions vs. Anticipated Design

In accordance with the USBR's established evaluation protocol, by rating the existing 13.55 acre property's functions and comparing it to the anticipated improvements, the HRS should endure a HQS increase of 2.5 points. The overall functional score of the enhanced area will increase based on the establishment of the following characteristics:

- Reduced sediment delivery to Birch Springs Creek
- Increased native vegetation diversity, overall health and stratification;
- Decreased prevalence of noxious weeds and Russian olives;
- Installation of a perching pole;
- Dedication of a suitable water supply; and,
- Measurably less human and livestock engagement on the property.

Table 3 illustrates the HQSs before and after construction of the HRS enchantments. Scoring comparisons for each of the Habitat Evaluation parameters are provided below.

Table 3: Summary of Habitat Quality Scores; pre and post construction of the HRS.

Habitat Status	Vegetative Diversity	Stratification	Native Species vs. Nonnative Species	Noxious Weeds	Overall Vegetative Condition/Health	Interspersion of Open Water with Vegetation	Connectivity	Uniqueness or Abundance	Water Supply	Alteration	Overall HQS
Pre-Construction	4	5	6	6	5	3	3	6	6	1	4.5
Post-Construction	6	7	7	7	7	4	10	8	8	6	7.0

Table 4 illustrates the net effect in terms of HQSs and provides a summary of the predicted THV for the impacted project area, as well as, the HRS.

Table 4: Summary of Calculated Values: Net Effect of HQSs and THV.

Feature	Area (in acres)	HQS before project (baseline score)	Anticipated HQS 5 years post project implementation	Net HQS	Net Effect to the Total Habitat Value (THV)
Project Disturbance Area	8.52	3.75 (averaged Type A and B Segments)	N/A	N/A	-31.95
Habitat Replacement Site	13.55	4.5	7.0	2.5	33.88

In terms of THV, the project impacts equate to -31.95 whereas the project enhancements equate to 33.88. Based on the estimated THV illustrated in Table 4, this HRP would produce a THV increase at the HRS, which equates to 1.93 = (33.88-31.95).

Likelihood of long-term success

Based upon previous designs of similar nature, the proposed enhancement plan has a high probability of successfully promoting a higher functioning habitat for waterfowl, resident birds, ungulates and aquatic life. Generally speaking, habitat values would be increased based on vegetative structure enhancements, increases in overall richness of native herbaceous and shrub species, and the decrease of undesired weedy species. Dedicated irrigation waters will help to ensure the success of the proposed new native re-plantings.

Conclusion

This HRP has been developed consistent with the Salinity Control Program Requirements, managed by USBR. The plan proposes to enhance an area that encompasses approximately 13.55 acres. The HRS is estimated to yield a total habitat value (THV) increase of 33.88 [5 years post project implementation], which is 1.93 more than what is required for the South Valley Lateral Project that Sheep Creek Irrigation Company is proposing.

The elimination of livestock grazing; the installation of perimeter fencing; re-contouring the nearly vertical banks above the OHWM of Birch Springs Creek; the installation of 600 re-plantings and a perching pole; the dedication of an irrigation system; and, the clearing of the noxious weeds and Russian olives, will provide a more ecologically rich site with a more diverse native vegetative community. The 13.55 acre site will increase the wildlife habitat potential, ultimately providing habitat for resident birds, waterfowl, ungulates, small mammals and other native plant species.

By summing the aforementioned project attributes it is evident that this project will yield beneficial effects to the natural environment, specifically to the vegetative communities and the Birch Springs Creek riparian area that currently exist. If you have any further questions or concerns, please contact me at 509-458-3727 or via email at vbarthels@jub.com.

Respectfully submitted by:



Vincent Barthels, Biologist

6/17/14

J-U-B ENGINEERS, Inc.

References Cited:

Bailey, R.G. 1995. Description of the Eco-regions of the United States. 2d ed. rev. and expanded (1st ed. 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: USDA Forest Service. 108 p.

Bureau of Reclamation (USBR). March 2013. Basin-wide Salinity Control Program: Procedures for Habitat Replacement. U.S. Department of the Interior.

Hanophy, Wendy. 2009. Fencing with wildlife in mind. Colorado Division of Wildlife, Denver, CO. 36 pp.

APPENDIX A



WYOMING

UTAH
(DAGGETT COUNTY)

MANILA

PROJECT
AREA



**SOUTH VALLEY SALINITY REDUCTION
SHEEP CREEK IRRIGATION CO.**

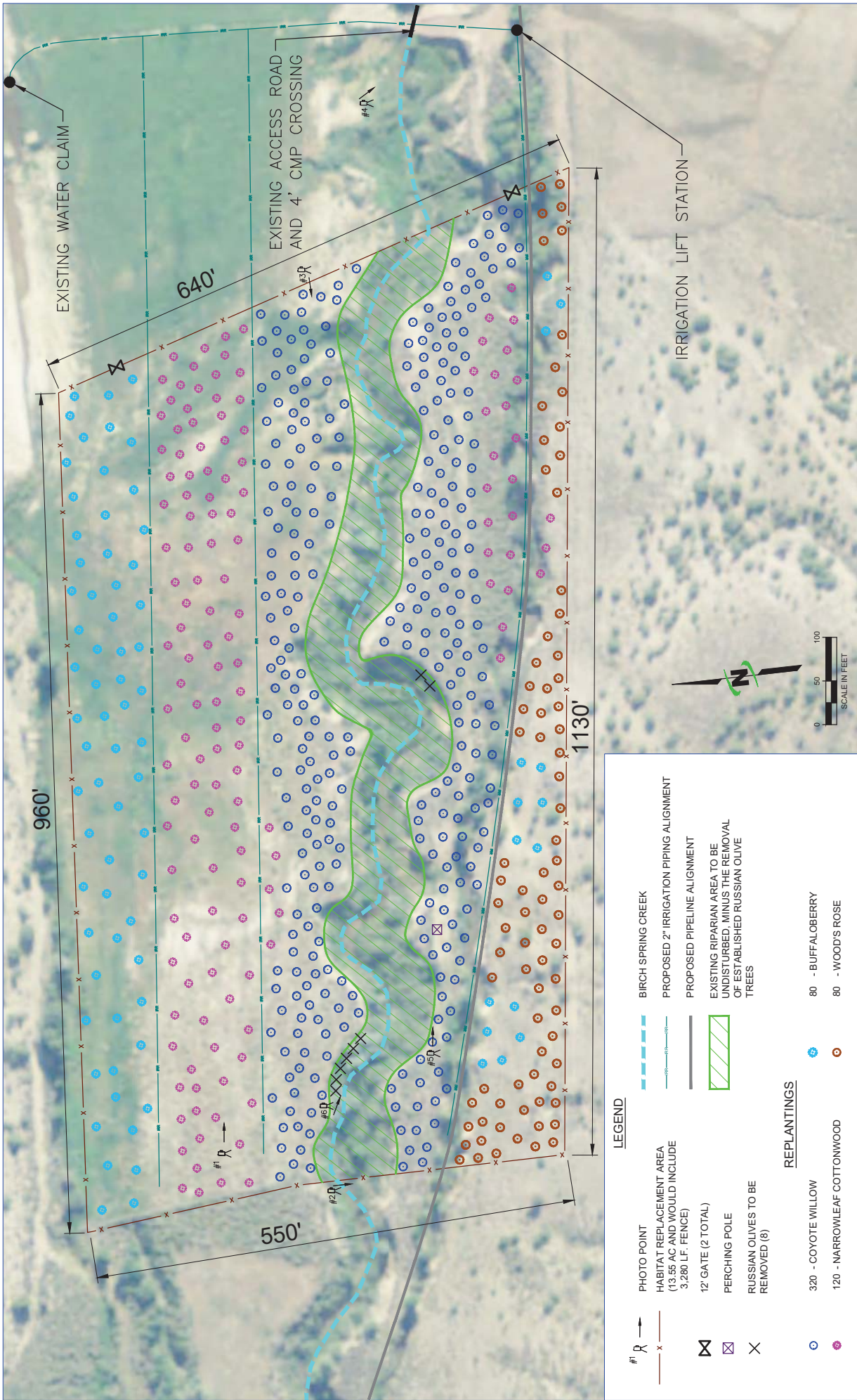
HABITAT REPLACEMENT SITE
VICINITY MAP



J-U-B ENGINEERS, INC.

LAST UPDATED: 5/2/2014
PLOT DATE: 5/2/2014
FILE: 55-11-040_E-104

Plot Date: 5/2/2014 10:59 AM Plotted By: Spencer Stephens
Date Created: 5/2/2014 F:\PROJECTS\0-ENVIRO GRP PROJ\NOS85-13-040 SHEEP CREEK SOUTH VALLEY CAD\SHSHEET155-11-040_E-104.DWG



SOUTH VALLEY SALINITY REDUCTION
 SHEEP CREEK IRRIGATION CO.
 HABITAT REPLACEMENT SITE
 PROJECT SUMMARY EXHIBIT

LEGEND

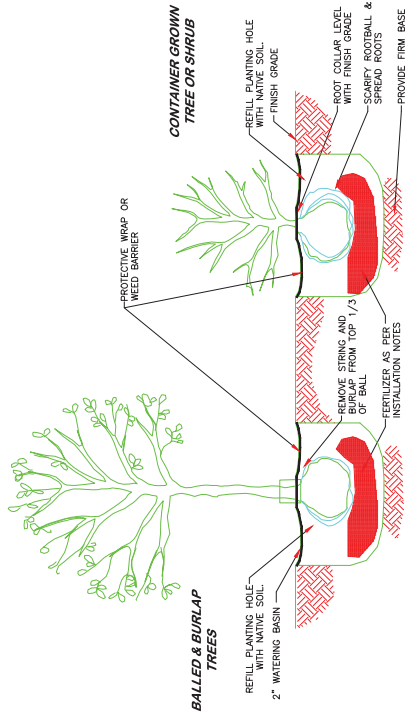
	PHOTO POINT		BIRCH SPRING CREEK
	HABITAT REPLACEMENT AREA (13.55 AC AND WOULD INCLUDE 3,280 LF. FENCE)		PROPOSED 2" IRRIGATION PIPING ALIGNMENT
	12' GATE (2 TOTAL)		PROPOSED PIPELINE ALIGNMENT
	PERCHING POLE		EXISTING RIPARIAN AREA TO BE UNDISTURBED, MINUS THE REMOVAL OF ESTABLISHED RUSSIAN OLIVE TREES
	RUSSIAN OLIVES TO BE REMOVED (6)		

REPLANTINGS

	320 - COYOTE WILLOW		80 - BUFFALO BERRY
	120 - NARROWLEAF COTTONWOOD		80 - WOOD'S ROSE



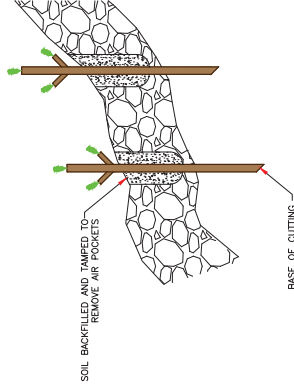
JUB ENGINEERS, INC.



SHRUB & TREE PLANTING DETAIL
NOT TO SCALE

INSTALLATION NOTES:

1. ALL PLANTING AND SITE PREPARATION OPERATIONS SHALL BE CONDUCTED ACCORDING TO AMERICAN NURSERMAN'S ASSOCIATION GUIDELINES.
2. ALL PLANTS SHALL BE PLANTED IN THE MANNER AND MATERIAL SPECIFIED. PLANTS SHALL BE FROM NATIVE STOCK. NO CULTURS OR HORTICULTURAL VARIETIES WILL BE ALLOWED.
3. ALL PLANTS SHALL BE IDENTIFIED IN THE MANNER AND MATERIAL SPECIFIED. PLANT SCHEDULE FOR THIS PROJECT. PROPOSALS FOR SUBSTITUTIONS REQUIRE THE APPROVAL OF THE PROJECT BIOLOGIST.
4. THE REQUIREMENTS OF ALL NURSERY GROWN PLANT MATERIALS ARE IDENTIFIED IN THE PROJECT SCHEDULE AND SHALL BE COMPLETED OR BELLED AND BULLED PRIOR TO PLANTING. ALL PLANTS SHALL BE HEALTHY, FREE OF DEFECTS, DISEASED, AND ALL FORMS OF INFESTATIONS WILL BE ACCEPTED.
5. ALL PLANTS, TRANSPORT, AND HANDLE ALL PLANTS WITH CARE TO AVOID 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. ALL PLANTS SHALL BE PLANTED IN THE MANNER AND MATERIAL SPECIFIED. THE TIME OF INSTALLATION SHALL BE DURING THE WET SEASON. PLANTS SHALL NOT BE PLANTED IN THE SUN PRIOR TO OR DURING INSTALLATION. IMMEDIATELY SATURATE REPLANTINGS AFTER PLANTING TO AVOID CAPILLARY STRESS.
7. ALL PLANTS SHALL BE PLANTED IN THE MANNER AND MATERIAL SPECIFIED. PLANTS SHALL BE PLANTED IN THE MANNER AND MATERIAL SPECIFIED. BACKFILL EXCAVATED PITS WITH NATIVE SOIL.
8. A PROTECTIVE WRAP OR WEED BARRIER SHALL BE PLACED IN A 3 FT. RADIUS AT THE TREE TRUNK. THIS WILL DISCOURAGE COMPETITION AMONGST OTHER PLANT SPECIES.
9. INSTALL TRANSPORTER TYPE FERTILIZER, SUCH AS OSMOCOTE SLOW RELEASE FERTILIZER (16-16-16 ANALYSIS) OR EQUAL. APPLICATION RATE SHALL BE AS SPECIFIED BY THE MANUFACTURER. FERTILIZER WILL BE ALLOWED IN PLANTING PITS ONLY.



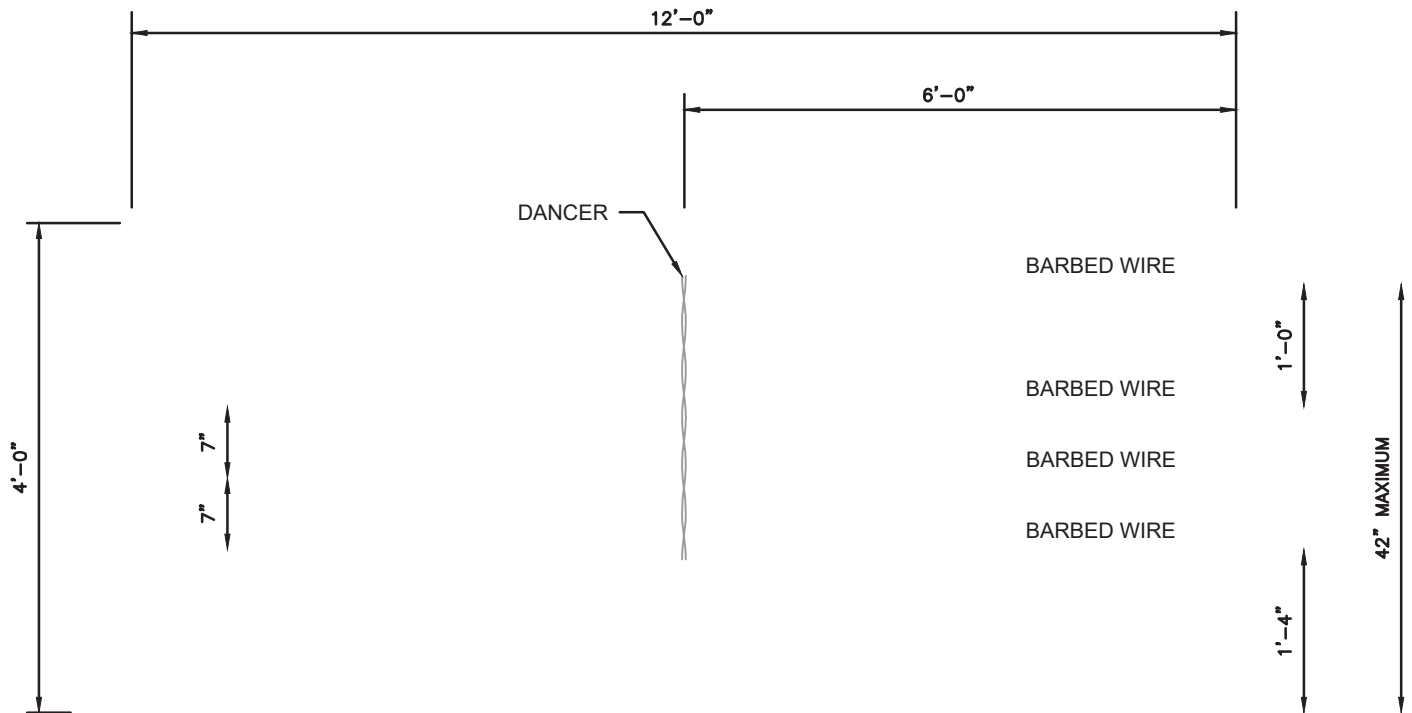
WILLOW STAKE PLANTING DETAIL
NOT TO SCALE

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.

