DRAFT ENVIRONMENTAL ASSESSMENT

Bostwick Park Water Conservation District's Siphon Lateral & Forked Tongue/Holman Ditch Company's Salinity Control Projects Mountrose and Delta Counties, CO

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CHAPTER 1- PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 Introduction

This Environmental Assessment (EA) has been prepared for the U.S. Bureau of Reclamation (Reclamation), the Bostwick Park Water Conservancy District (BPWCD), and the Forked Tongue/Holman Ditch Company (FTHDC) to assess the potential effects of the proposed BPWCD's Siphon Lateral Salinity Control Project located in Montrose County, Colorado, and the FTHDC's Forked Tongue/Holman Ditch Salinity Control Project located in Delta County, Colorado (Figure 1.1 – Project Vicinity Map). This document evaluates two Federal actions: 1) the use of Federal funds for the proposed piping of the Siphon Lateral and associated improvements including piping a portion of the East Lateral of the federal Bostwick Park Project; and 2) the use of Federal funds for the proposed piping of the private Forked Tongue/Holman Ditch and associated irrigation system improvements.

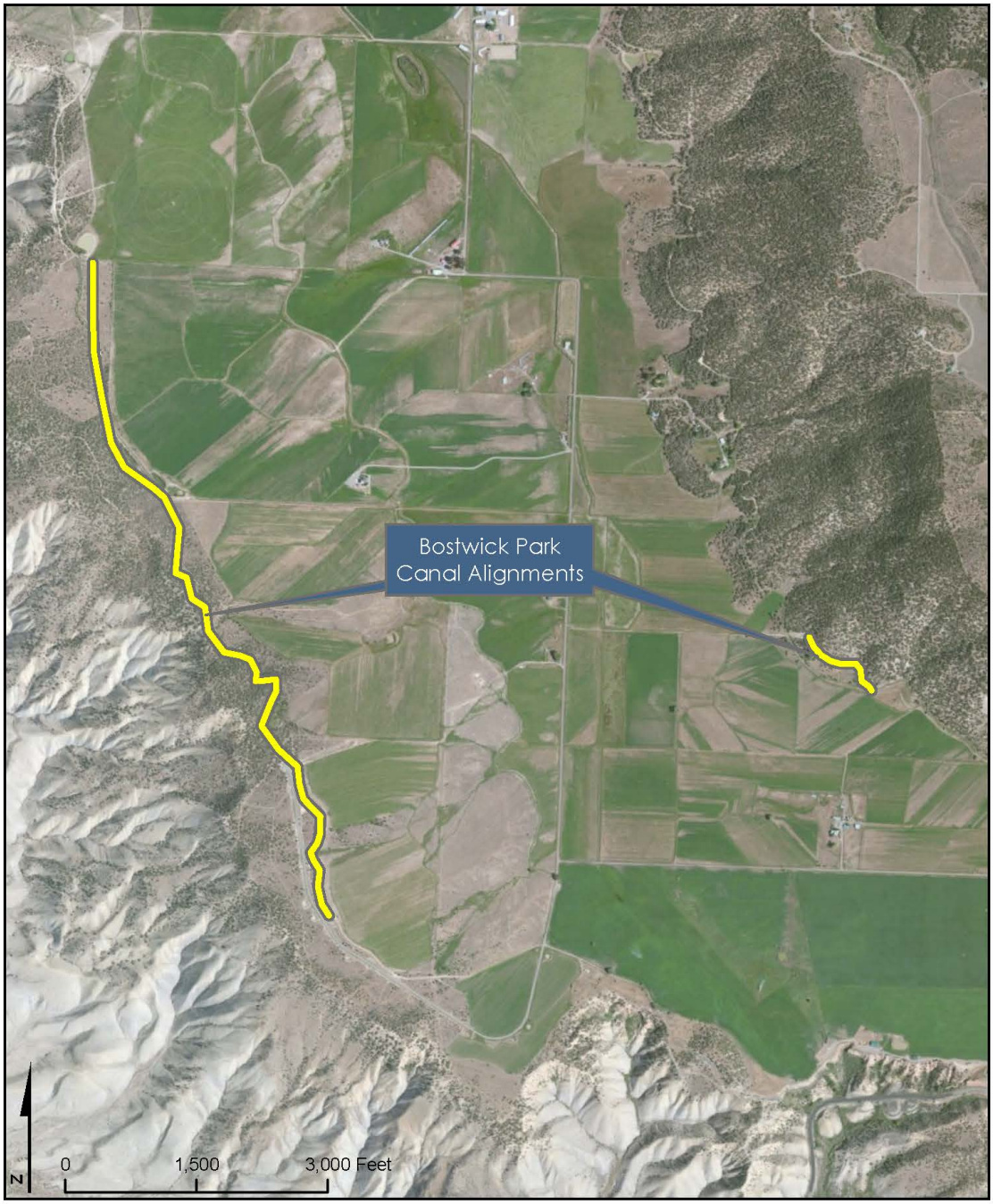
This EA has been prepared as required by the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ), and the U.S. Department of the Interior (Interior) regulations implementing NEPA. This EA evaluates two separate and complete Salinity Control Projects. The potential resource impacts from each of the proposed projects were evaluated separately. The findings of these evaluations are presented in detail in Chapter 3. Reclamation will evaluate each action individually and may choose to issue separate decision documents for the two projects. If potentially significant impacts are identified for a project, an Environmental Impact Statement (EIS) would be prepared. If no significant impacts are identified, a Finding of No Significant impact (FONSI) would be issued by Reclamation.

1.2 Proposed Action

Bostwick Park Siphon Lateral

The proposed action would pipe approximately 1.76 miles of the existing earthen Siphon Lateral and approximately 0.2 miles of the East Lateral with high-density polyethylene (HDPE) pipe (Figure 1.2 Bostwick Park Project Location Map). The proposed pipeline would primarily follow the existing canal right-of-way, except in minor sections where the proposed Siphon Lateral alignment would deviate from the existing alignment to increase the efficiency of the pipeline. Screens would be provided to remove debris at the head of the pipeline. This action may also include minor improvements to the existing access road to move construction vehicles and equipment over the siphon. Salinity improvements do not include new storage facilities or the irrigation of new lands. Water will continue to be stored in Silver Jack Reservoir within the normal operating ranges with releases made to meet downstream irrigation demands, as well as other authorized project purposes.

Figure 1.1 Project Vicinity Map



Legend

Canals to be Piped

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Figure 1.2 Bostwick Park Project Location Map

Forked Tongue/Holman Ditch

The proposed project would pipe approximately 1.89 miles of the open unlined earthen Forked Tongue/Holman Ditch (Figure 1.3 Forked Tongue Project Location Map). The pipeline would begin at the diversion point and continue along the top of the fields to the end of the existing line. A little more than half of the distance of the proposed alignment would be along a new alignment. The new alignment would shorten distances between turnouts and increase the efficiency of the line. The remaining alignment would follow the existing ditch. A new flume and meters would be installed to help monitor flows. Three drains would be installed along the alignment to assist in flushing sediment and to provide a means for draining the system, if necessary. The drains would only be used if required for maintenance of the canal and would not provide irrigation water to users. The salinity improvements would not provide storage and would not irrigate new lands.

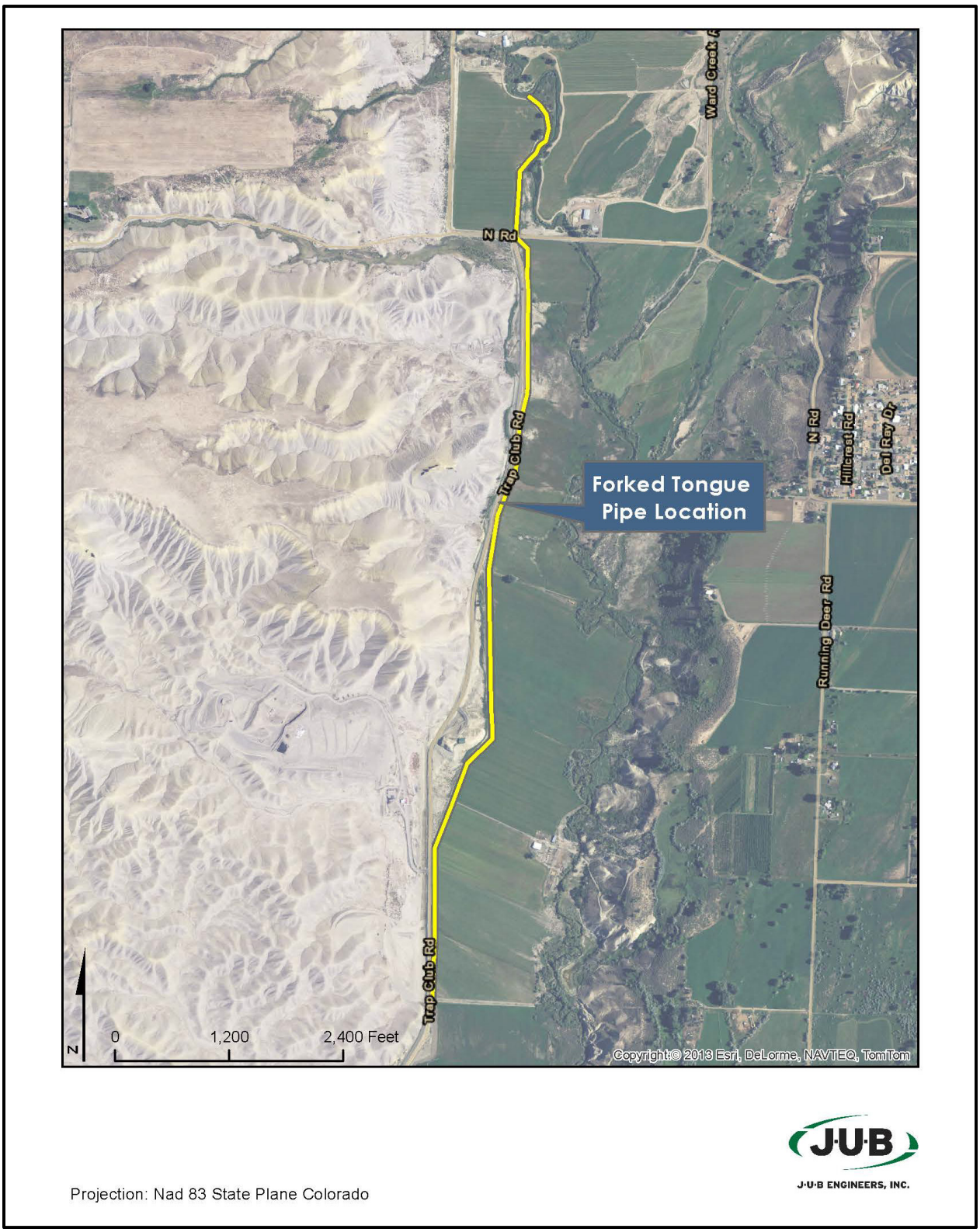


Figure 1.3 Forked Tongue Project Location Map

1.3 Purpose and Need

The purpose of both proposed projects is to replace existing unlined earthen canal laterals with pipelines to prevent seepage and reduce the salinity contributions to the Gunnison and Colorado Rivers. The proposed pipelines would increase the efficiency of the existing irrigation systems, improve on-farm deliveries and conserve water that is currently lost through the open laterals. The proposed project improvements are needed to reduce maintenance of the canals, lower the salinity contributions to the Colorado River system consistent with the purposes of the Colorado River Basin Salinity Control Program, and reduce selenium in adjacent waterways. The proposed Bostwick Park Siphon Lateral Project and the proposed Forked Tongue/Holman Ditch Project would reduce the annual salt loading of the Colorado River Basin by an estimated 413 tons and 412 tons, respectively.

The proposed projects would also provide pressure irrigation to users along both project alignments. It is anticipated that many landowners would convert from the existing flood irrigation practices to sprinklers and would implement other on-farm improvements. The anticipated on-farm improvements would not be funded by the proposed projects and therefore, are not evaluated in this EA.

1.4 Background Information

1.4.1 Colorado River Basin Salinity Control Program

The Colorado River and its tributaries provide municipal and industrial water for approximately 32 million people in the United States and the Republic of Mexico combined. Irrigation waters from the Colorado River serve 4 million acres of land in the United States and 500,000 acres of agricultural land in Mexico. High salinity levels threaten the productivity of agricultural crops and corrode municipal and residential plumbing.

Since 1980, it is estimated that approximately 8.7 million tons of salt flow annually into the Colorado River. According to Reclamation's "Water Quality Standards for Salinity, Colorado River System," by the year 2025, 1.8 million tons of salt will need to be diverted from the Colorado River annually in order to meet the water quality standards in the Lower Colorado River Basin (Reclamation 2005). About 50 percent of the salinity in the Colorado River System is due to natural sources including runoff, saline springs, and the erosion of saline geologic formations. Non-natural causes of salinity loading include irrigation activities, reservoir evaporation, and municipal and industrial practices. Irrigated agriculture is the largest user of water in the Colorado River Basin and a major contributor to the salinity of the system. Irrigation increases salinity by depleting the amount of water flowing to the Colorado River and by dissolving salts found in underlying saline soils and geologic formations, usually marine (Mancos) shale. Deep percolation of irrigation water mobilizes the salts found naturally in the soils, especially if the lands are over-irrigated which often occurs with flood irrigation practices.

In June 1974, Congress enacted the Colorado River Basin Salinity Control Act, which directed the Secretary of the Interior to proceed to enhance and protect the quality of water available in

the Colorado River for use in the United States and Mexico. The Colorado River Basin Salinity Control Program was developed to provide cost-effective means to reduce the salinity contributions to the Colorado River. The implementation of Colorado River Basin Salinity Control Program activities has reduced the salinity contributions to the Colorado River Basin by an estimated 772,627 tons of salt per year. These reductions in salinity are estimated to save approximately $88 million dollars in salinity damages (Reclamation 2005).

The proposed projects evaluated in this EA are both funded under the Basin States Program. The Basin States Program is one of two funding mechanisms that Reclamation uses to allocate Salinity Control Program funds. The other funding program is the Colorado River Basinwide Program. The Basin States Program funds projects that improve irrigation practices and reduce salinity loading of the Colorado River Basin but are too small to compete for the Basinwide Program's cost-competitive process. As a Basin States funded project, all contracts and funding for the proposed projects will pass through the State of Colorado.

1.4.2 Bostwick Park Water Conservancy District

Congress authorized Reclamation to construct the Bostwick Park Project in 1964 for the general purpose of supplying supplemental irrigation water to the Bostwick Park area. Reclamation turned over the project's irrigation facilities for operation and maintenance on January 1, 1976 to the BPWCD. Located in the town of Montrose, the Bostwick Park Project consists of the Silver Jack Dam and the BPWCD irrigation system facilities (Figure 1.4 Bostwick Park Irrigation System Map). Bostwick Park's service area is located in the Bostwick Park and Shinn Park areas near Montrose. The project provides irrigation water to approximately 5,600 acres of land. Presently, the irrigation in the project area is generally described as flood irrigation. Cattle and sheep ranching are the primary industries in the area. The principal agricultural crops include alfalfa, pasture grasses, and small feed grains.

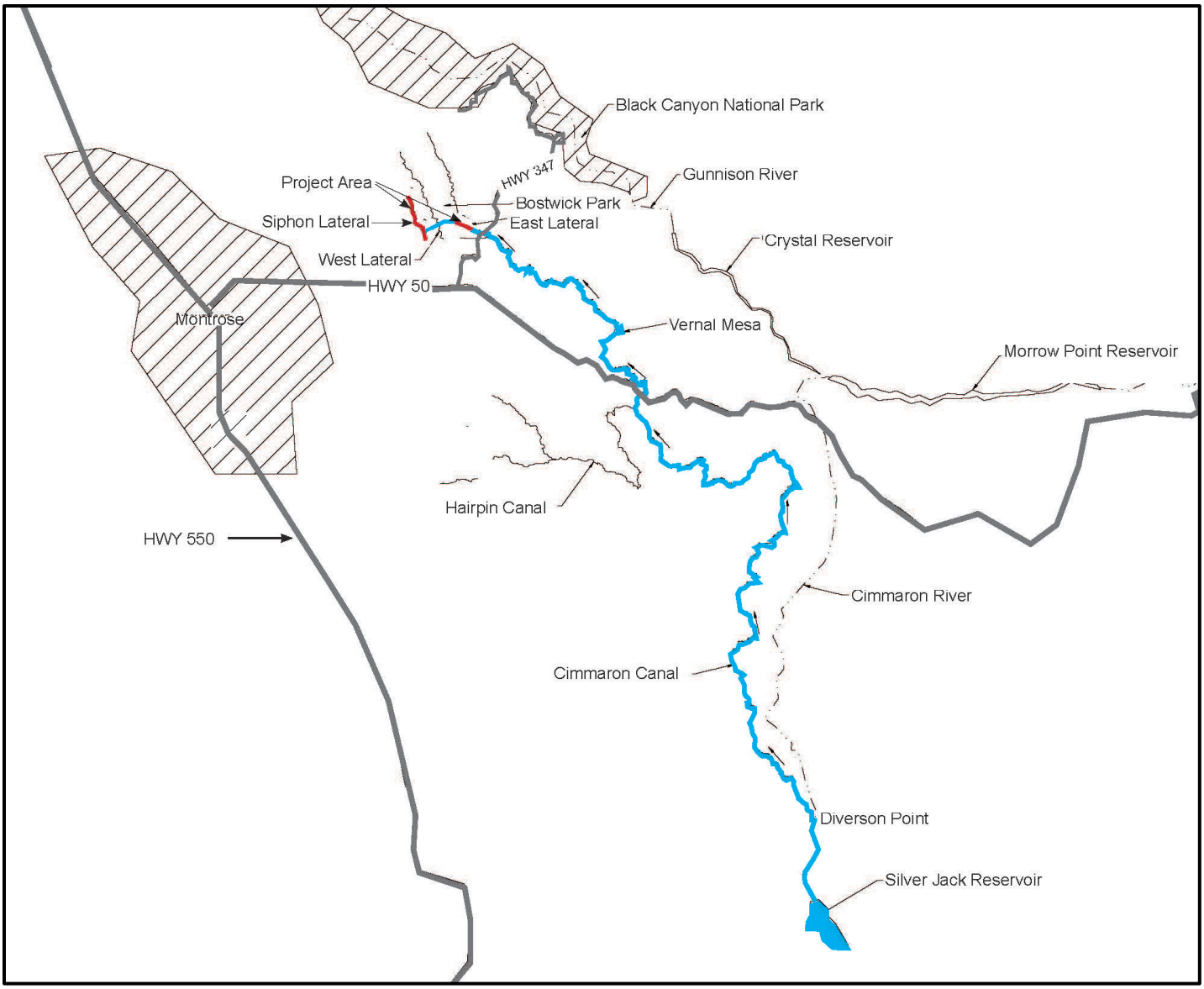


Figure 1.4 Bostwick Park Irrigation System Map

1.4.3 Forked Tongue/Holman Ditch Company

The Forked Tongue Ditch was originally built in 1886 to irrigate the lands of three property owners. The ditch was enlarged numerous times over the coming years, including the addition of the Holman Ditch in 1912. The FTHDC was established in April of 2011 with four shareholders. This small irrigation facility is located near the town of Eckert in Delta County, Colorado. The FTHDC irrigation facilities consist of one main canal, the Forked Tongue/Holman Ditch. There are no water storage facilities near the project area. The Forked Tongue/Holman Ditch is fed by Tongue Creek, a tributary of the Gunnison River (Figure 1.5 Forked Tongue Irrigation System Map). The Forked Tongue/Holman Ditch provides irrigation waters for approximately 170 acres of land. Most of the agricultural fields in the vicinity of the project area are flood irrigated.

