RECLAMATION
Managing Water in the West

Final Environmental Assessment Gobblefield Ditch Piping Project

PRO-EA-16-002

Upper Colorado Region
Provo Area Office
Provo, Utah

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

November 2016

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

Final Environmental Assessment Gobblefield Ditch Piping Project

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Upper Colorado Region
Provo Area Office

prepared by

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U.S. Department of the Interior
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Provo Area Office
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FINDING OF NO SIGNIFICANT IMPACT

Environmental Assessment Gobblefield Ditch Piping Project
Sanpete County, Utah

EA-16-002

Recommended by:

David Snyder
Fish and Wildlife Biologist

30 NOV 2016
Date

Concur:

Rick Baxter
Water, Environmental, and Lands
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30 Nov 2016
Date

Approved by:

Wayne G. Pullan
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30 NOV 2016
Date

Introduction

In compliance with the National Environmental Policy Act (NEPA) of 1969, as amended, the Bureau of Reclamation - Provo Area Office has conducted an Environmental Assessment (EA) to determine the impacts of the Proposed Action on the human environment and to decide whether to authorize the Ephraim Irrigation Company (EIC) to repair and stabilize the existing check structure, create an approximately 3 to 5 acre-foot retention pond, and install 3.5 miles of pipeline to convey water historically carried in the Gobblefield Ditch (Ditch).

The purposes of the Proposed Action are to conserve approximately 42 percent of water lost due to seepage and/or evaporation, which is about 1,360 acre-feet of water annually, improve water management, improve the reliability of irrigation water delivery, decrease shortages thus mitigating drought impacts, support shareholders in their efforts to convert from flood irrigation to sprinkler irrigation, conserve energy by limiting pumping of irrigation water, and produce a positive impact in the local economy. The project is needed to conserve water which would bring the water supply closer to the agricultural water demands.

Alternatives

The EA analyzed the No Action Alternative and the Proposed Action Alternative.

Minimization Measures Incorporated into the Proposed Action

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

- All land surface disturbances would be confined to areas previously disturbed, ditch rights-of-way, existing roads, agricultural farmland, and staging areas adjacent to the Project area.
- Stockpiling of materials would be limited to those areas approved and cleared in advance.
- The EIC would be responsible during construction for safety measures, noise and dust control, and air and water pollution.
- Project features have been located to avoid riparian areas and historic features.

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

1. **Additional Analyses** – If the Proposed Action were to change significantly from that described in the EA, because of additional or new information, or if other construction areas are required outside the areas analyzed in this EA, additional environmental analysis including cultural and paleontological analyses would be undertaken, if necessary.

2. **Construction Restrictions** – Construction and staging activities would be confined to previously disturbed areas, to the extent practicable.

3. **Public Access** – Activity areas would be closed to public access during construction. EIC would coordinate with contractor's personnel, as necessary, to ensure public safety.

4. **Flood Plains** – The EIC would be compliant with all rules and regulations of the Federal Floodplain Insurance Program as administered by the local city or county floodplain administrator.

5. **Invasive Species** – Appropriate steps would be taken to prevent the spread of, and to otherwise control, undesirable plants and animals within areas affected by construction activities. Equipment used for the Project would be inspected for reproductive and vegetative parts, foreign soil, mud or other debris that may cause the spread of weeds, invasive species, and other pests. Such material would be removed before moving vehicles and equipment. Upon the completion of work, decontamination would be performed within the work area before the vehicle and/or equipment are removed from the Project site if work was conducted in an area infested with noxious weeds.

   The EIC would make periodic inspections following vegetation of disturbed areas to locate and control populations of noxious weeds, if present. All seed used for restoration would be certified "noxious weed free" before use. If needed, the County Weed Control Department could be contacted to provide services to control the spread of noxious weeds.

6. **Vegetation** – Design and treatment activities would ensure that vegetation would be protected with no long term adverse effects. Staging areas would be in previously disturbed areas to the extent possible.

7. **Raptor Guidelines** – The EIC would adhere to the U. S. Fish and Wildlife Service (USFWS) Raptor Guidelines by placing seasonal and spatial "no construction" buffers, along with daily timing restrictions around all active raptor nests or winter roosting bald eagles. If unknown nests are located during construction, the same guidelines would be implemented.

8. **Cultural Resources** – Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, he/she must provide immediate telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work would stop until the proper authorities are able to assess the situation onsite. This action would promptly be followed by written confirmation to the responsible Federal agency official, with respect to Federal lands. The Utah State Historic Preservation Office (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 (43 CFR Part 10) and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470).

9. **Air Quality** – Best management practices would be followed to mitigate for temporary impact on air quality due to construction-related activities. These may include the application of dust suppressants and watering to control fugitive dust; minimizing the extent of disturbed surface; during times of high wind, restricting earthwork activities; and limiting the use of, and speeds on, unimproved road surfaces.

Related NEPA Documents

There are no other Environmental Assessments or Environmental Impact Statements that are related to the scope of this EA.

Decision and Finding of No Significant Impact

Based upon a review of the EA and supporting documents, I have determined that implementing the Proposed Action will not significantly affect the quality of the human environment, individually or cumulatively with other actions in the area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an Environmental Impact Statement is not required for this Proposed Action. This finding is based on consideration of the context and intensity as summarized here from the EA.

Context

The affected locality is the area served by the Ditch in Sanpete County, Utah. Affected interests include the EIC shareholders receiving water from the Ditch, the Utah Division of Wildlife Resources, and adjacent private landowners.

Intensity

The following discussion is organized around the 10 significance criteria described in 40 CFR 1508.27. These criteria were incorporated into the resource analysis and issues considered in the EA.

1. **Impacts may be both beneficial and adverse.** The Proposed Action will impact resources as described in the EA. Minimization measures and environmental commitments to reduce impacts to cultural and biological resources were incorporated into the design of the Proposed Action. The following short-term effects of the Proposed Action are predicted: noise, ground disturbance along the construction alignment, minor impacts to the irrigation-induced wet meadow during construction, potential temporary wildlife displacement during construction, and minor impacts to access and transportation during construction. Long-term predicted effects are beneficial effects to flood control through increased flow capacity. In the long-term, all affected water users supplied by the Ditch will benefit from water efficiency.

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

2. **The degree to which the selected alternative will affect public health or safety or a minority or low-income population.** The Proposed Action will have no significant impacts on

public health or safety. No minority or low income community will be disproportionately affected by the Proposed Action.

3. **Unique characteristics of the geographic area.** There are no unique characteristics associated with the Project area. No critical wildlife habitat will be adversely affected by the Proposed Action. There are no park lands, prime farmlands, wild and scenic rivers, or other ecologically critical areas that will be affected by the proposal.

4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** Reclamation contacted representatives of other Federal agencies, state and local governments, Indian tribes, public and private organizations regarding the Proposed Action and its effects on resources. Based on the responses received, the effects from the Proposed Action on the quality of the human environment are not highly controversial.

5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** When uncertainty about impacts to the human environment was identified in the EA, mitigation and monitoring measures were identified and included in the formulation of the alternatives. There are no predicted effects on the human environment that are considered highly uncertain or that involve unique or unknown risks.

6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** The Proposed Action will not establish a precedent for future actions with significant effects.

7. **Whether the action is related to other actions which are individually insignificant but cumulatively significant.** Cumulative impacts are possible when the effects of the Proposed Action are added to other past, present, and reasonably foreseeable future actions as described under related NEPA documents above; however, significant cumulative effects are not predicted, as described in the EA.

8. **The degree to which the action may adversely affect sites, districts, buildings, structures, and objects listed in or eligible for listing in the National Register of Historic Places.** The State Historic Preservation Officer has concurred with our determination of no adverse effect.

9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.** No threatened or endangered species are found within Project area. The Project area is identified as having proposed critical habitat for the threatened species, yellow-billed cuckoo (*Coccyzus americanus*); however, it is not currently suitable habitat. Therefore, Reclamation's finding was No Effect.

10. **Whether the action threatens a violation of Federal, state, local, or tribal law, regulation or policy imposed for the protection of the environment.** The Project does not violate any Federal, state, local, or tribal law, regulation, or policy imposed for the protection of the environment. In addition, this Project is consistent with applicable land management plans, policies, and programs.

Contents

Page

Chapter 1: Purpose of and Need for Proposed Action

1.1 Introduction

This Environmental Assessment (EA) is prepared to examine the potential environmental impacts of the Gobblefield Ditch Piping Project (Project), proposed by the Ephraim Irrigation Company (EIC) in Sanpete County, Utah. If approved, the existing check structure would be repaired and stabilized, an approximately 3 to 5 acre-foot retention pond created, and 3.5 miles of pipeline installed to convey water historically carried in the Gobblefield Ditch. The Gobblefield Ditch would remain open for stormwater/irrigation runoff and high flood flows.

1.2 Background

The EIC provides irrigation water for shareholders in an area of approximately 16 square miles around Ephraim City in Sanpete County. Cottonwood Creek, which flows down Ephraim Canyon from the east, is the main source of water, and has been used for crop cultivation since the 1850's. However, the available water is often limited and inconsistent, and farmers in the area have always sought ways to improve the supply. In the 1930's, the Ephraim Tunnel was built to convey water from the Colorado River Basin to Cottonwood Creek. While this helps, current agricultural water supplies are significantly less than needed for optimal crop production.

Cottonwood Creek begins in the Wasatch Plateau and flows in a westerly direction down Ephraim Canyon and enters the valley southeast of Ephraim City. Along its length there are many small canyons and springs, but the Left Fork and New Canyon are its main tributaries. The EIC manages all the water in Cottonwood Creek. Splitting structures are used in the canyon to divert water to the various shareholders in and surrounding Ephraim City. The majority of EIC's system has already been converted to pressurized irrigation. The last major ditch not converted to sprinkler irrigation is the Gobblefield Ditch. The Gobblefield Ditch provides water to lands immediately north of Ephraim City. Approximately 23 percent of the flow in Cottonwood Creek is diverted into the Gobblefield Ditch.

The shareholders on the Gobblefield Ditch have built ponds and pipelines on their land to better manage the limited water. Approximately 75 percent of shareholders in the Gobblefield Ditch are currently irrigating with sprinklers. It is

anticipated that piping the Gobblefield Ditch would facilitate the conversion of the remaining flood irrigated land to sprinkler. The lands not under sprinkler irrigation are mostly the lands close to the ditch where gravity-generated pressure is not sufficient to run sprinklers. The new pipeline would provide pressure to reduce or eliminate the need to pump.

This Project would provide irrigation shareholders with a more reliable source of water, and conserve water, which becomes very critical in the late summer season. After the construction of the pipeline, the compromised ditch portions would be reconstructed allowing the entire ditch to remain open to divert flood water away from Ephraim City. Thereby, preserving the flood control aspect of the Gobblefield Ditch.

1.3 Purpose of and Need for Proposed Action

This EA evaluates the potential effects of the Proposed Action in order to determine whether it would cause significant impacts to the human or natural environment, as defined by the National Environmental Policy Act (NEPA). If the EA shows no significant impacts associated with implementation of the Project, then a Finding of No Significant Impact (FONSI) would be issued by the Bureau of Reclamation. Otherwise, an Environmental Impact Statement would be necessary prior to implementation of the Proposed Action. The NEPA applies to this Project due to its WaterSMART Grant from Reclamation.

The purposes of the Project are to:

- Conserve approximately 42 percent of water lost due to seepage and/or evaporation, which is about 1,360 acre-feet of water annually;
- Improve water management;
- Improve the reliability of irrigation water delivery;
- Decrease shortages thus mitigating drought impacts;
- Support shareholders in their efforts to convert from flood irrigation to sprinkler irrigation;
- Conserve energy by limiting pumping of irrigation water; and
- Produce a positive impact in the local economy.

This project is needed to conserve water. The Gobblefield Ditch, an open canal that carries a large portion of the water from the tunnel, loses a substantial amount of water due to seepage. This reduces the available agricultural water to the EIC shareholders during the irrigation season. The average flow in the Gobblefield Ditch is 3,230 acre-feet per year from measurements taken since 2004. An average of 42 percent of the water is lost through seepage and evaporation. The substantial water loss has a negative impact on EIC shareholders, Ephraim City, and the general local economy.

By conserving this water, the Project would bring the water supply closer to agricultural water demand. However, no amount of water conservation will solve the late season water shortages since there is extremely limited storage available.

1.4 Public Scoping and Involvement

A public scoping meeting was held on August 4, 2016, at 6:00 p.m. at the Ephraim Town Hall to discuss the Project and answer questions. Notices were sent to adjacent landowners, shareholders receiving water from Gobblefield Ditch, Ephraim City, Utah Division of Wildlife Resources (UDWR), and the Utah Division of Water Resources (DWR). Eight individuals were in attendance.

1.5 Permits, Licenses, and Authorizations

Implementation of the Proposed Action may require a number of authorizations or permits from State and Federal agencies. The EIC would be responsible for obtaining all permits, licenses, and authorizations required for the Project. Potential authorizations or permits may include those listed in Table 1-2.

Table 1-1
Permits and Authorizations

Agency/Department	Purpose
Utah Department of Natural Resources, Division of Water Rights (DWRi)	Stream Alteration Permit under Section 404 of the Clean Water Act (CWA) and Utah statutory criteria of stream alteration described in the Utah Code. This would apply for impacts to Cottonwood Creek or other natural streams or creeks during Project construction.
Utah State Historic Preservation Office	Consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), 16 USC 470.
U.S. Fish and Wildlife Service	Consultation pursuant to Section 7 of the Endangered Species Act if endangered species are to be potentially impacted by the Project.
U.S. Army Corps of Engineers (USACE)	A USACE permit, in compliance with Section 404 of the CWA, would be required prior to the discharge of dredged or fill material into “waters of the United States” including wetlands.