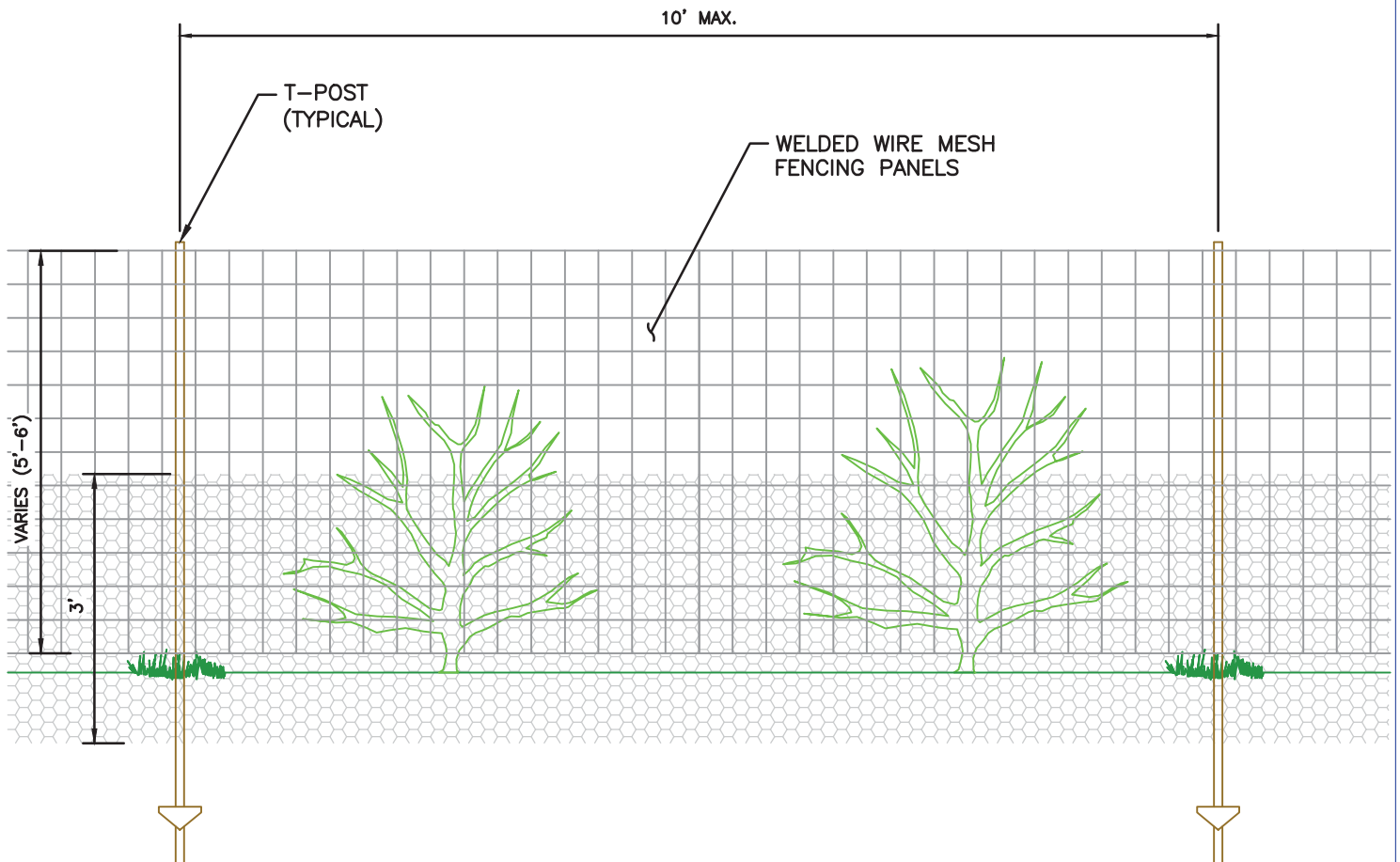
GRASS SEED NOTE:

1. WHEN RESEEDING WETLAND BARREN LOCATION IN THE IRRIGATION CANALS, UTILIZE ANY OF THE FOLLOWING SEEDS AT A DISPERSAL RATE OF 60 LBS./ACRE:
 - *Poa annua*
 - *Setaria viridis*
 - *Lolium perenne*



NOTE:
TYPICAL FENCE DESIGN MODELED FROM HANOPHY'S (2009) IDEAL WILDLIFE – FRIENDLY FENCE DETAIL.

REFERENCE CITED:
HANOPHY, WENDY. 2009. FENCING WITH WILDLIFE IN MIND. COLORADO DIVISION OF WILDLIFE, DENVER, CO. 36 pp.



NOTE:

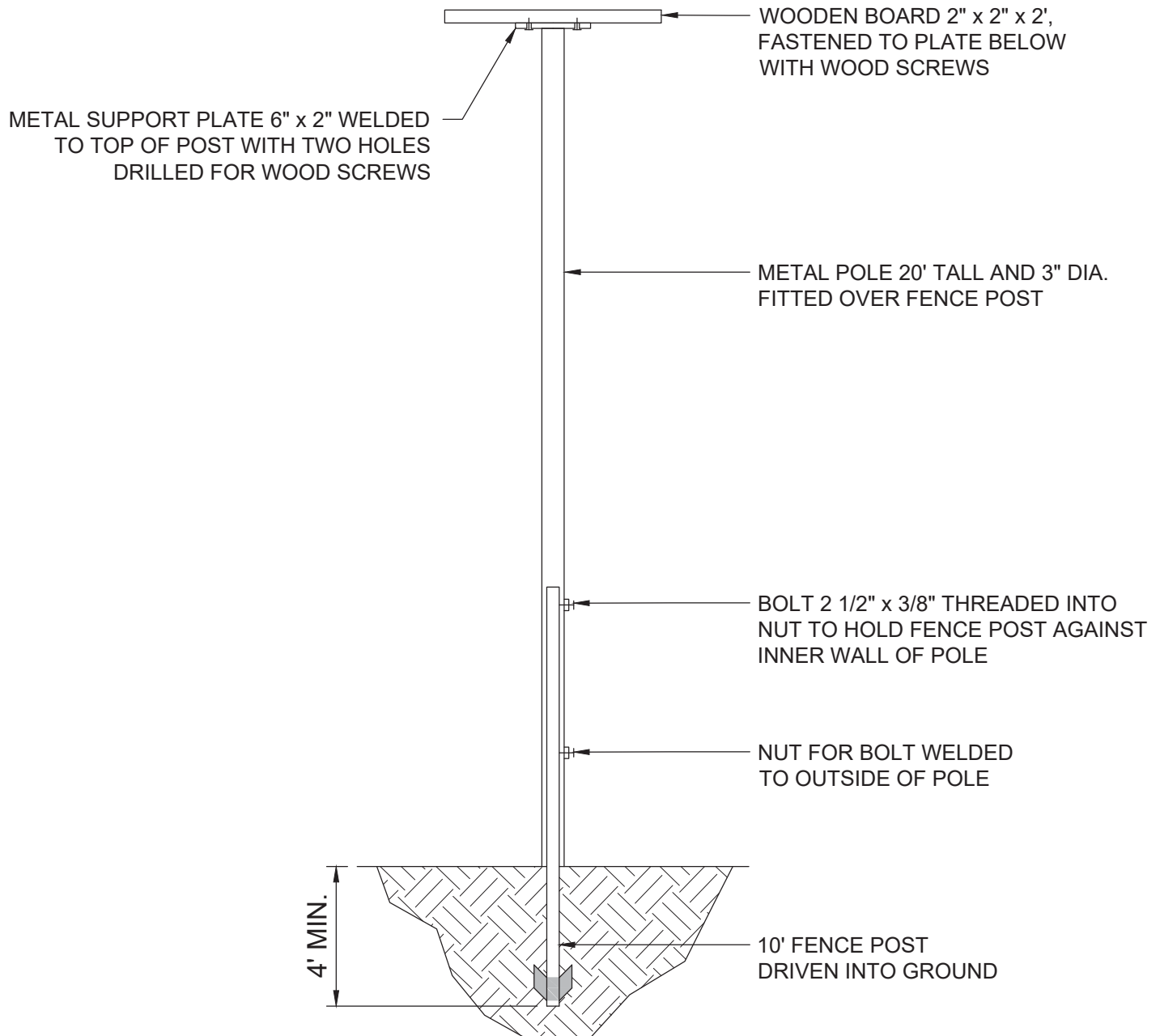
TYPICAL FENCE DESIGN YIELDS PANELS WITH WIRE DIAMETER (3-6mm) AND MESH (50-80mm x 50-80mm) AND A 3 FOOT SMALL MAMMAL EXCLUSION (I.E. CHICKEN WIRE) BURIED 12" BELOW GRADE.



• Environmental Group •

CAD FILE: 55-11-040_E-101_Fence Detail

SOUTH VALLEY SALINITY REDUCTION
SHEEP CREEK IRRIGATION CO.
TYPICAL EXCLUSIONARY FENCE DESIGN



NOTES:

1. PERCH SHOULD BE ASSEMBLED IN A WORKSHOP ACCORDING TO THIS DIAGRAM. THE 2' LENGTH OF 2" x 2" UNTREATED PINE BOARD SHOULD BE BOLTED TO THE 6" PIECE OF FLAT METAL THAT HAS BEEN ARC WELDED TO ONE END OF THE METAL POLE. TWO HOLES 1/2" IN DIAMETER SHOULD BE DRILLED IN THE POLE APPROXIMATELY 18" AND 48" FROM THE BOTTOM. NUTS FOR THE 2 1/2" x 3/8" BOLTS SHOULD BE ARC WELDED TO THE OUTSIDE OF THE POLE IN ALIGNMENT WITH THESE HOLES.
2. TO INSTALL THE POLE, DRIVE THE FENCE POST ABOUT HALF WAY INTO THE GROUND, MAKING SURE IT IS VERTICAL. FIT THE POLE OF THE BIRD PERCH OVER THE POLE, WITH THE POST INSIDE THE POLE. THE POLE SHOULD REST ON THE GROUND BUT NOT BE DRIVEN INTO THE GROUND. COAT THE NUTS WITH GREASE OR OTHER PRODUCT TO PREVENT RUST, AND THEN INSERT THE TWO BOLTS INTO THE NUTS AND TIGHTEN THE BOLTS AGAINST THE POST; THE POST MAY HAVE TO BE ROTATED SO THAT THE BOLTS REST AGAINST A FLAT PORTION OF THE POST.

SOUTH VALLEY SALINITY REDUCTION
SHEEP CREEK IRRIGATION CO.

HABITAT REPLACEMENT SITE
PERCHING POLE DETAIL



J-U-B ENGINEERS, INC.

APPENDIX B

March 2013

Basinwide Salinity Control Program: Procedures for Habitat Replacement

SUMMARY: Habitat Replacement requirements and procedures under salinity control programs have been prepared by a Reclamation-Fish and Wildlife Service team. Authorities for replacement are presented. Avoidance of habitat losses is preferred; where this is not possible, replacement plans should result in no net loss of habitat. A general method of determining habitat losses and replacement needs is presented. Monitoring and record keeping are discussed.

I. AUTHORITY

The requirement and authority to implement habitat replacement features were first included in the 1984 amendments, Public Law 98-569, to the Salinity Control Act, Public Law 93-320 (Act). The Act, as amended, states:

-In Section 202(a)(1)-(5) that The Secretary shall construct, operate, and maintain the salinity control units . . . consisting of measures to replace incidental fish and wildlife values foregone.

-In Section 202(b)(6) “In implementing the units authorized to be constructed pursuant to subsection (a) of this section, the Secretary shall implement measures to replace incidental fish and wildlife values foregone concurrently with the implementation of a unit's, or a portion of a unit's, related features.

The 1995 amendments, Public Law 104-20, to the Act that created the Basinwide Salinity Control Program states... “Such program shall provide for the mitigation of incidental fish and wildlife values that are lost as a result of the measures and associated works.”

The Act, as amended, requires the replacement of incidental fish and wildlife habitat values foregone by the implementation of salinity control projects in the Basinwide Program. The cost of this mitigation has typically been included in the costs of the salinity control projects used in computing cost effectiveness.

II. ASSUMPTIONS AND DEFINITIONS

A. Assumptions

As described in the last section, authority is provided by the Act for a habitat replacement program to replace the habitat values foregone or lost as a result of implementation of salinity control improvements. In the original salinity-control program, prior to the development of the Basinwide Program, habitat replacement was accomplished by Reclamation. Long-term

operation and maintenance (O & M) of these properties is funded through annual Congressional appropriations, and thus, there is little concern about losing these credits over a 50 year project life.

With the advent of the Basinwide Program, a “request for proposals” (now Funding Opportunity Announcement) is used to select salinity control projects from throughout the upper Colorado River Basin (Wyoming, Utah, New Mexico and Colorado). Successful project applicants become responsible for formulation, implementation and long term O&M of their habitat replacement plans. Some proponents utilize Reclamation technical assistance for initial planning and implementation, and other applicants work independently.

Some of the basic assumptions of the habitat replacement process are:

- Habitat losses are estimated based on impacts of the salinity control project on existing habitat. If it is clear that the habitat would be lost in the short term even without the salinity-control project, the projected losses can be adjusted.
- Piping an open ditch is assumed to eliminate 100% of the seepage from that ditch. In this case, all adjacent vegetation providing habitat would be assumed to be lost unless there is some other water source nearby (e.g., an irrigated field, groundwater from another source, or natural seeps and drainages) to maintain a portion of the vegetation. Residual seepage on a lined canal might be assumed to be 5% (initially) and 30% (for concrete later in its life) of the pre-project value which could help maintain some existing habitat.
- Habitat replacement plans are developed with the intent to provide complete and concurrent replacement of losses for the life of the salinity project, typically 50 years for pipelines. Habitat replacement activity will occur at the same time as project construction with the goal of having all initial habitat replacement development completed at the same time as the salinity-control project is completed. If habitat projects do not last the required 50 years, Reclamation operates under the assumption that a revitalized project or new projects will be implemented to complete the 50 year requirement.
- Costs of replacement were to be allocated to project’s cost effectiveness value (cost per ton).
- In general, NEPA and ESA compliance are needed to implement salinity-control projects. In some cases, NEPA can be tiered off of previous NEPA documents or categorically excluded from a need for a NEPA compliance document. Reclamation is usually the lead agency for NEPA although the project applicant may be required provide necessary data and draft reports. The NEPA document must include commitments to complete habitat replacement in accordance with salinity program requirements, even if NEPA analyses determine minor effects to wildlife from the proposed action
- There is a general assumption that wetlands associated with canal and lateral seepage do not meet the definition of jurisdictional wetlands in the 1989 Federal Manual for

Identifying and Delineating Jurisdictional Wetlands and the 1987 Corps of Engineers Wetlands Delineation Manual. If wetland sites are classified as jurisdictional under the Clean Water Act, additional permitting and mitigation may be required after consulting with the Corps of Engineers.