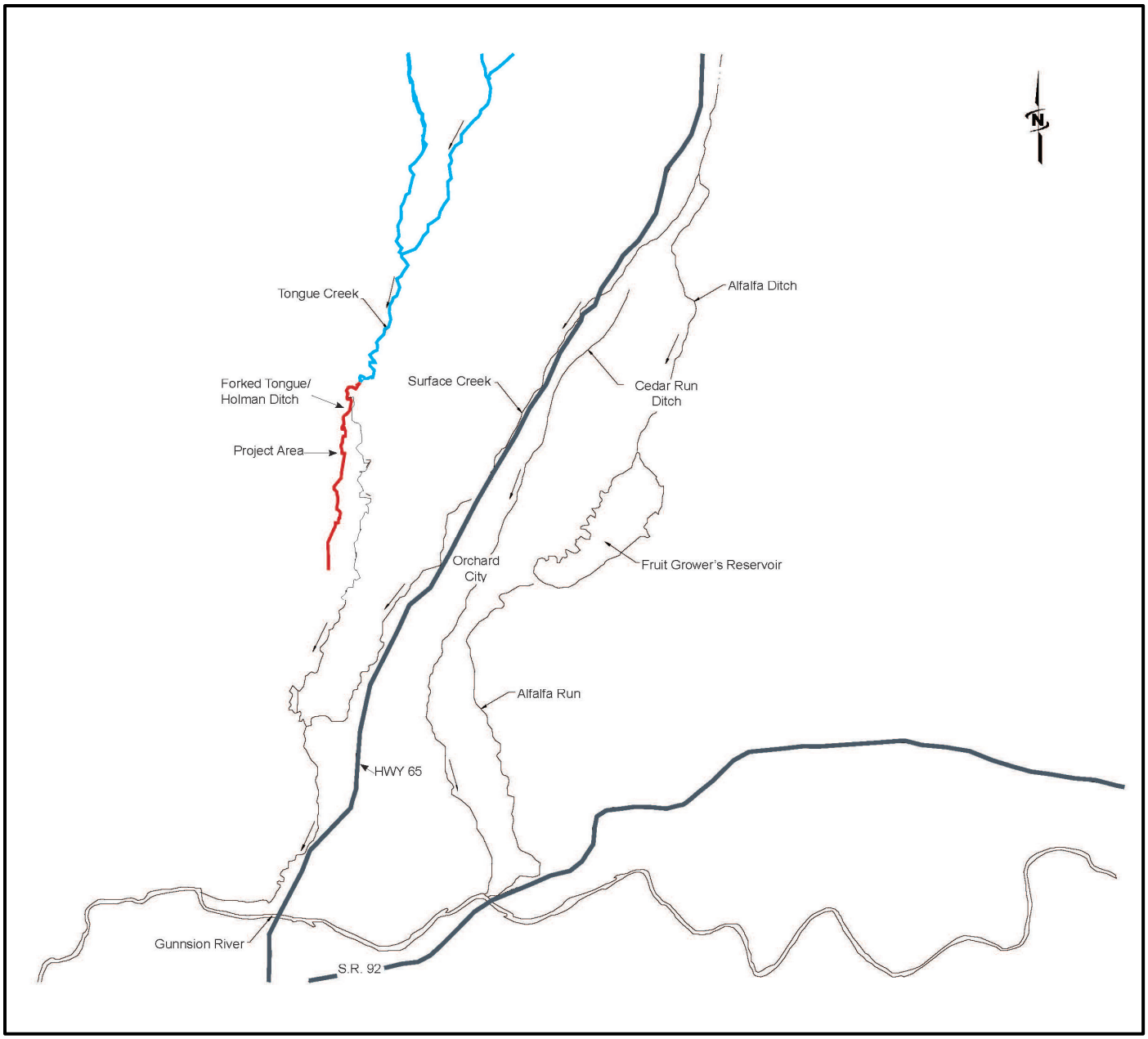


Figure 1.5 Forked Tongue Irrigation System Map

1.5 Location and Environmental Setting

Bostwick Park Siphon Lateral Project

The proposed project is located near Montrose, Colorado in the Gunnison River Basin, specifically in Sections 9, 10, 14, and 15, Township 49 North, Range 8 West, New Mexico Meridian and is part of the federal Bostwick Park Project. Silver Jack Dam and Reservoir is located on Cimarron Creek, a tributary of the Gunnison River, and provides the water storage for the BPWCD. The Silver Jack Reservoir is located on Cimarron Creek approximately 20 miles above its confluence with the Gunnison River. The reservoir has a total capacity of 13,520 acre-feet, including 12,820 acre-feet of active capacity and 700 acre-feet of inactive capacity, including dead storage. Silver Jack Reservoir is inaccessible during the winter months due to its high elevation (8,926 feet above sea level). During these months, the outlet valve is set to release at a rate of 17 cubic feet per second (cfs), which is the approximate rate of inflow during the mid-winter months. This continuous release maintains a minimum stream flow on the Cimarron and limits the accumulation of storage during the winter. During the summer months, Silver Jack is operated such that a minimum stream flow of 25 cfs below the head gate of the Cimarron Canal is maintained, if possible. This water is conveyed 23 miles to the project area. Most of the water is conveyed to the end of the canal at Cerro Summit and then delivered to the Hairpin and Vernal Mesa Ditches. The Bostwick Lateral diverts water from the Vernal Mesa Ditch and conveys it across Bostwick Park through an 18-inch siphon (the Siphon Lateral) to lands above the West Vernal Mesa Lateral. The Siphon Lateral is located on private land northeast of the town of Montrose, Colorado, and just west of Black Canyon National Park. Elevations along the proposed alignment range from 7,082 to 7,125 feet above sea level. The terrain is gently rolling and rises steeply on the western side to the rim above the adobe hills. The San Juan Mountains are south of the project location, with the Uncompahgre Plateau on the west, and the Grand Mesa to the north.

Forked Tongue/Holman Ditch Company

The Forked Tongue Ditch is a private irrigation ditch that is located on private land just west of the town of Eckert in Delta County, Colorado. Eckert is a small community located about 10 miles northeast of Delta. The proposed project area crosses through Sections 10 and 15, Township 14 South, Range 95 West, of the 6th Prime Meridian. Elevations along the ditch range from 5,202 to 5,320 feet above sea level. From its diversion point on Tongue Creek, the ditch runs directly south crossing beneath North Road at its intersection with Trap Club Road. Near its southern terminus, the ditch again crosses Trap Club Road and remains along the eastern side of the road.

The project area is in the Gunnison River Basin. The Grand Mesa encompasses the project site to the north and the Grand Mesa National Forest is to the northeast. The Gunnison River travels west to east, approximately 4 miles south of the project site, with the Gunnison Gorge located to the southeast. The Uncompahgre Plateau is to the west, with the West Elk Mountains located farther to the east. The proposed project site is located in the Tongue Creek sub-basin, and the ditch parallels Tongue Creek on its western side. Tongue Creek is a permanent water source that is fed by Dirty George, Ward, and Oak Creeks, which all originate

from the western slope of the Grand Mesa. The valley defines the southwestern extent of Cedar Mesa. The narrow valley where the project is located is quite level and flat. The project area is on a mantle of Holocene age Piney Creek alluvium deposited along the floodplain of Tongue Creek. These overlay Cretaceous-age Mancos shale, which is the source of the selenium in the adjacent waterways.

1.6 Relationship to Other Projects

The Minnesota Canal and Reservoir Company (MCRC) of Paonia, Colorado, is currently working with Reclamation on a Salinity Control Project to pipe 5.2 miles of the Minnesota Canal. The project is within the North Fork of the Gunnison River Valley on the eastern edge of the Colorado Plateau. The project is anticipated to reduce the salinity and selenium contributions to the Colorado River and adjacent waterways. Construction of the project should be finalized in 2015.

The Roger's Mesa Water Distribution Association (RMWDA) is working with Reclamation on an EA to pipe the Slack and Patterson Laterals of the RMWDA's irrigation system. The proposed Salinity Control Project would reduce the salinity loading of the Colorado River by an estimated 3,415 tons annually and is anticipated to reduce selenium levels in adjacent waterways including the North Fork of Gunnison River. Construction is anticipated to commence in October 2014.

The Grandview Canal is a privately owned canal diverting water from Smith Fork Creek and Crawford Reservoir to a service area located just south of the town of Hotchkiss, in Delta County, Colorado. The Grandview Canal Piping Project piped open irrigation ditches to reduce salt loading in the Colorado River. Ditches that were piped included the middle portion of the Grandview Canal, the GE Lateral, the east and west GG Laterals, and the T Miller Lateral. The project replaced approximately 4.8 miles of the Grandview Canal and approximately 5 miles of existing open ditch laterals, for a total of 9.8 miles.

Other Salinity Control Projects in the general vicinity of the proposed projects include the C Ditch Company's C Ditch/Needle Rock Pipeline Project and the Crawford Clipper Ditch Company's Piping Project. The proposed C Ditch/Needle Rock Pipeline Project is located about three miles north of Crawford, in the Cottonwood Creek drainage basin. This project would pipe approximately 14,669 linear feet of open irrigation ditch. The proposed Clipper Irrigation Salinity Control Project is located in Delta County, about 2.5 miles southeast of the Town of Hotchkiss, in the Cottonwood Creek drainage basin. This proposed project involves replacing approximately 18,709 linear feet of open irrigation ditch with buried pipe. The majority of the buried pipe alignment would be located within existing ditch alignments and approximately 1.4 miles of existing ditch alignment would be abandoned.

The projects mentioned above are being 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 Colorado River Basin.

1.7 Scoping

Scoping was primarily limited to BPWCD, FTHDC, U.S. Fish and Wildlife Service (USFWS), Colorado Parks and Wildlife, the Colorado Office of Archaeology and Historic Preservation, and local jurisdictions. Alternatives evaluated in this EA are limited to a Proposed Action and a No Action Alternative. The alternatives are discussed in Chapter 2. Information obtained during scoping was used to evaluate resource impacts and is described in detail in Chapter 3.

CHAPTER 2- PROPOSED ACTION AND ALTERNATIVES

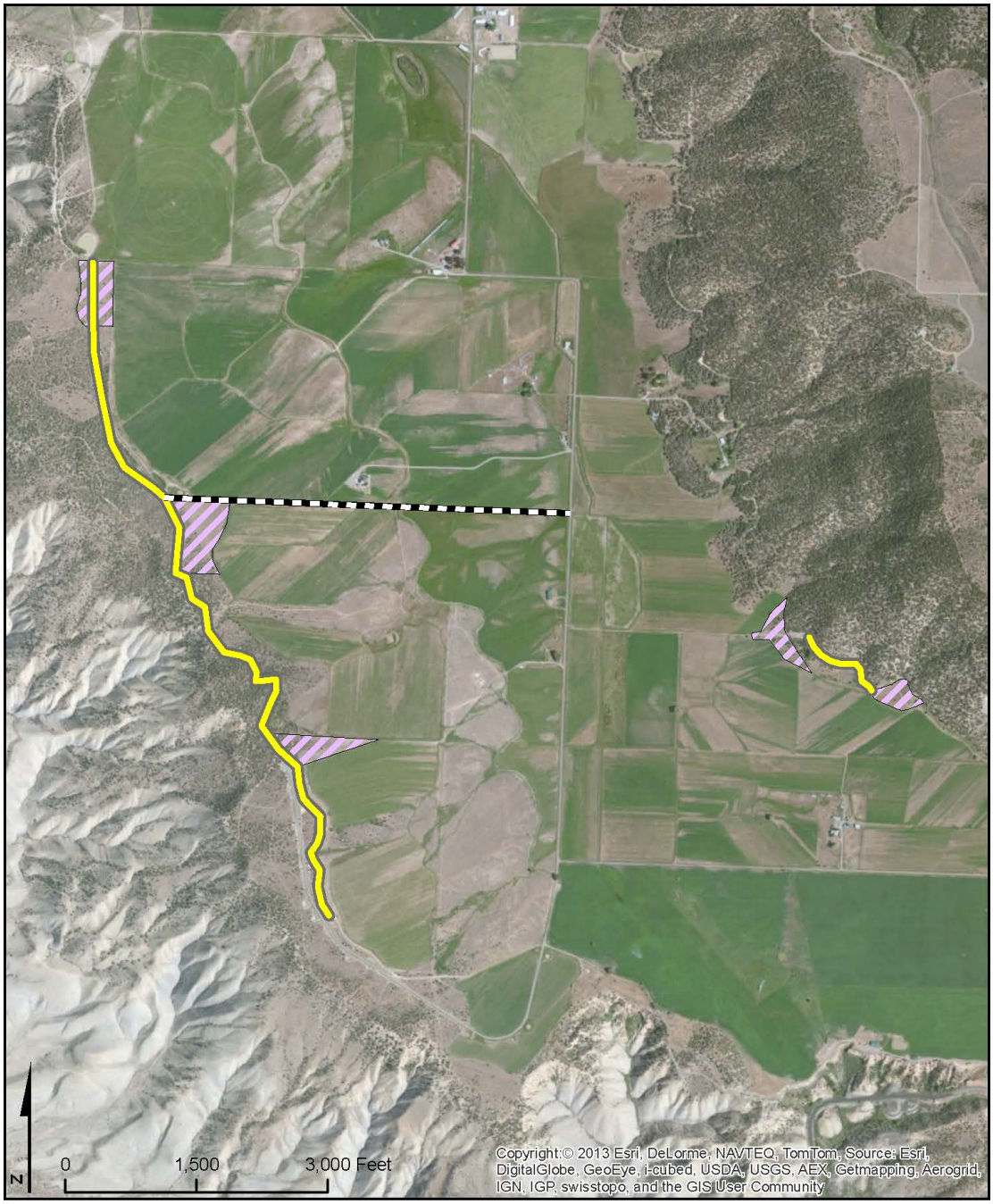
2.1 Introduction

The proposed action analyzed in this EA is Reclamation's authorization for the State of Colorado to use Reclamation funds to complete improvements to the Bostwick Park Siphon Lateral and the Forked Tongue Ditch through the Basin States Program. This EA will be used to determine the potential effects on the human and natural environment from the proposed piping projects. The resource analysis contained within this EA, along with other pertinent information, will guide Reclamation's decision about whether or not to implement the proposed projects. The proposed action (Action Alternative) is analyzed in comparison to a No Action Alternative in order to determine potential effects.

If Reclamation decides to implement the proposed action, BPWCD and FTHDC would enter into contracts with the Colorado State Conservation Board and be authorized to use Federal funds to proceed with piping the Bostwick Park Siphon Lateral and the Forked Tongue/Holman Ditch in order to reduce the salinity contributions to the Colorado River Basin. If authorized to proceed, the BPWCD and the FTHDC would construct, operate, and maintain these new pipelines in place of the open laterals. As a feature of the Bostwick Park Project, any newly acquired easements for the Bostwick Park Siphon Lateral Project would be in the name of BPWCD. The easements would be operated and maintained by the BPWCD. The existing and newly acquired easements associated with Forked Tongue/Holman Ditch Project would be owned, operated, and maintained by the FTHDC.

2.2 No Action Alternative

Reclamation would not authorize the use of Federal funds for the Bostwick Park Siphon Lateral or the Forked Tongue/Holman Ditch under the No Action Alternative. Seepage from the existing canals would continue to contribute to salt loading and to the high selenium levels in the Gunnison, Uncompahgre, and Colorado Rivers. These conditions are likely to worsen in the future under the No Action Alternative. Riparian and wetland habitat associated with the BPWCD and the FTHDC systems would likely remain in place and continue to provide some benefits to local wildlife.



Legend

- Potential Road Improvements
- Canals to be Piped
- Staging Areas

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Figure 2:1 Bostwick Park Proposed Project Improvements

2.3 Action Alternative

Bostwick Park Siphon Lateral

Under the Action Alternative, Reclamation would authorize the use of Federal funds to pipe approximately 1.76 miles of the existing earthen Siphon Lateral and approximately 0.2 miles of the East Lateral with high-density polyethylene (HDPE) pipe (Figure 2:1 Bostwick Park Proposed Project Improvements). The proposed pipeline for the Siphon Lateral would primarily follow the existing lateral alignment, with a few minor deviations. Screens would be provided to remove debris at the head of the pipeline. The piping of the East Lateral would follow the existing lateral alignment. The proposed project would also include minor improvements to the existing access road along the siphon. The roadway improvements would be made to allow for the transportation of construction vehicles and equipment to the Siphon Lateral. Piping of the laterals would reduce the amount of water lost through seepage, making more water available for irrigation users and reducing selenium contributions to adjacent waterways. The Action Alternative would also reduce the amount of ongoing system maintenance. Ongoing maintenance currently includes removing debris from the laterals, clearing overgrown vegetation, and replacing outdated valves and gates. It is anticipated that implementation of the Bostwick Park Siphon Lateral project would result in an annual reduction of 413 tons of salt contributions to Colorado River.