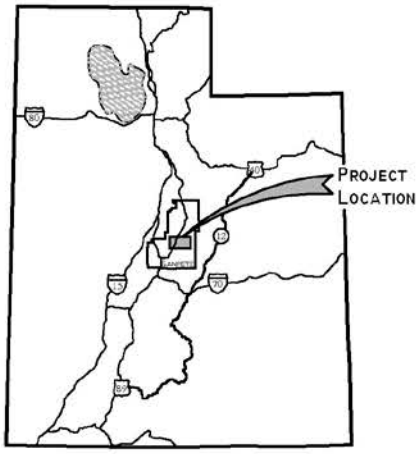
Agency/Department	Purpose
Utah Department of Environmental Quality, Division of Water Quality (DWQ)	A Utah Pollutant Discharge Elimination System (UPDES) permit for construction activities would be required to help prevent erosion and ensure sediment controls are utilized to minimize construction impacts.

1.6 Scope of Analysis

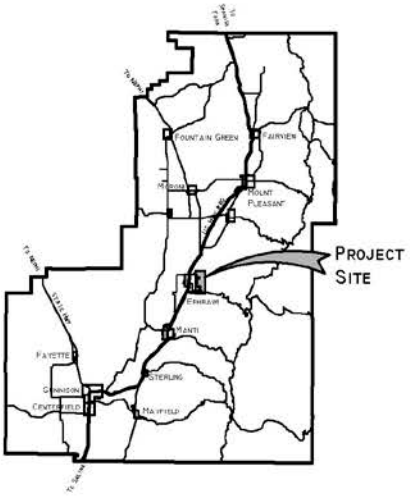
The purpose of this EA is to determine whether or not there would be significant impacts to the environment, which includes human environment, as a result of the Proposed Action Alternative. In order to install the proposed pipeline, this EA must be completed and a FONSI issued. Analysis in the EA includes temporary impacts from construction activities and permanent impacts as a result of constructing a pipeline.

1.7 Project Area/Action Area

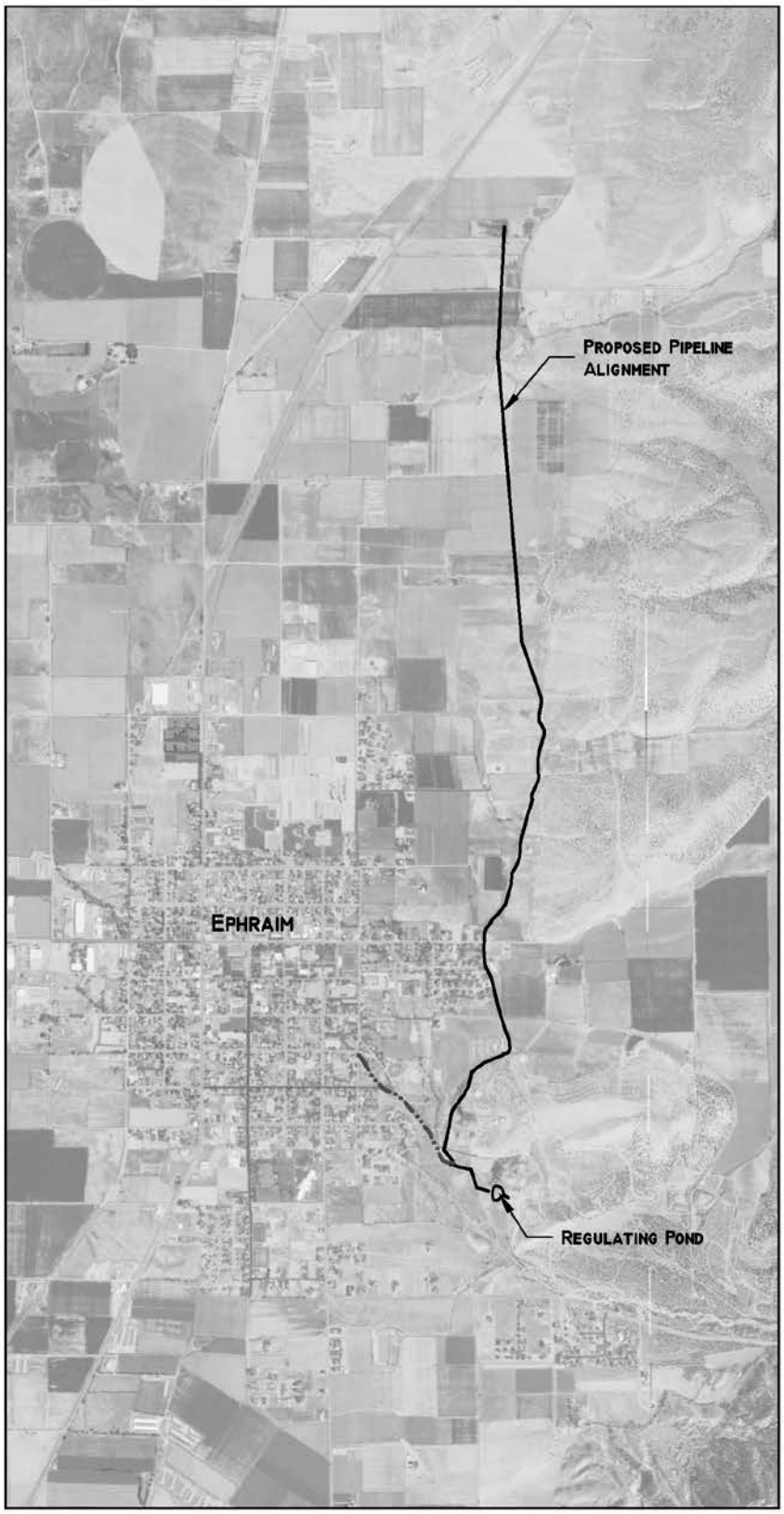
The Project area is located just east of Ephraim City, in Sanpete County, Utah, as shown on the Project location map (Figure 1). The proposed pipeline would begin at the proposed regulating pond to be constructed within the existing debris basin on the south end; and would travel north of Ephraim City for its approximate 3.5 mile length. Elevations range from 5,720 feet above sea level at the southern end of the Project area, to 5,570 feet above sea level at the northern end. The land is either private property, of which easements are being obtained, or public lands with rights-of-way in which the construction would occur.



State of Utah



Sanpete County



FRANSON CIVIL ENGINEERS	DATE: August 17, 2016 SCALE: No Scale Project Maps.dwg \\Franson\Projects\UT\Central\Gobblefield Ditch Enclosure\5 - Drawings\Figures	Ephraim Irrigation Company Gobblefield Ditch Piping Project	Figure 1 Project Location Map

Chapter 2: Alternatives

2.1 Introduction

This chapter describes the features of the No Action and Proposed Action Alternatives, and presents a comparative analysis. It includes a description of each alternative considered. This section also presents the alternatives in comparative form, defining the differences between each alternative.

2.2 No Action

Under the No Action Alternative, the Gobblefield Ditch would remain an open canal. It would continue to lose approximately 42 percent of the water diverted from Cottonwood Creek through seepage and evaporation. This negative impact on EIC shareholders, Ephraim City, and local economics would continue. Figure 2 shows the current location of the Gobblefield Ditch.

2.3 Proposed Action (Preferred)

The Proposed Action is the preferred alternative. The Project would stabilize and repair the existing check dam, construct a regulating pond, and install an approximately 3.5 mile pipeline to deliver irrigation water to the shareholders. An estimated 1,360 acre-feet of water would be conserved by implementing the Project, which would decrease shortages, improve water management, and improve the reliability of irrigation water delivery. With good construction practices, the losses due to seepage and evaporation would be near zero.

Figure 3 shows the location of the check dam, the proposed regulating pond, and the pipeline alignment. The existing 1930's check dam is showing its age with deteriorating concrete and exposed rebar. It is on the verge of collapse. During the high flows of 2011, it was questionable whether it could withstand the flows. The check dam would be stabilized and repaired to withstand future high flood situations, which could threaten to flood Ephraim City. There would be no adverse effects to the structure and it would maintain the same specifications. Directly southeast of the check dam, an approximately 1.25 acre area would be dug to an estimated depth of 5 to 8 feet to create an approximately 3 to 5 acre-foot regulating pond for the pipeline. It would temporarily store water allowing for a pressurized pipeline. The pond would support shareholders in their efforts to convert from flood irrigation to sprinkler irrigation by allowing for pressure in the pipeline. Its location was chosen to eliminate the need to remove any large trees and to avoid historic features.