B. Definitions

Replacement means the creation or enhancement of habitat to replace habitat values lost as a result of salinity control measures being implemented. This results in no net loss of habitat. An example of this is as follows:

- i. The implementation of a salinity control measure is estimated to cause the loss of 20 habitat units.
- ii. To replace that loss, a replacement property is located where the 20 units can be created by enhancing habitat through plantings, grazing management, wetland development, weed control, etc.
- iii. The replacement property may have had 10 units of value in its pre-existing condition, so once the habitat replacement plan is implemented, the total habitat units on this property would be 30.

Avoidance of impacts means not allowing impacts to occur in the first place. This is the preferred approach to project implementation, when compatible with the overall project purpose. If avoidance can be achieved as regards habitat replacement for salinity control projects, there is no need to undertake habitat replacement for those projects. When impacts to habitat are **unavoidable**, then habitat replacement is required.

Post-construction **preservation** can be an acceptable means of fulfilling the habitat replacement requirements of the salinity control program. **Preservation** of existing pre-project habitat means designing and implementing a management plan that assures that the habitat will remain viable for the life of the project. For example, habitat along a canal which is also located near natural seeps or a natural watershed might be designated for preservation, with monitoring and management intervention (water supply, invasive species control, etc) as needed.

Where avoidance and preservation are not feasible, then acquisition, through fee or easements, and improvement of replacement property is the required approach.

III. PROCEDURES

A. Determining Losses and Replacement Needs

The Salinity Control Act provides for the replacement of incidental fish and wildlife values that are affected by project implementation, and provides that there be no net loss of wildlife habitat.

This is not to say that acreage must be the same, but there should be no net loss in total value to wildlife.

Habitat quality will be ascertained using a standardized habitat assessment protocol. This protocol will examine various components of both the habitat impacted in the project area and proposed replacement habitat(s) to form a value of land to wildlife and to assign a Habitat Quality Score. The total wildlife habitat value of an area is determined with the following formula:

$$\begin{aligned} \text{Area (acres) of impacted habitat} \times \text{Habitat Quality Score (HQS) of the impacted habitat} &= \text{Total} \\ &\text{Habitat Value Lost (or Total Habitat Units lost)} \\ A \times \text{HQS} &= \text{THV} \end{aligned}$$

The existing total habitat value (THV) of the proposed replacement lands is determined by the same method. Then improvements are planned for replacement lands; the improvement (acres improved \times increase in existing HQS) must equal or exceed the total habitat value lost. Thus there will be no net loss of habitat value. The acreage of project impacts and replacement lands will likely be different, varying with the habitat quality scores (HQS) and improvement potential of the replacement lands.

Example:

Five miles of a lateral are to be placed in pipe. There are 5 acres of wetlands/riparian vegetation supported by seepage from the lateral. It is predicted that these 5 acres will be lost when the lateral is placed in pipe.

The Habitat Quality Score of the 5 acres are determined. In this example, the Habitat Quality is 3. Therefore the THV or Habitat Units lost will be 5 acres \times 3 = 15

Replacement lands are identified. These lands will have to have the THV improved by 15 in order to have no net loss of value. In this example the replacement area is 5 acres and has a Habitat Value Score of 4. Therefore the THV of the replacement lands is 20. This needs to be increased to 35. Improvements need to be made to the replacement lands to increase the per acre Habitat Quality Score to 7 for an improvement of 15. This improvement will result in no net loss of habitat value from the project. If jurisdictional wetlands are present within the proposed project area, Reclamation will coordinate with the Corps of Engineers to coordinate habitat replacement requirements.

1. Habitat Quality Score (HQS)

This protocol has been designed to assess the habitat quality score of a specified area in a timely and cost effective manner. Eleven criteria have been developed to examine aspects of habitat that are essential for wildlife. The first criterion, riparian or wetland habitat type must have a 'yes' answer in order to proceed to further evaluation. Each of the remaining 10 criteria should then be scored as to what is appropriate or expected for the specific habitat type being evaluated,

and some may need to be adapted to fit the specific project area. Evaluators should have an understanding of the ecological community they are evaluating.

For each criterion, the project area will be scored from 1-10, with 10 having the most value to wildlife, 1 having the least value. An example of the scoring system:

Native vs. Nonnative Vegetation Species for both Flora and Fauna.

0	2	4	6	8	10
5 % or less native species	20% native 80% nonnative	40% native 60% nonnative	60% native 40% nonnative	80% native 20% nonnative	95% or greater native species

After all criteria have been evaluated, the total points will be added together. These points will then be correlated to a habitat quality score based on percentage.

Example- There are 10 criteria to be evaluated. The total points earned in the different criteria were 86. The land would have an HQS of 8.6 (raw score of 86 divided by 10)

Habitat Quality Score (HQS)

Raw Score Total

10	100
9.0 to 9.9	90-99
8.0 to 8.9	80-89
7.0 to 7.9	70-79
6.0 to 6.9	60-69
5.0 to 5.9	50-59
4.0 to 4.9	40-49
3.0 to 3.9	30-39
2.0 to 2.9	20-29
1.0 to 1.9	10-19

2. Evaluation Criteria

- Habitat Type:** Examine the habitat type. Riparian and wetland communities serve a broader and more diverse species base as compared to upland communities. Project needs to restore or protect riparian or wetland habitat to be eligible for further consideration.

In evaluating replacement lands, project will restore/protect riparian or wetland habitat: YES
NO

If YES, proceed to evaluate remaining 10 criteria. If NO, project will not be considered further.

- Vegetative Diversity:** Evaluate the composition of readily observable native plant species. Examine if a variety of native plant species are present or if 1 or 2 species dominate with little variation.

0	3	5	7	10
Very Low Diversity	Low Diversity	Moderate Diversity	High Diversity	Very High Diversity

- Stratification:** Evaluate the canopy coverage of the different height levels of vegetation. It should be taken into account that different communities will have different canopy compositions. Examine if there is there an appropriate mixture of trees, shrubs, and herbaceous species.

0	2	4	6	8	10
More than 2 layers missing	2 layers are absent	1 layer is missing, at least 1 of the other layers is not functioning	1 layer is missing, but others are functioning	All appropriate layers are present, but one is not functioning	All appropriate layers present and functioning

- Native species vs. Nonnative species:** Evaluate the composition of native flora and fauna species as compared to nonnative species. What is the relative percentage of each?

0	2	4	6	8	10
5 % or less native species	20% native 80% nonnative	40% native 60% nonnative	60% native 40% nonnative	80% native 20% nonnative	95% or greater native species

- **Noxious Weeds:** Evaluate the presence of noxious weeds. Are noxious weeds present? How abundant are they? If weeds are present then management activities will be needed to control weeds.

0	2	4	6	8	10
Weeds cover 25% of lands	Weeds cover 20% of lands	Weeds cover 15% of lands	Weeds cover 10% of lands	Weeds cover 5% of lands	Land is weed-free

- **Overall Vegetative Condition/ Health:** Evaluate the overall health and condition of plant species. Are the plants healthy or stressed? Examine leaf color, leaf size, and percent of dead material, evidence or absence of new growth. Are any diseases or insect infestations present? If disease or infestation is present then a score no higher than 5 may be given.

0	2	4	6	8	10
60% of plants are stressed, no disease or infestation	50% or less of plants are stressed, no disease or infestation	40% or less of plants are stressed, no disease or infestation	30% or less of plants are stressed, no disease or infestation	20% or less of plants are stressed, no disease or infestation	No visible signs of disease/infestation, 100% of plants healthy

- **If disease or infestation is present, additional scoring as follows:**

0	2	4	5
25% of plants are diseased or infested	15% of plants are diseased or infested	10% of plants are diseased or infested	5% or less of plants are diseased infested

- **Interspersion of open water with vegetation:** The special arrangement of the Wetland's open water in relation to its vegetation.

10-8 High	7-4 Moderate	3 Low	1 Low	0 Zero
				

- **Connectivity:** Examine the proximity of other wildlife habitat areas. Is the land isolated or are travel corridors present? Is the adjacent property in an established conservation area, or is no protective agreement in place?

0	3	5	7	10
Land is isolated	Adjacent to wildlife habitat with no agreement	Within wildlife habitat property with no agreement	Adjacent to an established conservation area	Within an established conservation area

- **Uniqueness or Abundance:** Examine the overall value of habitat to wildlife and its abundance or scarcity. Is the land especially unique or valuable to wildlife? Does it provide special or critical habitat? Is this habitat type common or unusual?

0	2	4	6	8	10
Exhibits very low wildlife value regardless of abundance or scarcity	Exhibits medium to low value for wildlife and is relatively abundant	Exhibits medium value for wildlife and is relatively abundant	Exhibits medium value for wildlife and is relatively scarce Seasonal use	Highly valuable for wildlife but is relatively scarce or becoming scarce Year Round use by wildlife	Highly valuable for wildlife and is very uncommon Nesting or fawning or calving present

- **Water Supply:** Examine the water supply for the area. Examine if the water is from a natural flowing stream or river, or dependent on irrigation flows or delivery systems. Examine the nature of the stream- is water present year round or only seasonally? If the habitat is dependent on water from non-natural sources to maintain its HQS, then what are the terms surrounding the water supply? Is an agreement in place?

0	2	4	6	8	10
No water supply	Water supply is uncertain	Non-natural flows are seasonal or year round flows are uncertain	Non-natural seasonal flows are guaranteed; Seasonal natural flows are uncertain	Non-natural year round flows are guaranteed or seasonal natural flows guaranteed	Perennial, unregulated stream

- **Alteration:** Examine the evidence of human alteration on the land. Look for roads, mining, railroad tracks, urban and suburban encroachment. The more disturbance that has occurred on the land the lower the score.

0	2	4	6	8	10
80% or more of land has been heavily developed/ altered	70% has been developed/ altered	50% has been developed/ altered	30% of land has been developed/ altered	10% or less of project or adjacent land	No alteration/ development observed

3. Future Habitat Value

The future habitat value of replacement lands will be taken into consideration. If lands are currently at a low HQS due to current or past management practices, but have the potential for higher habitat quality, and will be managed in a manner to restore the habitat, then the potential of the land will be evaluated. The probable net increase of HQS of the habitat after restoration will be the score used in calculating the THV. A restoration plan, including identifying a managing entity, should be developed to qualify for consideration under this method. The predicted HQS should be supported by tangible evidence such as adjacent unaltered areas or historical references.

If the lands are currently in good condition but are faced with an imminent threat that would notably reduce their value then additional points will be awarded. 1/4 of the total points earned in the criteria evaluation will be added to the score.

4. Additional Considerations

The following criteria will not be used as “points” in evaluating existing conditions or proposals; however, the criteria will be important for qualitative adjustments and negotiations with wildlife agencies.

- **Operation and Maintenance Requirements:** Evaluate habitat replacement proposals for O M costs and for likelihood of area being maintained in the long-run. Is there an opportunity for a state/federal land management agency to manage lands under existing programs?
- **Habitat for Sensitive or Special Value Species:** Existing habitat and replacement habitat should be evaluated for federally or State listed species or their habitat. Also species of special value such as raptors should be considered.
- **Restoration of Missing Habitat:** There is added value to replacement lands that create or restore a community or habitat type that was previously missing.

- **Educational or Social Value:** The site has value to the community as an environmental education site and will be developed to utilize this potential.
- **Wildlife Species:** Based on observations, will replacement lands benefit species that utilized the impacted habitat.

B. Determining Habitat Replacement Plan

Documentation requirements for habitat replacement plans:

- Basic salinity control project information: Project name, applicant name, location, habitat replacement requirement.
- Approved habitat replacement plan/habitat management plan, including monitoring plan (or, a summary of approved plan).
- Monitoring reports

The goal of the salinity-control program pursuant to authorizing legislation is to assure no net loss of wildlife values. On the project management level, the goal where replacement is needed (e.g. impacts are unavoidable, and pre-project habitat cannot be reliably preserved) is to develop habitat replacement that is beneficial to wildlife, cost effective, viable and manageable for the life of the project, and meets the intent of the Salinity Control Act. This is accomplished through improvement in function and value of other habitats.

1. Criteria for habitat replacement for impacts

- i. Where habitat replacement is needed, the value of the created habitat must equal or exceed in biological value the habitat being lost as the result of a project.
- ii. An “Ideal” replacement property is one that:
 1. Is in or near the salinity-control project area so as to provide compensation for directly affected wildlife to the extent possible
 2. Is an in-kind replacement of the particular values lost (usually riparian or wetland but sometimes upland too)
 3. Is contiguous to or connects other areas that have wildlife value, such as adjacent to perennial streams and naturally occurring wetland complexes.
 4. Would have a willing and able manager (e.g. state wildlife agency, volunteer conservation group such as Ducks Unlimited, or a city or county level agency)
 5. Has the most characteristics that might assure viability for 50 years (e.g. location, ownership/easements, level of management/maintenance needs, fits within agency and public conservation plans and priorities, availability of managing partner at no cost to Reclamation)

2. Procedures and options for applicant’s planning and designing habitat replacement projects
 - i. Developmental steps
 1. Develop preliminary and final plans in coordination with Reclamation, FWS, state wildlife agencies, and landowners
 2. Identify opportunities for habitat projects closely resembling the Ideal property model described above
 3. Determine total habitat value of lands impacted by proposed action.
 4. Develop plan to provide replacement lands that provide sufficient increase in total habitat value to offset losses.
 5. Include monitoring, adaptive management, and reporting in the plan.

3. Option for Reclamation to implement habitat replacement plans

There are Pros and Cons as to whether Reclamation should, in the future, allow for the option of accepting responsibility for implementing project-specific habitat replacement for an applicant. We have historically allowed for this option by withholding project funds. In one case, the Provo Office must still come up with habitat replacement and management for 32.43 acres in the Price-San Rafael project area for 9 projects (an average of 3.6 acres per project). Below is a quick listing of ‘pros’- continuing to allow the pay-Reclamation-to-do-HR option, and ‘cons’- requiring the applicant to prepare and submit for approval a HR plan that assures replacement of wildlife values foregone for the life of the project.

PROS	CONS
For small acreage habitat needs, allows for consolidation into larger, contiguous wildlife tracts that would have more long term value and viability	Increases Reclamation’s salinity program staff workload and costs
Better assurance of viable habitat replacement for the life of the project	Reclamation is ‘not a land management agency’; not necessarily long term guarantee if future budget cuts
Increased opportunities to partner with state or Federal land or wildlife agencies to concurrently meet their needs while fulfilling salinity habitat requirements	Not necessarily long term assurance if partnering agency is victim of future budget cuts
Better assurance of willing participants in the process	Might be detrimental to desired goal of ‘in kind in place’ replacement (consolidated wildlife properties might be some distance from area of wildlife habitat loss).
Makes it easier on the applicant who is not a wildlife habitat expert	Potential loss of educational opportunity to foster local interest in wildlife conservation
Better accountability between Reclamation and Salinity Control Forum on good habitat replacement	Years later we are still on the hook for some projects- and getting them done goes to the end of the line in deference to getting newer projects in place.