Forked Tongue/Holman Ditch

The proposed project would pipe approximately 1.89 miles of the open unlined earthen Forked Tongue/Holman Ditch (Figure 2:2 Forked Tongue/Holman Ditch Proposed Project Improvements). The pipeline would begin at the diversion point off of Forked Tongue Creek and would continue along the top of the agricultural fields to the end of the existing line. A little more than half of the distance of the proposed pipeline would be along a new alignment. The remaining alignment would follow the existing ditch. The proposed new alignment would shorten distances between turnouts and increase the efficiency of the line. A new flume and meters would be installed to help monitor flows. Three drains would be installed along the alignment to assist in flushing sediment and to provide a means for draining the system, if necessary. The drains would only be used if required for maintenance of the canal and would not provide irrigation water to users. The salinity improvements would not provide storage and would not irrigate new lands. The proposed project is anticipated to reduce the annual salinity loading of the Colorado River by 412 tons.

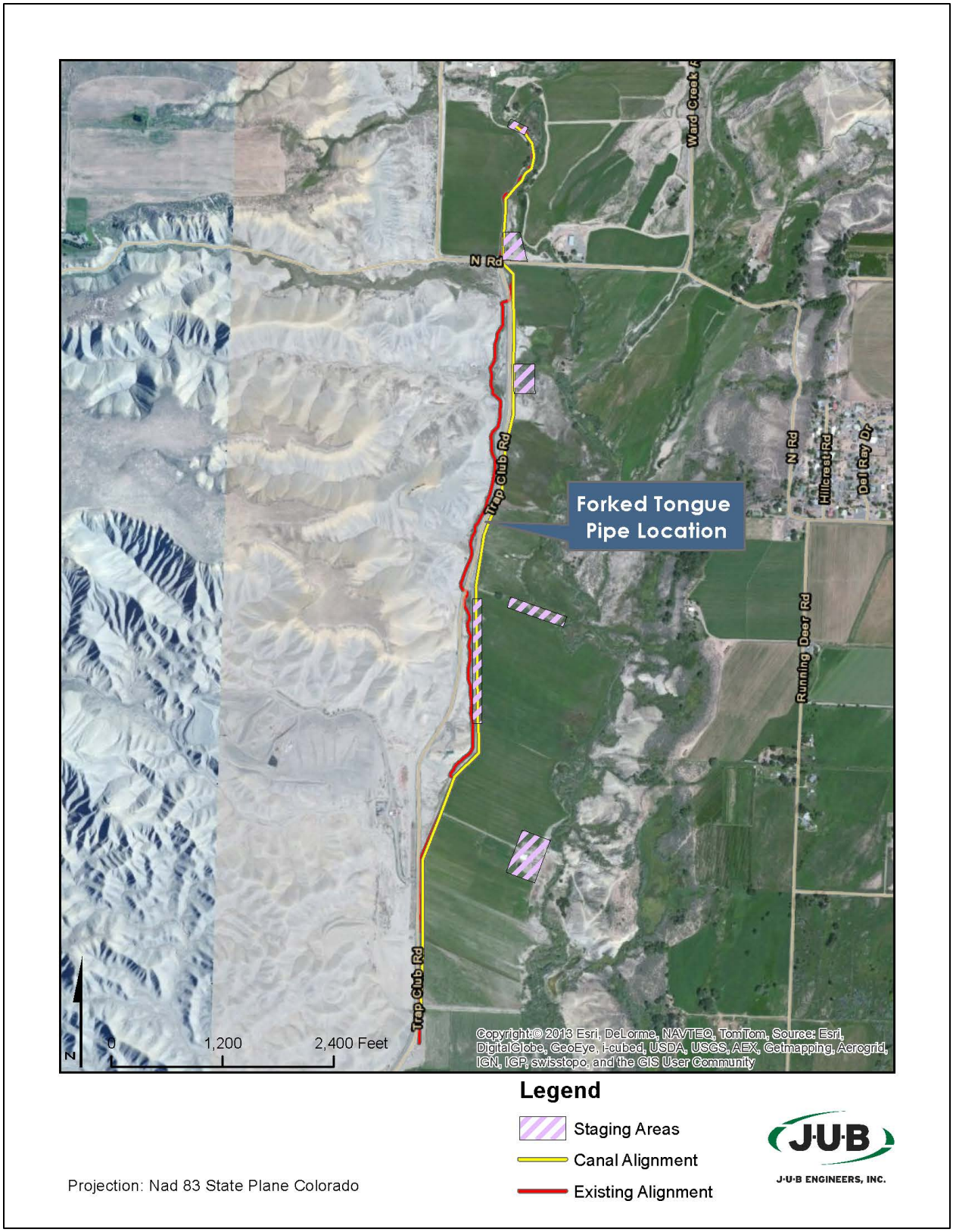


Figure 2:2 Forked Tongue/Holman Ditch Proposed Project Improvements

2.3.1 Easements

Bostwick Park Siphon Lateral Project

Easements would be required where the proposed alignment deviates from the existing Siphon Lateral alignment. All acquired easements would be obtained from landowners in the name of the BPWCD. The facilities would be operated and maintained by the BPWCD. Where deviations from the existing alignments occur, a 30-foot wide permanent easement would be needed for the operation and maintenance of the pipelines. No easements from publicly owned local, state, or federal land would be required.

A 100-foot temporary construction easement would be required for construction in areas where the proposed alignment deviates from the existing alignment. A 50-foot construction easement (25 feet off the centerline of the existing laterals) would be required for construction activities taking place along the existing alignment of the laterals. Construction on the Siphon Lateral would temporarily disturb approximately 23.6 acres of land along the project alignment and 24.6 acres for staging areas; 48.2 acres combined.

Forked Tongue/Holman Ditch Project

The easements for the Forked Tongue/Holman Ditch Project would be obtained in the name of the FTHDC. The irrigation facilities would be owned, operated, and maintained by the FTHDC. A 30-foot wide permanent easement would be needed for the operation and maintenance of the pipelines in areas where the proposed alignment deviates from the existing alignment. All required easements would be along privately owned land.

A 100-foot temporary construction easement would be required for construction in areas where the proposed alignment deviates from the existing alignment. A 50-foot construction easement (25 feet off the centerline of the existing lateral) would be required for construction activities taking place along the existing alignment of the ditch. Construction on the Forked Tongue/Holman Ditch would temporarily disturb approximately 22.9 acres of land along the project alignment and 13.5 acres for staging areas; 36.4 acres combined.

2.3.2 Construction Procedures

Sequencing of construction for both projects would likely occur as follows:

- Survey and flagging of the construction area
- Mobilization of construction equipment
- Delivery of construction materials to staging areas
- Excavation of trenches
- Pipe fusing
- Pipe placement within the excavated trenches
- Backfill around the pipe and compaction of the backfill
- Restoration and clean-up activities including planting and reseeding of disturbed areas

2.3.2.1 Trench Excavation

Excavation would be performed using appropriately sized construction equipment to minimize disturbance to the surrounding area. Excavated material would be stockpiled and used as backfill after pipe installation. Topsoil would be separated from other materials and will be replaced as the top layer of soil, wherever possible.

2.3.2.2 Pipe Installation

The pipe would be transported to the staging areas. From the staging areas, the pipe would either be transported by a loader to the work site or fused into longer sections and hauled to the work site access roads. Each section of pipe would be fused together with a pipe fuser and then placed in the prepared trench. After pipe installation, backfill would be placed around the pipes. In established agricultural areas, the preserved topsoil would be placed last to minimize impacts and facilitate recovery of vegetation. Backfill would be mechanically compacted. Soil in work areas would be spread evenly to blend with the natural topography and maintain local drainage patterns. Stockpiled topsoil would then be spread evenly to cover previously vegetated areas and reseeded with native or agricultural vegetation species, as appropriate.

2.3.3 Construction Staging Areas

Construction staging areas have been identified throughout both project areas and shown on Figures 2:1 and Figures 2:2. The staging areas would be used to stockpile the pipe, place equipment and park construction vehicles. Staging areas were included in each project's area of potential effect to assess resource impacts from construction activities.

2.3.4 Standard Operating Procedures

Reclamation's standard operating procedures (SOPs) would be followed (except for under unforeseen circumstances) during construction, operation, and maintenance of the proposed actions to avoid or minimize adverse impacts on the built and natural environments. A preconstruction meeting with Reclamation, the Contractor, and the irrigation companies would be held prior to the commencement of construction. During construction, weekly meetings for each project would be held to assess the progress of the work.

Specifics of restoration would be outlined in the SOPs and/or right-of-way easements. Restoration procedures include the determination of what native vegetation is appropriate for the different construction zones, reseeding rates, landscaping, re-vegetation, and noxious weed removal and control. Monitoring and treatment would continue until the success criteria are met for two successive years without human intervention. These actions would provide that disturbed areas are returned to a natural state as appropriate. Chapter 3 presents an impact analysis for resources after SOPs have been successfully implemented.

CHAPTER 3- AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

This chapter discusses the existing environment of the project area and potential impacts from the No Action and Action Alternatives to the environment. The present condition and characteristics of each resource are discussed, followed by an analysis of the anticipated impacts under the No Action and Action Alternatives. This chapter includes a summary comparison of the alternatives and a list of mitigation measures.

During preparation of this EA, information on existing conditions and potential concerns was received from BPWCD, FTHDC, resource agencies, key stakeholders, and other interested parties (see Chapter 4, Consultation and Coordination, for further details). Resource impacts for each project action area were evaluated separately. The resource impact evaluations detailed in this chapter refer to both projects areas, unless otherwise specified.

3.2 Air Quality

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

Delta County and Montrose County are in attainment for all criteria pollutants.

3.2.1 No Action Alternative

There would be no adverse effects on air quality from the No Action Alternative.

3.2.2 Action Alternative

There would be no long-term impacts to air quality from the Action Alternative. Fugitive dust generation from construction activities would, however, have a temporary, short-term effect on the air quality in the project area. Fugitive dust would be generated by excavation activities and the movement of construction equipment on unpaved roads. Best Management Practices (BMPs) would be implemented to minimize dust and would include measures such as watering the construction site and access roads, as appropriate. Impacts on air quality would be temporary and would cease once the projects are constructed.

3.3 WATER RIGHTS AND USE

The Gunnison River Basin encompasses approximately 7,800 square miles of western Colorado, extending from the Continental Divide to the confluence of the Gunnison and Colorado Rivers near Grand Junction. Numerous drainages originate near both project sites and drain southward to the North Fork of the Gunnison River.

The proposed action analyzed in this EA is Reclamation's authorization for the State of Colorado to use Reclamation funds to complete improvements to the Boskwick Park Siphon Lateral and the Forked Tongue Ditch through the Basin States Program. The Bostwick Park Siphon Lateral is part of the federal Bostwick Park Project that diverts water from Cimarron Creek to irrigate agricultural lands. Flood irrigation is the primary means of irrigating agricultural crops within the project area. The main crops grown in Bostwick Park are alfalfa, grass hay, and small grains. The BPWCD has 14,000 acre-feet of storage in Silver Jack Reservoir and has a combined 185 cfs of annual water rights.

The Forked Tongue/Holman Ditch is also privately owned and diverts water from Tongue Creek, a tributary of the Gunnison River, to irrigate agricultural lands. Flood irrigation is the primary means of watering agricultural lands in the area. Furrows are used in most fields to help facilitate the flood irrigation. The main crops grown in the area are hay, pasture, and small grains. The FTHDC has three water right decrees which total 6.97 cfs, all stemming from Tongue Creek.

3.3.1 No Action Alternative

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

3.3.2 Action Alternative

The Action Alternative would result in increased efficiencies in both the BPWCD and the FTHDC systems. The proposed project improvements would eliminate seepage through the existing earthen laterals. For the Bostwick Park project, additional water may be available in the later months of the irrigation season due to the reduction of delivery system losses but the reservoir would continue to be operated within historic levels. Neither the Bostwick Park project nor the Forked Tongue project would include new storage or irrigation of new lands. However, due to the increased efficiency, both systems will have the ability to better manage their water rights. No additional water rights or changes to water rights would be required under the Action Alternative.

3.4 WATER QUALITY

Water quality of the Gunnison and Colorado Rivers are threatened by high salinity and selenium levels. It is estimated that approximately 8.7 million tons of salt flow annually into the Colorado River (Reclamation 2005). Around fifty percent of the salinity in the Gunnison and Colorado Rivers are due to natural sources including runoff, saline springs, and the erosion of saline geologic formations. Non-natural causes of salinity loading include irrigation activities, reservoir evaporation, and municipal and industrial practices. Irrigated agriculture is the largest user of water in the Colorado River Basin and is a major contributor to the salinity of the system. Irrigation increases salinity by depleting the amount of water flowing to the Colorado River and by dissolving salts found in underlying saline soils and geologic formations, usually marine (Mancos) shale. Deep percolation of irrigation water mobilizes the salts found naturally in the soils, especially if the lands are over-irrigated, which often occurs with flood irrigation practices. High salinity levels make it difficult to grow winter vegetables and popular fruits. Salt in water systems plugs and destroys municipal and household pipes and fixtures.

Selenium is a nonmetal that most often occurs in soils in soluble forms such as selenite, which is very easily leached into rivers by runoff. Though trace amounts of selenium are necessary for cellular functioning of many organisms, it is toxic in lightly elevated amounts. Elevated levels of selenium may cause reproductive failure and deformities in fish and aquatic birds. The fish habitat in the Gunnison and Colorado Rivers is threatened by selenium levels. The U.S. Geological Service (USGS) is currently working on a water budget assessment for the Bostwick Park area as a component of the Selenium Management Program. The Selenium Management Program was developed as a cooperative effort in response to the USFWS Gunnison Basin Programmatic Biological Opinion issued in 2009.

BPWCD is located in the Gunnison River Watershed in south-central Colorado. The water that flows through the company's irrigation system is diverted from the Cimarron Canal. Red Rock Creek and several other small tributaries of the Uncompahgre River (including the Loutzenhizer Arroyo and Cedar Creek), which are located in the general vicinity of the Bostwick Park Siphon Lateral project site, are classified as impaired water bodies due to high selenium concentration levels. For example, Selenium concentrations in the Loutzenhizer Arroyo during low-flow periods may run as high as 150 parts per billion (ppb), significantly higher than the Colorado State standard of 4.6 ppb (NRCS 2010). It is likely that seepage from the BPWCD's irrigation system contributes to increased selenium levels in these adjacent waterways.

The Forked Tongue/Holman Ditch Project is also located in the Gunnison River Basin. The Grand Mesa is located to the north of the project site and the Grand Mesa National Forest is to the northeast. Several of the small creeks and rivers surrounding the area are classified as impaired waters due to high levels of selenium. These tributary water bodies are all part of the Colorado Headwaters-Plateau Lower Gunnison watershed. Similar to the BPWCD system, irrigation water seepage from the unlined earthen Forked Tongue/Holman Ditch likely contributes to the selenium levels of these waterways.

3.4.1 No Action Alternative

Existing water quality trends are anticipated to remain stable and possibly worsen under the No Action Alternative. An estimated 825 tons of salt (413 tons from the Bostwick Park Siphon Lateral and 412 tons from the Forked Tongue/Holman Ditch) would continue to reach the Colorado River annually from seepage of irrigation waters from the unlined earthen canal laterals. The laterals would also continue to contribute to the high selenium levels of the waterways in the general vicinity of the project areas. Waterways most likely to be impacted by selenium contributions include Tongue Creek, Red Rock Creek, and other tributaries of the Uncompahgre River.

3.4.2 Action Alternative

The Action Alternative would eliminate seepage from the Siphon Lateral and the Forked Tongue/Holman Ditch. Implementation of the Action Alternative is predicted to result in a total annual reduction of 825 tons of salt in the Colorado River and to lower selenium levels in the Colorado River and adjacent waterways. Therefore the Action Alternative is anticipated to have a long-term beneficial impact on water quality.

Construction of the Action Alternative would occur outside of the irrigation season when the laterals are dry. No short-term impacts on water quality are anticipated from the construction of the Action Alternative. However, BMPs would be implemented at each project site to protect water resources. BMPs may include but would not be limited to the following:

- If dewatering is needed, the contractors would obtain CWA Section 402 Storm Water Discharge Permits (NPDES) from the Colorado Department of Public Health and Environment for dewatering the construction areas.
- Fuels, lubricants, hydraulic fluids, and other petrochemicals would be stored and dispensed of in approved staging areas. Equipment would be inspected daily for petrochemical leaks. Construction equipment would be parked, stored, and serviced only at approved staging areas.
- An oil spill response plan would be prepared for areas of work where spilled contaminants could flow into water bodies. All employees and workers, including those under separate contract, would be briefed and made familiar with this plan. The plan would be developed prior to initiation of construction. An oil spill response kit, which includes appropriate-sized spill blankets, shall be easily accessible and on-site at all times.
- Onsite supervisors and equipment operators would be trained and knowledgeable in the use of spill containment equipment.
- Appropriate federal and Colorado authorities would be immediately notified in the event of any contaminant spill.

These projects qualify for Section 404 Water Quality exemptions and no water quality certifications are required (Appendix B).

3.5 VEGETATIVE RESOURCES

Vegetation in the general vicinity of the Siphon Lateral of the Bostwick Park Project is composed of juniper (*Juniperus)*, coyote willow (*Salix exigua)*, rabbit brush (*Chrysothamnus nauseosus)*, four-winged saltbrush (*Atriplex canescens)*, and wild rose (*Rosa acicularis)*. Cultivation has replaced most of the native vegetation in the project area with pasture grasses, row crops and fruit trees. Invasive weeds have taken over much of the disturbed areas that are not cultivated. Invasive weeds encountered during the site surveys included tamarisk (*Tamarix* spp.), Russian olive (*Elaeagnus angustifolia)*, Canada thistle (*Cirsium arvense)*, musk thistle (*Carduus nutans)*, Russian knapweed (*Acroptilon repens)*, yellow clover (*Melilotus officinalis)*, kochia (*Kochia scoparia)*, cheatgrass (*Bromus tectorum)*, common burdock (*Arctium minus)*, mullein (*Verbascum Thapsus)*, and showy milkweed (*Asclepias speciosa)*. Other plant species observed include narrow leaf cottonwoods (*Populus angustifolia)*, prickly pear cactus (*Genus Opentia)*, sagebrush (*Artemisia tridentate)*, alkali sacaton (*Sporobolus airoides)*, cattails (*Typha latifolia)*, and a number of other small forbs and grasses.