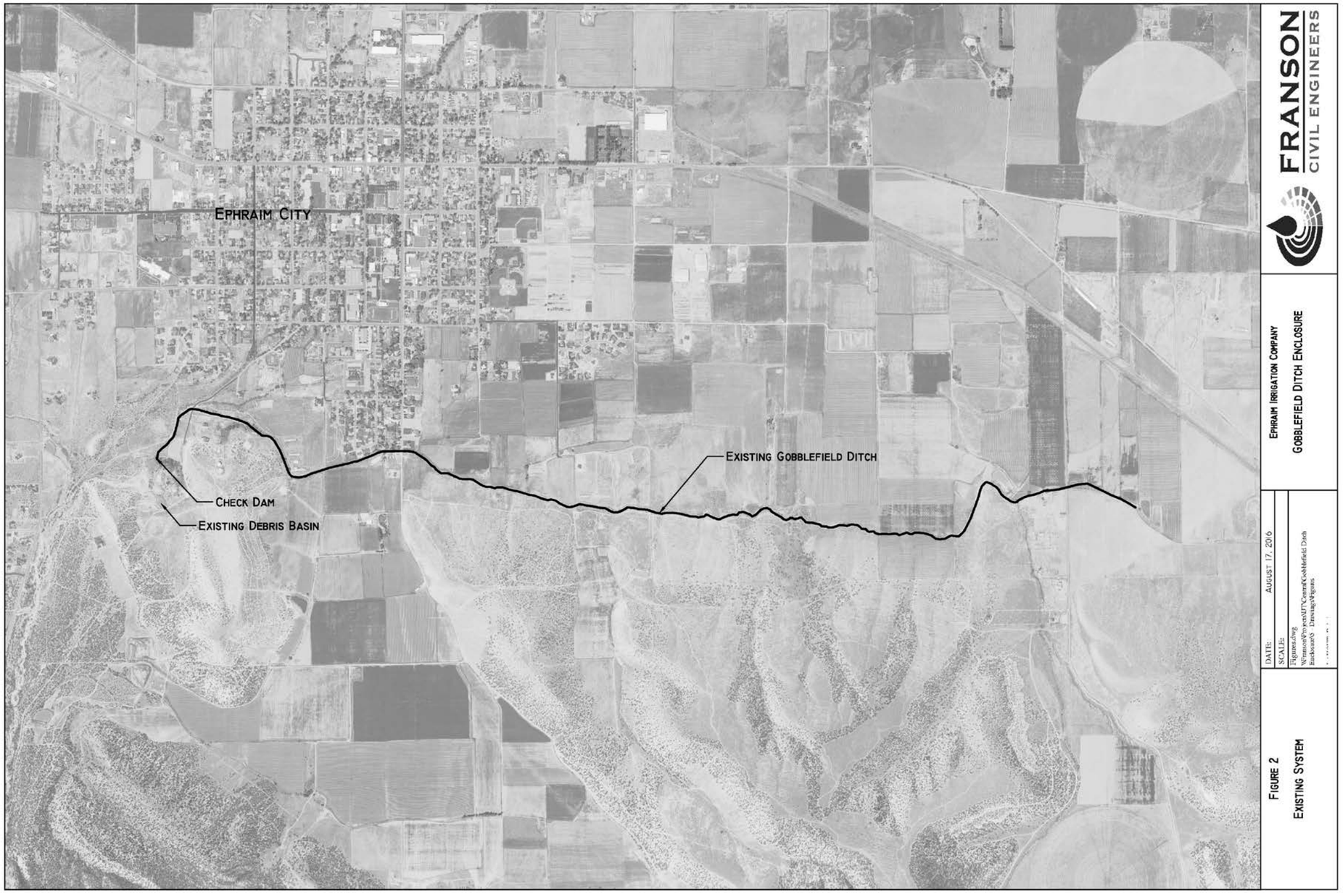


Figure 2: Existing Map

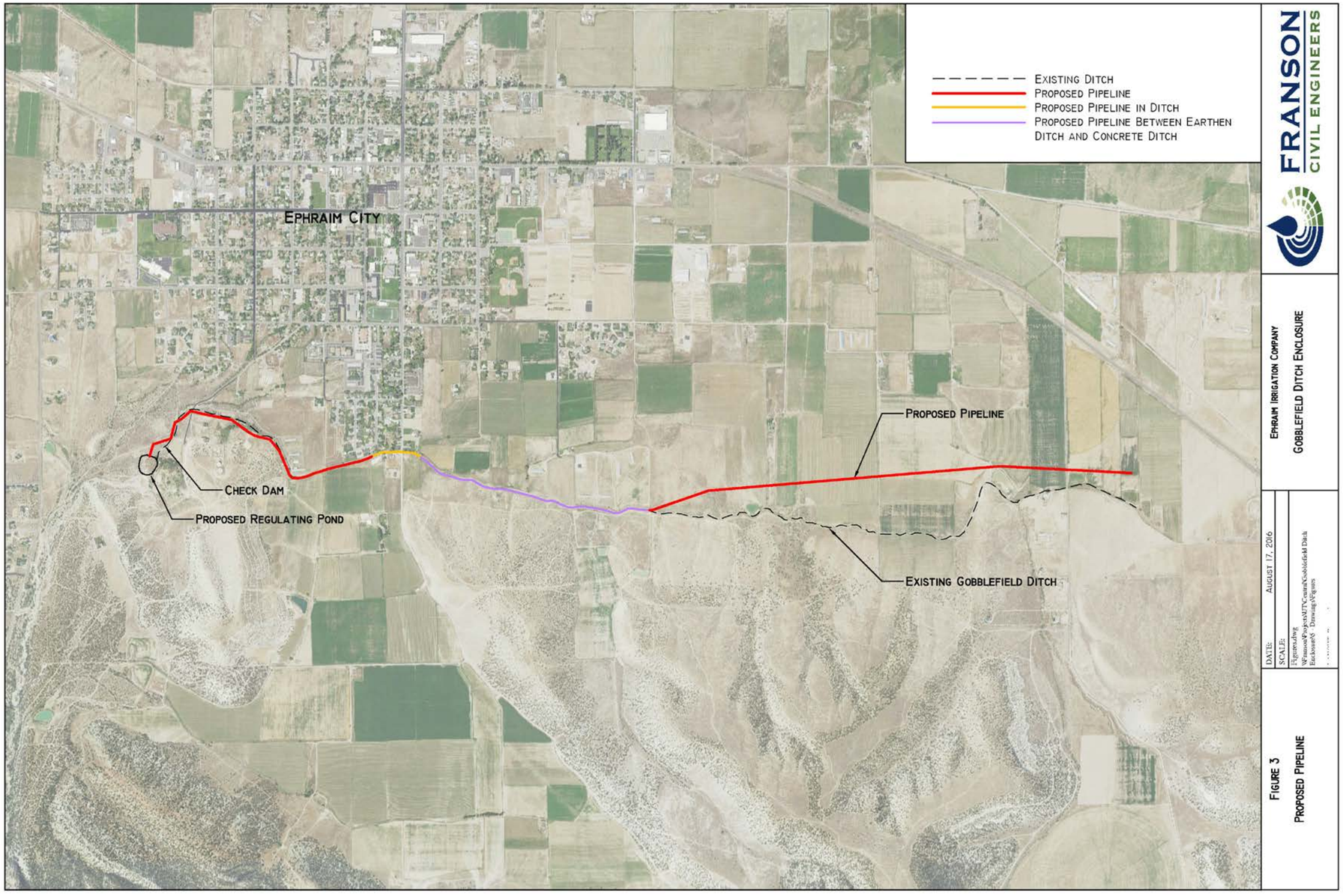


Figure 3: Proposed Pipeline Alignment Map

The pipeline would be constructed in the existing Gobblefield Ditch right-of-way and then cross agricultural land as shown in Figure 3. After pipe installation, the ditch would be restored to convey high stormwater flows to the north of Ephraim City into other natural drainages. The proposed regulating pond would facilitate this with an overflow function directing water to remain in the natural creek channel to be diverted into the existing Gobblefield Ditch at the current diversion location.

Beginning at the proposed regulating pond, the pipeline would be constructed approximately where an existing road crosses the embankment. The pipeline would then replace an existing pipeline until it reached the south side of the creek. At this point, it would parallel the creek in an existing road until it crossed the creek and would then follow the Gobblefield Ditch at an existing splitting structure. At the creek crossing, water would be released back into the creek channel for downstream shareholders and the remaining water, including conserved water, would remain in the pipeline. Approximately 500 feet of the creek channel that has not been regularly dewatered may be dewatered for portions of the year.

The pipeline would parallel the existing ditch on the east side along a two-track road for about 1.0 miles. Due to easement issues, the next approximately 1,000 feet would be laid in the bottom of the Gobblefield Ditch, with the canal remaining functional for conveyance of high water and flood control. After this section, the existing canal splits into an earthen and concrete-lined ditch system of which both would remain open and maintained for high flows and flood control for Ephraim City. The pipeline would be placed in between the earthen and concrete ditches within the existing right-of-ways. As shown on Figure 3, the pipeline then deviates from the existing ditch alignment to avoid shallow bedrock and shorten the pipeline by crossing fields.

At this point, the pipeline would be installed on the west side of the ditch crossing private agricultural lands to avoid shallow bedrock. The pipeline, varying in size from 12 to 42-inches-in-diameter, would deliver irrigation water to the shareholders. The pipeline would have a capacity of up to 35 cubic feet per second (cfs), which is enough to provide for the irrigation needs of the shareholders currently on the Gobblefield Ditch. Approximately seven turnouts would be installed along the pipeline to deliver water to small regulating ponds or directly to existing pipelines. The private regulating ponds may be abandoned after the Project has been completed.

Construction work would be completed during the non-irrigation season. Access to the farmlands and agricultural areas would be maintained. The EIC's board members have been working with the affected property owners to address their concerns as easements are obtained.

It is anticipated the pipe used would be high-density polyethylene (HDPE) and/or polyvinyl chloride (PVC), which has an industry accepted life expectancy of 50 years. The pipe type used would be based on site conditions. Corrosion resistant fittings would be used to increase life expectancy of all fittings and appurtenances.

2.3.1 Canal Enclosure

The EIC desires to replace the existing Gobblefield Ditch with 3.5 miles of pressurized pipeline. The pipe size would vary from 12 to 42 inches in diameter. Pipeline pressures would range from 2 pounds per square inch (psi) at the proposed regulating pond up to about 72 psi at the lowest point under static conditions. At locations where the higher pressures occur, the pipe would be rated to 80 psi. During planning of the Project, the canal would continue to be operated as an open canal (not piped) until the system is completed. The pipeline alignment would be revegetated after construction. The ditch system would continue to remain open to convey high flows and provide flood control for Ephraim City.

2.3.2 Turnouts

Approximately, seven turnouts would be installed along the pipeline to deliver water. Turnouts would be available to all current shareholders along the Gobblefield Ditch. Communication with these shareholders would allow for best placement of the turnouts.

2.3.3 Rights-of-Way

Ephraim City has provided an easement for the proposed regulating pond and first 1,240 feet of pipeline. The next 8,860 feet of the pipeline would be within the prescriptive easement for the current ditch(es). The EIC has obtained easements from the landowners whose property is being crossed where the pipeline alignment deviates from the existing ditch alignment. Where the pipeline crosses the Black Hill Wildlife Management Area, the EIC is in the process of obtaining an easement for the new infrastructure as required by the UDWR.

2.3.4 Road Crossings

Road crossings would occur where surface streets cross the pipeline alignment. Where possible, existing culverts would be used to cross the local roadways. The pipeline would cross Mill Road at the beginning of the Project. It is anticipated the road would be temporarily shut down so the roadway could be cut for pipeline construction. At 100 North, the pipeline would be installed under the bridge that crosses the ditch. During periods of road closure, traffic would be routed by traffic controls and road detour signs. Following construction, disturbed roads would be repaired.

Driveway crossings provide access over the ditches for individual landowners and consist of existing culverts. It would be anticipated that most crossings would remain intact throughout construction of the Project.

2.3.5 River Crossings

The existing check dam on Cottonwood Creek would be stabilized and repaired to withstand future high flood situations. Cottonwood Creek would be crossed once by the pipeline. Although it may be temporarily disrupted during construction, Cottonwood Creek would remain open following pipeline construction to carry potential high flows. A Stream Alteration Permit would be obtained for the river crossing and the existing check dam.

2.3.6 Saved Water

An estimated 1,360 acre-feet of water would be conserved by implementing the Project, which would decrease shortages, improve water management and improve the reliability of irrigation water delivery. With good construction practices, the losses due to seepage and evaporation would be near zero. This saved water does not constitute a new source of water previously unavailable to the users of the canal.

The Project would benefit all water users on the system. Although conserving this water would bring the water supply closer to agricultural water demand, no amount of water conservation will solve the late season water shortages since there is extremely limited water storage available.

Approximately 75 percent of shareholders on the Gobblefield Ditch are currently irrigating with sprinklers which are pressurized by private ponds. It is anticipated the piping of Gobblefield Ditch would facilitate the conversion of the remaining flood irrigated land to sprinkler irrigation. The new pipeline would provide pressure that would reduce or eliminate the need to pump.

2.3.7 Construction Schedule and Canal Operation During Construction

The Project consists of constructing approximately 3.5 miles of pipeline. It is anticipated the work would begin during the fall or winter of 2016 and all construction could be completed by the end of 2017.

Access to the farmlands and agricultural areas would be maintained during construction. The ditch would operate as normal until the pipeline is completed. The EIC's board members have been and will continue to work with the affected property owners to address their concerns, to the extent possible.

2.3.8 Pipeline Construction Procedures

2.3.8.1 Construction Sequence

Construction would likely occur in the following sequence:

- Excavate and grade pipeline alignment
- Install pipeline bedding materials
- Haul pipeline to construction sites
- Place pipeline and connect
- Backfill around pipeline and grade surface
- Cleanup and restore areas disturbed by construction
- Seed rights-of-way and disturbed areas to provide revegetation

2.3.8.2 Excavate and Grade Pipeline Alignment

The pipeline alignment would be excavated and graded to provide a base for installation of the pipeline. All excess material would be disposed within easements of the pipeline right-of-way. Much of the excavated material could be used for backfill and would be disposed in ways that blend with adjacent lands. Bedding material would be hauled to the Project site and placed in the bottom of the pipeline trench if native material is not acceptable for use as bedding material.

2.3.8.3 Pipeline Installation

The pipe manufacturer would transport the materials to the work site by flatbed truck and/or specially outfitted loaders. Construction equipment would place the pipeline in the prepared alignment and connect to the previously laid section by field welding depending on the pipeline type. Backfill would be placed at correct compaction levels around the pipeline from either material available along the alignment or imported from local off-site commercial gravel pits. Backfill would be mechanically compacted with a compactor. Air valves, control valves, drains, fittings, and relief valves would be installed at appropriate locations to ensure the proper operation of the pipeline. Spoil in work areas would be blended with existing contours to maintain local drainage patterns. All construction debris would be removed by the contractor.

2.3.8.4 Road Crossings

It is anticipated that pipeline installation at road crossings would be completed with minimal disturbance to existing structures. Backfill would be compacted all the way to the ground surface at road crossings, to prevent the road surface from subsiding under repeated traffic loads during and after construction. Temporary gravel surfaces would be installed and the final asphalt and curb and gutter, where existing, would be restored by the completion of the Project. Road crossings would be restored to a condition better than or equal to existing conditions as confirmed by video footage and photographs.

2.3.8.5 Quality Control Procedures

The contractor would ensure quality control of construction through visual inspection after backfilling and all construction work is completed. The required testing would be performed to ensure the system operates to design specifications.

2.3.8.6 Construction Staging Areas

Two separate staging areas in the Project area were evaluated as part of the environmental process to be used for equipment staging, construction personnel vehicular parking, and occasional materials stockpiling. However, the pipeline alignment would be a continuous staging area for the construction crews as they construct the pipeline by preparing the alignment, laying the pipeline, backfilling, finishing grading, and restoration. Work would be conducted in stages.

2.3.8.7 Operation and Maintenance

Operation of the EIC's system after the Project would remain essentially unchanged, and maintenance would be reduced significantly. Operation would occur primarily from April 15 to October 15. However, emergency situations or when other conveyance systems are out of service may require the pressurized pipeline to be operated at other times. The EIC and Ephraim City would work cooperatively to maintain the Gobblefield Ditch for flood control.

2.3.8.8 Standard Operating Procedures

The Project has been designed to avoid or minimize adverse impacts. Standard Operating Procedures (SOP) would be followed during Project construction and operation and maintenance (O&M) to avoid or minimize adverse impacts on people and natural resources. Chapter 3 presents the impact analysis for resources after SOP have been successfully implemented.

2.4 Alternatives Considered and Eliminated from Further Study

The following alternatives were evaluated but eliminated because they did not meet the purpose of or need for the Project.

2.4.1 Membrane Lining

This alternative involves lining the existing canal with an impermeable membrane, such as an ethylene propylene diene monomer or polyvinyl chloride. This liner would be installed on top of a 6-inch thick layer of clean backfill material and covered with several inches of the same backfill material.

This alternative was rejected because of susceptibility to puncturing and the need to repair punctures on a regular basis. Punctures can occur when equipment or large animals, such as livestock, enter the canal. It would also still allow debris to enter the canal, it would not shorten the time to make flow changes, and most of the other aspects of an open canal would remain the same. Pressure would not be

generated that would allow further on-farm water conservation improvements and reduce or eliminate the need to pump water for sprinkler irrigation. Public safety and evaporation loss would not be addressed with this alternative.

This alternative does not meet the purpose and need of the Project because it would keep the water in an open environment; thus allowing evaporation and contamination from equipment and livestock.

2.4.2 Gravity Pipeline

This alternative would pipe the existing canal alignment with a 24 to 42-inch-diameter pipe. A larger size pipe is required to convey the free flowing water in areas where the slope is nearly flat rather than a pressurized pipeline. In steep areas, frequent check structures would be needed to maintain velocities of 5 miles per hour. The pipeline would need to follow the canal alignment with its many curves, thus increasing the length of the pipeline as well as the number of fittings. The canal crosses hills with shallow bedrock. Pipe installation in these areas would be difficult and expensive. A gravity flow pipeline would not generate pressure that would allow further on-farm water conservation efforts and reduce or eliminate the need to pump water for sprinkler irrigation.

While this alternative would conserve water, it does not meet the purpose and need of the Project to conserve energy as it actually wastes it and is cost prohibitive.

2.5 Comparison of Alternatives

The suitability of the No Action and Proposed Action Alternatives were compared based on six objectives identified for the Project, which are listed in Section 1.3. As shown in Table 2-1, the No Action Alternative did not meet the Project objectives.