4. Options for locating projects

With increasing land values, urbanization and small scale salinity projects (when compared to Salinity Control Units, i.e. Grand Valley) being implemented, purchasing properties for development for most habitat replacement projects may not be a realistic option. Partnerships with other agencies can stretch limited funding and accomplish multiple objectives. Listed below are few options to assist in planning habitat replacement projects.

- Are there federal, state, county or local government properties with proposed habitat projects that need funding for implementation? Examples include: national wildlife refuges, national parks and conservation areas, wilderness study areas, areas of critical environmental concern, state wildlife areas, state parks, county-designated open space areas, and conservation easements. Agencies may agree to provide long-term operation and maintenance if habitat projects fit within their long-range plans and the anticipated O&M costs are limited.
- Are there properties listed in above without planned habitat enhancement projects that have potential for habitat development or enhancement?
- Are there lands under federal, state, or local jurisdictions adjacent to properties described above that could be developed and incorporated by the jurisdiction (i.e. adding adjoining land to a state wildlife area)?
- Does the applicant own or control lands with potential for habitat replacement? Ideal properties would include those along rivers or streams where sufficient groundwater and/or irrigation is available to support riparian and wetland species. Measures need to be developed to assure that the habitat replacement is maintained for the life of the salinity control project implemented (normally 50 years for piping projects).

C. Habitat replacement written plans

General requirements: The habitat replacement plan should include:

- Description of proposed salinity control project.
- Description and quantification of salinity project habitat impacts
- Description of proposed habitat replacement plan, including development and O&M.
- Quantification of net increase in habitat value that result from the habitat replacement plan.

D. Review procedures

Habitat replacement plan will be reviewed by Reclamation and wildlife agencies. Plan will require approval by Reclamation prior to implementation of salinity control activities

IV. Role of Fish and Wildlife Service and State & Tribal Wildlife Agencies

The FWS participates in the Salinity Control Program pursuant to authorities and responsibilities set forth in the Endangered Species Act, Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, and the Migratory Bird Treaty Act. These authorities are not always applicable; however, Reclamation believes that voluntary coordination with the FWS on all program habitat replacement projects is appropriate and beneficial.

The FWS participates in the Salinity Control Program by providing technical assistance on fish and wildlife resource impact assessment, restoration, and management and acting as liaison with and to state wildlife management agencies. The FWS also provides independent review and oversight of program aspects dealing with fish and wildlife resources, including our assessment of the degree to which fish and wildlife have received due consideration in project planning and incidental fish and wildlife values foregone have been replaced.

Scope of work for FWS pertaining to the basinwide program contains this:

- Shall provide written evaluations or recommendations to Reclamation for the planning, design, and development of habitat replacement plans for Basinwide Program projects throughout the Upper Colorado River basin. Such evaluations or recommendations will be for the purpose of assisting Reclamation in assuring the habitat replacement commitments are met.
- Shall assist in preparing a “Score Sheet” table, in collaboration with Reclamation, showing the habitat replacement needs, i.e. values and/or acres, for each of the Basinwide Program projects and the habitat replacement that has occurred with these projects.

Coordination with State and Tribal Wildlife Agencies: '

- Reclamation will provide state or tribal wildlife agencies copies of all wildlife agreements with a request for their review, comments and ultimate approval of the agreement prior to its implementation. The state and tribal wildlife agencies will be encouraged to contact the FWS salinity coordinator to discuss the agreements prior to their final approval.

V. Monitoring requirements

Final payment for salinity work should be made pending sufficient progress on habitat replacement work. Once a property has been developed for salinity project wildlife replacement, the proponent is responsible for long-term monitoring to determine if habitat replacement remains successful. Habitat plans should commit proponents to monitoring for life of project. In

addition, Reclamation will monitor each property at least once a year to ensure that it is performing as intended and attaining or enhancing wildlife values.

- Site visits are conducted at least once a year to verify condition of property and allow for follow-up with applicant (or property manager if different) on any issues/concerns that need to be addressed.
- When applicable set up photo points of area of interest (Example: pre and post pictures of grazing).
- Coordination with property manager occurs as needed throughout the year to ensure management in accordance with approved plan or if necessary, revise plan in coordination with FWS and DWR as conditions change.
- Reclamation will direct applicants to repair any determined deficiencies.

September 3, 2013

U.S. Department of the Interior
Bureau of Reclamation
302 East 1860 South
Provo, Utah 84606
ATTN: Jeff D'Agostino, Environmental Group Chief

RE: Sheep Creek Irrigation Company South Valley Piping Project-Concurrence Request linked to habitat replacement needs.

Mr. D'Agostino:

The intent of this letter is to serve three primary purposes, which include: (1) to provide the Bureau of Reclamation (BOR) a detailed project narrative for the proposed Sheep Creek Irrigation Company South Valley Piping Project; (2) to quantify the anticipated habitat replacement requirements correlated to the South Valley Piping Project; and, (3) to request concurrence from the BOR with regard to the quantified Total Habitat Value Units estimated for the South Valley Piping Project.

Project narrative:

The proposed Sheep Creek Irrigation Company piping project is located nearest the Town of Manila, Utah. It is scheduled to commence during September of 2014 and should be completed by May 2015. This project involves piping approximately 39,130 linear feet of the South Valley irrigation canal lateral, which is currently an open and unlined conveyance channel or ditch. Based on a recent survey (2013) conducted by J-U-B ENGINEERS, Inc., the average width (i.e. ordinary high water mark (OHWM) to OHWM) of the South Valley Lateral equates to 9.48 feet. This project is estimated to reduce the salinity loading into the Colorado River Basin by a cumulative total of 3,373 tons annually. The proposed piping alignment is illustrated on the attached project summary exhibit.

The South Valley lateral is proposed to be piped with HDPE pipe ranging in size from 42" to 18" in diameter. The piping would initiate at the existing intake structure; minor modifications to the intake structure are required to transition into the new pipe. This project does not include constructing a new water impoundment structure. The installation of the piping would include: demolition of all existing canal structures, excavation, backfilling and surface restoration to install the pipe. Also included in the project is installation of all standpipes, air valve assemblies, drains, valves, and other incidental items associated with piping the existing lateral. Existing turnouts will be maintained, which yields a total of 7 turnouts along the new pipeline alignment. Turnouts include construction of concrete dissipation boxes, installation of valves, air/vacs, owner furnished meters and electrical equipment, and all other appurtenances associated with the project. The project will also include backfilling the existing lateral with native material. After re-grading the lateral to match adjacent grades, disturbed or barren soils will be seeded with a native upland grass seed mix at a rate of at least 40 lbs per acre.

Evaluating habitat impacts and habitat replacement needs:

The anticipated action area was systematically walked and/or driven on March 14th and 15th, 2013, by Vincent Barthels, Biologist, from J-U-B ENGINEERS, Inc., to assess and rate the habitat conditions. During the site visits, irrigation waters were not actively diverted into the

lateral; nonetheless, the OHWM was determined based on physical criteria (e.g. evident scour lines, water staining, and vegetative transitions). The adjacent photo illustrates the South Valley lateral near the upper end of the proposed piping alignment.



This letter report documents the potential impacts on wildlife habitat value from the proposed desalinization project. The BOR has developed a standardized habitat assessment protocol (dated: March 2013), named "Evaluating habitat impacts and avoidance options Habitat Replacement for Salinity Control Projects." BOR's protocol takes into account ten separate categories (e.g. vegetative diversity and water supply) to rate habitat quality (scores range between 0 & 10) and uses a standard formula to determine the Total Habitat Value (THV). The formula equates to $THV = \text{Area (in acres)} \times \text{the net change in Habitat Quality Scores (HQS)}$.

The entire canal anticipated to be piped has 2 distinct habitat types. The lower 30% of the canal alignment and the upper 20% of the canal alignment are grouped together and characterized as the "TYPE A Segment." The TYPE A Segment contains a fairly established woody vegetative community. The adjacent photo illustrates a representative Type A segment of the canal. The middle 50% of the canal alignment is characterized as the "TYPE B Segment," which contains little to no woody vegetation.

The total "Area" for the proposed project = $39,130' \times 9.48' = 370,952.4$ square feet = 8.52 acres. The "Area" for each Segment (TYPE A & TYPE B) = $(39,130/2) \times 9.48 = 185,476.2$; $185,476.2/43,560 = \underline{4.26}$ acres.

Table 1 summarizes the HQS for each of the two segments (i.e. A & B) that make up the South Valley lateral. The HQS was determined for each segment by scoring the entire segment as a whole.

Table 1: Summary of Habitat Quality Scores for the South Valley Lateral.

Riparian Feature	Vegetative Diversity	Stratification	Native Species vs. Nonnative Species	Noxious Weeds	Overall Vegetative Condition/Health	Interspersion of Open Water with Vegetation	Connectivity	Uniqueness or Abundance	Water Supply	Alteration	Overall HQS
TYPE A Segment	4	6	6	7	5	1	6	4	4	2	4.5
TYPE B Segment	2	3	4	6	3	1	3	2	4	2	3.0

THV Units (TYPE A Segment) = 4.26 acres (Area) X 4.5 (HQS) = 19.17

THV Units (TYPE B Segment) = 4.26 acres (Area) X 3.0 (HQS) = 12.78

TYPE A and TYPE B Segments combined = 19.17 + 12.78 = 31.95

No adjacent fringe wetlands were identified that are anticipated to be impacted by the proposed project. Based on the proposed project action combined with the BOR's standardized evaluation protocol, **the South Valley lateral piping project should require 31.95 THV Units.**

If you concur with the calculated THV for the proposed South Valley lateral project, please offer Sheep Creek Irrigation Company or J-U-B Engineers, Inc. (the project consultant) a brief letter to this effect.

I greatly appreciate your time and expertise and look forward to hearing from you soon in regard to this matter. If you have questions regarding this concurrence request, please do not hesitate to contact me. I can be reached at vbarthels@jub.com or on my office phone at 509-458-3727.

Sincerely,

Vincent Barthels, Biologist
J-U-B Engineers, Inc.

List of Attachments:

1. Project Summary Exhibit



United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Provo Area Office
302 East 1860 South
Provo, UT 84606-7317

RECEIVED

SEP 13 2013

J-U-B ENGINEERS INC

IN REPLY REFER TO:

PRO-771
ENV-4.00

SEP 11 2013

Mr. Vincent Barthels
J-U-B Engineers, Inc.
422 West Riverside Avenue, Suite 304
Spokane, WA 99201

Subject: Habitat Replacement Requirements for the 2014/2015 Sheep Creek Irrigation Company South Valley Lateral Salinity Control Project - Daggett County, Utah

Dear Mr. Barthels:

The Provo Area Office understands that the proposed Sheep Creek Irrigation Company piping project is scheduled to commence September 2014 and should be completed by May 2015. This irrigation infrastructure improvement project would reduce the amount of water lost through seepage along the South Valley Lateral and subsequently reduce the salinity loading of the Colorado River Basin by an estimated 3,373 tons annually. This project should improve the efficiency of the water delivery system in the project service area by replacing approximately 7.4 linear miles of open unlined earthen irrigation canal with buried HDPE pipe.

Based on the information presented in your letter dated September 3, 2013, the Bureau of Reclamation concurs with the total habitat value (THV) of 31.95 credits, quantified for the proposed South Valley Lateral. Reclamation looks forward to working in cooperation with the Sheep Creek Irrigation Company and its agents to review a Habitat Replacement Plan that will adequately address and compensate for the loss of 31.95 units of THV.

Should you have any questions or comments, please contact Mr. Shane Mower at 801-379-1081 or by e-mail at cmower@usbr.gov.

Sincerely,

Kerry Schwartz
Manager, Water and Environmental
Resources Division

APPENDIX C

Photo Inventory

The following photos were taken on March 25th, 2014



Photo 1: Showing the upper left bank of Birch Spring Creek which lacks woody vegetation and is actively grazed by cows. This upper flat is proposed to be re-graded and restored with native re-plantings.



Photo 2: Looking southerly along the western boundary of the Habitat Replacement Site (HRS). A large percentage of the banks of Birch Spring Creek within the HRS are very steep (i.e. near vertical slopes). The proposed earthwork above the OHWM of Birch Spring Creek is intended to lay the slopes back, which will help to stabilize these banks and minimize unraveling.



Photo 3: Looking westerly at the upper left terrace of the HRS. This section lacks woody vegetation and is actively grazed by cows. This upper flat is proposed to be re-graded and restored with native re-plantings.



Photo 4: This photo shows an existing access road and location of the 4' CMP through which Birch Spring Creek flows (see the Habitat Replacement Site Exhibit).



Photo 5: Looking easterly at the right bank of Birch Spring Creek. This near vertical bank is actively sloughing.



Photo 6: Looking downstream at Birch Spring Creek within the HRS. Established Russian olive trees along the left bank and above the OHWM are proposed to be removed.

RECORD OF AGENCY CONSULTATION

PROJECT REVIEW COMMENT/RESPONSE MATRIX

TYPE OF REVIEW (Check one): <input type="checkbox"/> Concept <input type="checkbox"/> Preliminary <input type="checkbox"/> Intermediate <input checked="" type="checkbox"/> Final <input type="checkbox"/> PS&E <input type="checkbox"/> SWPPP	
PROJECT:	Sheep Creek Irrigation Company – South Valley Lateral Piping Project – BOR Salinity Project
PROJECT NO:	J-U-B Project # 55-13-040
LOCATION:	Section 29, Township 3 North, Range 19 East, in Daggett County, Utah; near Manila, Utah.

REVIEWER:	Barb Osmundson, USFWS	REPORT:	Habitat Replacement Plan	DATE OF REVIEW:	6/6/14
COMMENT NUMBER	COMMENT LOCATION	COMMENT		ACTION	
1	Pg 5	Fencing this area is a great way to improve the habitat. On the temporary mesh exclusion fencing, I would recommend that besides being deer-proof, that is also rabbit-proof. We have had some rabbit herbivory affect plantings on HRS's in western Colorado.		The Exclusionary Fence Design (Appendix A.5) has been modified to include small mammal exclusion measures of 3 feet of chicken wire, buried a minimum of 12 inches below grade.	
2	Pg 6	Installing a perching pole is an interesting addition to this HRS. Has this been done on any of the other HRS's, and what has the raptor use been?		Yes, a perching pole was installed within the HRS for the Cedar Hollow Piping Project, Daggett County, Utah. Primarily this perching pole has been used by red-tailed hawks.	
3	Pg 6	Having a dedicated irrigation system will really be helpful in getting plantings established.		No changes made to the HRP.	
4	Pg 8	Re-establishment of native vegetation and weed control adjacent to Birch Spring Creek is a great habitat project. Use of Aquamaster™ is a good choice of herbicide.		No changes made to the HRP.	
5	Pg 8	I would recommend monitoring for longer than five years, as these habitat replacement projects take several years before they are fully functional.		Sheep Creek Irrigation Company is responsible for the first five years of monitoring. Concurrently, USBR will monitor the site for the duration of the project, ending in 2065.	
6	Pg 9	Getting a formal conservation easement agreement with Boyd Pallesen is an excellent measure to insure this replacement project lasts the life of the irrigation piping project.		No changes made to the HRP.	