The land cover in the Forked Tongue/Holman Ditch project area is primarily agricultural. Native vegetation encountered in the project area includes coyote willows, rabbit brush, greasewood (*Sarcobatus vermiculatus)*, sagebrush, four-winged saltbush, narrow leaf and Fremont cottonwoods (*Populus fremontii)*, sumac (*Rhus glabra*), wild rose, oak brush (*Quercus gambelii)*, bulrush, carex, cattails, and a number of small forbs and grasses. Invasive weeds along the proposed project alignment include Russian olive, Canada thistle, yellow clover, musk thistle, Russian knapweed, whitetop (*Cardaria draba)*, chicory (*Cichorium intybus,)* cheatgrass, kochia, halogeton (*Halogeton glomeratus)*, showy milkweed, common burdock, and tamarisk (*Tamarix ramosissima)*.

There are no jurisdictional wetland features within the Bostwick Park Siphon Lateral project area.

There are no jurisdictional wetland features within the Forked Tongue Ditch project area. There is, however, an isolated non-jurisdictional feature outside of the project disturbance area that contains wetland vegetation. The feature is located near the northern most staging area located at the beginning of the proposed project alignment.

3.5.1 No Action Alternative

The No Action Alternative would have no effect on existing vegetation or current land uses in either project area.

3.5.2 Action Alternative

Construction activities would temporarily disturb vegetative resources in the project areas. Most of the areas where construction would take place are already altered from their natural state by adjacent land use activities. Areas that are disturbed during construction would be more vulnerable to nonnative species and noxious weed infestation. Noxious vegetative species typically recover more quickly after a disturbance than native species.
BMPs would be implemented to reduce impacts to native vegetation. BMPs would include staging materials outside of sensitive areas and washing construction equipment to remove seeds and reduce the possibility of infestation by nonnative species. After surface disturbance, proper rehabilitation procedures would be followed to prevent infestation of invasive species. Cultivated lands that are disturbed during construction would be reseeded with an appropriate agricultural seed mix. Post construction treatment would take place to control noxious and invasive weeds.

The wetland feature located adjacent to the northern most staging area on the Forked Tongue Ditch project would be fenced prior to construction to prevent disturbance to the area. BMPs would be implemented to prevent pollution from traveling into the adjacent water. With the protective fencing and implementation of the BMPs, there would be no long-term or short-term impacts to wetland resources.

BPWCD and the FTHDC are seeking concurrence from the U.S. Army Corps of Engineers (USACE) that a Department of Army permit is not required for either project. The proposed project improvements meet the agricultural exemption requirements outlined in 33 CFR 323.4(a)(3).

3.6 FISH AND WILDLIFE RESOURCES

The majority of the project action areas contain cultivated agricultural lands. Small areas of riparian vegetation exist along the laterals. Vegetation along the laterals provides habitat for nesting birds and small mammals. The adjacent irrigated fields provide hunting and foraging opportunities for wildlife including migratory birds and mammals. Habitat supported by agricultural activities is subject to disturbance from periodic maintenance of the irrigation facilities and agricultural activities.

The Colorado Parks and Wildlife (CPW) describes the Bostwick Park project area as winter and severe winter range for elk. For deer, the CPW lists the project area as a mule deer concentration area, winter range, winter concentration area, summer range, severe winter range, resident population area, and critical winter range (CPW 2010). The project area is also described as a winter forage area for the bald eagle and is within the historic range of Gunnison Sage Grouse. The Colorado Parks and Wildlife describes the Forked Tongue project area as winter range for elk and winter range/winter concentration area for deer. This project area is also listed as a wintering and winter forage area for the bald eagle (CPW 2010).

All projects receiving funding through the Colorado River Basin Salinity Control Program are required to implement a habitat replacement plan to provide for the mitigation of incidental fish and wildlife values that are lost due to the project. Reclamation has developed habitat evaluation procedures that estimate habitat losses or changes associated with salinity improvements. Tables 3.1 and 3.2 detail the results of the habitat evaluation.

Table 3.1 Predicted Habitat Loss for Bostwick Park

Habitat Segment	Habitat Type	Length of Ditch (Feet)	Width of Impact (Feet)	Impact Area (Acres)	Habitat Quality Score (HQS)	Total Habitat Value Lost (THV)
H1	Shrub/Forb	1,049	20	0.48	0.90	0.43
H2	Shrub/Forb	7,122	25	4.09	1.10	4.50
H3	Shrub/Grass	---	----	1.0	0.20	0.20
H4	Trees/Shrub	949	60	1.31	1.30	1.70
			Total Habitat Credit Loss			**6.83**

Table 3.2 Predicted Habitat Loss for Fork Tongue

Habitat Segment	Habitat Type	Length of Ditch (Feet)	Width of Impact (Feet)	Impact Area (Acres)	Habitat Quality Score (HQS)	Total Habitat Value Lost (THV)
H1	Shrub/Forb	1,691	30	1.16	0.40	0.46
H2	Shrub/Forb	458	30	0.32	0.30	0.10
H3	Shrub/Forb	3,428	30	2.36	1.60	3.78
H4	Grass/Forb	--	---	0.82	0.70	0.57
H5	Shrub/Forb	2,042	30	1.41	0.90	1.27
H6	Grass/Forb	937	20	0.43	0.20	0.09
H7	Grass/Forb	1,596	20	0.73	0.60	0.44
			Total Habitat Credit Loss			**6.71**

Appendix H contains the habitat loss scoring and required habitat replacement values for the proposed project improvements.

3.6.1 No Action Alternative

Under the No Action Alternative, terrestrial wildlife habitat would remain in its current condition. Salinity and selenium loading to adjacent waterways would continue at current rates, which would affect water quality within the Colorado River basin and the Colorado River over time, thereby negatively impacting the fish and wildlife using the area.

3.6.2 Action Alternative

Upland wildlife habitat would likely be temporarily impacted by the construction of the Action Alternative. During construction, there would be a short-term displacement (approximately three to six months) of wildlife that normally occupy the immediate project area. Generally, wildlife would move easily and find alternative areas for forage and cover, and may return after construction operations have been completed.

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 the loss would be minor. During construction, pipeline trenches left open overnight would be kept to a minimum to reduce potential entrainment of small animals and public safety problems. In the event a pipeline trench is left open overnight, escape ramps will be utilized.

Impacts to big game would include short-term disturbances and displacement of late summer and fall incidental use during the construction period. It is anticipated, 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. Construction would occur outside of the irrigation season and should not impact nesting birds.

The proposed action would result in a decrease in salinity and selenium levels, which would improve water quality in the Colorado River Basin and potentially benefit fish within the Colorado River System.

Those species, including avian and amphibian species, which are dependent on wetland and riparian habitats, would experience a long-term (greater than five years) loss of habitat as described above. The habitat scoring for each project area is described in detail in Appendix H. The total habitat value that would be lost long-term would be mitigated through the implementation of a Reclamation approved habitat replacement plan for each project.

The habitat replacement plans for each project are currently being developed. The BPWCD habitat replacement being developed may be implemented on the Billy Creek State Wildlife Area. The initial plans for this area include removing invasive weeds and providing measures to prevent the reestablishment of invasive weeds; revegetating the area with native plants, trees, and shrubs; and creating potholes to provide watering areas for wildlife including deer, elk, turkey, and waterfowl which currently utilize the area.

The FTHD habitat replacement plan is planned to be developed on a parcel land located outside of Orchard City and adjacent to Tongue Creek. The proposed habitat improvements include

tamarisk removal and other methods to control and prevent the reestablishment of invasive weeds. The area would likely also be revegetated with native plants, trees, and shrubs to provide a more diverse vegetative structure for wildlife in the area.

These habitat replacement plans will be finalized and discussed in greater detail in the final EA.

3.7 FEDERALLY LISTED SPECIES

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

3.7.1 Federally Listed Species in Montrose and/or Delta Counties

Table 3.3 lists these species that may occur within Montrose and/or Delta Counties, Colorado. A general description of each species follows.

Table 3.3 - Federally Listed Species in Montrose and Delta Counties

Common Name	Scientific Name	County of Occurrence	Listing Status
Black-footed ferret	*Mustela nigripes*	Delta, Montrose	Endangered
Bonytail chub	*Gila elegans*	Delta*	Endangered
Canada lynx	*Lynx canadensis*	Delta	Threatened
Clay-loving wild buckwheat	*Eriogonum pelinopilum*	Delta, Montrose	Endangered
Colorado pikeminnow	*Ptychocheilus lucius*	Delta*	Endangered
Colorado Basin hookless cactus	*Sclerocactus glaucus*	Delta, Montrose	Threatened
Greenback cutthroat trout	*Oncorhynchus clarki stomias*	Delta, Montrose	Threatened
Gunnison's prairie dog	*Cynomys gunnisoni*	Delta, Montrose	Candidate
Gunnison sage-grouse	*Centrocervus minimus*	Delta, Montrose	Proposed Endangered
Humpback chub	*Gila cypha*	Delta*	Endangered
Mexican spotted owl	*Strix occidentalis lucida*	Montrose	Threatened
North American wolverine	*Gulo gulo luscus*	Delta, Montrose	Proposed Threatened
Razorback sucker	*Xyrauchen texanus*	Delta*	Endangered
Yellow-billed cuckoo	*Coccyzus americanus*	Delta, Montrose	Proposed Threatened

**While these Colorado River fish do not occur in Montrose County, irrigation projects and associated depletions may impact these species and their habitat outside of the County.*

Black-footed Ferret

The black-footed ferret is an 18 to 24-inch long mammal that weighs one-and-a-half to two-and-a-half pounds. This species is slender with a black face mask, black feet, and a black-tipped tail. It has short legs with large front paws and claws developed for digging (USFWS Species Profile, July 2009). The black-footed ferret is known to inhabit white-tailed prairie dog towns. The species was listed as endangered on March 11, 1967. A reintroduction program is underway for the black-footed ferret in northwest Colorado. At the present time, there are no known populations of black-footed ferrets in the Gunnison Basin. Potential habitat is fragmented in the basin, with prairie dog towns separated by cropland and other human developments. There are no known occurrences of black-footed ferret in the project areas. Furthermore, no prairie dogs or prairie dog complexes were found at either site during the biological field surveys.

Bonytail Chub

The bonytail chub is a large cyprinid fish endemic to the Colorado River and is the rarest of the four big river endangered fishes in the Colorado River Basin. The fish can grow to over 2 feet long. Their coloration is usually darker dorsally and lighter ventrally, however, in very clear waters, they look almost completely black. During breeding season, males and females have distinct coloration. Mature males have bright red-orange lateral bands between their paired fins, while females have a more subdued coloration. Wild populations are considered nearly extinct. Early sampling and anecdotal information suggest the species was common in the Green and Colorado Rivers in the early 20th century (McAda, 2003). USFWS cited one capture in the Gunnison River near Delta by Jordan (1891), although identification of this specimen has been questioned. There is no known habitat for this species in the project areas.

Canada Lynx

The Canada lynx is normally found in dense forested areas with an abundance of windfalls, swamps and brushy thickets (Maas 1997). Lynx require heavy cover for concealment when stalking prey. In addition, lynx are most likely to persist in areas that receive deep snow, for which the lynx is highly adapted (Maas 1997). In the western U.S., lynx occurrences generally are found only above 4,000 feet in elevation (McKelvey et al. 2000). Lynx may have disappeared from Colorado by about 1973. Sightings prior to that were few and scattered throughout the mountainous areas of the state. Today, Colorado's lynx population includes surviving reintroduced adults, lynx born to reintroduced animals, and the offspring of first and perhaps second-generation lynx. Based on the results from reintroduction and monitoring efforts to date, Colorado's lynx reintroduction has successfully achieved the program's original goals and benchmarks. Reintroduced lynx have entered the Gunnison Basin where potential habitat occurs at higher elevations. The potential exists that the species will become permanently established in the basin, but the piping projects should have no effect on existing populations. The project area is highly disturbed, there are no areas of high elevation, dense forested vegetation, and no known habitat exists.

Clay-loving Wild Buckwheat

The clay-loving wild buckwheat is a low growing, rounded, densely branched shrub. It has dark green leaves that roll inward and appear needle-like. It grows 6 to 8 inches tall and is known to live for more than 18 years. It has small white to cream colored flowers with pink veins clustered at the end of each branch. Clay-loving wild buckwheat can be found in bloom from late May to early September. Clay-loving wild buckwheat is endemic to the rolling clay (adobe) hills and flats immediately adjacent to the communities of Delta and Montrose, Colorado. Species found in association with the clay-loving wild buckwheat include mat saltbrush, black sagebrush, shadscale, and Adobe Hills beardtongue. The unique soils that support clay-loving wild buckwheat populations are limited in their distribution. Clay-loving wild buckwheat was listed as an endangered species in 1984 because of the extremely limited range of its habitat and the high risk of habitat loss. Increasing urban, residential, and agricultural development threaten the species' limited habitat. A survey to identify clay-loving wild buckwheat species was conducted for both project alignments. Although the project site is near known habitat areas of the clay-loving wild buckwheat, no habitat or specimens were found within or directly adjacent to the project area.

Colorado Basin Hookless Cactus

The Colorado Basin hookless cactus is a barrel shaped cactus that typically grows 1.2 to 4.8 inches tall, with exceptional plants growing up to a foot tall. The cactus is cyndrical in shape. The stems of the plant have 8 to 15 ribs that extend from the ground to the tip of the plant. The flowers are usually funnel-shaped, but sometimes bell-shaped. They usually have pink to violet petals. The plant grows on exposed stretches of gravelly clay, including the alluvial benches above floodplains and on mesa slopes. The plant was listed as threatened on November 13, 1979. A survey to identify habitat for the Colorado Basin hookless cactus was performed for both project alignments. No habitat or plant specimens were found within or directly adjacent to the project areas.

Colorado Pikeminnow

The Colorado pikeminnow is originally native to the Colorado River system. Currently, the species range is limited to the Upper Colorado River system. The near extinction of the Colorado pikeminnow can be linked to flow regulation or alterations of natural waterways, habitat loss, and competition and predation by non-native fish. Colorado pikeminnows are mainly piscivorous, meaning they eat fish. Younger pikeminnows also eat insects and other invertebrates. The species spawn in the spring and summer over gravel or smaller cobble substrate situated in riffle habitat. Adult Colorado pikeminnows prefer medium to large rivers while young prefer slow-moving backwaters. Historical accounts of 6-foot long Colorado pikeminnows make this species the largest minnow in North America (UDWR 2010). It is estimated that the pikeminnow no longer occurs in approximately 75 percent of its historic range and was listed as endangered in 1967. The species occurred in the Gunnison River and has probably not ever been totally expatriated from the river. Historical upstream limits on the Gunnison River are not known, but fish probably occurred at least as far upstream as the North Fork Confluence. There is no potential habitat for the Colorado pikeminnow in the project areas.

Greenback Cutthroat Trout

Greenback cutthroat trout are coldwater fish belonging to the trout, salmon and whitefish family. They have dark, round spots on the sides and tail and two colorful blood-red stripes on each side of the throat under the jaw, hence the name "cutthroat". During the spring spawning season the entire belly may become crimson red. The species is found in clear, swift-flowing mountain streams with overhanging banks and vegetative cover. Juveniles tend to shelter in shallow backwaters and lakes. Spawning occurs in spring, or in some high-elevation sites, during early summer. There is no potential habitat for the greenback cutthroat trout in the project area.

Gunnison's Prairie Dog

Gunnison's prairie dog is a member of the Sciuridae family, which includes squirrels, chipmunks, marmots, and prairie dogs. Adults vary in length from 12 to 15 inches and weigh 650 to 1,200 grams (23 to 42 ounces), with males averaging slightly larger than females. The dorsal color is yellowish buff intermixed with blackish hairs. The top of the head, sides of cheeks and "eyebrows" are noticeably dark. The species is much shorter and has a lighter colored tail than the black-tailed prairie dogs, and have grayish-white hairs in the distal half of the tail rather than pure white like the white-tailed prairie dogs. CPW have extensively searched for populations of Gunnison's prairie dog and determined that there are no known occurrences of the species in the project area. Furthermore, no prairie dogs or prairie dog complexes were found during the site examination.

Gunnison Sage-grouse

The Gunnison sage-grouse is a species of sage-grouse found south of the Colorado River in Colorado and Utah. They are about one-third smaller than the greater sage-grouse, and males have more distinct, white barring on their tail feathers, longer and more dense filoplumes on their necks. Female Gunnison and greater sage-grouse have nearly the same plumage, but the female Gunnison is again about one-third smaller than the greater sage-grouse. Male Gunnison sage-grouse conduct an elaborate display when trying to attract females on breeding grounds (leks) in the spring. Nesting begins in mid-April and continues into July.

The Gunnison sage-grouse is a species of special concern in Colorado. Human development, livestock, grazing, and increased ungulate populations have all contributed to historic losses of habitat for the Gunnison sage-grouse. In 2013, the Gunnison sage-grouse was proposed for listing as an endangered species. No known populations of Gunnison sage-grouse have been found in the proposed piping corridor. The nearest known species occurrences are approximately 6 miles to the north and 3.5 miles to the east of the proposed Bostwick Park project site.

Humpback Chub

The humpback chub is a federally listed endangered minnow that is originally native to the Upper Colorado River system. Humpback chub originally thrived in the fast, deep, whitewater areas of the Colorado River and its major tributaries. Man-induced flow alterations have

changed the turbidity, volume, current speed, and temperature of those rivers and have contributed to the significant population declines. Humpback chub mainly eat insects and other invertebrates, and occasionally algae and fish. The species spawns during the spring and summer in shallow, backwater areas with cobble substrate. Younger individuals reside in shallower, turbid habitats until they are large enough to move into whitewater areas (UDWR 2010). The Gunnison River has never been confirmed as important habitat for this species. Only one specimen has been confirmed in the Gunnison River and it was found in a canyon area about 4 miles downstream from Bridgeport in 1995. There is no potential habitat for the humpback chub in the project areas.

Mexican Spotted Owl

The Mexican spotted owl is a federally listed threatened species. These owls are nocturnal and non-migratory. The spotted owl occupies steep rocky canyons and they are typically found between 4,100 and 9,000 feet above sea level. These owls tend to be opportunistic feeders and prey on small mammals, birds, reptiles, and insects. Spotted owls utilize suitable naturally occurring sites and nests built by other animals. The eggs are incubated for approximately 32 days. Fledging typically occurs 36 days after the eggs hatch (UDWR 2009). Most known owls exist within the boundaries of 11 National Forests in Arizona and New Mexico. Those found in Colorado only inhabit the Mesa Verde National Park area. No specimens or habitat are known to exist within the project area.