Table 2-1
Comparison of Alternatives

Project Objective	Does the No Action Meet the Objective?	Does the Proposed Action Meet the Objective?
Conserve water	No	Yes
Improve water management	No	Yes
Improve reliability of irrigation water delivery	No	Yes
Decrease shortages	No	Yes
Convert from flood to sprinkler irrigation	No	Yes

Project Objective	Does the No Action Meet the Objective?	Does the Proposed Action Meet the Objective?
Conserve energy	No	Yes
Positive impact on the local economy	No	Yes

2.6 Minimization Measures Incorporated into the Proposed Action

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

- All land surface disturbances would be confined to areas previously disturbed, ditch rights-of-way, existing roads, agricultural farmland, and staging areas adjacent to the Project area.
- Stockpiling of materials would be limited to those areas approved and cleared in advance.
- The EIC would be responsible during construction for safety measures, noise and dust control, and air and water pollution.
- Project features have been located to avoid riparian areas and historic features.

Chapter 3: Affected Environment and Environmental Consequences

3.1 Introduction

This chapter describes the environment that could be affected by the Proposed Action. These impacts are discussed under the following resource issues:

- Geology and Soils Resources
- Visual Resources
- Cultural Resources
- Paleontological Resources
- Wilderness and Wild and Scenic Rivers
- Hydrology
- Water Quality
- System Operations
- Health, Safety, Air Quality, and Noise
- Prime and Unique Farmlands
- Flood Plains
- Wetlands, Riparian, Noxious Weeds, and Existing Vegetation
- Fish and Wildlife Resources
- Threatened, Endangered, and Sensitive Species
- Recreation
- Socioeconomics
- Access and Transportation
- Water Rights
- Flood Control
- Indian Trust Assets
- Environmental Justice
- Cumulative Effects

The present condition or characteristics of each resource are discussed first, followed by a discussion of the predicted impacts caused by the Proposed Action. The environmental effects are summarized in Section 3-7.

Implementing minimization measures would ensure impacts are minimal and short-term. Chapter 3 presents the impact analysis for resources after minimization measures and best management practices (BMP) have been successfully implemented.

3.2 Resources Considered and Eliminated from Further Analysis

The following resources were considered but eliminated from further analysis because they did not occur in the Project area or because their effect is so minor (negligible) that it was discounted.

Table 3-1 identifies the resources that have been eliminated from further analysis. Impacts to these resources were considered, but not analyzed in detail, because they were determined to not be affected directly, indirectly, or cumulatively by the No Action or Proposed Action Alternatives.

Table 3-1
Resources Eliminated from Further Analysis

Resource	Rationale for Elimination from Further Analysis
Paleontological Resources	Consultation with the State Paleontologist indicates there is only a low probability of the presence of significant paleontological resources in the Project area.
Wilderness Areas and Wild and Scenic Rivers	There are no designated Wilderness Areas or Wild and Scenic Rivers within the Project area; Wilderness Areas and Wild and Scenic Rivers would not be affected by implementing the No Action or Proposed Action Alternatives.
Health, Safety, Air Quality, Noise	Public health and safety would not be affected by implementing either the No Action or Proposed Action Alternatives as the ditch would remain open as it historically has been. The Project is located in an attainment area as defined under the Clean Air Act, which requires the Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for airborne pollutants considered damaging to public health and the environment. Attainment designation refers to areas that do not exceed the NAAQS. Negligible or no effects to air quality or noise are expected long-term by implementing the No Action or Proposed Action Alternatives. No long term affects due to the Project are anticipated to the air quality or noise.
Prime and Unique Farmlands	There is Prime Farmland within the Project area but no Unique Farmland. However, there would be no conversion of farmland to non-agricultural use, as defined by the Farmland Protection Policy Act (USC 4201-4209), by implementing the No Action or Proposed Action Alternatives.
Recreation	Cottonwood Creek is not a substantial fishery nor does the Utah Division of Wildlife Resources stock fish within the creek. All water in Cottonwood Creek is removed upstream of the Project area for hydropower generation at times of the year. This dewaters

Resource	Rationale for Elimination from Further Analysis
	sections of the creek upstream and prevent fish from living in the vicinity of the Project. It is also too small to support any measurable recreation. The EIC's irrigation ditches do not provide sources of recreation.

3.3 Affected Environment and Environmental Consequences

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

3.3.1 Geology and Soils Resources

The soils in the Project area are dominated by sandy and clay loams, which are ideal for agricultural lands. The majority of the soils type is Amtoft flaggy loam with some Rapho gravelly fine sandy loam, Quaker silty clay loam, and Woodrow silty clay loam. The remaining soils vary and are minor. They may have properties similar to the dominant soils and do not affect use and management.

3.3.1.1 No Action

Under the No Action, the Project would not be built. This would have no effect on geology and soils.

3.3.1.2 Proposed Action

The Proposed Action Alternative would have temporary surface soil impacts during construction. Construction erosion and sediment controls would serve to minimize these impacts. As a requirement of the UPDES permit for construction activities, a Storm Water Pollution Prevention Plan (SWPPP) would be developed and adhered to by the construction contractor.

3.3.2 Visual Resources

The natural and constructed features contribute to the visual resources within the Project area, including: mountain views, agricultural fields, and vegetation along the ditch corridor. Viewers, including local residents, workers, and recreationists, have a perception of the existing physical characteristics. This section assesses the extent to which the Project would change the perceived visual character and quality of the environment where the Project is located.

3.3.2.1 No Action

Under the No Action Alternative, there would be no changes to the existing visual resources.

3.3.2.2 Proposed Action

Under the Proposed Action Alternative, it is not anticipated that there would be direct or indirect impacts to the visual resources along the mountain range due to construction of the Project. The Gobblefield Ditch would remain open for stormwater collection and high flood flows.

Additionally, there would be no permanent impact from constructing a pipeline to the overall visual character for the close-range to mid-range to long-range viewers. Any visual impairment due to construction would be temporary.

3.3.3 Cultural Resources

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

Section 106 of the National Historic Preservation Act of 1966 (NHPA), mandates that Reclamation take into account the potential effects of a proposed Federal undertaking on historic properties. Historic properties are defined as any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NRHP). Potential effects of the described alternatives on historic properties are the primary focus of this analysis.

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

A Class I literature review and a Class III cultural resource inventory were completed for the APE, defined in the action alternative and analyzed for the proposed action, by Bighorn Archaeological Consultants (Bighorn) on October 20, 2015, and July 11, 2016. Nine previous cultural resource inventories, seven previously recorded cultural sites, and 83 historic buildings/features are within a half mile of the proposed project area. Two previously recorded sites were located within the inventory area and updated during the course of the project.

One site consists of a Civilian Conservation Corps (CCC) debris basin. The site is associated with CCC camp BR-6 and was constructed sometime between 1934 and 1940. The notable features consist of a stone and earthen retaining berm along the western edge of the site and a 3-step stone and concrete check dam that bisects the retaining wall. This site was previously determined eligible to the NRHP. Portions of the site, especially the basin behind the features, have recently been heavily disturbed by the construction, maintenance, and use of a disc golf course. Due to these intrusive activities impacting the integrity of the basin, the site boundary was redefined around the existing features of the site.

The proposed project would occur within the redefined site boundary for the site. A 2.5 acre area of the original debris basin would be renewed and the check dam would be repaired to maintain its intended function with appropriate materials that would not impact its integrity. As such, there would be no adverse effects to this site due to project activities.

The other site, the Gobblefield Ditch, is an ineligible site. The irrigation pipe would be placed along the ditch and the ditch would remain open to carry overflow water. As an ineligible site, the proposed project would have no adverse effect on this site.

3.3.3.1 No Action

Under the No Action Alternative, a continuation of existing management and land use practices would occur. It would include on-going maintenance and repair of existing facilities. There would be no changes to the current conditions.

3.3.3.2 Proposed Action

The Project would stabilize and repair the aging concrete dam of the CCC debris basin to withstand future high flood situations which could threaten Ephraim City. This would maintain its intended function. There would be no adverse effects to the CCC debris basin and the check dam would maintain the same function and specifications. The Gobblefield Ditch is an ineligible site. The ditch would remain open and serve its intended function. There would be no adverse effect to the ditch.

Under the Proposed Action Alternative, construction activities have the potential to discover previous, unknown, cultural resources and Native American artifacts. In the event of a discovery, construction activity in the vicinity would be suspended. A treatment plan would be developed, and coordination with the Utah State Historic Preservation Office (SHPO) would occur immediately.

3.3.4 Hydrology

Cottonwood Creek begins in the Wasatch Plateau and flows in a westerly direction down Ephraim Canyon and enters the valley southeast of Ephraim City. Along its length there are many small canyons and springs, but the Left Fork and New Canyon are its main tributaries. The EIC manages all the water in

Cottonwood Creek, which has no in-stream flow requirements below the check dam structure. EIC uses splitting structures in the canyon to divert water to the various shareholders in the areas in and surrounding Ephraim City.

Cottonwood Creek is the main source of water and has been used for crop cultivation since the 1850's. However, the available water is often limited and inconsistent, and farmers in the area have always sought ways to improve the supply. Most of the water comes in late May to early June. During this period of high flow, shareholders have sufficient water but most of the high flow ends up in the San Pitch River since there is extremely limited storage and the crops cannot utilize additional water. Flows typically peak during the beginning of June and there are significant decreases by the middle of July.

3.3.4.1 No Action

Under the No Action Alternative, there would be no direct or indirect effect on the hydrology of Cottonwood Creek stream flows, as there would be no change in the existing management of the water resource.

3.3.4.2 Proposed Action

The Proposed Action Alternative would have a negligible effect on the hydrology of Cottonwood Creek. The flows in the creek below the Gobblefield Ditch diversion would remain unchanged as the diversion capacity is limited. The same amount of water would be diverted into the proposed pipeline as was historically diverted into the Gobblefield Ditch. However, the estimated 42 percent of water currently lost to seepage and evaporation would be conserved and available to shareholders to reduce current shortages.

The Gobblefield Ditch currently collects stormwater/runoff from the hillside and high flows, and then conveys it north of Ephraim City into other natural drainages. Under the Proposed Action, a pipeline would be installed adjacent to the ditch leaving the ditch open to continue to collect stormwater/runoff and high flood flows.

The water supply available to the shareholders would increase due to eliminating seepage and evaporation losses. This would result in an improved water supply that would benefit the farmland's crop production.

3.3.5 Water Quality

Each stream, reservoir, and canal in Utah is classified according to its beneficial uses. The required standards for water quality parameters are determined by the classifications used. According to the Standards of Quality for Waters of the State, Environmental Quality (R317-2-13), Utah Administrative Code (UAC), Cottonwood Creek is classified as:

- Class 2B -- Protected for infrequent primary contact recreation. Also, protected for secondary contact recreation where there is a low likelihood

of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.

- Class 3A -- Protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in their food chain.

There are no water quality concerns for Cottonwood Creek. About 22.5 percent of Cottonwood Creek flows are diverted into the Gobblefield Ditch, which is the last diversion before the creek enters Ephraim City. Below this diversion, the creek has minimal capacity. Any water not diverted flows to the San Pitch River.

The Gobblefield Ditch collects stormwater runoff from the adjacent hillside and has been enlarged to carry flood flows. Stormwater runoff can cause sediment to enter the canal affecting water quality. The canal may also inadvertently intercept agricultural and urban runoff, which can contain fertilizers, pesticides, sediment, automobile-related pollutants (lead, copper, zinc, oil, grease, and rust), and de-icing chemicals (salt and salt solutions). However, the majority of land above the ditch is undeveloped.

3.3.5.1 No Action

Under the No Action Alternative, there would be no changes to the current conditions or additional effects to water quality. Any herbicides, nutrients, and sediments would continue to remain in the water in the same ratios as current conditions. Since no construction would occur, there would be no temporary construction-related water quality impacts.

3.3.5.2 Proposed Action

Under the Proposed Action Alternative, water quality impacts during construction would be minimal, as there is little water in the ditch during the winter. Piping the ditch would improve water quality in the system, because water would be conveyed in a closed pipe not allowing exposure to stormwater, agricultural, and urban runoff. There are no foreseen long term negative impacts to water quality in Cottonwood Creek or the irrigation system.

There is a potential temporary increase in turbidity due to sediment entering Cottonwood Creek during construction of the retention pond and/or repairing the check dam, creating direct and indirect effects on the water quality. Erosion control measures would be specified to protect Cottonwood Creek's water quality. The Project would require disturbed land to be graded to provide proper drainage, to blend with the natural contours, and to be revegetated with native plants.

3.3.6 System Operations

The EIC currently operates the Gobblefield Ditch as an open canal to transport irrigation water from the Cottonwood Creek to water users along the 3.6 miles of the ditch system. One hundred percent of the water is used for agricultural

purposes. Approximately 75 percent of the shareholders currently irrigate using sprinkler systems. Most have retention ponds, which they pump out of for fields close to the pond. The lands not under sprinkler irrigation are mostly the lands close to the ditch where gravity-generated pressure is not sufficient to run sprinklers. The ponds provide sufficient pressure to sprinkler irrigate fields farther from the ponds that are significantly lower in elevation.

3.3.6.1 No Action

Under the No Action Alternative, the EIC system would continue to operate under its current conditions. The EIC faces water shortages at the end of most irrigation seasons because of water losses in the system and reduced flow in the creek. The only water supply for the Gobblefield Ditch is the Cottonwood Creek, so the water supply is dependent on this source alone.