PROJECT REVIEW COMMENT/RESPONSE MATRIX

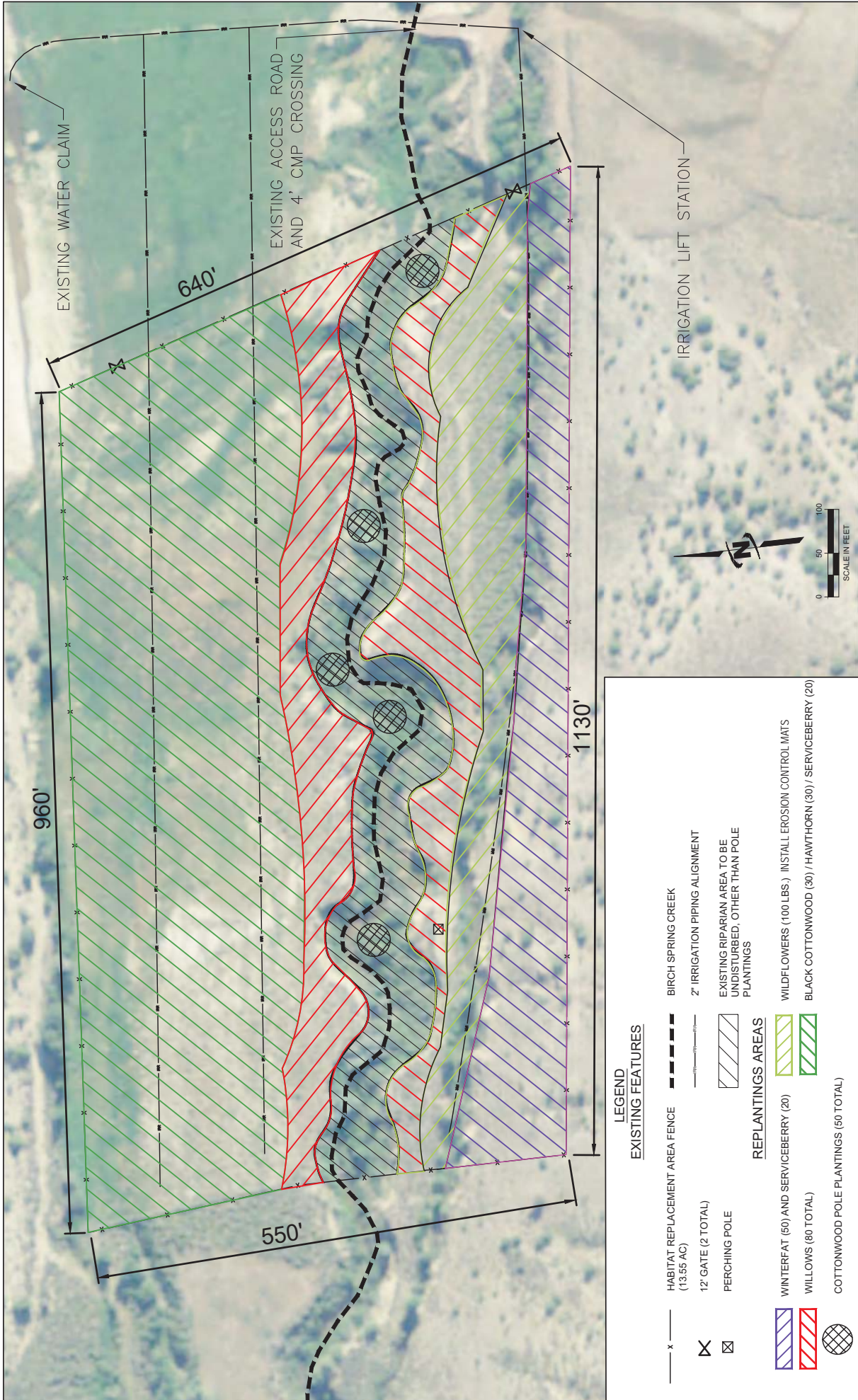
7	Appendix A	Wonder about a little more interspersion of the willow and buffaloberry with the cottonwoods. Also, what about phased plantings of cottonwoods, for canopy stratification??	Interspersion of planted species can take place under the direction of the project engineer or biologist. This will be documented in the contract/specs. Plantings will be phased over three years, as outlined on page 7.
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USBR Biologist (David Snyder) also reviewed this HRP. Comments back were received by J-U-B ENGINEERS, Inc. on June 10, 2014.

The only comment from David was to fix a typo error: "I did notice that the last sentence on page 10 underneath Table 4 gives reference to a Table 5. Is there supposed to be a Table 5 that got left out or is this a typo and supposed to reference Table 4?"

This error was fixed in the document consistent with the comment.

Appendix B



LEGEND

EXISTING FEATURES

- x
- HABITAT REPLACEMENT AREA FENCE (13.55 AC)
- 12' GATE (2 TOTAL)
- PERCHING POLE
- BIRCH SPRING CREEK
- 2" IRRIGATION PIPING ALIGNMENT
- EXISTING RIPARIAN AREA TO BE UNDISTURBED, OTHER THAN POLE PLANTINGS

REPLANTING AREAS

- WINTERFAT (60) AND SERVICEBERRY (20)
- WILLOWS (80 TOTAL)
- COTTONWOOD POLE PLANTINGS (50 TOTAL)
- WILDFLOWERS (100 LBS.) INSTALL EROSION CONTROL MATS
- BLACK COTTONWOOD (30) / HAWTHORN (30) / SERVICEBERRY (20)



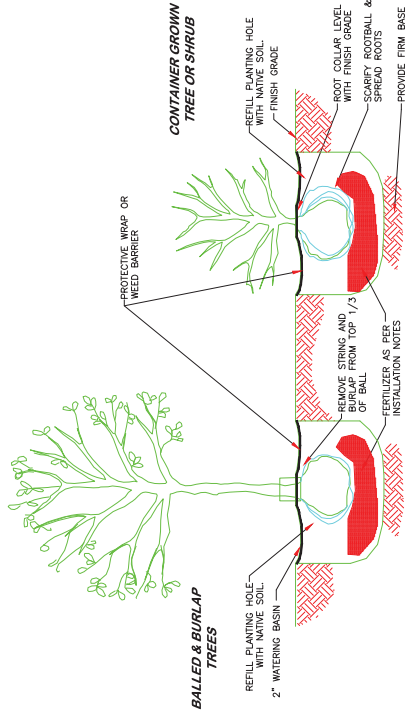
ANTELOPE & NORTH LATERALS
 SHEEP CREEK IRRIGATION CO.
 HABITAT REPLACEMENT SITE
 PROJECT SUMMARY EXHIBIT



JUB ENGINEERS, INC.
 1000 WEST 10TH AVENUE, SUITE 200
 DENVER, CO 80202

Project No: 17-2018-01-01
 Date: 11/15/18
 Scale: As Shown
 Author: JUB
 Checker: JUB
 Title: Project Summary Exhibit

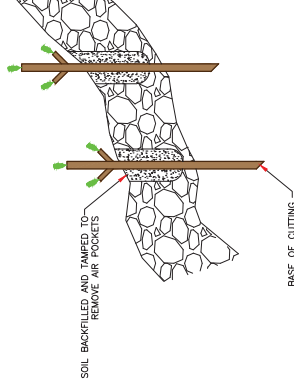
Appendix C



**SHRUB & TREE
PLANTING DETAIL**
NOT TO SCALE

INSTALLATION NOTES:

1. ALL PLANTING AND SITE PREPARATION OPERATIONS SHALL BE CONDUCTED ACCORDING TO AMERICAN NURSERMAN'S ASSOCIATION GUIDELINES.
2. ALL PLANTS SHALL BE PLANTED IN THE MANNER AND MATERIAL SPECIFIED. PLANTS SHALL BE FROM NATIVE STOCK. NO CULTURS OR HORTICULTURAL VARIETIES WILL BE ALLOWED.
3. ALL PLANTS, SPECIES, SIZES, AND SCHEDULES FOR INSTALLATION WILL BE IDENTIFIED IN THE PLANT SCHEDULE FOR THIS PROJECT. PROPOSALS FOR SUBSTITUTIONS REQUIRE THE APPROVAL OF THE PROJECT BIOLOGIST.
4. THE REQUIREMENTS OF ALL NURSERY GROWN PLANT MATERIALS ARE IDENTIFIED IN THE PLANT SCHEDULE AND SHALL BE COMPLETED OR BELLED AND BURLAPED PRIOR TO DELIVERY TO THE PROJECT. ALL PLANTS SHALL BE HEALTHY, FREE OF DISEASE, AND ALL FORMS OF INFESTATIONS WILL BE ACCEPTED.
5. USE PINK TRANSPARENT AND UNABLE 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. "HEEL-IN" PLANTS SHALL BE PLANTED IMMEDIATELY UPON DELIVERY. THE ACTUAL TIME OF INSTALLATION SHALL BE DETERMINED BY THE PROJECT BIOLOGIST. AFTER PLANTING TO AVOID CAPILLARY STRESS.
7. ALL PLANTS SHALL BE PLANTED IN THE MANNER AND MATERIAL SPECIFIED. BACKFILL EXCAVATED PITS WITH NATIVE SOIL.
8. A PROTECTIVE WRAP OR WEED BARRIER SHALL BE PLACED IN A 3 FT. RADIUS AT THE TREE TRUNK. THIS WILL DISCOURAGE COMPETITION AMONGST OTHER PLANT SPECIES.
9. INSTALL TRANSPARENT TYPE FERTILIZER, SUCH AS OSMOCOTE SLOW RELEASE FERTILIZER (16-16-16 ANALYSIS) OR EQUAL. APPLICATION RATE SHALL BE AS SPECIFIED BY THE MANUFACTURER. FERTILIZER WILL BE ALLOWED IN PLANTING PITS ONLY.



**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.

GRASS SEED NOTE:

1. WHEN RESEEDING WETLAND BARREN LOCATION IN THE IRRIGATION CANALS, UTILIZE ANY OF THE FOLLOWING SEEDS AT A DISPERSAL RATE OF 60 LBS./ACRE:
 - *Poa annua*
 - *Lolium perenne*
 - *Stylo setaceum*



J-U-B ENGINEERS, INC.

J-U-B COMPANIES



THE LANGDON GROUP



GATEWAY MAPPING INC.

August 2, 2016

David Snyder, Fish & Wildlife Biologist
Bureau of Reclamation, Provo Area Office
302 East 1860 South
Provo, UT 84606

Subject: Sheep Creek Irrigation Company Antelope and North Laterals Salinity Control Project - Concurrence request linked to habitat replacement needs.

David Snyder:

The intent of this letter is to serve three primary purposes, which include: (1) to provide the U.S. Bureau of Reclamation (Reclamation) a detailed project narrative for the proposed Antelope and North Laterals Salinity Control Project (Proposed Project); (2) to quantify the anticipated habitat replacement requirements correlated to the Proposed Project; and, (3) to request concurrence from Reclamation with regard to the quantified Total Habitat Value (THV) Units estimated for the Proposed Project.

Project Description and Evaluating Habitats

A field survey for the anticipated action area was completed on May 21, 2015, and then the North Lateral and parts of the Antelope were revisited on November 5, 2015, by Trent Toler, Biologist from J-U-B ENGINEERS, Inc., to assess and rate the current habitat conditions. During the May site visit, irrigation water was actively flowing. The Antelope Lateral is discussed as two sections, north and south (of SR 43), because of a variation in the habitat between the two section of the canal. The North Lateral was scored and discussed as one section.

This report documents the potential impacts to wildlife habitat value from the proposed piping project to reduce the salinity loading of the Upper Colorado River Basin. Reclamation's standardized protocol (Basinwide Salinity Control Program: Procedures for Habitat Replacement, March 2013) which used to assess the habitat quality in the proposed project disturbance area. Reclamation's protocol uses ten separate parameters (such as vegetative diversity, connectivity, and water supply) to rate habitat quality (scores range from 0 to 10) and uses a formula to determine the THV. The formula to arrive at $THV = \text{Area (in acres)} \times \text{net change in Habitat Quality Scores (HSQ)}$. To arrive at the area, the laterals were divided into discrete segments that each share a common quality, vegetation type, and average width of habitat. To calculate the acreage of each segment, the width of the habitat along the banks is multiplied by the length of that segment, then converted into acreage.

Habitat Assessment and Scoring

Scoring for each of the segments in the Antelope and North Laterals are summarized in Tables 1 and 2. The Antelope Lateral was divided into twelve segments, including the proposed new alignment section for the cutoff. The North Lateral was divided into fourteen segments, including the proposed new alignment section shortly before the east terminus by the Pallesen Farm.

Insert file name here

Table 1. Total Habitat Value Scoring for Antelope Lateral.

Segment	Habitat Quality Score (HQS)	Acreage	Total Habitat Value (THV) ^a
A1	3	0.054	0.16
A2	5.4	0.013	0.07
A3	3	0.049	0.15
A4	3	0.102	0.31
A5	No loss	--	--
A6	3	0.026	0.08
A7	5	0.072	0.36
A8	4.7	0.013	0.06
A9	4.4	0.098	0.43
A10	4.1	0.109	0.45
A11	4.4	0.029	0.13
A12	4.1	0.207	0.85
	Total	0.772	3.05

^a THV = Habitat Quality Score x Acreage

Antelope Lateral - South

Most of the vegetation along the banks of the canal (8-12 ft wide OHWM) through this portion of the Antelope Lateral has been cleared, but a few scattered shrubs remain. The habitat type for this area is disturbed riparian shrub and due to the cutting and clearing (regular canal maintenance) generally achieved low scores (HQS of 3.0) with a few exceptions (Photos 1 and 2). In some sections (segments A3, A4, and A6), one bank of the canal is nearly vertical and tall, with no riparian vegetation (Photos 2 and 3). The only other habitat type along this stretch is shrubby riparian. Most of this habitat type is found in two stretches, one by a wet area above the canal (segment A2) and the other near SR 43 (segment A7). The shrubby riparian (segment A2) is less disturbed so it scored much higher (5.4) (Photo 4). This section of the Antelope Lateral where the canal turns sharply as it passes through a shallow valley contains wet areas both upslope and downslope from the canal. There is a known spring upslope and west of the canal that supports these wet areas. The water appears to be used for irrigation by the landowner on the other side of the canal. The other shrubby riparian segment by SR 43 (segment A7) has had some disturbance on the east bank of the canal, but the vegetation is generally intact on the west bank (Photo 5).

One section of the Antelope Lateral will be abandoned (segment A4) where the canal had previously traversed the slopes of a steep valley. That loop of the canal will be cut off and the pipeline placed across the valley (segment A5) (Photo 6). As the habitat along this new alignment is not currently supported by the canal water, this new section was scored as "no loss". The valley does contain some mesic and possibly wetland habitats where groundwater and precipitation concentrates in the lower parts of the valley (Photo 7). Although the canal currently crosses through this valley, the vegetation in the valley appears to have hydrological support independent of the canal. Any potential wetland areas would be avoided by the new alignment through the center of the valley.

Antelope Lateral - North

Conditions are similar in the section of the Antelope Lateral north of SR 43, with the same two primary habitat types. However, the disturbed riparian shrub was in better condition (generally HQS of 4.1 to 4.7) than in Antelope Lateral - South area, with some banks partially cleared of vegetation but other short sections without recent clearing (Photos 8 and 9). The short wooded riparian sections were also somewhat disturbed (HQS of 4.4) (Photos 10 and 11). No wetland areas appeared to be a part of this section, though there were some parallel smaller distribution ditches (Photo 11).

Table 2. Total Habitat Value Scoring for North Lateral.