North American Wolverine

The North American wolverine is approximately three feet long with a rather short tail, just one-quarter the total length. They are stocky mammals, weighing 20 to 30 pounds, and are built like a small bear. Their fur is dark brown to black and the sides have a characteristic yellowish brown to whitish stripe. In Colorado, nearly all historical and recent reports of wolverines are from higher elevation alpine areas. Until recently, the last confirmed wolverine sighting in Colorado was in 1919. Occasional reports of wolverine sightings were investigated, but wolverines were never officially documented. There is no known wolverine habitat in the proposed project areas.

Razorback Sucker

The Razorback sucker 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. The species spawn between February and June. Reproductive populations remain only in the middle Green River in Utah and in an off-channel pond in the Colorado River near Grand Junction. The proposed piping area does not contain any known habitat for the razorback sucker.

Yellow-billed Cuckoo

As the name suggests, this avian species has a yellow lower mandible. It has rufous wings that contrast against the gray-brown wing coverts and upperparts. The underparts are white and they have large white spots on a long black undertail (Alsop 2001). It is a neotropical migrant,

which winters in South America. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects (Ehrlich et al. 1992). Its incubation/nestling period is the shortest of any known bird because it is one of the last neotropical migrants to arrive in North America and chicks have very little rearing time before embarking on their transcontinental migration. Yellow-billed cuckoos arrive in Colorado in late May or early June and breed in late June through July. Cuckoos typically start their southerly migration by late August or early September (Parrish et al. 1999). Yellow-billed cuckoos are considered a riparian obligate and are usually found in large tracts of cottonwood/willow habitats with dense sub-canopies (below 33 ft.). Based on historical accounts, the species was localized and uncommon along Colorado drainages while being locally common in other western areas (Fish and Wildlife Service 2005).

Cottonwood woodlands have been lost or fragmented in the study area due to clearing residential and agricultural uses, fires, invasion of tamarisk and other nonnative plants, and reduction of spring peaks that are important for regeneration of cottonwood stands. The lack of cottonwood thickets and dense habitat along the proposed piping area makes it highly unlikely that cuckoo habitat exists in the project area. Furthermore, there are no known occurrences of the species in the project area.

3.7.1 No Action Alternative

Salinity loading of the Colorado River Basin would continue at current rates due to seepage from the Bostwick Park Siphon Lateral and Forked Tongue/Holman Ditch. This seepage would continue to impact water quality within the drainage, thereby impacting wildlife using the area. Minor direct and indirect impacts to threatened, endangered, or candidate species from the continued salt loading in the Colorado River Basin is anticipated under the No Action Alternative.

3.7.2 Action Alternative

On November 12, 2013, Mike Zeman, Wildlife and Natural Resource Concepts and Solutions LLC., conducted a biological assessment for the Forked Tongue/Holman Ditch Project. On November 15, 2013, Mike Zeman also conducted a biological assessment on the Bostwick Park Siphon Lateral Project (see Appendix C). No threatened, endangered, candidate, or sensitive species or habitats were identified during either survey.

The proposed projects do not include additional storage or irrigate new lands, and will not result in new depletions. Effects on endangered Colorado River fishes from the continued operations and historic depletions associated with the federal Bostwick Park Project were included and addressed in the Gunnison Basin Programmatic Biological Opinion (PBO) (FWS 2009) and no additional Section 7 consultation is needed for the endangered fish for the Bostwick Park Project. FTHDC's historic depletions of 79 acre feet per year would also continue to adversely impact endangered fish. The historic depletions were also included in the Gunnison PBO. Reclamation is consulting with the Service regarding concurrence that the

FTHDC's historic depletions fit under the umbrella of the Gunnison River Basin PBO and would avoid the likelihood of jeopardy and/or adverse modification of critical habitat for depletion impacts. FTHDC will then enter into a separate Recovery Agreement to provide certainty that their depletions can occur consistent with Section 7 of the ESA. Results of the consultation will be included in the Final EA.

The Bostwick Park project is an area that has been proposed as critical habitat for the Gunnison sage-grouse. The area is currently unoccupied by the Gunnison sage-grouse. Informal discussions between Reclamation, CPW and USFWS in May 2014 indicates that the proposed piping activities would not take place within leking habitats and would also occur outside of the critical leking timeframes. If the Gunnison sage-grouse were to be federally listed as an endangered species at any point during project construction, and critical habitat is designated, all construction activities would cease, and Reclamation would have to consult with the USFWS. Based on the May 2014 informal discussions, Reclamation anticipates USFWS would likely concur with a "may affect, not likely to adversely affect, and no adverse modification of critical habitat" determination.

Informal discussions with the USFWS indicates that given the lack of suitable habitat within the proposed project areas, neither of the proposed projects evaluated in this EA would have an impact on the yellow-billed cuckoo.

Reclamation has determined that the proposed actions have no new effect on the, bonytail chub, Colorado pikeminnow, humpback chub, and razorback sucker, and no effect on other listed species. Reclamation also had determined that the proposed project will not impact candidate species or their proposed habitats. Furthermore, the cumulative efforts of the Colorado River Basin Salinity Control Program are improving water quality within designated critical habitats for the Colorado pikeminnow, razorback sucker, humpback chub, and bonytail chub throughout the Colorado River and Gunnison River basins by reducing salt and selenium loads.

3.8 INDIAN TRUST ASSETS

Indian trust assets (ITAs) are legal interests in property held by the United States for Indian Tribes or individuals. The Department of the Interior's policy is to recognize and fulfill its legal obligations to identify, protect and conserve the trust resource of federally recognized Indian tribes and tribal members, and to consult with the tribes on a government-to-government basis whenever plans or actions affect tribal trust resources, trust assets, or tribal safety (please refer to the Departmental manual, 512 DM 2). Under this policy, as well as Reclamation's ITA policy, Reclamation is committed to carrying out its activities in a manner which avoids adverse impacts to ITAs when possible, and to mitigate or compensate for such impacts when it cannot. All impacts to ITAs, even those considered insignificant, must be discussed in the trust analyses in NEPA compliance documents and appropriate compensation or mitigation must be implemented.

Trust assets may include: lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. Impacts to ITAs are evaluated by assessing how the action affects the use and quality of ITAs. Any action that adversely affects the use, value, quality or enjoyment of an ITA is considered to have an adverse impact on the resources.

No ITAs have been identified within either project area. Therefore, the No Action Alternative and Proposed Actions have no effect on ITAs.

3.9 ENVIRONMENTAL JUSTICE

Executive Order 12898 on Environmental Justice requires Federal agencies to analyze programs to assure that they do not disproportionately adversely affect minority or low income populations or Indian Tribes.

3.9.1 No Action Alternative

The No Action Alternative would have no effect on environmental justice populations in the project area.

3.9.2 Action Alternative

While a minority population may exist in the general project area, implementation of the Action Alternative would not disproportionately affect low-income or minority populations. The proposed action would not involve population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts. The Action Alternative would therefore have no adverse effects to human health or the environment and would not disproportionately affect minority and low-income populations.

3.10 CULTURAL RESOURCES

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

Bostwick Park Water Siphon Lateral Project
In October 2013, Alpine Archaeological Consultants, Inc. conducted a Class III cultural resource inventory of the Area of Potential Effect (APE) for the proposed action, which includes the proposed irrigation features, construction disturbance areas and staging areas. A total of 48.2 acres were inventoried.

The cultural inventory identified one linear site, the East Lateral, historically known as the East Vernal Ditch. The linear site no longer retains its historical integrity and was not recommended eligible for listing in the National Register of Historic Places (NRHP). In addition to the East

Lateral, three isolated finds were also recorded during the project inventory. The isolated finds have limited research potential and are therefore recommended as not eligible for inclusion in the NRHP. No listed, eligible or potentially eligible cultural resources were identified within the APE.

Forked Tongue/Holman Ditch Company
On November 20, 2013 Alpine Archaeological Consultants, Inc., conducted a Class III cultural resource inventory of the 36.4 acre Area of Potential Effect (APE) for the proposed action, which includes the proposed irrigation features, construction disturbance areas and staging areas.

The cultural resource inventory identified one linear site within the APE, Forked Tongue/Holman Ditch. The ditch is recommended not eligible for inclusion in the NRHP. This recommendation is due to a lack of unique design or engineering characteristics, the fact that it served only four landholdings and it was never incorporated into a larger water delivery system, and the determination that it is not important to the history of the region. No listed, eligible or potentially eligible cultural resources were identified within the APE.

3.10.1 No Action Alternative

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

3.10.2 Action Alternative

Based on the cultural resource inventories, Reclamation determined that there were no effects to cultural resources eligible to the National Register of Historic Places within either project's APE. The Colorado State Historic Preservation Officer (SHPO) agreed with these determinations. The SHPO correspondence is located in Appendix D, Cultural Resources. Therefore, there would be no adverse effects on cultural resources from the implementation of the Action Alternative.

In the event of discovery of evidence of possible cultural or paleontological resources at either project site, the managing entity associated with the project site where the cultural or paleontological resource is found (BPWCD or the FTHDC) will immediately cease all ground-disturbing activities in the vicinity and notify Reclamation. Work will not be resumed until approved by Reclamation.

3.11 PUBLIC SAFETY, ACCESS, AND TRANSPORTATION

Major transportation resources in the Bostwick Park area include State Highway (SH) 50, which runs east out of the city of Montrose; SH 347 which runs north from SH 50 to the Bostwick Park; and local roadways. County and local roads provide access and mobility for residents traveling in and out of Bostwick Park. There is no public safety or emergency services located within the project area. Montrose County provides emergency services for the area of Bostwick Park.

Transportation resources in the Forked Tongue/Holman Ditch project area includes SH 65, which travels north and south through Orchard City and Eckert; Trap Club Road which parallels most of the Forked Tongue Ditch; and several other small roads such as Running Deer Road and North Road that connect to the small neighborhoods in the area. Other county and local roads provide access and mobility for residents traveling in and out of the project area. The public safety and emergency services are located in the City of Eckert. The Delta County Sherriff's Department provides emergency services for the area of Orchard City and Eckert.

3.11.1 No Action Alternative

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

3.11.2 Action Alternative

There would be no need for new access roads for either of the proposed projects. There are no known bridges with weight restrictions that would be used by construction vehicles. Implementation of the Action Alternative may cause limited delays along roadways adjacent to the project areas from construction vehicles entering and exiting the local roadways. Although no temporary road closures are planned, any temporary road or access closure would be coordinated with the Colorado Department of Transportation, Delta and Mesa Counties, and local law enforcement and emergency services.

3.12 RECREATION RESOURCES

The proposed projects are located entirely on private lands. There are no public recreation resources within the project areas. Recreation in the form of hunting on private lands may occur in the general project vicinity. Construction activities may present a temporary short-term impact on the use of big game access to the area and therefore may present minor disruptions to hunting on those lands that are disturbed during construction. Coordination with private property owners would occur prior to construction to minimize potential impacts. The No Action and Action Alternative would have no long-term effect on recreation resources.

3.13 VISUAL RESOURCES

The visual resources within the project areas are generally related to the area's population, agricultural activities, and adjacent topographic features. The elevation along the Bostwick Park Siphon Lateral ranges from 7,082 to 7,125 feet above sea level. The elevation of the Forked Tongue/Holman Ditch project ranges from 5,202 to 5,320 feet above sea level. Most of the project area has been previously disturbed and converted to agricultural or residential uses. No portions of the proposed Bostwick Park Siphon Lateral or the Forked Tongue/Holman Ditch projects are located on public lands.

3.13.1 No Action Alternative

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

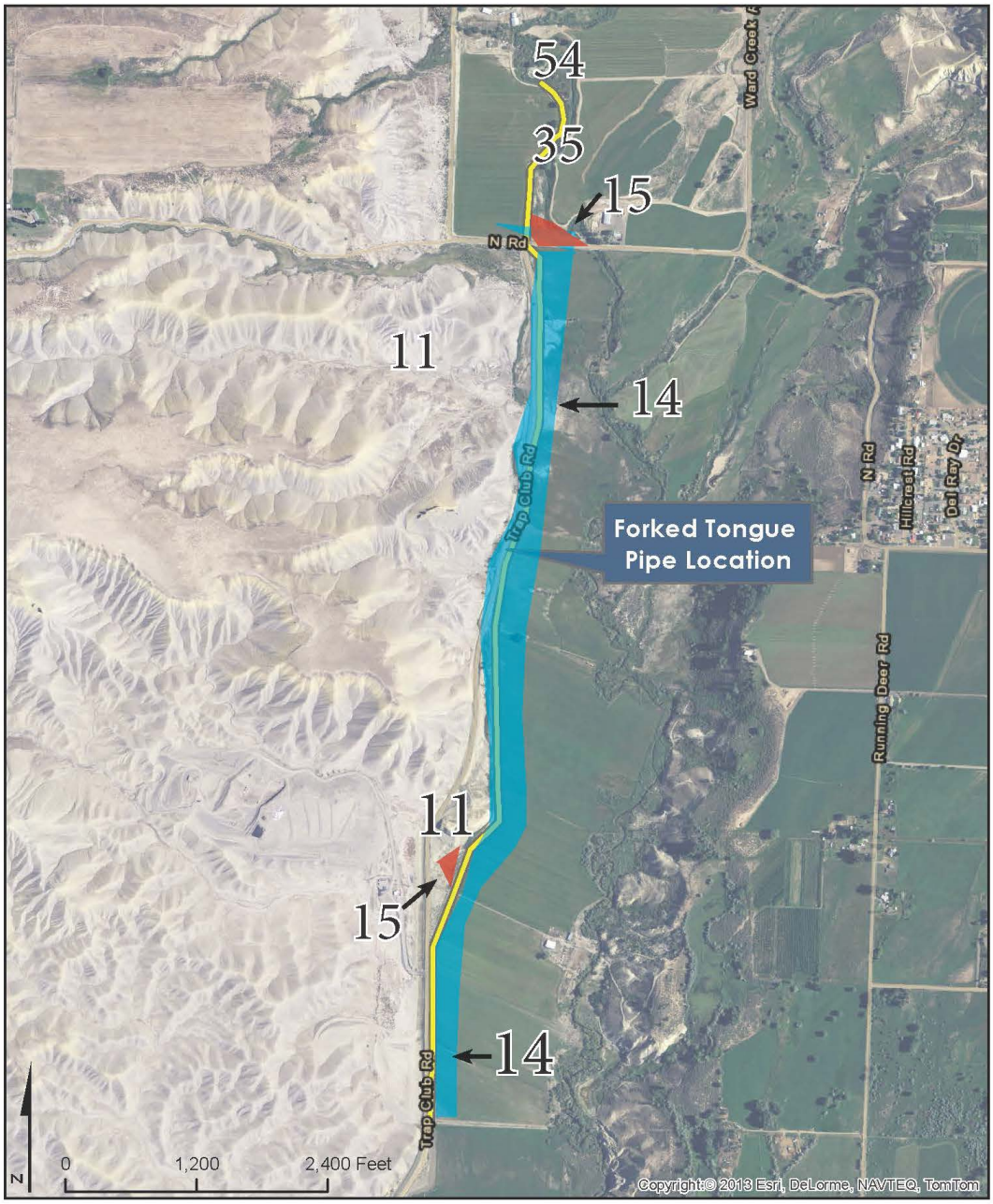
3.13.2 Action Alternative

Under the proposed action, both proposed pipelines would be buried and the disturbed areas would be restored to their original conditions. Visual impacts associated with construction activities would be temporary. During post-construction rehabilitation of the project area, the excavated areas would be filled, graded, and re-vegetated to match the surrounding landscape.

3.14 PRIME, UNIQUE AND STATEWIDE IMPORTANT FARMLAND

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

Information on soils was obtained from the Natural Resources Conservation Service (NRCS) to determine the presence of prime, unique, statewide, or locally important farmland within the project footprint. There is no prime, unique, statewide or locally important farmland within the Bostwick Park Siphon Lateral project area. The Forked Tongue/Holman Ditch project area contains land that is considered prime farmland if irrigated (Figure 3:1).



Projection: Nad 83 State Plane Colorado

J·U·B ENGINEERS, INC.

Figure 3:1 Forked Tongue/Holman Ditch Farmlands – Project area of potential effect is represented by the blue polygon. Orange polygons represent areas that are considered prime farmland if irrigated.

Table 3.4 details the soil information for the Forked Tongue/Holman Ditch Project.

Table 3.4 - Prime and Other Important Farmlands (Forked Tongue Project)

Map Symbol	Map Unit Name	Farmland Classification
11	Badland	Not prime farmland
14	Billings silty clay loam (0 to 3 percent slopes)	Prime farmland if irrigated
15	Billings silty clay loam (3 to 6 percent slopes)	Prime farmland if irrigated
35	Fluvaquents, flooded	Farmland of statewide importance
54	Mesa loam (3 to 6 percent slopes)	Prime farmland if irrigated

3.14.1 No Action Alternative

The No Action Alternative would have no new impact on the farmlands in the project areas. Existing maintenance on the laterals would continue to disturb areas of farmland, and irrigation water may be insufficient in dry years.

3.14.2 Action Alternative

The construction of the Action Alternative may have short-term impacts from ground disturbing activities. Topsoil would be preserved and replaced last to minimize impacts and to facilitate recovery of vegetation. Post-construction, the canal prisms would be filled, contoured and reseeded. Once constructed, annual maintenance activities along the laterals adjacent to these farmlands would be greatly reduced. In addition, improved water delivery should assist in keeping these agricultural lands in production. The increased efficiency of the irrigation systems along with the reduction in maintenance activities from the Action Alternative would result in a beneficial effect to farmland in both project areas.

3.15 WILD AND SCENIC RIVERS, WILDERNESS, OR WILDERNESS STUDY AREAS

The Gunnison Gorge National Conservation and Wilderness Area is located approximately 11 miles from the Bostwick Park project and 13 miles from the FTHD project location. The Gunnison Gorge Wilderness Area encompasses 17,784 acres of land and includes a 14-mile stretch of the Gunnison River. As a wilderness area, the land is managed through the Bureau of Land Management (BLM).

The Black Canyon of the Gunnison National Park is located to the northwest of the Gunnison Gorge Wilderness Area. The Park, which is managed by the National Park Service, contains 12-miles of the 48-mile long canyon of the Gunnison River. The Park boundary is approximately 5-miles from the Bostwick Park project area.

There are no Wild and Scenic Rivers, Wilderness, or Wilderness Study Areas within either project area.

3.15.1 No Action Alternative

The No Action Alternative would have no impact on the Wilderness Area or National Park.