3.3.6.2 Proposed Action

Under the Proposed Action Alternative, the system would have minimal losses and conserve up to 1,360 acre-feet of water annually. The proposed regulating pond allows the system to be pressurized, which reduces the need for individual shareholders to pump and have retention ponds. Thereby, the Proposed Action would reduce the energy requirements for the system. Additionally, it would reduce the required maintenance along the Gobblefield Ditch as the enclosed pipe would reduce the amount of debris from entering the system. Therefore, the Proposed Action would have a beneficial impact on the system operations.

3.3.7 Flood Plains

Federal Emergency Management Agency (FEMA) Flood Zone maps were reviewed to determine if the Project area lies within an area of potential risk. Flood zones are geographic areas that FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM), which reflect the severity or type of flooding that could occur. Maps for the Project area are shown in Appendix A.

Approximately 2.25 miles of the Gobblefield Ditch lies within Zone A of the FIRM. Zone A is defined as "areas with a 1 percent annual chance of flooding and a 26 percent chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones."

3.3.7.1 No Action

Under the No Action Alternative, there would be a continuation of existing land use and management. There would be no changes to the current conditions. However, during the high flows of 2011, it was questionable whether the check dam structure, shown in Figure 2, would withstand the flows. Due to the deteriorating condition of the check dam structure, it is anticipated that a future high flood event would cause the weakened structure to be washed out causing

failure of the embankment and destruction of the structure. This may result in flooding in Ephraim.

3.3.7.2 Proposed Action

Under the Proposed Action Alternative, the flood plain areas would remain the same. However, there would be additional flood control capacity with the earthen and concrete ditches remaining open and maintained for flood control and the capacity of the pipeline. Additionally, the check dam structure would be stabilized and repaired to assist with controlling flood flows. See Section 3.14 for additional discussion on Flood Control.

3.3.8 Wetlands, Riparian, Noxious Weeds, and Existing Vegetation

3.3.8.1 Wetlands

A Wetlands and Waters of the U.S. Delineation was conducted for the proposed Project on December 1 and December 3, 2015. A copy is in Appendix B. Focus was placed on areas previously identified as potential wetland areas listed on the National Wetland Inventory (NWI).

Three soil types were identified as being present from the Web Soil Survey data collected from Natural Resouces Conservation Service (NRCS). The soil types from NRCS data are shown as poorly drained or have a rare frequency of flooding. However, the on-site survey found the soils were well-drained and are not ideal for supporting wetlands. Gobblefield Ditch does not appear to have the potential to support wetlands primarily because of soil characteristics (i.e. well-drained, little to no flooding, no ponding) and seasonal inundation.

The survey resulted in one wet meadow being delineated near the south end of the Project area, directly west of the Ephraim City water tank. When the springs providing drinking water for Ephraim City exceed the water demand, the water tank overflows. The water from overflow events is resulting in the wet meadow area. Water flowing from the water tank towards Gobblefield Ditch is not navigable or supported by any of its tributaries. Therefore, it may not categorically fall under protection or mitigation typically associated with wetland protection. However, the wet meadow would be avoided as possible. Any disturbance of this area that cannot be avoided would be temporary in nature.

3.3.8.2 Vegetation and Noxious Weeds

Habitat surrounding the proposed pipeline is primarily agricultural with foothills nearby containing tree stands that are pinyon (*Pinus edulis*) and juniper (*Juniperus sp.*) intermingled with sagebrush (*Artemisia tridentata*) and rabbitbrush (*Ericameria nauseosa*). The Gobblefield Ditch contains riparian plants such as cottonwoods (*Populus sp.*) and willows (*Salix exigua*). The pipeline corridor is relatively clear of larger vegetation and understory, with the exception of grasses and weeds. Elevation at the Project area ranges from 5,720 feet to about 5,570 feet. The following photos are representative of the existing vegetation.

Noxious weeds are plants that typically invade from other countries, leaving their natural controls and competitors behind (insects, diseases, grazers, and climate). They have adapted to grow and proliferate in human-disturbed areas.

The following is a list of weeds declared noxious in Sanpete County:

Noxious Weed	Noxious Weed
Russian knapweed	Curly dock
Yellow/Dalmatian toad flax	Black henbane
Squarrose knapweed	Dyer woad
Whitetop/Hoary cress	Scotch thistle
Burdock (Wild morning glory)	Canada thistle
Buffalo bur	Perenial pepperweed
Mark thistle	Difuse knapweed
Houndstongue	Spotted knapweed

The Utah Noxious Weed Act (Title 4, Chapter 17, Rule R68-09) provides for the control and management of noxious weeds in Utah. Sanpete County Weed Department has an integrated Weed Management Plan to control noxious weeds.

3.3.8.3 No Action

Under the No Action Alternative, there would be no changes to the current conditions or additional effects to vegetation. Since no construction would occur, there would be no impacts to vegetation. Existing management and land use practices would continue. Existing management activities would include on-going maintenance and repair of existing facilities. There would be no changes to the current conditions.

3.3.8.4 Proposed Action

Under the Proposed Action Alternative, minor impacts to the wet meadow are anticipated to occur during construction; however, they would be expected to be temporary and minimal. Disturbances to all vegetation types would be expected to be temporary and minimal. All construction activities would occur in areas previously disturbed by the development of existing facilities, farming practices, and roadways. The Gobblefield Ditch would remain open after construction to convey high and flood flows which would continue to provide water to the riparian vegetation along the ditch.

During construction, the disturbance to the soils along the pipeline alignment would be expected to be temporary and minimal. The spread of noxious weeds would be decreased because the water placed in the pipeline would not pick up and transport the seeds from noxious weeds.

3.3.9 Fish and Wildlife Resources (Fish, Small Mammals, Raptors, Migratory and Other Birds, Big Game)

The Project area provides habitat for a wide variety of wildlife species ranging from mule deer to elk to migratory birds and small mammals. According to the Information for Planning and Conservation (IPaC) report, there are no critical habitats within the Project area.

The following section profiles species with identified habitats found in and adjacent to the Project area. Section 3.3.10 discusses the one species listed as Federally-threatened that has potential to occur within the Project area and/or adjacent lands.

3.3.9.1 Fish

Cottonwood Creek is not a major fishery in the area nor does the UDWR stock fish within the creek. All water in Cottonwood Creek is removed upstream of the Project area for hydropower generation at times of the year. This dewaters sections of the creek upstream making it difficult to support fish within the vicinity of the Project. Low flows and dry conditions in the summer limit habitat for fish. If fish do occur, it is unknown what species typically occur.

The Gobblefield Ditch is not a fishery and is dewatered annually during winter months. Periodic O&M activities also cause dewatering to occur. There are no fish that exist in the ditch.

3.3.9.2 Small Mammals

Small mammals are inherent in rural, agricultural areas. These small mammals can use the upland habitat, as well as the agricultural properties and the lands in between to live and locate prey.

3.3.9.3 Raptors

Raptors, such as the bald eagle (*Haliaeetus leucocephalus*) may winter in the area but do not breed locally. The ferruginous hawk (*Buteo regalis*), the golden eagle (*Aquila chrysaetos*), and the peregrine falcon *(Falco peregrinus)* may be found year-round. The swainson's hawk (*Buteo swainsoni*) may breed in the area. A large portion of the raptors diet may include the many small mammals living in open grasslands and agricultural lands within the Project area.

3.3.9.4 Migratory and Other Birds

The habitat in the Project area supports a high quantity and diverse type of migratory and other birds. The following birds were identified on the U.S. Fish and Wildlife Service (USFWS) IPaC Trust Resource List for breeding: brewer's sparrow (*Spizella breweri*), burrowing owl (*Athene cunicularia*), calliope hummingbird (*Stellula calliope*), eared grebe (*Podiceps nigricollis*), flammulated owl *(Otus flammeolus)*, fox sparrow (*Passerella liaca*), long-billed curlew (*Numenius americanus*), olive-sided flycatcher (*Contopus cooperi*), sage thrasher (*Oreoscoptes montanus*), virginia's warbler *(Vermivora virginiae)*, western grebe

(Aechmophorus occidentalis), williamson's sapsucker (*Sphyrapicus thyroideus*), and the willow flycatcher *(Empidonax traillii)*.

Another group of birds that are in the Project area year-round include: black rosy-finch *(Leucosticte atrata)*, cassin's finch (*Carpodacus cassinii*), greater sage-grouse *(Centrocercus urophasianus)*, lewis woodpecker *(Melanerpes lewis)*, loggerhead shrike *(Lanius ludovicianus)*, and pinyon jay (*Gymnorhinus cyanocephalus*). The short-eared owl *(Asio flammeus)* also winters in the Project area.

3.3.9.5 Big Game

The Project area and adjacent lands are classified as crucial winter habitat for mule deer (*Odocoileus hemionus*) and rocky mountain elk (*Cervus canadensis nelsoni*). South and west-facing slopes at lower elevations are important wintering areas. The Project area is generally on west facing slopes and may or may not be preferred wintering areas for mule deer. During the winter, elk are usually found in lower to mid-elevation habitats with mountain shrub and sagebrush vegetation. During summer, most mule deer habitat is located at higher elevations generally found in the Manti-La Sal National Forest. Although deer may feed at night in adjacent agricultural fields, the city limits of Ephraim and deer-proof fenced agricultural lands nearby limit their use of the area as winter habitat.

The Black Hill Wildlife Management Area (WMA), owned by the UDWR, consists of 1,668 acres and exists within the Project area. This WMA was acquired primarily to protect, preserve, and enhance critical big game winter range, and to reduce crop depredation by mule deer and elk on surrounding private property.

3.3.9.6 No Action

The No Action Alternative represents a continuation of existing management and land use practices. There would be no impacts to wildlife within the Project area.

3.3.9.7 Proposed Action

Under the Proposed Action Alternative, there would be no major long-term negative effects to wildlife. The Gobblefield Ditch is dewatered annually during the winter months and does not provide a winter water source for big game. Construction activities would occur in or adjacent to areas that were previously disturbed by agricultural development, homes, and roadways. Construction would be in the late fall through early spring. Wildlife disturbance would be localized, temporary and minimal due to the lineal and fast moving nature of the construction activities. Construction activities would occur on the western border of the WMA. Revegetation at that elevation and location in spring and early summer would likely occur fairly rapidly, which would minimize the disruption of habitat use by wildlife.

Seasonal migrations of wildlife may be affected by Project construction. This would be temporary and wildlife would be able to use adjacent lands during this time as they currently do when vehicles and off-highway vehicles (OHVs) use the area. Most of the land to be temporarily impacted by construction are regularly used by vehicles, agricultural equipment, and/or OHVs for recreational purposes.

There would be no displacement or harassment of migratory birds and raptors because the construction season would occur during the late fall, winter, and early spring, which is after and prior to times when birds are actively breeding in the area. The Project would ensure compliance with the Migratory Bird Treaty Act. In the event that construction activities occurred in the late spring/early summer or any time active breeding, nesting, or pre-fledging behavioral activities were happening, EIC would adhere to the USFWS Utah Raptor Guidelines, placing appropriate buffers on nests until fledging activities concluded. If nests of migratory birds were located during the construction process, a Reclamation biologist would be consulted and an appropriate buffer would be put in place. Any birds still in the Project area during construction would be able to use similar roost sites or other habitats in the immediate vicinity, if cottonwood trees and/or willows were removed during construction. The removal of large trees is not anticipated to be necessary for the Project. The Project would be designed to avoid small trees where possible.

Effects to fish, small mammals, reptiles, and big game would be minimal. If the species were present during construction, minor disturbance may occur. Temporary changes in habitat for sensitive species would be negligible. No effect to the behavior of the listed species is expected and therefore, would not cause a trend toward Federal listing under the Endangered Species Act (ESA) of 1973 because they are not known to be in the Project area.

Overall, the direct and indirect effects to wildlife resources would be minimal. In addition, the long and short-term impacts to the habitat, natural water sources, and behavior would be minor.

3.3.10 Threatened, Endangered, and Sensitive Species

Federal agencies are required under the ESA, 16 USC 1531, to ensure any action federally authorized, funded, or carried out, does not jeopardize the continued existence of threatened or endangered species, or modify their critical habitat.

An information request from the UDWR, Natural Heritage Program was made with results obtained on December 7, 2015. The UDWR does not have any records of occurrence for any threatened or endangered species within the Project area or within a two-mile radius. The results are based on data existing in the UDWR central database on December 7, 2015.

An IPaC report was obtained from USFWS regarding any threatened or endangered species within the Project area. The threatened species, yellow-billed

cuckoo (*Coccyzus americanus*), is the only listed species on the IPaC report. The Project area is identified as having proposed critical habitat for the species; however, it is not currently suitable habitat. Table 3-2 lists the species along with habitat requirements and potential impact determination.

Table 3-2

ESA Listed Species with Potential Habitat in the Project Area

Species (common and scientific name)	Status	Habitat Description	Suitable Habitat in Project Area	Project Impact Determination
Yellow-billed cuckoo *(Coccyzus americanus)*	Threatened	Riparian areas with dense willows combined with mature cottonwoods. Also known to use wooded parks, cemeteries, tree islands, great basin shrub-steppe, and high elevation willow thickets	Proposed	**No effect**

U.S. Fish & Wildlife Service (2015, November 25)

The UDWR was contacted on December 7, 2015, and does not have any records of occurrence for any sensitive species within the Project area or within a 2-mile radius.

3.3.10.1 No Action

Under the No Action Alternative, there would be no direct or indirect threats to the listed species or its proposed critical habitat due to no construction-related activities. There would be a continuation of existing management and land use practices. There would be no changes to the current conditions, and no impacts to threatened and endangered species within the Project area.

3.3.10.2 Proposed Action

Under the Proposed Action Alternative, based on the absence of the species or its habitats, there would be no effect to threatened and endangered species.