Segment	Habitat Quality Score	Acreage	Total Habitat Value (THV)^a
N1	No loss	--	--
N2	5.2	0.019	0.10
N3	4.8	0.013	0.06
N4	5.4	0.144	0.78
N5	5	0.009	0.05
N6	No loss	--	--
N7	5	0.173	0.86
N8	4.8	0.013	0.06
N9	4.8	0.050	0.24
N10	4.9	0.047	0.23
N11	4.7	0.020	0.09
N12	4.7	0.121	0.57
N13	4.5	0.019	0.08
N14	No loss	--	--
	Total	0.628	3.12

^a THV = Habitat Quality Score x Acreage

North Lateral

The North Lateral is much narrower and a little shorter than the Antelope, generally with an OHWM of approximately 3 ft. As this lateral has not been maintained by cutting or removing vegetation, it still retains most of its vegetation, even though some disturbance from the agricultural operations has occurred in these areas. Where all the vegetation surrounding the canal for some distance has been cleared and grubbed a total of 5 habitat types were observed. The disturbed habitat type was only found in two locations (segments N1 and N6) (Photos 12 and 13). Those two segments were scored as "no loss" as no habitat currently exists that would be lost from pipe installation. The shrubby riparian segments (segments N2, N4, N9, and N12) contains a mix of an herbaceous layer and a minor willow-cottonwood sapling and small tree layer of varying widths (Photos 14, 15, and 16). Disturbance to these sections originates from the agricultural operations in the area. The herbaceous riparian (segments N3, N5, N8, and N11) was of a medium value but mostly contained grasses, forbs, and other herbaceous species (Photos 17 and 18). The wooded riparian areas (segments N7 and N10) contain a medium quality habitat because of some cutting and disturbance around farm buildings and operations (Photos 19 and 20). Lastly, the disturbed riparian shrub (segment N13) was a mix of vegetation layers but all affected by livestock use or limited ditch

maintenance (clearing) (Photo 21). There is also a new section (segment N14) where the pipe would be placed not in the original ditch but under the Pallesen farm property and along the farm road (also scored as "no loss"). The section that would be abandoned (segments N11 and N12) because of the new pipe would not be filled in but left open. Although some surface runoff or precipitation could collect in the open section, irrigation water would no longer flow as it previously did.

Conclusion

The proposed project would 6.2 THV units of replacement to account for habitat potential lost from the implementation of the project. If the Reclamation concurs with the calculated THV for the proposed Antelope and North Laterals Piping Project, please offer Sheep Creek Irrigation Company or J-U-B ENGINEERS, Inc. (the project consultant) a brief letter to this effect.

I appreciate your time and expertise and look forward to hearing from you soon in regards to this matter. If you have any questions or concerns regarding this concurrence request, please feel free to contact me at either ttoler@jub.com or by phone at 801-886-9052.

Sincerely,

Trent Toler, Biologist
J-U-B ENGINEERS, Inc.

Attachments:

1. Habitat Assessment Map
2. Photo Inventory
3. Habitat Assessment Excel Worksheets



Legend

- - - - - Antelope Lateral
- - - - - Staging Areas
- - - - - North Lateral



1 inch = 667 feet



**Antelope & North Lateral Piping Project
Habitat Assessment Map
Canal Segments**



PHOTO INVENTORY

Photos taken on May 21 and November 5, 2015.



Photo 1. Segment A1 habitat by the Olson Weir and near the diversion structure, looking south.



Photo 2. Segment A3 habitat, looking west.



Photo 3. Segment A4 habitat, close to beginning of Segment A6, and looking east.



Photo 4. Segments A2 (in the background) and A3, looking south.



Photo 5. Segment A7, near the bridge under SR 43, and looking south.



Photo 6. Segment A5, the proposed new pipe alignment across the small valley, looking north. Segment A4 can be seen in the upper left of the photo as a horizontal break in the slope.



Photo 7. Valley vegetation within the loop of Segment A4 (can be seen in the upper left side as a cut across the slope), looking east.



Photo 8. Segment A10, looking west.



Photo 9. Segment A12 by the Olson-Pallesen Weir, looking west.



Photo 10. Segment A11, near A10, and looking east.



Photo 11. Segment A11, near A12, looking west.



Photo 12. Segment N1 near diversion structure, looking northeast.



Photo 13. Segment N6, looking southwest toward the South Valley Habitat Replacement Area in the distance (where work was underway at the time).



Photo 14. Segment N4, looking west.



Photo 15. Segment N9, looking east.



Photo 16. Segment N12, looking west.



Photo 17. Segment N5, looking west.



Photo 18. Segment N11, next to Pallesen Farm, looking west (A12 is in the distance).



Photo 19. Segment N7, looking east.



Photo 20. Segment N9 (foreground) and N10 (background), looking east.



Photo 21. Segment N13, near the east terminus, looking east.

Project: Antelope Lateral, Sheep Creek - Manila, Utah
Assessment Conducted By: Trent Toler (JUB Engineers, Inc.)

Seg. ID	Veg. Diversity	Strat-ification	Native vs. Non-native	Noxious Weeds	Veg. Health	Disease Present	Interspersion of Open Water with Vegetation	Conn-ectivity	Uniqueness or Abundance	Water Supply	Alter-ation	Total	HQS	Length	Width	Habitat Acreage	THV
1	1	0	6	9	2		1	5	2	4	0	30	3	588	4	0.054	0.16
2	5	4	8	9	8		1	5	6	4	4	54	5.4	279	2	0.013	0.07
3	1	0	6	9	2		1	5	2	4	0	30	3	1071	2	0.049	0.15
4	1	0	6	9	2		1	5	2	4	0	30	3	2223	2	0.102	0.31
5	No loss (new)											0	0	759		0.000	0.00
6	1	0	6	9	2		1	5	2	4	0	30	3	565	2	0.026	0.08
7	5	4	8	9	8		1	3	4	4	4	50	5	782	4	0.072	0.36
8	5	4	8	6	8		1	3	4	4	4	47	4.7	292	2	0.013	0.06
9	3	4	6	9	8		1	3	4	4	2	44	4.4	533	8	0.098	0.43
10	3	3	6	6	8		1	2	4	4	4	41	4.1	1582	3	0.109	0.45
11	3	4	6	9	8		1	3	4	4	2	44	4.4	317	4	0.029	0.13
12	3	3	6	6	8		1	2	4	4	4	41	4.1	2259	4	0.207	0.85

Date: May 21, 2015

Overall THV: 3.041
 Completed Pipe Lengths: 9027
 Total Habitat Acreage: 0.7726

Project: North Lateral, Sheep Creek - Manila, Utah
Assessment Conducted By: Trent Toler (JUB Engineers, Inc.)

Seg. ID	Veg. Diversity	Stratification	Native vs. Non-native	Noxious Weeds	Veg. Health	Disease Present	Interspersion of Open Water with Vegetation	Connectivity	Uniqueness or Abundance	Water Supply	Alteration	Total	HQS	Length	Width	Habitat Acreage	THV
1	No loss											0	0	96	0	0.000	0.00
2	5	4	8	9	8		1	3	4	4	6	52	5.2	209	4	0.019	0.10
3	3	2	8	9	8		1	3	4	4	6	48	4.8	193	3	0.013	0.06
4	5	4	8	9	8		1	5	4	4	6	54	5.4	2092	3	0.144	0.78
5	3	2	8	9	8		1	5	4	4	6	50	5	200	2	0.009	0.05
6	No loss											0	0	559	0	0.000	0.00
7	5	4	8	9	8		1	3	4	4	4	50	5	1504	5	0.173	0.86
8	3	2	8	9	8		1	3	4	4	6	48	4.8	290	2	0.013	0.06
9	5	4	8	9	6		1	3	4	4	4	48	4.8	1087	2	0.050	0.24
10	5	4	8	9	8		1	2	4	4	4	49	4.9	339	6	0.047	0.23
11	3	2	8	9	8		1	2	4	4	6	47	4.7	433	2	0.020	0.09
12	5	4	8	9	6		1	2	4	4	4	47	4.7	879	6	0.121	0.57
13	5	4	6	9	6		1	2	4	4	4	45	4.5	408	2	0.019	0.08
14	No loss (new)											0	0	1491	0	0.000	0.00

Date: May 21, 2015

Overall THV: 3.130
 Completed Pipe Lengths: 8289
 Total Habitat Acreage: 0.6280

Appendix E. Biological Evaluation

Biological Assessment for the Antelope and North Laterals Salinity Control Project

Manila, Utah

October 4, 2016

Prepared for:

United States Department of the Interior
Bureau of Reclamation
Upper Colorado Region
Provo Area Office

Prepared by:

J-U-B Engineering, Inc.
2875 South Decker Dr. Ste. 575
Salt Lake City, UT 84119

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INTRODUCTION

This Biological Assessment (BA) has been prepared for the Bureau of Reclamation (Reclamation) as required by Section 7(c) of the Endangered Species Act (ESA), for the proposed Antelope and North Laterals Salinity Control Project located in Daggett County, Utah. The proposed project would pipe approximately 3.4 miles of unlined, open canals along the Antelope and North Laterals in the Sheep Creek Irrigation Company's (SCIC) irrigation system. The proposed project would begin at the diversion structures for both the Antelope and North Laterals and would continue along each lateral.

Purpose of the Biological Assessment

The objective of this BA is to assess the potential environmental impacts of the proposed Antelope and North Laterals Salinity Control Project. This report focuses on federally-listed plant and animal species in accordance with the requirements of Section 7 of the ESA. This BA includes species accounts, analysis of potential project-related impacts, and effects determinations for each species. This document is intended to provide the U.S. Bureau of Reclamation (Reclamation) and the U.S. Fish and Wildlife Service (USFWS) with the information necessary to evaluate the potential impacts associated with the proposed project, and the project committed conservation measures for species with expected effects or impacts.

DESCRIPTION OF PROPOSED ACTION

Purpose and Need

The purpose of the proposed action is to enclose approximately 3.5 miles of the open, unlined canals (See Appendix A. Project Exhibits). The need for the proposed action, consistent with Reclamation's salinity program, is to improve the efficiency of the existing system and reduce the amount of salt in the system by reducing water lost to seepage, evapotranspiration, and operational use.

Proposed Action

The proposed piping activities would occur along or adjacent to the existing alignment of both the Antelope and North Laterals about 5 miles east of Manila, Utah. More specifically, these improvements would be contained within Sections 19, 20, 21, 29 and 30, Township 3 North, Range 19 East (Salt Lake Base and Meridian) (see Appendix A. Project Exhibits). For illustrations of typical conditions throughout the project area, please see Appendix B. Photo Inventory. The elevation of the project area ranges from approximately 6,880 to 7,220 feet above sea level.

The Antelope and North Laterals Salinity Control Project would enclose approximately two, 1.5 to 2-mile sections of the existing open gravity-flow canal laterals in the Sheep Creek drainage. The Antelope Lateral runs north from its diversion for about .67 of a mile, along a slope above agricultural fields, to SR-43 where it crosses under the road then turns east and parallels SR-43 for a little less than a mile until it reaches the Pallesen-Slagowski-Pendleton Weir structure where the piping would end. High-density polyethylene (HDPE) DR 41 pipe ranging from 24 to 48 inches in diameter would be used.

The North Lateral runs east-northeast from its diversion for about 1.5 miles along the foot of a low ridge and along the edge of agricultural fields and buildings until it reaches the existing

Newell-Swedland-Olson Pond where the piping would end. HDPE DR 32.5 pipe would be used along the North Lateral. Pipe sizes would range between 12 and 18 inches in diameter.

The project would better manage 13,700 acre-feet of water in the Sheep Creek Irrigation Company system. This project is estimated to reduce the salt loading of the Upper Colorado River Basin by 1,474 tons per year. Any water savings from the proposed project would be diverted back to the river and all water in the SCIC irrigation system will remain in agricultural use. Construction is anticipated to take place over a six-month period beginning in October 2016. Construction activities would occur from October to early May, outside of the typical irrigation season.

Road Crossings

Existing roadway crossings would be maintained during construction. The pipe would either be installed in existing culverts or by an open cut across the pavement or gravel depending on the existing conditions at the two road crossings. One of the crossings would be beneath a County gravel road, and the other a State road (SR 43). No federal highways would be impacted by the proposed action.

Construction Activities

The anticipated construction equipment would include: compactors, excavators, backhoes, graders, and dump trucks for hauling materials. The most prevalent construction noise source would come from equipment powered by internal combustion engines (usually diesel). Noise from equipment used on this project would likely peak at approximately 89 decibels (dBA) when measured from a distance of 15 meters (50 feet). To reduce the impact of construction noise, most construction activities would be confined to weekdays between 7:00 a.m. and 7:00 p.m.

Best Management Practices (BMPs)

Best Management Practices (BMPs) would be in place to minimize direct, short-term construction impacts. Some of these measures include replanting barren locations (post-construction) with native vegetation and limiting noise/human-induced disturbances. BMPs are mandatory and would become part of the project design. They would include, but are not limited to the following:

1. Temporary Erosion and Sediment Control (TESC) structures (e.g. silt fences) would be in place during construction to limit sediment delivery into any adjacent drainage channels.
2. Excavation activities, staging areas, stock piling areas and embankment placement would occur only within staked limits of the project action area.
3. Temporary construction equipment noise would be minimized by regular inspection and replacement of defective mufflers and parts that do not meet the manufacturer's specifications.
4. Fueling of excavation equipment (e.g. excavators, backhoes, etc.) would be completed within the project action area only after ground surface protection is implemented to facilitate spill mitigation. The fueling truck would utilize drip pans and absorbent cloths during fueling activities. Additionally, the Contractor would have emergency spill equipment onsite at all times and would have a Spill Prevention Plan approved and in place prior to any construction activities. Dump

trucks, pickups and other general construction equipment would be fueled offsite at a commercial facility.

5. Any vegetation or land clearing is anticipated to be conducted outside nesting season for migratory birds (April 1 to August 15).
6. All disturbed areas would be reseeded upon project completion with an appropriate seed mix, approved by a Reclamation biologist, which contains species specific to the areas affected.
7. Noxious weed management for invasive weed control, would be implemented within the project footprint and would include washing construction vehicles before entering the project site and restoration of the project area including reseeded with native and agricultural seed mixes.
8. The project action area would be monitored on a regular basis by a designated construction monitor. The monitoring would consist of observing the TESC structures so that sediment does not reach active drainage channels. If any structure fails, it would be replaced immediately. If sediment deposits are observed beyond the control structures following a failure, the sediment would be removed immediately.

PROJECT ACTION AREA

The project action area for the Antelope and North Laterals Salinity Control Project includes the entire 3.5 miles of sections of both lateral canals as well as the work areas, staging areas, the habitat replacement area, and all other areas that may be affected by dust and noise totaling approximately 59 acres (See Appendix A. Project Exhibits). Therefore, the action area would be the same as the project area. The work would be conducted after the water in the canal is no longer flowing for the season. The land use surrounding the laterals is a combination of rural agriculture and open rangeland and not likely to be greatly affected by any temporary construction work.

STATUS OF LISTED SPECIES AND ASSOCIATED HABITAT

Site visits were conducted on May 21, 2015, November 5, 2015 and August 10, 2016, by Trent Toler, Qualified Biologist with J-U-B ENGINEERS, INC., in order to review the existing conditions within the project action area. Site visits were also conducted by Reclamation biologists on August 25, 2015 and August 10, 2016. In order to identify species of concern associated with the proposed project actions, a species list was obtained from the United States Fish and Wildlife Service (USFWS) Information, Planning, and Conservation (IPaC) system. According to the IPaC Official Species Report (See Appendix C. Federal & State Agency Correspondence), seven federally listed species have potential to exist within the project action area. The species list summarized in Table 1 was derived from the habitat conditions and potential species occurrence within the defined project action area. No critical habitat has been identified in the project action area.

Table 1: Summary of Potential TES Species.