3.15.2 Action Alternative

The Gunnison Gorge Wilderness Area and the Black Canyon National Park are outside of the project action areas. The Action Alternative would therefore not disturb any land within or directly adjacent to these areas. Although the Bostwick Park project is near these areas, the proposed improvements would not result in any short or long-term impacts on the Wilderness Area or the National Park. There would be no impacts on the travel routes to and from these areas, nor is there likely to be visual impacts from the construction activities in either project area. Therefore, there would be no impact to these resources from the Action Alternative.

3.16 CUMULATIVE IMPACTS

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

At this time, there are no known federal, state, or local projects occurring within the project areas. The Action Alternative would comply with all relevant federal, state, and local permits (detailed in the Chapter 4 Environmental Commitments). The disturbance associated with the implementation of the Action Alternative is not expected to raise cumulative negative impacts to a significant level.

There are three federal programs that include the project areas on a basin-wide scale. The first program is the Colorado River Basin Salinity Control Program, which would provide the funding for implementation of the proposed action. Collectively, projects funded under the Colorado River Basin Salinity Control Program result in improved water quality with the goal of reducing salt loading in the Colorado River. The second is the Upper Colorado River Endangered Fish Recovery Program. The Recovery Program involves federal, state, and private organizations and agencies in Colorado, Utah, and Wyoming. Partners of the Recovery Program are

recovering four species of endangered fish in the Colorado River and its tributaries while water use and development continues to meet human needs in compliance with interstate compacts and applicable federal and state laws. The third program is the development and implementation of the Gunnison Basin Selenium Management Plan which was incorporated as a conservation measure in the Gunnison Basin Programmatic Biological Opinion (Fish and Wildlife Service 2009). Reclamation, working with entities in the Gunnison Basin, developed a plan to reduce selenium levels in the Gunnison River at Whitewater. When the Action Alternative is analyzed with components of these basin-wide programs, the cumulative beneficial effects on water quality are significant.

3.17 SUMMARY OF IMPACTS

Table 3.5 and Table 3.6 list predicted resource impacts of the No Action and Action Alternative for each project analyzed in this EA.

Table 3.5 – Bostwick Park Siphon Lateral Summary of Impacts

Resource Issue	No Action Alternative	Action Alternative
Air Quality	No Effect	Minor short-term effects due to fugitive dust and equipment exhaust from construction activity. Mitigate with BMPs.
Water Rights and Use	No Effect	No Effect
Water Quality	Continued salt and selenium loading from the Project Areas to the Colorado River Basin	Estimated annual reduction of 413 tons of salt loading to the Colorado River from off-farm improvements. Also potential selenium loading reductions to the Gunnison and Colorado Rivers.
Vegetative Resources	No Effect	Estimated loss of 6.83 habitat units from reduced seepage and canal prism habitat. A Reclamation approved Habitat Replacement Plan would be implemented to mitigate for the habitat units lost from the construction of the Action Alternative.
Fish and Wildlife Resources	No Effect	Short-term temporary impact to local wildlife during construction. Estimated loss of 6.83 habitat units from reduced seepage and canal prism habitat. A Habitat Replacement Plan would be implemented to mitigate for the habitat units lost from the construction of the Action Alternatives.

Table 3.5 – Bostwick Park Siphon Lateral Summary of Impacts (continued)

Resource	No Action Alternative	Action Alternative
Threatened and Endangered Species	Salt and Selenium loading from the project area would continue to affect aquatic dependent species, as would historic depletions.	Historic depletions would continue to adversely affect the Colorado River fish.
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Cultural Resources	No Effect	No Effect
Public Safety, Access, and Transportation	No Effect	Minor temporary disruptions to local roadways from construction traffic entering and exiting the roadways. No long-term effects from the Action Alternative.
Recreation Resources	No Effect	No Effect
Visual Resources	No Effect	Minor temporary impacts from construction activities. No long-term effects from the Action Alternative.
Prime, Unique and Statewide Important Farmland	Minor direct and indirect impacts may occur due to inefficiency of the existing water delivery system and increased selenium levels.	Minor temporary impacts from construction activities may occur on farmland. Beneficial Effects
Wild And Scenic Rivers	No Effect	No Effect
Cumulative Impacts	No Effect	Beneficial Effects

Table 3.6 – Forked Tongue/Holman Ditch Summary of Impacts

Resource Issue	No Action	Proposed Action
Air Quality	No Effect	Minor short-term effects due to fugitive dust and equipment exhaust from construction activity. Mitigate with BMPs.
Water Rights and Use	No Effect	No Effect
Water Quality	Continued salt and selenium loading from the Project Areas to the Colorado River Basin	Estimated annual reduction of 412 tons of salt loading to the Colorado River from off-farm improvements. Also potential selenium loading reductions to the Gunnison and Colorado Rivers.
Vegetative Resources	No Effect	Estimated loss of 6.71 habitat units from reduced seepage and canal prism habitat. A Habitat Replacement Plan would be implemented to mitigate for the habitat units lost from the construction of the Action Alternative.
Fish and Wildlife Resources	No Effect	Short-term temporary impact to local wildlife during construction. Estimated loss of 6.71 habitat units from reduced seepage and canal prism habitat. A Habitat Replacement Plan would be implemented to mitigate for the habitat units lost from the construction of the Action Alternatives.
Threatened and Endangered Species	Salt and Selenium loading from the project area would continue to affect aquatic dependent species, as would historic depletions.	Historic depletions would continue to adversely affect the Colorado River fish. *Pending consultation with USFWS.*
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Cultural Resources	No Effect	No Effect

Table 3.6 – Forked Tongue/Holman Ditch Summary of Impacts (continued)

Resource	No Action Alternative	Action Alternative
Public Safety, Access, and Transportation	No Effect	Minor temporary disruptions to local roadways from construction traffic entering and exiting the roadways. No long-term effects from the Action Alternative.
Recreation Resources	No Effect	No Effect
Visual Resources	No Effect	Minor temporary impacts from construction activities. No long-term effects from the Action Alternative.
Prime, Unique and Statewide Important Farmland	Minor direct and indirect impacts may occur due to inefficiency of the existing water delivery system and increased selenium levels.	Beneficial Effects
Wild And Scenic Rivers	No Effect	No Effect
Cumulative Impacts	No Effect	Beneficial Effects

CHAPTER 4 – ENVIRONMENTAL COMMITMENTS AND MITIGATION MEASURES

4.1 INTRODUCTION

This section discusses the environmental commitments and related mitigation measures developed to protect resources and mitigate adverse impacts to a non-significant level. The cooperative agreements between Reclamation and BPWCD and between Reclamation and FTHDC require that BPWCD and FTHDC be responsible for "…implementing and/or complying with the environmental commitments contained in the NEPA/ESA compliance documents to be developed by Reclamation for the project."

4.2 ENVIRONMENTAL COMMITMENTS

The following environmental commitments would be implemented as an integral part of the Action Alternative for both the Bostwick Park Siphon Lateral Project and the Forked Tongue/Holman Ditch Project, unless otherwise specified. Environmental commitments include:

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 personnel and included in contract specifications.

2. **Construction Activities Confined to the Surveyed Corridor** - All construction activities would be confined to the proposed pipeline alignments and construction staging areas that have been surveyed for resource impacts including cultural, paleontological, and biological resources. Construction activities outside of this corridor would require additional review by Reclamation to determine if the existing surveys are adequate to evaluate impacts outside these corridors. If additional borrow or waste areas are identified, the areas would be inventoried, surveyed, and evaluated prior to use. Additional NEPA/ESA compliance activities may be required as determined by Reclamation.

3. **Disturbed Areas** - Topsoil would be preserved during construction and redistributed after completion of construction activities. All disturbed areas would be smoothed, shaped, contoured and reseeded to as near their pre-project conditions as practicable. Seeding and planting would occur at appropriate times with weed-free seed mixes of native plants and agricultural grasses on disturbed areas, where appropriate.

4. **Water Quality** - BMPs would be implemented to minimize erosion and protect water quality of downstream resources. BMPs are described in greater detail in the Water Quality section of this document. In the event that dewatering during construction is needed, the irrigation company and their respective contractor(s) would obtain required CWA Section 402 permits prior to dewatering.

5. **Vegetation Resources** - Ground disturbances would be limited to only those necessary to safely implement the proposed project improvements. BMPs would be implemented to reduce disturbances to vegetation and to reduce the amount of required planting and reseeding. Planting and reseeding disturbed areas, per landowner specifications, monitoring plantings to ensure establishment, control of noxious weeds in disturbed areas, and the use of accepted erosion control measures during construction are all incorporated as environmental commitments for the proposed actions.

6. **Noxious Weeds** - Noxious weeds would be controlled following Reclamation's BMPs. Areas that are disturbed may be more vulnerable to nonnative and noxious weed infestation. Nonnative species typically recover more quickly after a disturbance than native species. To minimize impact to native vegetation, previously disturbed areas would be used for construction activities, where possible. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive species. This would include weed-free seeding mixtures of desirable native species and agricultural grasses, where appropriate.

7. **Fish and Wildlife Resources** - Construction areas would be confined to the smallest feasible area to limit disturbance to wildlife within the project areas. Trenches left open overnight will be kept to a minimum to limit the entrainment of small animals and address public safety problems. Any trenches left open overnight will be fitted with escape ramps.

8. **Habitat Replacement** - Development and/or enhancement to replace the predicted fish and wildlife habitat units lost under the proposed actions are required under the Colorado River Salinity Control Act. BPWCD and FTHDC are responsible for developing and implementing Reclamation approved wildlife habitat replacement plans to replace fish and wildlife values foregone as required by the Salinity Control Act. Habitat replacement would be implemented concurrently with the proposed actions.

9. **Federally Listed Species** - BPWCD historic depletions are covered under the umbrella of the Gunnison Basin Biological Opinion. No further consultation is required for this project.

FTHDC will enter into a recovery agreement with the USFWS to incorporate its historic depletions under the umbrella of the Gunnison Basin Biological Opinion. *A recovery agreement is pending USFWS consultation*.

In the event that the Gunnison sage-grouse is listed on the ESA during project construction, and critical habitat is designated, all construction activities will cease and Reclamation will consult with the USFWS.

10. **Cultural Resources** - Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, must provide immediate telephone notification of the discovery to Reclamation's Grand Junction 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 Colorado SHPO and interested Native American tribal representatives would be promptly notified. Consultation would begin immediately. This requirement is prescribed under the Native American Graves Protection and Repatriation Act (NAGPRA) (43 CRF Part 10); and the Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C 470).

    In the event of discovery evidence of possible cultural or paleontological resources at either project site, the managing entity associated with the project site where the cultural or paleontological resource was found (BPWCD or FTHDC) will immediately cease all ground disturbing activities in the vicinity and notify Reclamation. Work will not be resumed until approved by Reclamation.

11. **Hazardous Materials** - During construction, the use, storage, and disposal of hazardous waste materials and waste onsite would be managed in accordance with all federal, state, and local standards.

CHAPTER 5 – CONSULTATION AND COORDINATION

5.1 INTRODUCTION

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

The Siphon Lateral Piping Project and the Forked Tongue Lateral Piping Project were developed by BPWCD and FTHDC as a means to implement the goals of the Colorado River Salinity Control Program and to improve the efficiency of the BPWCD and FTHDC systems. Conceptual plans were developed by BPWCD and FTHDC with assistance from J-U-B Engineers, Inc. of Salt Lake City, UT. BPWCD and FTHDC prepared and submitted formal funding applications for the salinity funds through Reclamation's Funding Opportunity Announcement (FOA).

5.2 AGENCY CONSULTATION

This EA was prepared by J-U-B Engineers, Inc. for the Bureau of Reclamation, BPWCD, and FTHDC. Local, state, and federal agencies were contacted and consulted in the preparation of this document. Agencies and organizations consulted during the EA process include the following:

- U.S. Army Corps of Engineers, Grand Junction, CO
- Colorado Parks and Wildlife, Gunnison, CO
- Bostwick Park Water Conservancy District, Bostwick Park, CO
- Montrose County, CO
- U.S. Fish and Wildlife Service, Grand Junction, CO
- Colorado Office of Archaeology and Historic Preservation, Denver, CO
- Colorado Water Conservation Board, Denver, CO
- Forked Tongue/Holman Ditch Company, Eckert, CO
- Delta County, CO
- National Parks Service
- Colorado Division of Water Resources

5.3 DRAFT EA COMMENTS

[Pending Draft EA distribution]

5.4 DISTRIBUTION LIST

Appendix A contains the distribution list for this draft EA.

[Pending Draft EA distribution]

5.5 LIST OF PREPARERS

Table 5.1 List of Preparers

Name	Title/Position	Contributions
Agency Representatives		
Terry Stroh	Grand Junction BOR, Environmental and Planning Group Chief	Environmental Project Manager
Mark Wernke	Grand Junction BOR, Design and Construction Group Chief	Project Manager
Jenny Ward	Grand Junction BOR, Environmental Protection Specialist	Project Coordination and Oversight
Consultants		
Brian Deeter, P.E.	Engineer, J-U-B Engineers, Inc.	Project Manager
Bryce Wilcox, P.E	Design Engineer, J-U-B Engineers, Inc.	Alternative Analysis
Marti Hoge	Environmental Lead, J-U-B Engineers, Inc.	NEPA Oversight
Jordan Hansen	GIS Specialist, Gateway Mapping, Inc.	GIS, Document Graphics
Becky Lang	Environmental Planner, J-U-B Engineers, Inc.	Affected Environment & Environmental Consequences
Michael Zeman	Biologist, Wildlife and Natural Resource Concepts & Solutions, LLC.	Biological Resources
Tracy Hoose	Staff Archaeologist, Alpine Archaeological Consultants, Inc.	Cultural Resources and Paleontological Resources
Jack E. Pfertsh	Principal Investigator, Alpine Archaeological Consultants, Inc.	Cultural Resources and Paleontological Resources

CHAPTER 6 - REFERENCES

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CHAPTER 7 - ABBREVIATIONS AND ACRONYMS

APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
BMPs	Best Management Practices
BPWCD	Bostwick Park Water Conservancy District
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FTHDC	Forked Tongue/Holman Ditch Company
FONSI	Finding of No Significant Impact
Interior	Department of the Interior
ITAs	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
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
PM 10	Particulate Matter 10 Micrograms for Cubic Meter
PM 2.5	Particulate Matter 2.5 Micrograms for Cubic Meter
Reclamation	Bureau of Reclamation
SOPs	Standard Operating Procedures
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Appendix A: Distribution List

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

Mr. Kyle Banks
District Wildlife Manager
Colorado Parks and Wildlife

Mr. J. Wenum
Gunnison Area Wildlife Manager
Colorado Parks and Wildlife

Mr. David Rice
Delta County Planning and Development
Delta, CO

Montrose County Planning and Development
Montrose, CO

Mr. Larry Record
Delta County Road and Bridge
Delta, CO

Ms. Patty Gelatt
Assistant Field Supervisor
US Fish and Wildlife Service

Mr. Nathan Green
US Army Corps of Engineers
Colorado West Regulatory Branch

Mr. Steve Miller
Colorado Water Conservation Board
Denver, CO

Mr. Dave Kanzer
Colorado Water Conservation District
Glenwood Springs, CO

Mr. Ralph D'Alessandro
Delta Conservation District
Delta, CO

Appendix B: Clean Water Act Exemptions

Irrigation Exemption Summary

US Army Corps of Engineers

Sacramento District
1325 J Street
Sacramento, CA 95814-2922

FARM OR STOCK POND OR IRRIGATION DITCH CONSTRUCTION OR MAINTENANCE

Pursuant to Section 404 of the Clean Water Act (33 USC 1344) and Federal Regulations (33 CFR 323.4(a)(3)), certain discharges for the construction or maintenance of farm or stock ponds or irrigation ditches have been exempted from requiring a Section 404 permit. Included in the exemption are the construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not the construction) of drainage ditches. Discharges associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption.

A Section 404 permit is required if either of the following occurs:

(1) Any discharge of dredged or fill material resulting from the above activities which contains any toxic pollutant listed under Section 307 of the Clean Water Act shall be subject to any applicable toxic effluent standard or prohibition, and shall require a permit.

(2) Any discharge of dredged or fill material into waters of the United States incidental to the above activities must have a permit if it is part of an activity whose purpose is to convert an area of the waters of the United States into a use to which it was not previously subject, where the flow or circulation of waters of the United States may be impaired or the reach of such waters reduced. Where the proposed discharge will result in significant discernible alterations to flow or circulation, the presumption is that flow or circulation may be impaired by such alteration. For example, a permit will be required for the conversion of a wetland from silvicultural to agricultural use when there is a discharge of dredged or fill material into waters of the United States in conjunction with construction of dikes, drainage ditches, or other works or structures used to effect such conversion. A discharge which elevates the bottom of waters of the United States without converting it to dry land does not thereby reduce the reach of, but may alter the flow or circulation of, waters of the United States.

If the proposed discharge satisfies all of the above restrictions, it is automatically exempted and no further permit action from the Corps of Engineers is required. If any of the restrictions of this exemption will not be complied with, a permit is required and should be requested using ENG Form 4345 (Application for a Department of the Army permit). A nationwide permit authorized by the Clean Water Act may be available for the proposed work. State or local approval of the work may also be required.

For general information on the Corps' Regulatory Program please check our web site at www.spk.army.mil/regulatory. For additional information or for a written determination regarding a specific project, please contact the Corps at the following addresses:

Sacramento Main Office-1325 J Street, Room 1480, Sacramento, CA 95814	(916) 557-5250
Redding Field Office-152 Hartnell, Redding, CA 96002	(530) 223-9534
Reno Office-300 Booth Street, Room 2103, Reno, NV 89509	(775) 784-5304
Intermountain Region Main Office-533 West 2600 South, Suite 150, Bountiful, UT 84010	(801) 295-8380
Colorado/Gunnison Basin Office-402 Rood Ave., Room 142, Grand Junction, CO 81501	(970) 243-1199
Durango Office-278 Sawyer Dr., Unit #1, Durango, CO 81301	(970) 375-9506
Frisco Office-301 W Main, Suite 202, P.O. Box 607, Frisco, CO 80443	(970) 668-9676
St. George Office-321 North Mall Drive, Suite L-101, St. George, UT 84790	(435) 986-3979

Appendix C: ESA Compliance Documents

(Pending USFWS Consultation)

Appendix D: Cultural Resource Compliance Documents

HISTORY Colorado

OFFICE OF HIST. PRES.
RECEIVED BUR. RECL.
GRAND JUNCTION
MAR 14 2014

3/12/14 EW EWarner
3/20/14 TB T Stroh
CHS #65497

6 March 2014

Ed Warner
Area Manager
Western Colorado Area Office
US Bureau of Reclamation
445 West Gunnison Ave., Suite 221
Grand Junction, CO 81501

RE: Bostwick Park Piping Project, Delta, Delta County

Dear Mr. Warner:

Thank you for your recent correspondence received 26 February 2014, concerning the proposed replacement of a 1,056-foot portion of the East Lateral/East Vernal Canal and a 9,504-foot portion of the Bostwick Lateral with pipe. Our office has reviewed the submitted materials.