3.3.11 Socioeconomics

The population of Ephraim City was 6,135 in the 2010 census. This does not include the student population of Snow College which was 4,386 in 2010. There has been a 5.4 percent increase since 2010 with an estimated 6,463 residents in 2014. The estimated median household income for 2009-2013 was $42,988, which is 26.5 percent lower than the state's median of $58,821. Ephraim exhibits

limited overall racial diversity, with 89.2 percent of residents classified as white in 2010 and the next largest race being Hispanic at 9.7 percent.

3.3.11.1 No Action

Under the No Action Alternative, there would be no changes to the socioeconomics of the community.

3.3.11.2 Proposed Action

There would be an increase in crop production to EIC shareholders irrigating from the Gobblefield Ditch system, providing an economic benefit due to the implementation of the Proposed Action Alternative. There would also be a temporary increase in jobs created, including construction workers and local suppliers of construction materials.

Lands currently flood irrigated would have the option to change from flood irrigation to sprinkler irrigation. Positive economic benefits would result from the Proposed Action Alternative. There would be no changes to the land uses adjacent to the Gobblefield Ditch, thereby, creating no effect to the socioeconomics of the community. The Project would not adversely affect low income or minority populations.

3.3.12 Access and Transportation

This section identifies potential access and transportation impacts from the construction and operation of the Proposed Action and No Action. Remotely located, the Project can be accessed from Highway 89. The impact area of influence for transportation includes roads that would be used during construction and O&M of the No Action and Proposed Action Alternatives. The impact area of influence for utilities includes any utilities that would be moved, replaced, or experience service interruptions under the No Action or Proposed Action Alternatives.

During construction, the majority of the vehicle trips would be for transporting construction materials. The contractor would be transporting heavy construction equipment at the beginning and end of the Project.

3.3.12.1 No Action

Under the No Action Alternative, there would be no adverse effects to access and transportation.

3.3.12.2 Proposed Action

The Project would have minor short-term effects on access and transportation during construction. Where the pipeline crosses existing roadways, the roads would be temporarily shut down so they can be cut and the pipeline installed. During each roadway closure, detours would be provided which could cause short-term delays. The road would be repaired following pipe installation. The Proposed Action would have minor short-term effects during construction and there

would be no long-term effects on public safety. Access and transportation to and from the site would be the same following construction.

3.3.13 Water Rights

The EIC owns multiple water rights for various sources. The water rights associated with the Project are from Cottonwood Creek near Ephraim and Ephraim Tunnel water rights that divert water from the Colorado River Basin. Table 3-3 lists the direct flow water rights from Cottonwood Creek. Of the total amount, water is not always available and often only during the peak flow periods of late spring. Cottonwood Creek flows decrease dramatically in the later summer season. Table 3-4 lists the Ephraim Tunnel water rights that supplement the Cottonwood Creek water rights. Similar to the Cottonwood Creek water rights, the water available for the Ephraim Tunnel is not always available and is decreased based on the water flows of the sources and the water right priority dates.

Table 3-3
Direct Flow Water Rights on Cottonwood Creek for Gobblefield Ditch

Flow (cfs)	Priority Date	Water Right Number	Change Number
1.77	1854	65-2452	a15687
5	1854	65-3383	
20	1854	65-2504	a16547
196.1845	1854	65-3382	a28763
0.04	1880	65-3385	

Table 3-4
Ephraim Tunnel Water Rights in Cottonwood Creek for Gobblefield Ditch

Flow (cfs)	Priority Date	Water Right Number	Change Number
20.0	7/25/1928	93-962	
100	2/27/1932	93-833	a2847
8	7/16/1937	93-834	a4145
2.5	7/16/1937	93-835	a12704
5.0	10/08/1941	93-836	

3.3.13.1 No Action

Under the No Action Alternative, the Project would not be built. This would have no effect on water rights.

3.3.13.2 Proposed Action

Under the Proposed Action Alternative, there would be no changes to the allowed beneficial uses of EIC water rights. However, the conserved water would allow EIC to more fully utilize its water rights due to elimination of water losses associated with seepage and evaporation.

3.3.14 Flood Control

The Gobblefield Ditch has served as a flood control facility, collecting stormwater, irrigation runoff, and high flows from Cottonwood Creek. Ephraim City has come to rely on this benefit.

3.3.14.1 No Action

Under the No Action Alternative, there would be no changes and the ditch would continue to collect stormwater, irrigation runoff, and high flows from Cottonwood Creek. However, during the high flows of 2011, it was questionable whether the check dam structure shown, in Figure 2, would withstand the flows. Due to the deteriorating condition of the check dam structure, it is anticipated that a future high flood event would cause the weaken structure to be washed out causing failure of the embankment and destruction of the structure. This may result in flooding in Ephraim.

3.3.14.2 Proposed Action Alternative

The earthen and concrete ditches would remain open to collect stormwater, runoff, and high flows from Cottonwood Creek under the Proposed Action Alternative. However, due to easement challenges, there are sections of the unlined ditch that would be impacted by pipe installation before being restored for flood control purposes. The pipeline's capacity would provide additional flood control capacity when necessary. Additionally, the check dam structure would be stabilized and repaired to assist with controlling flood flows. See Section 3.7 for discussion on Flood Plains. The EIC would continue O&M of the ditch.

3.4 Indian Trust Assets

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

3.5 Environmental Justice

Executive Order 12898, established Environmental Justice as a Federal agency priority to ensure that minority and low-income groups are not disproportionately affected by Federal actions. Implementation of the No Action or Proposed Action would not disproportionately (unequally) affect any low-income or minority communities within the Project area. The reason for this is the Project would not involve major facility construction, population relocation, health hazards, hazardous waste, property takings, or substantial economic impacts. This action would therefore have no adverse human health or environmental effects on minority and low-income populations.

3.6 Cumulative Effects

In addition to Project-specific impacts, Reclamation analyzed the potential for significant cumulative impacts to resources affected by the Project and by other past, present, and reasonably foreseeable activities within the watershed. According to the Council on Environmental Quality's regulations for implementing NEPA (50 CFR §1508.7), a “cumulative impact” is an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. It focuses on whether the Proposed Action, considered together with any known or reasonably foreseeable actions by Reclamation, other Federal or State agencies, or some other entity combined to cause an effect. Based on resource specialists’ review of the Proposed Action, Reclamation has determined this action would not have a significant adverse cumulative effect on any resources.

3.7 Summary of Environmental Effects

Table 3-5 summarizes environmental effects under the No Action and Proposed Action Alternatives.

Table 3-5
Summary of Environmental Effects

Project Resource	No Action	Proposed Action
Geology and Soils Resources	No Effect	Minor Temporary Impacts
Visual Resources	No Effect	Minor Temporary Impacts
Cultural Resources	No Effect	No Effect
Hydrology	No Effect	No Effect
Water Quality	No Effect	Minor Temporary Impacts

Project Resource	No Action	Proposed Action
System Operations	No Effect	No Effect
Flood Plains	No Effect	No Effect
Wetlands, Riparian, Noxious Weeds, and Existing Vegetation	No Effect	Minor Temporary Impacts
Fish and Wildlife Resources	No Effect	Minor Temporary Impacts
Threatened, Endangered, and Sensitive Species	No Effect	No Effect
Socioeconomics	No Effect	No Effect
Access and Transportation	No Effect	Minor Temporary Impacts
Water Rights	No Effect	No Effect
Flood Control	Potential negative impact	Greater Flood Flow Capacity
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Cumulative Effects	No Effect	No Effect

Chapter 4: Environmental Commitments

Environmental Commitments, along with Minimization Measures in Section 2.6 have been developed to lessen the potential adverse effects of the Proposed Action.

4.1 Environmental Commitments

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

1. **Additional Analyses** – If the Proposed Action were to change significantly from that described in the EA, because of additional or new information, or if other construction areas are required outside the areas analyzed in this EA, additional environmental analysis including cultural and paleontological analyses would be undertaken, if necessary.

2. **Construction Restrictions** – Construction and staging activities would be confined to previously disturbed areas, to the extent practicable.

3. **Public Access** – Activity areas would be closed to public access during construction. The EIC would coordinate with contractor's personnel, as necessary, to ensure public safety.

4. **Flood Plains** – The EIC would be compliant with all rules and regulations of the Federal Floodplain Insurance Program as administered by the local city or county floodplain administrator.

5. **Invasive Species** – Appropriate steps would be taken to prevent the spread of, and to otherwise control, undesirable plants and animals within areas affected by construction activities. Equipment used for the Project would be inspected for reproductive and vegetative parts, foreign soil, mud or other debris that may cause the spread of weeds, invasive species and other pests. Such material would be removed before moving vehicles and equipment. Upon the completion of work, decontamination would be performed within the work area before the vehicle and/or equipment are removed from the Project site if work was conducted in an area infested with noxious weeds.

   The EIC would make periodic inspections following vegetation of disturbed areas to locate and control populations of noxious weeds, if present. All seed used for restoration would be certified "noxious weed free" before use.

If needed, the County Weed Control Department could be contacted to provide services to control the spread of noxious weeds.

6. **Vegetation** – Design and treatment activities would ensure that vegetation would be protected with no long term adverse effects. Staging areas would be in previously disturbed areas to the extent possible.

7. **Raptor Guidelines** – The EIC would adhere to the USFWS Raptor Guidelines by placing seasonal and spatial "no construction" buffers, along with daily timing restrictions around all active raptor nests or winter roosting bald eagles. If unknown nests are located during construction, the same guidelines would be implemented.

8. **Cultural Resources** – Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains on Federal land, he/she must provide immediate telephone notification of the discovery to Reclamation's Provo Area Office archaeologist. Work would stop until the proper authorities are able to assess the situation onsite. This action would promptly be followed by written confirmation to the responsible Federal agency official, with respect to Federal lands. The 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 (43 CFR Part 10) and the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470).

9. **Air Quality** – The BMPs would be followed to mitigate for temporary impact on air quality due to construction-related activities. These may include the application of dust suppressants and watering to control fugitive dust; minimizing the extent of disturbed surface; during times of high wind, restricting earthwork activities; and limiting the use of, and speeds on, unimproved road surfaces.

Chapter 5: Consultation and Coordination

5.1 Introduction

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

The following agencies were consulted during the development of this EA.

Table 5-1
Consultation List for EA Preparation

Name	Purpose & Authorities for Consultation or Coordination	Contacts
Ephraim City	Stormwater control	Bryan Kimball, City Engineer 435-283-4631
U.S. Fish and Wildlife Service	Consultation under Section 7 of the ESA (16 USC 1531)	The USFWS was coordinated with for possible endangered species issues. An IPaC request was made on November 25, 2015.
Utah Division of Wildlife Resources	Consult with UDWR as the agency with expertise on wildlife and ESA; searched database for wildlife and ESA species; easement	Contacted Sarah Lindsey: sarahlindsey@utah.gov on November 30, 2015. Data request response letter received on December 7, 2015. Coordinating with Steve Hansen regarding easement on UDWR land: stephenhansen@utah.gov 801-538-4778
Utah Division of Water Rights	Stream Alteration Permit	Chuck Williamson charleswilliamson@utah.gov 801-538-7404
Utah Conservation Data Center	State Special Status Species Wildlife species	Researched website on December 4, 2015: http://mapserv.utah.gov/Wildlife/.

Name	Purpose & Authorities for Consultation or Coordination	Contacts
Utah Geological Survey (UGS)	Consult with UGS concerning the paleontological sensitivity of the Project area.	Contacted Martha Hayden at 801-537-3311, assistant to the State Paleontologist, on December 2, 2015.
Utah Department of Natural Resources	Aquatic information	Matt Briggs 435-340-0140

5.2 Public Involvement

A public scoping meeting was held on August 4, 2016, at 6:00 p.m. in the Ephraim Town Hall to discuss the Project. Notices were sent to adjacent landowners, shareholders receiving water from the Gobblefield Ditch, Ephraim City, Utah Department of Natural Resources, and UDWR. Eight individuals were in attendance. The draft EA was provided to the public and government agencies for a 21-day comment period and no comments were received.

5.3 Native American Consultation

Reclamation conducted Native American consultation throughout the public involvement process. A consultation letter and copy of the Class III Cultural Resource Inventory Report was sent to the Ute Tribe of the Uintah and Ouray Reservation on October 24, 2016. This consultation was conducted in compliance with 36 CFR 800.2(c)(2) on a government-to-government basis. Through this effort the tribe is given a reasonable opportunity to identify any concerns about historic properties; to advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance; to express their views on the effects of the Proposed Action on such properties; and to participate in the resolution of adverse effects.

5.4 Utah Geological Survey

The Utah Geological Survey (UGS) was contacted on December 2, 2015. The assistant to the State Paleontologist reviewed the Project area and determined that the area of potential effect (APE) has a low probability to be a paleontological sensitive area.

5.5 Utah State Historic Preservation Office

The SHPO concurred with Reclamation's findings in a letter dated October 6, 2016.

5.6 Bureau of Indian Affairs

Dr. Zachary Nelson conducted a review of the Current American Indian/Alaska Native/Native Hawaiian Areas (AIANNH) National Shapefile which indicated that no Indian Trust Assets (ITAs) were located near the Project area. This review occurred on October 18, 2016.

5.7 U.S. Fish and Wildlife Service

The USFWS was contacted on November 25, 2015, and an IPaC report was obtained for the APE.

5.8 Utah Division of Wildlife Resources

The UDWR was contacted on November 30, 2015. A response letter was received on December 7, 2015, with information on the State's Special Status Species.

5.9 U.S. Army Corps of Engineers

The EIC has obtained Stream Alteration Permit 16-65-003 from the DWRi for the crossing of Cottonwood Creek and the regulating pond's spillway to return flows to Cottonwood Creek.