Common Name	Scientific Name	Occurrence	Effects
ENDANGERED			
Bonytail chub	<i>Gila elegans</i>	None	No Effect
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	None	No Effect
Humpback chub	<i>Gila cypha</i>	None	No Effect
Razorback sucker	<i>Xyrauchen texanus</i>	None	No Effect
THREATENED			
Canada lynx	<i>Lynx canadensis</i>	None	No Effect
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	None	No Effect
Ute ladies'-tresses	<i>Spiranthes diluvialis</i>	Low	May Affect But Not Likely to Adversely Affect

^a Occurrence = Likelihood of the presence of habitat or known species records for the project action area, where: None = no habitat or known records; Low = some potential habitat adjacent to or within project action area, or known presence records near but not in the project action area; High = habitat and/or known presence records in project action area.

On February 9, 2016, the Utah Division of Wildlife Resources (UDWR) provided a response letter regarding information on ESA species (See Appendix C. Federal & State Agency Correspondence) in the vicinity of the proposed project action area. There are no occurrence records specified by the UDWR relating to the above mentioned federally-listed species within 2 miles of the project action area.

EFFECTS OF THE PROPOSED PROJECT ON LISTED SPECIES AND ASSOCIATED HABITAT

This section documents any direct, indirect, or cumulative effects to the threatened or endangered species and the associated habitat listed above (Table 1) as a result of implementing the proposed action. Any water savings from the proposed project would be diverted back to the river and all water in the SCIC irrigation system will remain in agricultural use.

Endangered Species

Bonytail Chub

The bonytail chub is a federally listed endangered minnow that is originally native to the Colorado River system. The near extinction of the bonytail can be linked back to flow regulation or alteration, habitat loss, and competition and predation by exotic fishes. Bonytail are opportunistic feeders. Their prey includes insects, zooplankton, algae, and higher plant matter. Bonytails spawn in the spring and summer over gravel substrate. Currently, many bonytail are raised in fish hatcheries and released into the wild when they are large enough to survive in their natural environment. Bonytail prefer stream habitat that consists of eddies, pools, and backwaters near swift current in large rivers (UDWR 2016).

Based on the information obtained from the UDWR and USFWS, there are no recent documented occurrences of the bonytail within the vicinity of the project action area and this project would not encroach or affect any viable fish habitat. There would be **no effect** to the bonytail.

Colorado Pikeminnow

The Colorado pikeminnow is a federally listed endangered minnow that is originally native to the Colorado River system. Currently, their range is limited to the Upper Colorado River

system. The near extinction of the Colorado pikeminnow can be linked to flow regulation or alterations (e.g. the installation of dams), habitat loss, and competition and predation by non-native fishes. Colorado pikeminnow are mainly piscivorous, meaning they eat fish. Younger pikeminnow also eat insects and other invertebrates. They spawn in the spring and summer over gravel or smaller cobble substrate situated in riffle habitat. Adult Colorado pikeminnow prefer medium to large rivers. Young pikeminnow prefer slow-moving backwaters. Historical accounts of six-foot long Colorado pikeminnow make this species the largest minnow in North America (UDWR 2016).

Based on information obtained from the UDWR and USFWS, there are no recent documented occurrences of the Colorado pikeminnow within the vicinity of the project action area. In addition, the project area does not contain viable fish habitat; therefore, there would be **no effect** to Colorado pikeminnow.

Humpback Chub

The humpback chub is a federally listed endangered minnow 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 such as dams have changed the turbidity, volume, current speed, and temperature of the water in rivers and have contributed to significant population declines. Documented occurrences of the humpback chub in Utah are now confined to a few whitewater areas in the Colorado, Green, and White Rivers. 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 (UDWR 2016).

Based on information obtained from the UDWR and USFWS, there are no recent documented occurrences of the humpback chub within the vicinity of the project action area. The project area is not located within the areas that this species inhabits and there is no suitable habitat present. Therefore, there would be **no effect** to the humpback chub.

Razorback Sucker

The razorback sucker is a federally listed endangered sucker fish that is originally native to the Colorado 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. Razorback suckers mainly eat algae, zooplankton, and other aquatic invertebrates. They spawn between February and June. Adult razorback suckers prefer slow backwater habitats. The largest current concentration of razorback suckers can be found in Lake Mohave (an impounded water-body), located along the Arizona - Nevada border (UDWR 2016).

Based on information obtained from the UDWR and USFWS, there are no recent documented occurrences of the razorback sucker within the vicinity of the project action area. This project would not impact any viable fish habitat. Razorback suckers are native to, and found exclusively within the Colorado River system and no suitable habitat is found within the project area. Therefore, there would be **no effect** to the razorback sucker.

Threatened Species

Canada Lynx

The Canada lynx (*Lynx canadensis*) is normally found in dense forested areas with an abundance of windfalls and brushy thickets. Lynx require heavy cover for concealment when stalking prey. In terms of their prey base, lynx depend on snowshoe hares and red squirrels. In

addition, lynx are most likely to persist in areas that receive deep snow, for which the lynx is highly adapted (USFWS 2005). In the western U.S., lynx occurrences generally are found only above 4,000 feet in elevation (McKelvey et al. 2000).

Based on our surveys and information obtained from the UDWR, there are no recent documented occurrences of the Canada lynx near the project action area. Through field reconnaissance, we documented that the area is a highly disturbed residential/agricultural environment, lacking multi-storied conifer cover and the prey base needed to support Canada lynx. Based on these factors, the proposed project would have **no effect** on the Canada lynx.

Yellow-billed Cuckoo (YBC)

The yellow-billed cuckoo is a federally listed threatened species. 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). Yellow-billed cuckoos arrive in Utah 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. Yellow-billed cuckoos in the West are considered a riparian obligate and are usually found in large forested tracts of native cottonwood/willow habitats with dense sub-canopies (below 33 feet). Moist river bottoms and deltas with high humidity and a lack of invasive tree species are also key habitat elements (USFWS 2013). More specifically, the Proposed Rule for Critical habitat in the Federal Register (Vol. 79 No. 158 Pp. 48548-48652) describes habitat and space needs for normal life history behavior (non-critical habitat). Therein (Pp. 48551), it describes that YBC require “large tracts of willow-cottonwood or mesquite (*Prosopis* sp.) forest or woodland for nesting season habitat. Western YBCs rarely nest at sites less than 50 acres in size and sites less than 37 acres are considered unsuitable habitat.” The project area, taking into consideration the entire length and width of the canal ROW, contains approximately 3.1 acres of habitat close to residential and agricultural areas along the Weber River.

Based on information obtained from the UDWR and USFWS, there are no documented occurrences of YBC within 2 miles of the project action area. The project area contains scattered cottonwood trees that parallel parts of both of the laterals through the farmland areas, but this does not meet the requirements of this species as outlined by the Federal Register. Therefore, based on the lack of suitable habitat in the project area and no known occurrences within 2 miles, implementation of the proposed action would have **no effect** on the yellow-billed cuckoo.

Ute Ladies'-tresses

Ute ladies'-tresses (ULT) is a member of the orchid family. It was first described in 1984 and was federally listed as threatened by the USFWS under the ESA in January, 1992 (USFWS 1995). Populations have been found in Utah, Colorado, Wyoming, Montana, Nevada, Idaho, and Washington. The elevation ranges in which populations have been found vary from 750 to 7,000 feet, with most populations above 4,000 feet. It is found in wetlands and riparian areas, including spring and seep habitats, mesic meadows, river meanders, abandoned oxbows, and floodplains. They require open habitats, and populations decline if trees and shrubs invade the habitat. They are not tolerant of permanent, stagnant water, and do not compete well with aggressive species such as reed canary grass (*Phalaris arundinacea*). The survey time for the species, as identified by the USFWS (1995), is mid-August through mid-September. ULT surveys were conducted for the entire Project Action Area on August 25, 2015 and August 10, 2016 by qualified Reclamation biologists (Appendix A. Project Exhibits). No ULTs were found during either of these surveys.

Additional information obtained from the UDWR and USFWS, showed there were no documented occurrences of ULT near the project action area. The project area does contain canal edge habitats, but most of these edges are steep and incised, without a sloping wetland fringe. The Antelope Lateral has very steep and eroded banks in many sections, but in areas where the banks are not as steep, dense willows and other vegetation have grown. This area is periodically cut back by the irrigation company as a part of regular maintenance. In a few scattered locations along the North Lateral, there are a few vegetated sloping banks and small gravel bars that could be potential habitat. However, both laterals are emptied of water for half of the year, including part of the spring growing season, and without alternative hydrological support the canal banks are unlikely to maintain proper suitable habitat conditions throughout the year. There are also no known hydrologically connected source populations upstream of the project action area. Based on the current setting of the project footprint, the lack of hydrologically connected upstream occurrences, and the limited potentially suitable habitat, the proposed action **may affect but is not likely to adversely affect** the ULT.

IMPACT AVOIDANCE AND MINIMIZATION MEASURES

None of the listed species have been recorded in the area; additionally, no critical habitat exists in the area and only potentially suitable habitat exists for ULT. Therefore, no additional impact avoidance and minimization measures beyond the BMPs mentioned above would be necessary.

CONCLUSIONS AND DETERMINATION OF EFFECT

We determined that the anticipated construction activities to enclose two sections of the Antelope and North Laterals through the Sheep Creek drainage will have no effect on the following species: bonytail chub, Colorado pikeminnow, humpback chub, razorback sucker, Canada lynx, and yellow-billed cuckoo. However, the project may affect but is not likely to adversely affect the Ute ladies'-tresses. We ask concurrence of our findings of effect for these listed species.

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1995. Ute ladies'-tresses (*Spiranthes diluvialis*) Draft Recovery Plan. Denver, Colorado.
2005. Recovery Outline for the Contiguous United States Distinct Population Segment of the Canada Lynx (*Lynx canadensis*). Montana Field Office. Approved September 14, 2005.
2013. Endangered and Threatened Wildlife and Plants; Proposed Threatened Status for the Western Distinct Population Segment of the Yellow-billed Cuckoo (*Coccyzus americanus*); Proposed Rule. 50 CFR Part 17 (October 3, 2013), pp. 61622-61666.

Appendix A.
Project Exhibits



Manila

Anetelope/North Laterals Alignment

- Pipe Alignment
- Alternate Pipe Alignment



JUB

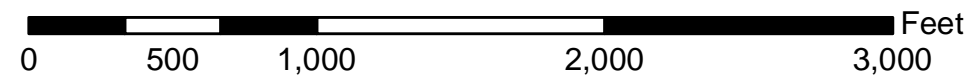
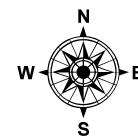
THE LANDSON GROUP GATEWAY MAPPING, INC.
OTHER JUB COMPANIES



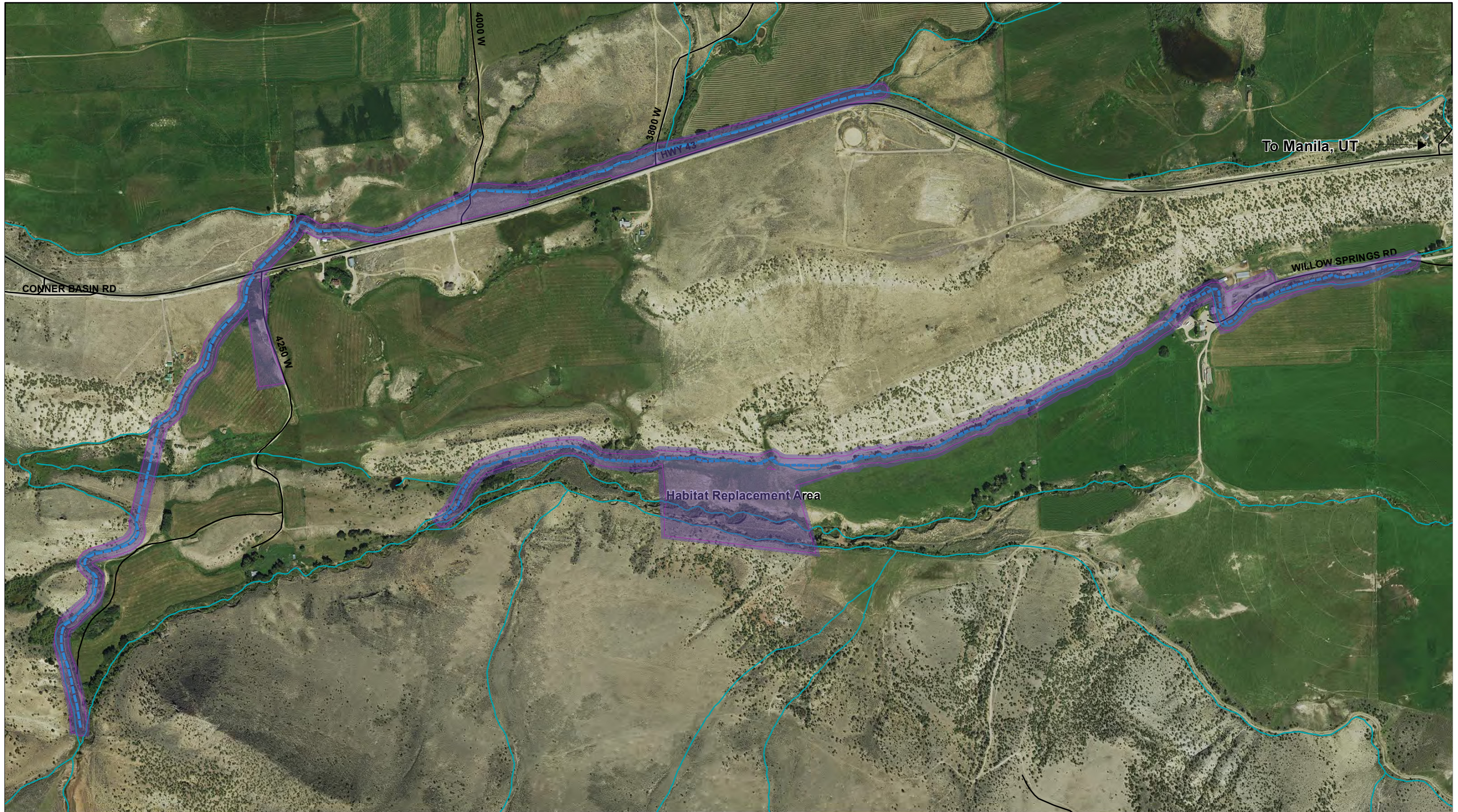
Legend

- Area of Potential Effect
- Antelope Lateral
- North Lateral

1 inch = 667 feet



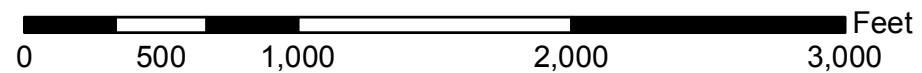
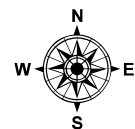
**Antelope & North Lateral Piping Project
Project Action Area**



Legend

- Area of Potential Effect
- Antelope Lateral
- North Lateral

1 inch = 667 feet



Antelope & North Lateral Piping Project
 Antelope & North Lateral Piping Project
 ULI Survey Area Exhibit
 Project Action Area

Appendix B.
Photo Inventory

PHOTO INVENTORY

Date of Photographs: May 21, 2016 unless otherwise noted.



Photo 1. Start of Antelope Lateral, looking north and downstream from diversion structure.



Photo 2. Typical section of the Antelope Lateral where regular maintenance has occurred, looking west along a section that will be abandoned and filled in.



Photo 3. A section of the Antelope Lateral that is north of and parallels SR 43 where regular maintenance has occurred, looking west.



Photo 4. Close to the east terminus of the Antelope Lateral piping, looking east.