The Bostwick Lateral is less than fifty years old and is not eligible for listing on the National Register of Historic Places. The East Lateral is more than fifty years old, but we concur that it has been altered over the years and no longer retains enough integrity to be considered eligible for the National Register. Therefore, we find that no historic properties will be affected by this project.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer, and
President, Colorado Historical Society

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
303-866-3392 * Fax 303-866-2711 * E-mail: oahp@state.co.us * Internet: www.historycolorado.org

HISTORY Colorado

OFFICIAL FILE COPY
RECEIVED FOR W.C.A.O.
GRAND JUNCTION
MAR 14 2014
MAR 14 2014
3/18/14 EW
CHS #65537 R
EWARNER
TSTROH
Hamilton

6 March 2014

Ed Warner
Area Manager
Western Colorado Area Office
US Bureau of Reclamation
445 West Gunnison Ave., Suite 221
Grand Junction, CO 81501

RE: Forked Tongue Piping Project, Eckert vicinity, Delta County

Dear Mr. Warner:

Thank you for your recent correspondence dated 27 February 2014, concerning the proposed replacement of 1.93 miles of the Forked Tongue Ditch (5DT.1965) with pipe. Our office has reviewed the submitted materials. Although the Forked Tongue Ditch is more than fifty years old, it does not appear to be eligible for listing in the National Register of Historic Places. Therefore, we find that no historic properties will be affected by this project.

If you have any questions, please contact Joseph Saldibar, Architectural Services Manager, at (303) 866-3741.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer, and
President, Colorado Historical Society

OFFICE OF ARCHAEOLOGY AND HISTORIC PRESERVATION
303-866-3392 * Fax 303-866-2711 * E-mail: oahp@state.co.us * Internet: www.historycolorado.org

Appendix E: Delta & Montrose County Noxious Weed List

Delta County

1.08 Weed Lists: State of Colorado

Under the Colorado Noxious Weed Act, the Colorado Department of Agriculture has appointed a Colorado State Noxious Weed Advisory Board. The Colorado State Noxious Weed Advisory Board and the Department of Agriculture Commissioner have designated the following classifications and management goals for the noxious weed species below:

List A Species

List A species in Colorado are designated by the Commissioner for eradication. These weeds are either relatively rare or have not been found in Colorado. Species that are in **bold print** are known to exist in Delta County as of January 1, 2009.

African rue (*Peganum harmala*)
Camelthorn (*Alhagi pseudalhagi*)
Common crupina (*Cupina vulgaris*)
Cypress spurge (*Euphorbia cyparissias*)
Dyers woad (*Isatis tinctoria*)
Giant salvinia (*Salvinia molesta*)
Hydrilla (*Hydrilla verticillata*)
Meadow knapweed (*Centaurea pratensis*)
Mediterranean sage (*Salvia aethopsis*)
Medusahead (*Taeniatherum caput-medusae*)
Myrtle spurge *(Euphorbia myrsinites)*
Orange hawkweed *(Hieracium aurantiacum)*
Purple loosestrife (*Lythrum salicaria*)
Rush skeletonweed (*Chondrilla juncea*)
Sericea lespedeza (*Lespedeza cuneata*)
Squarrose knapweed (*Centaurea virgata*)
Tansy ragwort (*Senecio jabobaea*)
Yellow starthistle (*Centaurea solstitialis*)

List B Species

List B weed species are species for which the Commissioner (in consultation with the state noxious weed advisory committee, local governments, and other interested parties) develops and implements state noxious weed management plans designed to stop the continued spread of these species. Species that are in **bold print** are known to exist in Delta County as of January 1, 2009

Absinth wormwood (*Artemisia absinthium*)
Black henbane *(Hyoscyamus niger)*
Bouncingbet (*Saponaria officinalis*)

Bull thistle *(Cirsium vulgare)*
Canada thistle *(Cirsium arvense)*
Chinese clematis *(Clematis orientalis)*
Common tansy *(Tanacetum vulgare)*
Common teasel (*Dipsacus fullonum*)
Dalmatian toadflax *(Linaria dalmatica)*
Dame's rocket *(Hesperis matronalis)*
Diffuse knapweed *(Centaurea diffusa)*
Eurasian watermilfoil *(Myriophyllum spicahim*)
Hoary cress or Whitetop *(Cardaria draba)*
Houndstongu*e (Cynoglossum officinale)*
Leafy spurge *(Euphorbia esula)*
Moth mullein (*Verbascum blattaria*)
Musk thistle *(Carduus nutans)*
Oxeye daisy *(Chrysantheum leucanthemum)*
Perennial pepperweed (*Lepidium latifolium*)
Plumeless thistle *(Carduus acanthoides)*
Quackgrass (*Elytrigian repens*)
Redstem filaree (*Erodium cicutarium*)
Russian knapweed *(Centaurea repens)*
Russian olive (*Elaneagnus angustifolia*)
Saltcedar *(Tamarix ramossissima)*
Scentless chamomile *(Matricaria perorate)*
Scotch thistle (*Onopordum acanthium*)
Spotted knapweed *(Centaurea maculosa)*
Spurred anoda (*Anoda cristata*)
Sulfur cinquefoil (*Potentilla recta*)
Venice mallow (*Hibiscus trionum*)
Wild caraway *(Carum carvi)*
Yellow nutsedge (*Cyperus esculentus*)
Yellow toadflax *(Linaria vulgaris)*

List C Species

List C weed species are species for which the Commissioner (in consultation with the state noxious weed advisory committee, local governments, and other interested parties) will develop and implement state noxious weed management plans designed to support the efforts of local governing bodies to facilitate more effective integrated weed management on private and public lands. The goal of such plans will be to stop the continued spread of these species and provide additional education, research, and biological control resources to jurisdictions that choose to require management of List C species. Species that are in **bold print** are known to exist in Delta County as of January 1, 2009

Cheatgrass *(Bromus tectorum)*
Chicory (*Cichorium intybus*)

Common burdock (*Arctium minus*)
Common mullein *(Verbascum thapsus)*
Field bindweed *(Convolvulus arvensis)*
Halogeton (*Halogeton glomeratus*)
Johnsongrass (*Sorghum halepense*)
Jointed goatgrass (*Aegilops cylindrica*)
Perennial sowthistle (*Sonchus arvensis*)
Poison hemlock (*Conium maculatum*)
Puncturevine (*Tribulus terrestris*)
St. Johnswort *(Hypericum perforatum*)
Velvetleaf *(Abutilon theophrasti*)
Volunteer rye (*Secale cereale*)
Wild-prose millet (*Panicum miliaceum*)

1.09 Delta County Noxious Weed List

Yellow starthistle (*Centaurea solstitialis)*
Purple loosestrife (*Lythrim salicaria)*
Myrtle spurge *(Euphorbia myrsinites)*
Common burdock (*Arctium minus*)
Diffuse knapweed *(Centaurea diffusa)*
Spotted knapweed (*Centaurea maculosa*)
Russian knapweed *(Centaurea repens)*
Hoary cress or Whitetop *(Cardaria draba)*
Leafy spurge *(Euphorbia esula)*
Canada thistle *(Cirsium arvense)*
Musk thistle *(Carduus nutans)*
Scotch thistle (*Onopordum acanthium*)
Bull thistle *(Cirsium vulgare)*
Yellow toadflax *(Linaria vulgaris)*
Oxeye daisy *(Chrysantheum leucanthemum)*
Poison hemlock (*Conium maculatum*)
Halogeton (*Halogeton glomeratus*)
Russian olive (*Elaneagnus angustifolia*)
Saltcedar *(Tamarix ramossissima)*

II: GEOGRAPHICAL OVERVIEW OF COUNTY DESIGNATED NOXIOUS WEED INFESTATIONS IN DELTA COUNTY

2.01 Description of Delta County

1. Major Natural Features:
   a. Lakes and Reservoirs: Crawford Reservoir, Sweitzer Lake, Fruitgrowers Reservoir, numerous Grand Mesa lakes and reservoirs.

Montrose County

5.2 Colorado Noxious Weed List

Though many of the following weed species aren't known to be present in Montrose County, any List A species should be reported to the Weed Mitigation Department immediately. Questions concerning weed identification and treatment can often be answered by visiting the Colorado Department of Agriculture's web site at http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1174084048733. Any additional questions should be directed to the Montrose County Weed Mitigation Department.

Though many of the following species aren't likely to be encountered, species known to have been present in Montrose County will be indicated with bold print.

List A species in Colorado that are designated by the Colorado Commissioner of Agriculture for eradication:
African rue (Peganum harmala)
Camelthorn (Alhagi pseudalhagi)
Common crupina (Crupina vulgaris)
Cypress spurge (Euphorbia cyparissias)
Dyer's woad (Isatis tinctoria)
Giant salvinia (Salvinia molesta)
Hydrilla (Hydrilla verticillata)
Meadow knapweed (Centaurea pratensis)
Mediterranean sage (Salvia aethiopis)
Medusahead (Taeniatherum caput-medusae)
Myrtle spurge (Euphorbia myrsinites)
Orange hawkweed (Hieracium aurantiacum)
Purple loosestrife (Lythrum salicaria)
Rush skeletonweed (Chondrilla juncea)
Sericea lespedeza (Lespedeza cuneata)
Squarrose knapweed (Centaurea virgata)
Tansy ragwort (Senecio jacobaea)
Yellow starthistle (Centaurea solstitialis)

List B weed species are species for which the Colorado Commissioner of Agriculture, in consultation with the State Noxious Weed Advisory Committee, local governments, and other interested parties, has developed and implemented state noxious weed management plans designed to stop the continued spread of these species:
Absinth wormwood (Artemisia absinthium)
Black henbane (Hyoscyamus niger)
Bouncingbet (Saponaria officinalis)
Bull thistle (Cirsium vulgare)
Canada thistle (Cirsium arvense)
Chinese clematis (Clematis orientalis)
Common tansy (Tanacetum vulgare)
Common teasel (Dipsacus fullonum)
Corn chamomile (Anthemis arvensis)

Cutleaf teasel (Dipsacus laciniatus)
Dalmatian toadflax, broad-leaved (Linaria dalmatica)
Dalmatian toadflax, narrow-leaved (Linaria genistifolia)
Dame's rocket (Hesperis matronalis)
Diffuse knapweed (Centaurea diffusa)
Eurasian watermilfoil (Myriophyllum spicatum)
Hoary cress (Cardaria draba)
Houndstongue (Cynoglossum officinale)
Jointed goatgrass (Aegilops cylindrica)
Leafy spurge (Euphorbia esula)
Mayweed chamomile (Anthemis cotula)
Moth mullein (Verbascum blattaria)
Musk thistle (Carduus nutans)
Oxeye daisy (Chrysanthemum leucanthemum)
Perennial pepperweed (Lepidium latifolium)
Plumeless thistle (Carduus acanthoides)
Quackgrass (Elytrigia repens)
Russian knapweed (Acroptilon repens)
Russian-olive (Elaeagnus angustifolia)
Salt cedar (Tamarix chinensis, T.parviflora, and T. ramosissima)
Scentless chamomile (Matricaria perforate)
Scotch thistle (Onopordum acanthium)
Scotch thistle (Onopordum tauricum)
Spotted knapweed (Centaurea maculosa)
Spurred anoda (Anoda cristata)
Sulfur cinquefoil (Potentilla recta)
Venice mallow (Hibiscus trionum)
Wild caraway (Carum carvi)
Yellow nutsedge (Cyperus esculentus)
Yellow toadflax (Linaria vulgaris)

List C weed species are species for which management goals will not be to stop continued spread but to provide additional education, research, and biological control resources to jurisdictions that choose to require management.
Chicory (Cichorium intybus)
Common burdock (Arctium minus)
Common mullein (Verbascum thapsus)
Common St. Johnswort (Hypericum perforatum)
Downy brome (Bromus tectorum)
Field bindweed (Convolvulus arvensis)
Halogeton (Halogeton glomeratus)
Johnsongrass (Sorghum halepense)
Perennial sowthistle (Sonchus arvensis)
Poison hemlock (Conium maculatum)
Puncturevine (Tribulus terrestris)
Redstem filaree (Erodium cicutarium)

Velvetleaf (Abutilon theophrasti)
Wild proso millet (Panicum miliaceum)

Appendix F: Comment Letters

(Pending Draft EA Distribution)

Appendix G: Habitat Scoring and Draft Habitat Replacement Plan

Habitat Impacts Of Bostwick Park Ditch
Piping Project

By Michael Zeman
Natural Resource Concepts & Solutions, LLC
Wildlife and November 25, 2013

The Bostwick Park Ditch Piping Project will put approximately 1.55 miles of open ditch into underground pipe. The elevation of the project location is about 7000 feet and located 5.5 miles northeast of Montrose, Colorado. The project will be built mostly along the edge of irrigated farm lands and at the base of drier, pinion-juniper foothills . Juniper trees, rabbit brush, sagebrush, willow, and wild rose are the most prevalent types of vegetations found along the ditch. Other plant species observed include: cottonwoods; four-winged saltbush; prickly pear cactus; bulrush; carex; cattails; yellow clover; and a number of small forbs & grasses. Other invasive weed encountered included: Canada thistle; Russian knapweed; whitetop; chicory; cheat grass; milkweed; burdock; kochia, and mullein.

Many of the native riparian plant species found on and near the ditch sections being piped will be lost because pipe construction will be in the current ditch & there are no other sources of water close by. There are only a limited number of trees along the proposed ditch piping area and most of them are junipers. Habitat segment #2 (See H 2 in habitat map labeled *Proposed Bostwick Park Piping Project - Segments H 2, 3, 4)* will create the greatest loss of habitat. A wide service road was built alongside the ditch in this segment and reduce the amount of habitat to be lost due to piping. There are also many weed species along the ditch that can be reduced when a weed treatment program is implemented at the completion of the project.

There is a proposed alternative route for piping that cuts across a pinion-juniper hillside to save on the amount of pipe needed for the project. It is recommended that this alternative not be implemented. It will cause a 33% increase in habitat loss as opposed to staying in the existing ditch. It will also creates habitat fragmentation and increase the chance for more invasive weed to get started in the disturbed soils.

Five staging areas for equipment and pipe storage were proposed and evaluated for possible impacts on habitat. Staging Area 1 should have no significant impact on habitat as it is on the edge of an existing field and heavily used by livestock. It is recommended that Staging Area 2 not be used because much of the area is on an existing sagebrush/juniper flat that would have to be cleared to make it useable. Staging Area 1 is only a short distance away and with only a few native plant species on it, makes it a much better site. Proposed Staging Area 3 was originally about twice the size it is now and extended into a sagebrush flat to the north side of the area. It is recommended that the staging area utilize only the already cleared section of land north of the current field. The same thing applies to Staging Area 4 except the sagebrush flat is to the west of the staging area. Staging Area 5 is the middle of an area filled with sagebrush, rabbit brush, and other native plants. It also heavily infested with species like Russian knapweed and cheat grass. It is recommended that this staging area be reduced to one acre in size. This staging area is also considered Habitat Segment 5 (H5). The estimate losses of this habitat segment and the others are found in the table labeled *Habitat Quality Scoring - Bostwick Park Proposed Piping Project.*

A total of 5.13 habitat units * are expected to be lost due to the Bostwick Park Piping Project (See table labeled *Proposed Bostwick Park Piping Project - Habitat Areas Affected*). The habitat loss increases to 6.83 habitat credits if the alternate piping route is implemented. Impacts to habitat along the piping project can be minimized by: avoiding the removal of trees as much as possible when installing the pipe; proper choice of plants & replanting methods used when reclaiming the area over the pipeline; and implementing an effective weed control program over the disturbed areas.

* Calculations were made using criteria set forth in the *Basinwide Salinity Control Program: Procedures for Habitat Replacement* - (A manual developed by the Bureau of Reclamation and U.S. Fish & Wildlife Service).