Chapter 6: Preparers

The following are contributors to the EA.

Table 6-1
Contributors to the EA

Name	Agency	Position Title	Contribution
Ms. Linda Andra	Reclamation	Secretary	Visual Identity, Editing
Mr. Rick Baxter	Reclamation	Water, Environmental, and Lands Division Manager	ESA Compliance, Wildlife Resources
Mr. Scott Blake	Reclamation	Recreation Specialist	Recreation, Visual Resources
Mr. Peter Crookston	Reclamation	Environmental Group Chief	EA Coordinator, Writing, Editing, and NEPA Compliance
Mr. Jeff Hearty	Reclamation	Economist	Socioeconomics
Mr. Ryan Luke	Reclamation	Chief, Operations, Emergency Management Group	Water Resources, System Operations
Ms. Linda Morrey	Reclamation	Secretary	Visual Identity, Editing
Mr. Zachary Nelson	Reclamation	Archaeologist	Cultural Resource, Paleontological Resources, ITAs
Mr. Justin Record	Reclamation	Civil Engineer	Water Rights
Mr. Gary Henrie	Reclamation	Civil Engineer	Hydrology
Mr. Dale Hamilton	Reclamation	Resource Management Division Manager	Health, Safety, Air Quality, Noise, Access, Transportation
Ms. Monique Robbins	Franson Civil Engineers Inc.	Senior Engineer	Project Manager, Writing, Editing
Mr. David Snyder	Reclamation	Fish and Wildlife Biologist	CWA Compliance, Wetlands
Ms. Donna Strait	Reclamation	Secretary	Visual Identity, Editing

Chapter 7: Acronyms and Abbreviations

AIANNH	American Indian/Alaska Native/Native Hawaiian
APE	area of potential effect
Bighorn	Bighorn Archaeological Consultants
BMP	Best Management Practices
CCC	Civilian Conservation Corps
cfs	cubic feet per second
CWA	Clean Water Act
DWQ	Utah Division of Water Quality
DWR	Utah Division of Water Resources
DWRi	Utah Division of Water Rights
EA	Environmental Assessment
EIC	Ephraim Irrigation Company
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
HDPE	high-density polyethylene
IPaC	Information for Planning and Conservation
ITAs	Indian Trust Assets
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory

O&M	operation and maintenance
OHV	off-highway vehicle
Project	Gobblefield Ditch Piping Project
psi	pounds per square inch
PVC	polyvinyl chloride
Reclamation	Bureau of Reclamation
SHPO	Utah State Historic Preservation Office
SOP	Standard Operating Procedures
SWPPP	Storm Water Pollution Prevention Plan
UAC	Utah Administrative Code
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
UPDES	Utah Pollutant Discharge Elimination System
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Area

Chapter 8: References

Bighorn Archaeological Consultants, LLC. (2016, August). *A Cultural Resource Inventory for the Proposed Gobblefield Canal Project near Ephraim, Sanpete County, Utah.* Report Number 15-71.

Bighorn Archaeological Consultants, LLC. (2015, December). *Wetlands and Waters of the U.S. Delineation for the Proposed Gobblefield Ditch Pipeline Project*.

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Sanpete County, *Utah Resource Assessment* (2005, August). http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs141p2_032731.pdf.

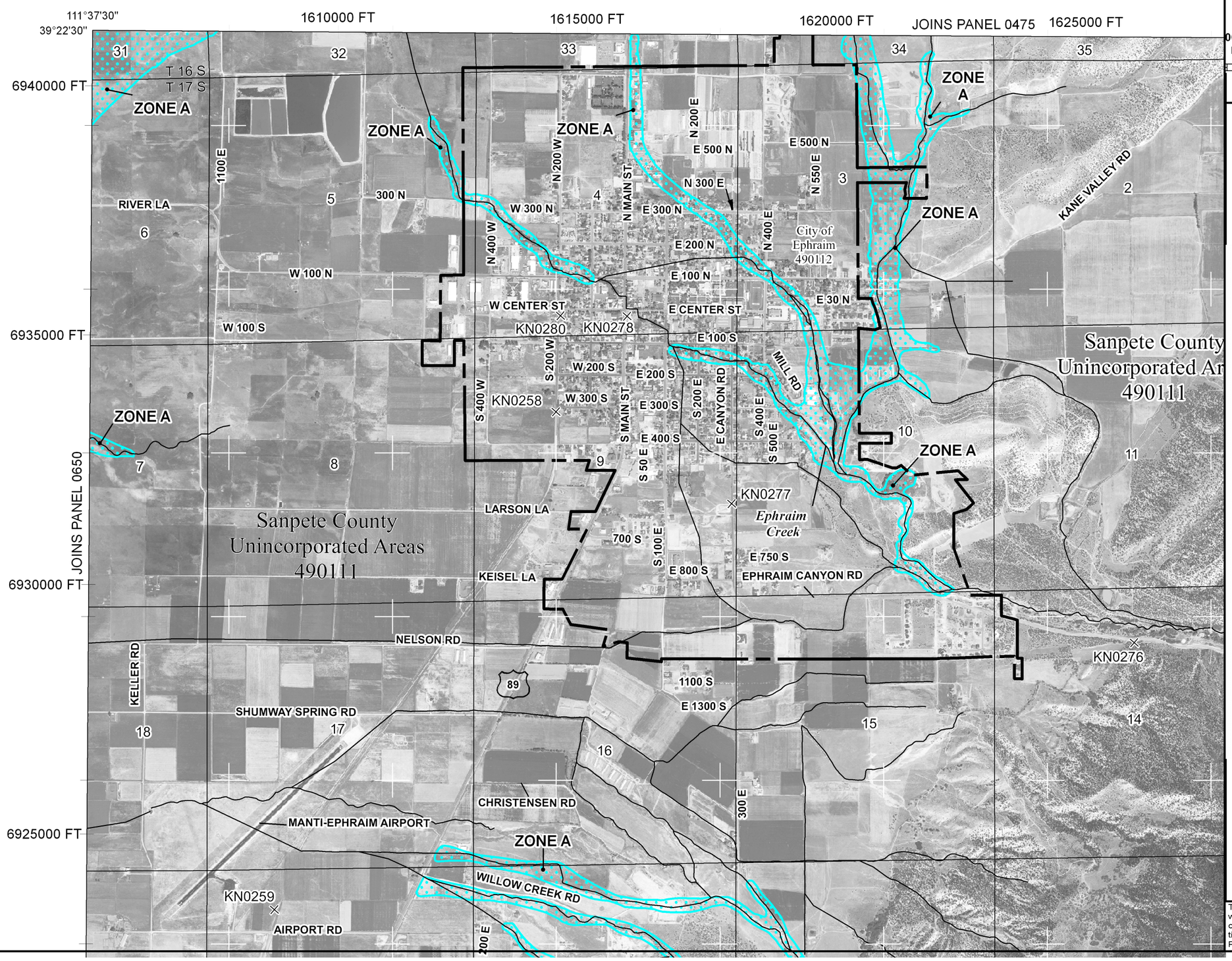
Sanpete County Weed Department, *Sanpete Integrated Weed Management Plan*. http://sanpete.com/downloads/weed_plan.pdf.

U.S. Fish & Wildlife Service. (2015, November 25). *IPaC – Information, Planning, and Conservation System.* http://ecos.fws.gov/ipac/project/XV5PNBK6CJECVE7FZY7SGPALEM/regulatoryDocuments.

Utah Division of Wildlife Resources. (2015, December 7). *Species of Concern Near the Gobblefield Ditch Piping Project, Ephraim Utah.* Letter obtained on December 7, 2015.

Chapter 9: Appendices

Appendix A: Flood Insurance Rate Maps



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FEET

METER

NFIP

PANEL 0675C

FIRM

FLOOD INSURANCE RATE MAP

SANPETE COUNTY, UTAH
AND INCORPORATED AREAS

PANEL 675 OF 1075

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EPHRAIM, CITY OF	490112	0675	C
SANPETE COUNTY	490111	0675	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
49039C0675C

EFFECTIVE DATE
MAY 2, 2012

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

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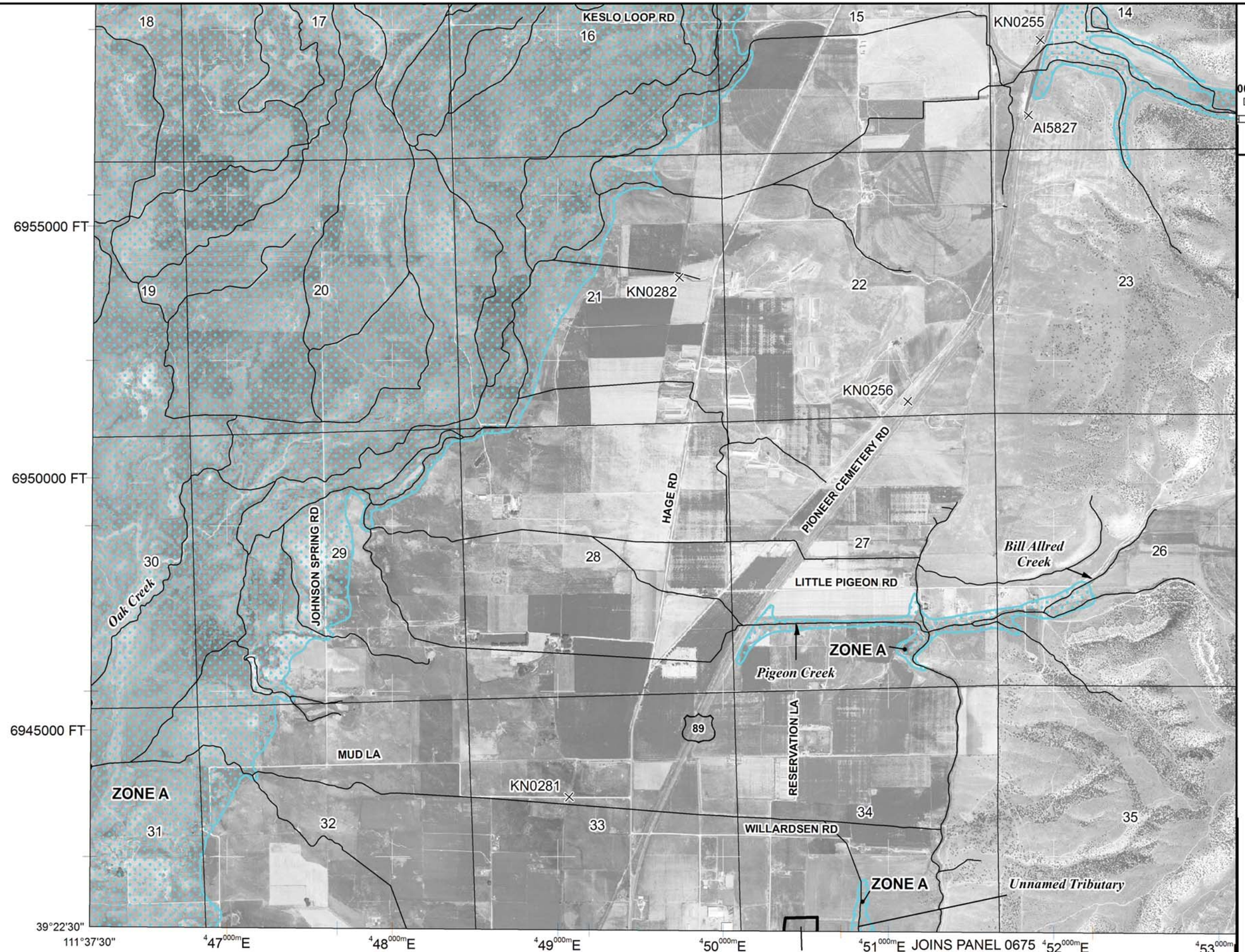

MAP SCALE 1" = 2000'

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NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0475C

FIRM

FLOOD INSURANCE RATE MAP

SANPETE COUNTY, UTAH
AND INCORPORATED AREAS

PANEL 475 OF 1075

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EPHRAIM, CITY OF	490112	0475	C
SANPETE COUNTY	490111	0475	C
SPRING CITY, CITY OF	490119	0475	C

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
49039C0475C

EFFECTIVE DATE
MAY 2, 2012

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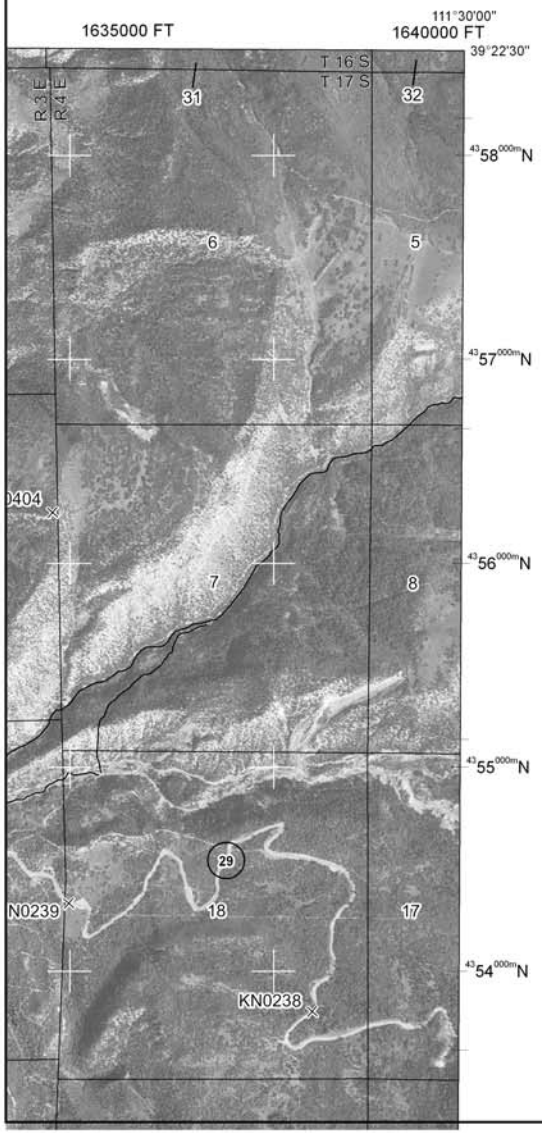

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

MAP SCALE 1" = 2000'

000 0 2000 4000 FEET

METER

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0675C

FIRM

FLOOD INSURANCE RATE MAP

SANPETE COUNTY, UTAH
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Appendix B: Wetlands and Waters of the U.S. Delineation

WETLANDS AND WATERS OF THE U.S. DELINEATION

FOR THE PROPOSED

GOBBLEFIELD DITCH PIPELINE

PROJECT

SANPETE COUNTY, UTAH

December, 2015

PREPARED FOR:

Franson Civil Engineers

1276 South 820 East, American Fork, Utah 84003

PREPARED BY:

Bighorn Archaeological Consultants, LLC

1712 North 320 West Orem, Utah 84057

TABLE OF CONTENTS

Photos

1.0 INTRODUCTION

On behalf of Franson Civil Engineers, Bighorn Archaeological Consultants, LLC (Bighorn) has conducted a Wetland and Waters of the United States Delineation in Sanpete County, Utah. The proposed project consists of a water line installment along the Gobblefield Ditch near Ephraim, Sanpete County, Utah (Appendix A). The delineation was conducted on December 1 and December 3, 2015.