Photo 5. Looking west towards the west terminus of the North Lateral, with the creek diversion structure in the background.



Photo 6. Typical section of the North Lateral through a mixed shrub area, looking east.



Photo 7. Disturbed section of the North Lateral upstream of the Pallensen Pond in the background, looking east.



Photo 8. Typical section of the North Lateral through the farming area, looking southwest.



Photo 9. Section of the North Lateral in a large, eroded gully shortly before the east terminus, looking west.



Photo 10. Area between the Antelope Lateral where the new pipeline would cross to cut off a sharp bend in the existing canal, looking north. (Date of photo: November 5, 2015)

Appendix C.

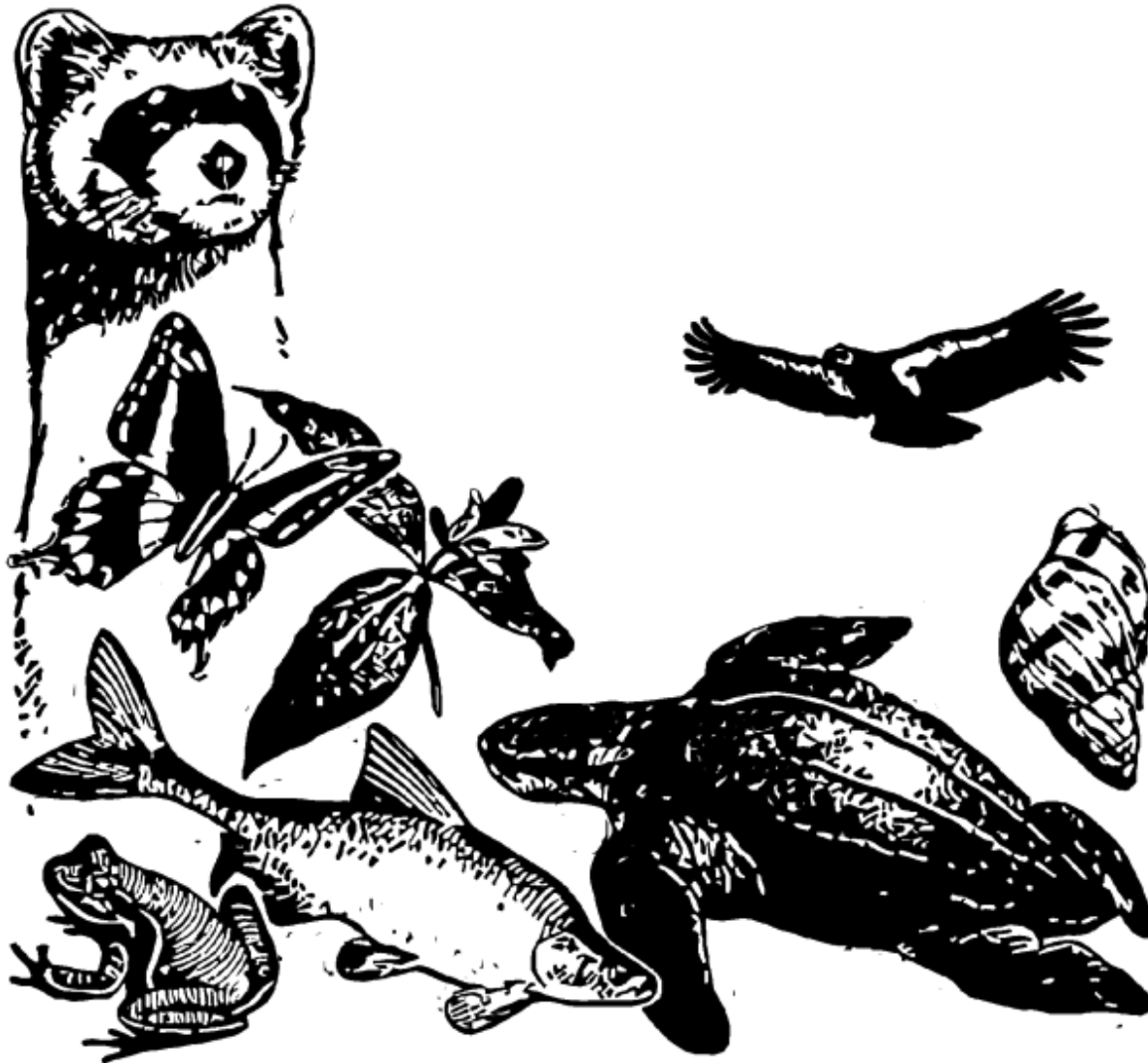
Federal and State Agency Correspondence

Sheep Creek Irrigation Company, Antelope and North Laterals Piping

IPaC Trust Resource Report

Generated November 09, 2015 09:28 AM MST

This report is for informational purposes only and should not be used for planning or analyzing project-level impacts. For projects that require FWS review, please return to this project on the IPaC website and request an official species list from the Regulatory Documents page.



US Fish & Wildlife Service

IPaC Trust Resource Report



Project Description

NAME

Sheep Creek Irrigation Company,
Antelope and North Laterals Piping

PROJECT CODE

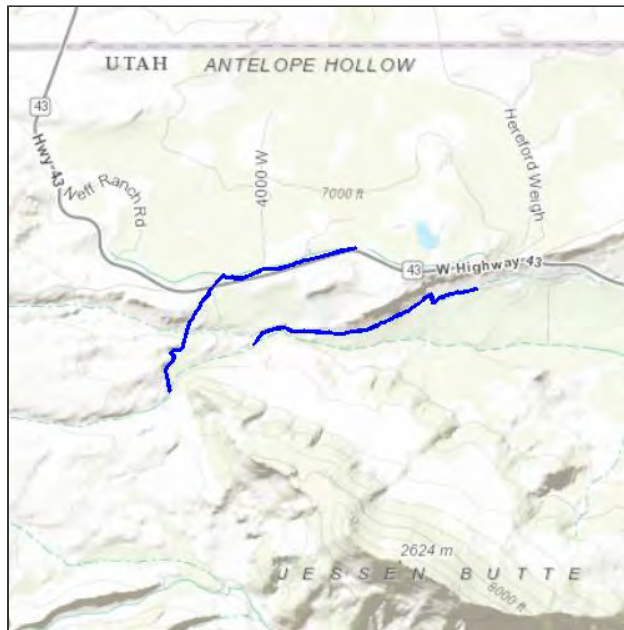
SMDFX-AIF7N-FKXCY-VZLRM-RVS6A4

LOCATION

Daggett County, Utah

DESCRIPTION

Piping of sections of the Antelope and
North Lateral Canals



U.S. Fish & Wildlife Contact Information

Species in this report are managed by:

Utah Ecological Services Field Office

2369 West Orton Circle, Suite 50

West Valley City, UT 84119-7603

(801) 975-3330

Endangered Species

Proposed, candidate, threatened, and endangered species that are managed by the [Endangered Species Program](#) and should be considered as part of an effect analysis for this project.

This unofficial species list is for informational purposes only and does not fulfill the requirements under [Section 7](#) of the Endangered Species Act, which states that Federal agencies are required to "request of the Secretary of Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action." This requirement applies to projects which are conducted, permitted or licensed by any Federal agency.

A letter from the local office and a species list which fulfills this requirement can be obtained by returning to this project on the IPaC website and requesting an official species list on the Regulatory Documents page.

Birds

Yellow-billed Cuckoo *Coccyzus americanus* Threatened

CRITICAL HABITAT

There is **proposed** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06R>

Fishes

Bonytail Chub *Gila elegans* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E020>

Colorado Pikeminnow (=squawfish) *Ptychocheilus lucius* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E006>

Humpback Chub *Gila cypha* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E000>

Razorback Sucker *Xyrauchen texanus* Endangered

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=E054>

Flowering Plants

Ute Ladies'-tresses *Spiranthes diluvialis* Threatened

CRITICAL HABITAT

No critical habitat has been designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=Q2WA>

Mammals

Canada Lynx *Lynx canadensis* Threatened

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

<https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?sPCODE=A073>

Critical Habitats

Potential effects to critical habitat(s) within the project area must be analyzed along with the endangered species themselves.

There is no critical habitat within this project area

Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

You are responsible for complying with the appropriate regulations for the protection of birds as part of this project. This involves analyzing potential impacts and implementing appropriate conservation measures for all project activities.

<p>American Bittern <i>Botaurus lentiginosus</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F3</p>	Bird of conservation concern
<p>Bald Eagle <i>Haliaeetus leucocephalus</i> Season: Wintering https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B008</p>	Bird of conservation concern
<p>Black Rosy-finch <i>Leucosticte atrata</i> Year-round</p>	Bird of conservation concern
<p>Brewer's Sparrow <i>Spizella breweri</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HA</p>	Bird of conservation concern
<p>Burrowing Owl <i>Athene cunicularia</i> Season: Breeding</p>	Bird of conservation concern
<p>Calliope Hummingbird <i>Stellula calliope</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0K3</p>	Bird of conservation concern
<p>Cassin's Finch <i>Carpodacus cassinii</i> Year-round</p>	Bird of conservation concern
<p>Ferruginous Hawk <i>Buteo regalis</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06X</p>	Bird of conservation concern
<p>Fox Sparrow <i>Passerella iliaca</i> Season: Breeding</p>	Bird of conservation concern
<p>Golden Eagle <i>Aquila chrysaetos</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0DV</p>	Bird of conservation concern
<p>Greater Sage-grouse <i>Centrocercus urophasianus</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06W</p>	Bird of conservation concern
<p>Juniper Titmouse <i>Baeolophus ridgwayi</i> Year-round</p>	Bird of conservation concern

Lewis's Woodpecker <i>Melanerpes lewis</i> Season: Breeding	Bird of conservation concern
Loggerhead Shrike <i>Lanius ludovicianus</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FY	Bird of conservation concern
Long-billed Curlew <i>Numenius americanus</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06S	Bird of conservation concern
Mountain Plover <i>Charadrius montanus</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B078	Bird of conservation concern
Olive-sided Flycatcher <i>Contopus cooperi</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0AN	Bird of conservation concern
Pinyon Jay <i>Gymnorhinus cyanocephalus</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0I0	Bird of conservation concern
Prairie Falcon <i>Falco mexicanus</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0ER	Bird of conservation concern
Sage Thrasher <i>Oreoscoptes montanus</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0ID	Bird of conservation concern
Short-eared Owl <i>Asio flammeus</i> Year-round https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0HD	Bird of conservation concern
Swainson's Hawk <i>Buteo swainsoni</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070	Bird of conservation concern
Williamson's Sapsucker <i>Sphyrapicus thyroideus</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0FX	Bird of conservation concern
Willow Flycatcher <i>Empidonax traillii</i> Season: Breeding https://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0F6	Bird of conservation concern

Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. If your project overlaps or otherwise impacts a Refuge, please contact that Refuge to discuss the authorization process.

There are no refuges within this project area

Wetlands

Impacts to [NWI wetlands](#) and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

Project proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate [U.S. Army Corps of Engineers District](#).

DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Freshwater Emergent Wetland

PEMA

10.7 acres



GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

State of Utah

DEPARTMENT OF NATURAL RESOURCES

MICHAEL R. STYLER
Executive Director

Division of Wildlife Resources

GREGORY SHEEHAN
Division Director

June 19, 2015

Trent Toler
J-U-B Engineers
2875 South Decker Lake Drive, Suite 575
Salt Lake City, Utah 84119

Subject: Species of Concern Near the Antelope Lateral Head Screening and Piping Project

Dear Trent Toler:

I am writing in response to your email dated June 16, 2015 regarding information on species of special concern proximal to the proposed Antelope Lateral Head Screening and Piping Project located in Section 30 of Township 3 North, Range 19 East, SLB&M in Daggett County, Utah.

The Utah Division of Wildlife Resources (UDWR) does not have records of occurrence for any threatened, endangered, or sensitive species within the project area noted above. However, within a two-mile radius there are recent records of occurrence for white-tailed prairie-dog, a species included on the *Utah Sensitive Species List*.

The information provided in this letter is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, and because data requests are evaluated for the specific type of proposed action, any given response is only appropriate for its respective request.

In addition to the information you requested, other significant wildlife values might also be present on the designated site. Please contact UDWR's northeastern regional habitat manager, Miles Hanberg, at (435) 247-1557 if you have any questions.

Please contact our office at (801) 538-4759 if you require further assistance.

Sincerely,

Sarah Lindsey
Information Manager
Utah Natural Heritage Program

cc: Miles Hanberg





United States Department of the Interior

BUREAU OF RECLAMATION
Upper Colorado Region
Provo Area Office
302 East 1860 South
Provo, UT 84606-7317

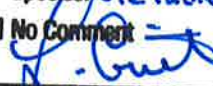


IN REPLY REFER TO:

PRO-632
ENV-6.00

OCT 13 2016

MEMORANDUM

<input type="checkbox"/>	Concur No Effect Species:
<input checked="" type="checkbox"/>	Concur Not Likely to Adversely Affect Species: Ute ladies'-tresses
<input type="checkbox"/>	No Comment
 U.S. FWS Utah Field Supervisor	
Date: 12/6/16	

To: Mr. Larry Crist, Field Supervisor, U.S. Fish and Wildlife Service, Utah Ecological Services Field Office, 2369 West Orton Circle, Suite 50, West Valley City, UT 84119-7603

From: Wayne G. Pullan
Area Manager

Subject: Informal Consultation on Ute ladies'-tresses for the Proposed Antelope and North Laterals Salinity Control Project – Daggett County, Utah

We are requesting concurrence from the U.S. Fish and Wildlife Service (USFWS) on our determination of effect for the proposed Antelope and North Laterals Salinity Control Project. The proposed project is located in Manila (T. 3 N., R. 19 E., sec. 30), Daggett County, Utah. Funding for this project would be provided by the U.S. Bureau of Reclamation. The project would involve piping approximately 3.4 miles of unlined open canals along the Antelope and North Laterals in the Sheep Creek Irrigation Company's (SCIC) irrigation system.

According to your Section 7 Consultation website (November 9, 2015), the listed species that may be present in the Project Action Area are the endangered Bonytail chub (*Gila elegans*), Colorado pikeminnow (*Ptychocheilus lucius*), Humpback chub (*Gila cypha*), Razorback sucker (*Xyrauchen texanus*) and the threatened Canada Lynx (*Lynx canadensis*), Yellow-billed cuckoo (*Coccyzus americanus*), and Ute ladies'-tresses (*Spiranthes diluvialis*) (ULT). The enclosed Biological Assessment (BA), prepared by J-U-B Engineers and accepted by Reclamation, analyzes presence of and possible impacts to listed species that may occur within the Project Action Area. The BA also provides rationale for our determination of effect for each of the listed species. Based on our evaluation, Reclamation concludes that ULT is the only listed species that may be affected by the proposed project.

In order to ascertain whether ULT would be affected by the proposed project, field surveys were performed to quantify and qualify ULT numbers and habitat suitability. The survey time for the species, as identified by the USFWS in the 1995 Draft Recovery Plan, is mid-August through mid-September. ULT surveys were conducted on August 25, 2015 and August 10, 2016, by qualified Reclamation biologists using USFWS's 2011 Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants. No ULTs were located during either of these surveys, even though

marginally suitable habitat was observed. Also important to note is the lack of hydrologically connected ULT source populations to the Project Action Area.

Due to the marginally suitable habitat at the site, inability to locate ULT within the Project Action Area, and the fact that there is no hydrologic connection to other known populations of ULT, we determine that the proposed project “may affect, but is not likely to adversely affect” ULT. If you have questions about the proposed project or our determination please contact Mr. Peter Crookston via email at pcrookston@usbr.gov or by telephone at 801-379-1152.

Attachment