11/25/2013

Habitat Quality Scoring
Bostwick Park Proposed Piping Project

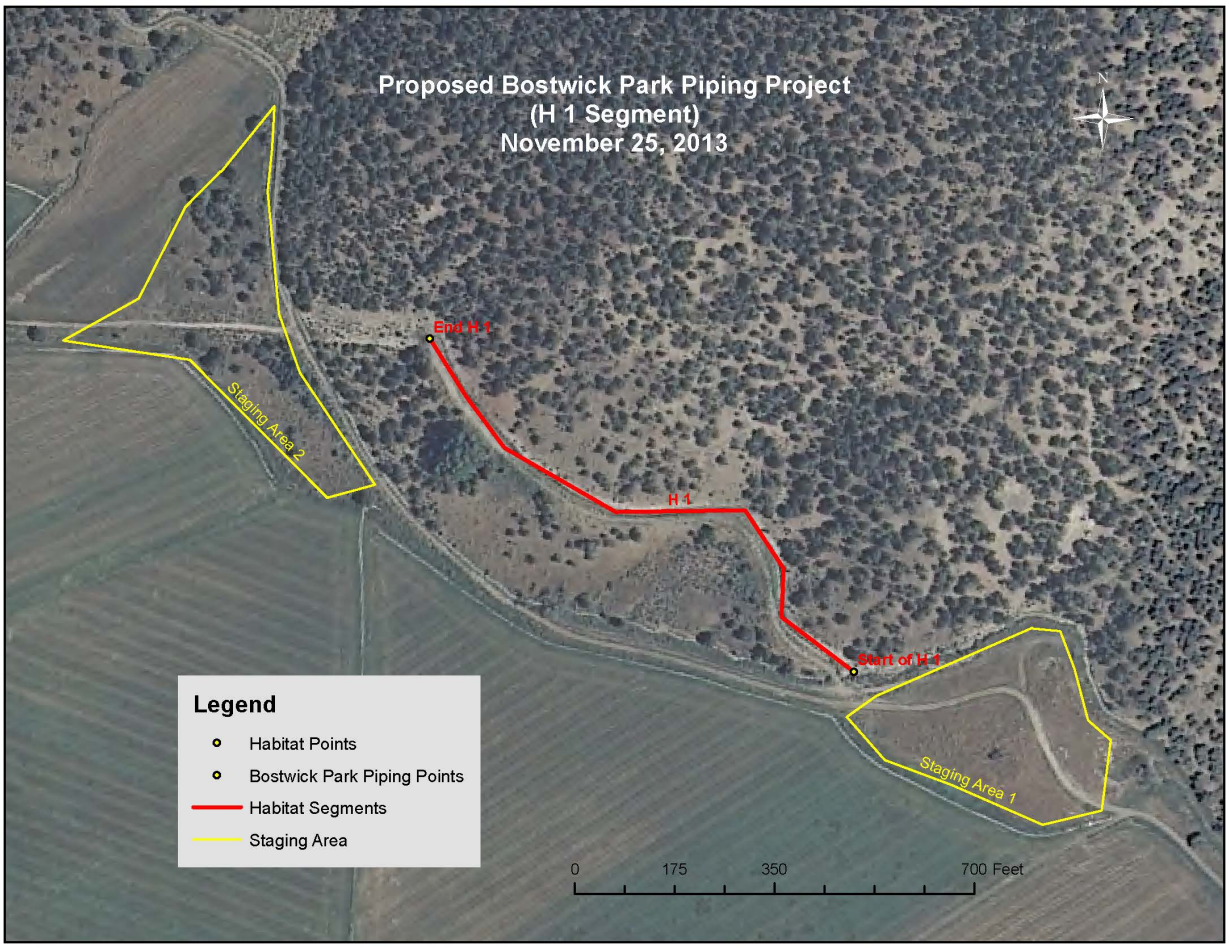
Habitat Site	H 1		H 2		H 3		H 4	
Habitat Type	Shrub/Forb		Shrub/Forb		Shrub/grass		Tree/Shrub	
Mapped Acres/Adjustment	0.48	100%	4.09	100%	1.00	100%	1.31	100%
	Before	After	Before	After	Before	After	Before	After
Vegetation Diversity	4	2	5	2	4	3	5	3
Stratification	10	7	10	7	10	6	10	6
Native vs. Non-Native species	8	8	5	7	5	5	8	6
Noxious Weeds	8	9	6	8	2	7	9	8
Overall Vegetative Condition	10	10	10	10	10	10	10	10
Disease Additional scoring	0	0	0	0	0	0	0	0
Interspersion of open water	1	0	1	0	0	0	5	5
Connectivity	5	5	5	5	5	5	4	2
Uniqueness or Abundance	4	2	5	2	3	2	0	0
Water Supply	4	2	6	1	0	0	10	8
Alteration	6	6	8	8	4	3		
Raw Scores	60	51	61	50	43	41	61	48
Habitat Quality Score (HQS)	**6.0**	**5.1**	**6.1**	**5.0**	**4.3**	**4.1**	**6.1**	**4.8**
Habitat Score Difference	0.90		1.10		0.20		1.30	
Habitat Credits Lost	**0.43**		**4.50**		**0.20**		**1.70**	
Total Habitat Credits Lost	**6.83**							

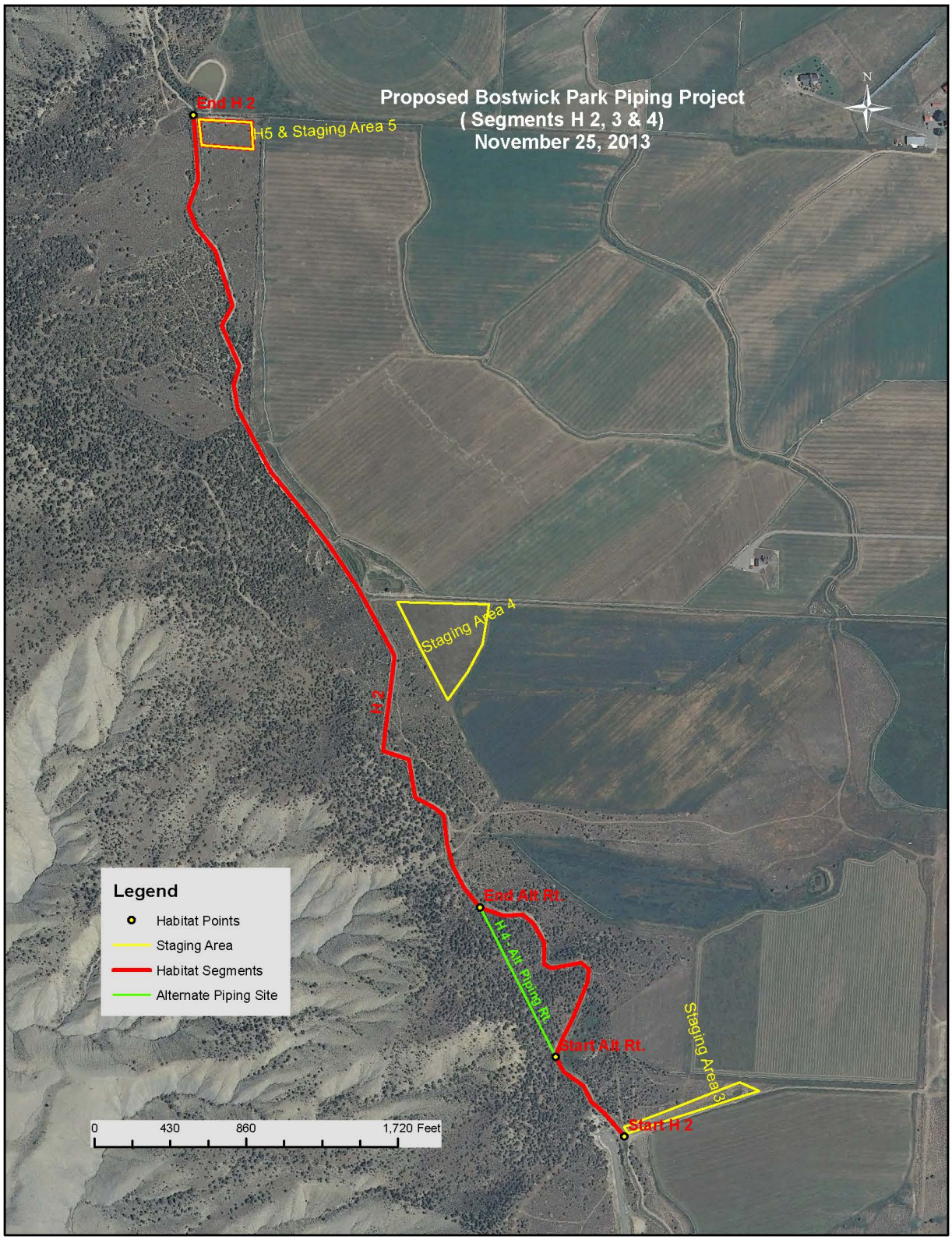
11/25/2013

Proposed Bostwick Park Piping Project
Habitat Areas Affected

Habitat Segment	Habitat Type	Feet of Ditch	Width of Impact (Ft.)	Acres of impact	Habitat Score Difference	Habitat Credits Lost
H1	Shrub/Forb	1049	20	0.48	0.9	0.43
H2	Shrub/Forb	7122	25	4.09	1.1	4.50
H3	Shrub/Grass			1.00	0.2	0.20
H4	Trees/Shrub	949	60	1.31	1.3	1.70

Total Habitat Credit Loss	**6.83**	**Credits**
Total Habitat Credit Loss Without Using Alternate Route (H4)	**5.13**	**Credits**


Proposed Bostwick Park Piping Project
(H 1 Segment)
November 25, 2013
N
End H 1
Staging Area 2
H 1
Start of H 1
Staging Area 1
Legend
Habitat Points
Bostwick Park Piping Points
Habitat Segments
Staging Area
0
175
350
700 Feet


Proposed Bostwick Park Piping Project
(Segments H 2, 3 & 4)
November 25, 2013
N
End H 2
H5 & Staging Area 5
Staging Area 4
H 2
End Alt Rt.
H 4 Alt Piping Rt.
Start Alt Rt.
Staging Area 3
Start H 2
Legend
Habitat Points
Staging Area
Habitat Segments
Alternate Piping Site
0
430
860
1,720 Feet

Habitat Impacts Of Forked Tongue/Holman Ditch Piping Project

By Michael Zeman
Wildlife and Natural Resource Concepts & Solutions, LLC
November 22, 2013

The Forked Tongue/Holman Ditch Piping Project will put approximately 1.92 miles of open ditch into underground pipe. The elevation of the project location is about 5300 feet and located 1.5 miles west of Eckert, Colorado. The project will be built mostly along the edge of irrigated farm lands with a portion of it going along the base of some adobe foothills . Rabbit brush, sagebrush, and 4-winged saltbush are the three most prevalent types of vegetations found along the ditch. Other plant species observed include: Fremont cottonwoods; sumac; wild rose; bullrush; carex; cattails; and a number of small forbs & grasses. Invasive weed encountered included: Russian olive; Canada thistle; Russian knapweed; whitetop; chicory; cheatgrass; burdock; and tamarisk.

Several sections of the piping are adjacent to irrigated fields and to Tongue Creek, which flows alongside the upper part of the ditch. The proximity of these water sources will help lessen the effect on existing habitat when the open ditch is put into pipe. This will especially help the limited number of trees along the ditch. Some of these trees will be lost in the construction of the project. The plant diversity and habitat value along the ditch is limited because of current farming practices and the closeness of the county road to the ditch. The greatest loss of habitat will come from piping the ditch along the base of the adobe hillside, on the west side of the county road. The ditch has created a narrow green-belt along its length that will disappear after the ditch is piped. The vegetation includes a fair amount of tamarisk, Russian olive, & Russian knapweed, but also some sedges, small cottonwoods, and carex species. Changes in expected habitat values are listed in the table labeled *Habitat Quality Scoring - Forked Tongue/Holman Ditch Piping Project*.

Many of the areas along the ditch are heavily infested with weeds and could benefit from the piping project. A weed management program is required as part of the reclamation plan and to be implemented after the project is completed. Soils used to bury the pipeline will be reseeded and the use of selective herbicides will help keep the weeds from returning.

Six staging areas have been designated for the project and all but one should cause minimal affect on existing habitat (See overview map labeled *Forked Tongue/Holman Ditch Piping Project)*. Stage Area 6 is the exception and is at the point of diversion of the ditch on Tongue Creek. This area should not be used for storing pipe or equipment as it could cause unnecessary damage to some very good riparian habitat along the creek. If this staging area is used, then piping should placed in the adjacent field rather than clearing land in the riparian area. The other staging areas are located on existing fields, cleared areas around buildings or service roads, or in areas along the ditch where the habitat loss has already been calculated. Use of these area should cause little to no permanent damage on habitat.

A total of 6.70 habitat units * are expected to be lost due to the piping of the Forked Tongue/Holman Ditch (See table labeled *Forked Tongue/Holman Piping Project - Habitat Areas Affected*). Impacts to habitat along the piping project can be minimized by: avoiding the removal of trees as much as possible when installing the pipe; proper choice of plants & replanting methods used when reclaiming the area over the pipeline; and implementing an effective weed control program over the disturbed areas.

* Calculations were made using criteria set forth in the *Basinwide Salinity Control Program: Procedures for Habitat Replacement* - (A manual developed by the Bureau of Reclamation and U.S. Fish & Wildlife Service).

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Forked Tongue/Holman Piping Project
Habitat Areas Affected

Habitat Point	Habitat Type	Feet of Ditch	Width of Impact (Ft.)	Acres of Impact	Habitat Score Differnce	Habitat Credits Lost
H1	Shrub/Forbs	1691	30	1.16	0.4	0.46
H2	Shrub/Forbs	458	30	0.32	0.3	0.10
H3	Shrub/Forbs	3428	30	2.36	1.6	3.78
H4	Grass/Forbs			0.82	0.7	0.57
H5	Shrub/Forbs	2042	30	1.41	0.9	1.27
H6	Grass/Forbs	937	20	0.43	0.2	0.09
H7	Grass/Forbs	1596	20	0.73	0.6	0.44
					Total Habitat Credits Lost	**6.70**

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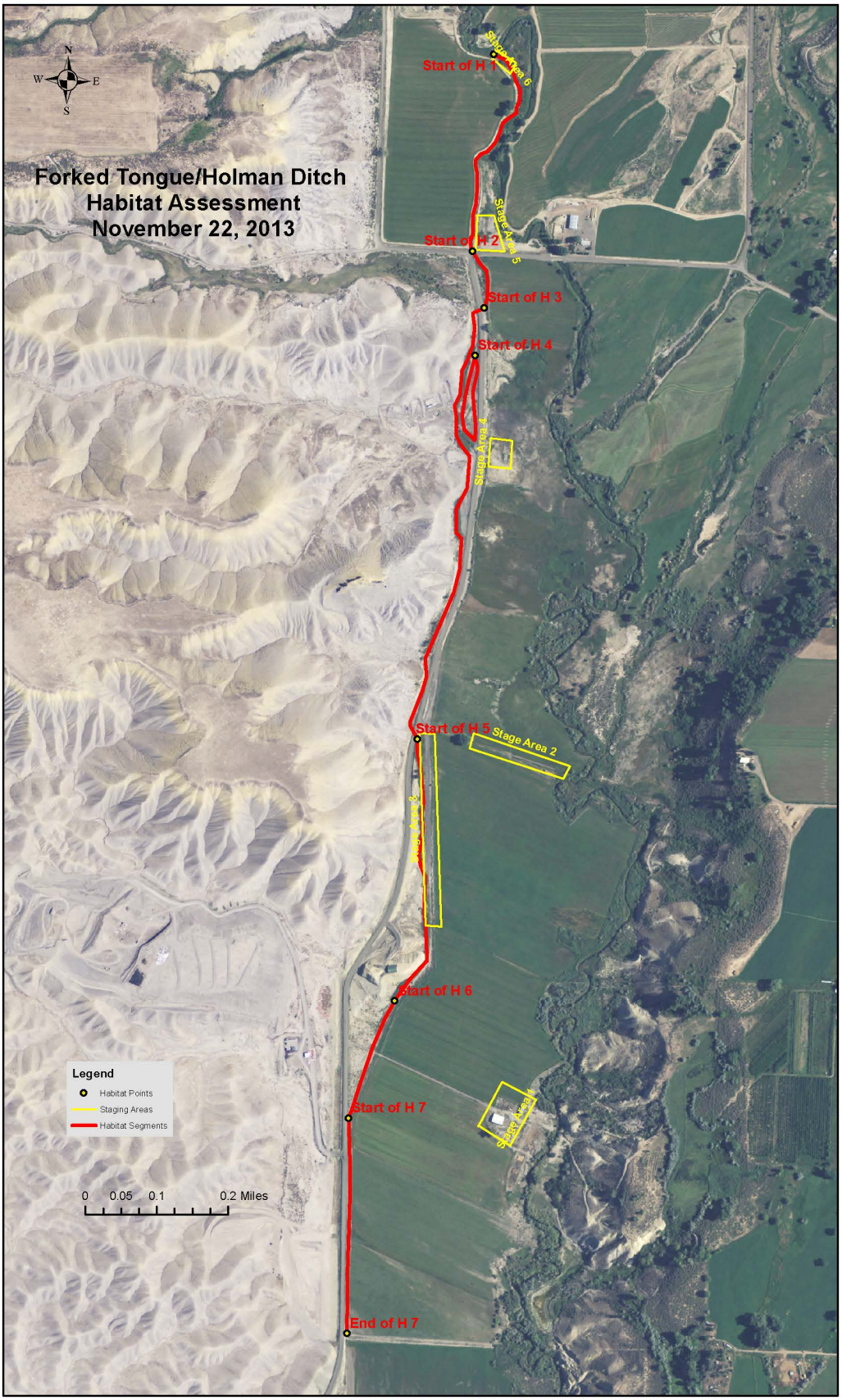
Habitat Quality Scoring
Forked Tongue/Holman Ditch Piping Project

Habitat Site	H 1		H 2		H 3		H 4		H 5		H 6		H 7	
Mapped Acres/Adjustment	1.16	100%	0.32	100%	2.36	100%	0.82	100%	1.41	100%	0.43	100%	0.73	100%
	Before	After	Before	After	Before	After	Before	After		After	Before	After	Before	After
Vegetation Diversity	5	5	5	5	4	1	2	1	5	3	3	2	1	1
Stratification	10	10	8	6	10	4	3	1	10	6	4	2	2	2
Native vs. Non-Native species	7	8	7	7	6	2	6	6	8	8	5	6	5	5
Noxious Weeds	2	8	6	8	4	9	8	9	7	9	2	8	2	9
Overall Vegetative Condition	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Disease Additional scoring	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interspersion of open water	1	0	1	0	1	0	0	0	1	0	1	0	1	0
Connectivity	5	5	5	5	3	3	3	3	5	5	5	5	5	5
Uniqueness or Abundance	6	6	6	6	4	1	2	1	4	2	2	1	1	1
Water Supply	6	4	6	4	6	2	4	0	4	2	4	4	4	4
Alteration	4	4	4	4	4	4	2	2	3	3	3	3	2	2
Raw Scores	56	60	58	55	52	36	40	33	57	48	39	41	33	39
Habitat Quality Score (HQS)	**5.6**	**6**	**5.8**	**5.5**	**5.2**	**3.6**	**4**	**3.3**	**5.7**	**4.8**	**3.9**	**4.1**	**3.3**	**3.9**
Habitat Score Difference	0.4		0.3		1.6		0.7		0.9		0.2		0.6	
Habitat Credits Lost/Segment	**0.46**		**0.10**		**3.78**		**0.57**		**1.27**		**0.09**		**0.44**	

Total Habitat Credits Lost 6.70 Credits


Forked Tongue/Holman Ditch
Habitat Assessment
November 22, 2013
N
W
E
S
Start of H 1
Stage Area 6
Start of H 2
Stage Area 5
Start of H 3
Start of H 4
Stage Area 4
Start of H 5
Stage Area 2
Stage Area 3
Start of H 6
Start of H 7
Stage Area 1
End of H 7
Legend
Habitat Points
Staging Areas
Habitat Segments
0 0.05 0.1 0.2 Miles

(Pending Habitat Replacement Plan Approval)