1.1 LOCATION

From UT Highway 89 in Ephraim, Utah head east on 100 North for 0.5 miles. Turn right onto 400 East and head South for 0.3 Miles. Take a slight left onto Mill Road and follow heading southeast for 0.5 miles. The project location is where Gobblefield Ditch crosses under Mill Road. The project is located in Sections 27 and 34 of Township 16 South, Range 3 East; and Sections 3 and 10 of Township 17 South, Range 3 East.

1.2 PROJECT AREA DESCRIPTION

Ephraim Irrigation Company is proposing a water line installation that mostly parallels Gobblefield Ditch near Ephraim, Sanpete County, Utah. The length of the proposed waterline is 3.4 miles (17,916 feet), nearly all of which is located on private lands. A small portion of the proposed line will cross Utah State lands and total approximately 0.1 miles (582 feet). No stream gauge data is available for the Gobblefield Ditch.

1.2.1 Habitat

Arial imagery reveals that the habitat surrounding the proposed pipeline is primarily agricultural with foothills nearby containing tree stands that are pinyon (*Pinus edulis*) and juniper (*Juniperus sp.*) intermingled with sagebrush (*Artemisia tridendata*). The Gobblefield Canal appears to contain possible riparian plants such as cottonwoods (*Populus sp.*) and likely willows (*Salix sp.*).

1.2.2 Soils

Web Soil Survey data (NRCS) revealed 13 different soil types that were identified within or near the project area (Soil Resource Report). Only three soil types were identified as being either poorly drained, or have a rare frequency of flooding. The soils that have the most potential of containing wetlands, without anthropogenic influence, are Genola loam (*GeB*), Shumway silty clay loam (*Sn*), and Torrifluvents and Torriorthents (*TT*). A closer examination revealed that both the *GeB* and Sn soils do not exist within the project area or its right-of-way (ROW). The *TT* soil is located at the south end of the project near Ephraim Creek. Although the properties and qualities of this soil in this area does have the potential to rarely flood, it is a well-drained soil that does not have the likelihood of ponding or water retention, thus not ideal for supporting

wetlands.

An analysis of National Wetland Inventory (NWI) metadata shows that wetlands may exist primarily near the south end of the project in soil type Quaker silty clay loam, 1-2 percent slopes (*QkB*) and Quaker silty clay loam, 2-5 percent slopes (*QkC*). Aerial imagery shows the *QkC* soil wetland area may be located in an area near Ephraim creek that has been dug out to serve as a containment/overflow pond. The *QkB* soil wetland area appears to be on a slope and adjacent to the Gobblefield Ditch. The potential wetland area seems to be located uphill from the ditch, therefore likely not resulting from its overflow. A close examination shows a potential water tank located uphill from the *QkB* wetland area, which may reveal leaking/overflow from the water tank (intended or unintended).

1.2.3 Interstate or Foreign Commerce

There were no observed or documented examples of interstate or foreign commerce within the project area or its wetlands. UT Highway 89 is located approximately 0.27 miles west of the project area at the north end.

1.3 WETLANDS

Using geographic information system (GIS) mapping and NWI metadata a desktop analysis shows the most likely potential for wetland occurrence within the ROW toward the south end of the project, as mentioned in *Section 1.2.2*. A field visit will provide vegetation, soil, and hydrology analysis to more adequately identify wetland areas. Vegetative analysis includes the identification of plant species and determining their indicator status as found on the National Wetland Plant List (NWPL). NWPL indicator status is broken up in the following categories:

- Obligate (OBL)
- Facultative Wetland (FACW)
- Facultative (FAC)
- Facultative Upland (FACU)
- Upland (UPL)
- Not Listed (NL)

1.4 ORDINARY HIGH WATER MARK

Pigeon Creek runs perpendicular near the north end of the project area. Ephraim Creek runs near the south end of the project area. Both creeks appear to be purposefully channeled and redirected uphill (before) from the project area. An OHWM is not anticipated for this project.

1.5 WATERS OF THE U.S.

Ephraim Creek exhibits the potential for interspersion to wetland areas considered *freshwater emergent wetlands*. Pigeon Creek does not exhibit potential for interspersion to wetland areas.

Waters of the United States is defined in the 1987 Wetland Delineation Manual as:

a. *The territorial seas with respect to the discharge of fill material.*

b. *Coastal and inland waters, lakes, rivers, and streams that are navigable waters of the United States, including their adjacent wetlands.*

c. *Tributaries to navigable waters of the United States, including adjacent wetlands.*

d. *Interstate waters and their tributaries, including adjacent wetlands.*

e. *All other waters of the United States not identifiable above, such as isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not part of a tributary to interstate waters or navigable waters of the United States, the degradation or destruction of which could affect interstate commerce.*

1.6 IRRIGATION CANALS AND DITCHES

Due to agricultural development, the general area has many small irrigation canals and ditches, primarily Gobblefield Ditch. If contained within the confines of the canal banks, Gobblefield Ditch does not appear to have the potential to support wetlands primarily because of soil characteristics (i.e. well- drained, little to no flooding, no ponding) and seasonal inundation.

2.0 METHODOLOGY

Bighorn surveyed approximately 100 meters (328 feet) upstream and 100 meters downstream of the project area for wetlands, Waters of the U.S. channels, Ordinary High Water Marks (OHWM), and canals and ditches on December 1 and December 3, 2015. Focus was placed on areas previously identified as potential NWI wetland areas. Field conditions were typical for the time of year.

2.1 WETLANDS

If a potential wetland area was encountered, standard routine wetland determination data sheets were filled out for each sample point and photos were taken. Wetland boundaries were surveyed using a sub-meter accuracy global positioning system (GPS) unit.

The wetland delineation was completed in accordance with the U.S. Army Corps of Engineers' 1987 Wetland Delineation Manual (USACOE 1987) and the Arid West Supplement (USACOE 2008). All potential wetland areas were checked for wetland indicators. The following procedure was implemented at each sample point:

1. The plant species within a 6-foot radius of the sample point were recorded. The percentage of relative cover for each species was determined by estimating aerial cover. The indicator status of each species was determined by using the National Wetland Plant List: Update of Wetland Ratings, version 3.2 (Lichvar et al. 2014). If more than 50 percent of the dominant species had an indicator status of obligate (OBL), facultative wetland (FACW), or facultative (FAC), the sample point met the wetland vegetation parameter.

2. A soil pit was dug at each sample point location to assess soil characteristics. After the pit was dug, an analysis was made to determine soil color, texture, and moisture at different depths within the soil profile. Color was determined by comparing a wet soil sample with the Munsell Soil Color Charts (Munsell 2000). Soil texture was determined by feeling the soil samples and testing the ribboning ability of each layer within the soil profile. If the soil characteristics met the hydric soil criteria provided in the Arid West Supplement (2008) the sample point met the wetland soils parameter.

3. Each soil pit was examined to determine correlation with the wetland hydrology criteria. Field indicators of periodic saturation and/or inundation include redox features, drainage patterns in the wetland, hydrogen sulfide odor, gleyed soils, soils with low chroma, sediment deposits, salt crust, surface soil cracks, or water stained leaves. If at least one primary indicator or two secondary indicators were present, the sample point met the wetland hydrology parameter.

3.0 Results and Discussion

3.1 Summary

The survey resulted in one wet meadow being delineated. This area is located near the south end of the project directly west of the Ephraim City water tank. Other areas of interest were also assessed. All other potential areas either lacked the vegetation, soils, and/or the hydrology required to sustain wetlands. Very little water was flowing within Gobblefield Ditch during the time of the survey.

3.1.1 Habitat

The project area is predominantly dominated by alfalfa (*Medicago sativa*) and grains in the open areas and cottonwoods (*Populus sp*.) and willows (*Salix exigua*) following the Gobblefield

Ditch corridor. In unfarmed areas plants are predominantly Utah juniper (*Juniperus osteosperma*), sagebrush (*Artemisia tridentata*), and rabbitbrush (*Ericameria nauseosa*). Although FACW species were identified at various locations, OBL species were identified at one location near the south end of the project west of the Ephraim City water tank.

3.2 CONTAINMENT / OVERFLOW POND

The first area assessed was a containment/overflow pond area at the very south end of the proposed project waterline. This area was a manmade pond that did not contain any standing water during the time of the survey (Photo 1 and Photo 2). No OBL species were found in the pond area. However, a couple of FACW species were identified, namely narrow-leaf cottonwood (*Populus angustifolia*) and narrow-leaf willow (*Salix exigua*). A soil analysis shows no hydric conditions exist at permanently or semi-permenantly at this location (Photo 3). A hydrology analysis demonstrated that this area is not classified as wetlands as there was neither standing water, a high water table, saturation, or any other indicators or inundation. If used often, the soils appear to be very well drained. This conclusion also supports the soils analysis results of *Section 1.2.2* and the *QkC* soil description found in this area.

Photo 1. Containment Pond Habitat at the South End of the Project.

Photo 2. Habitat found near Sample Point 1.

Photo 3. Sample Point 1 test pit. Notice the animal burrow found between 9-11 inches in depth from the surface. This is a good indicator that this area is not generally underwater.

3.3 Ephraim City Water Tank

While assessing potential wetland areas Bighorn was shown a wet meadow that was flowing from the Ephraim City water tank to the Gobblefield Ditch. Brent Peterson, a board member from Ephraim Irrigation, mentioned that the wet area was a result of a leak from the Ephraim City water tank that was flowing through the meadow toward the ditch. No information could be found on how long it had been leaking. Water flowing from the water tank to Gobblefield Ditch was not determined to be Waters of the U.S. because it was not deemed navigable waters or supported by any of its tributaries. Rather, the cause of the wet meadow was more similar flood irrigation induced than any other category.

3.4 Wet Meadow

The wet meadow between Gobblefield Ditch and the water tank did not contain many OBL or FACW species typically associated with this area such as cattail (*Typha sp.*) or Reed Canarygrass (*Phalaris arundinacea*) (Photo 4). However, water was continually flowing and appeared to have been for a long enough time to support the establishment of some OBL and FACW species. Among the plant species identified within the wet meadow were least duckweed (*Lemna minuta*), narrow-leaf cottonwood (*Populus angustifolia*), narrow-leaf willow and (*Salix exigua*). There was also moss growing in the slow-flowing water (Photo 5). Sample Point 2 showed the ground to be saturated and with a high water table (Photo 6). Photos 7 and 8 show Sample Point 3 and the upland vegetation on the east side of the meadow, respectively.

Photo 4. Wet Meadow Habitat. Ephraim City water tank is in the background behind the tree in the center.

Photo 5. Duckweed and moss in the flowing water.

The survey yielded zero wetland acres that were delineated near the project area. The survey also yielded the OHWM delineation of a portion or North Creek that bisects the project area. The map in Appendix A is overlaid on a U.S. Geological Survey (USGS) topographic map and on ArcMap® aerial imagery (ESRI 2014). Photos of the project area are provided in Appendix B. The Wetland Datasheet for Sample Point 1 is provided in Appendix C. Table 1 below contains a list of plant species found within or near the project area.

Photo 6. Sample Point 2. Note the saturation and water table.

Photo 7. Sample Point 3. Soil was extremely rocky and partially frozen and could not be dug with the shovel.

Photo 8. Upland habitat on east side of wet meadow. Taken near Sample Point 3. Notice the slope and vegetation community shift.

4.0 CONCLUSION

Both vector and raster data were analyzed for potential wetland areas and/or impacts to these and other areas nearby the project. Field observations and data were collected and analyzed. Following all observations and analysis it is concluded that minor impacts to the wet meadow is anticipated to occur with project implementation. However, as previously noted the wet meadow takes on more characteristics of an overly irrigated pasture, rather than a typical wetland for that area. As also noted the water flow would not be considered Waters of the U.S., therefore may not categorically fall under protection or mitigation typically associated with wetland protection. All other areas of the project were determined not to contain wetlands.

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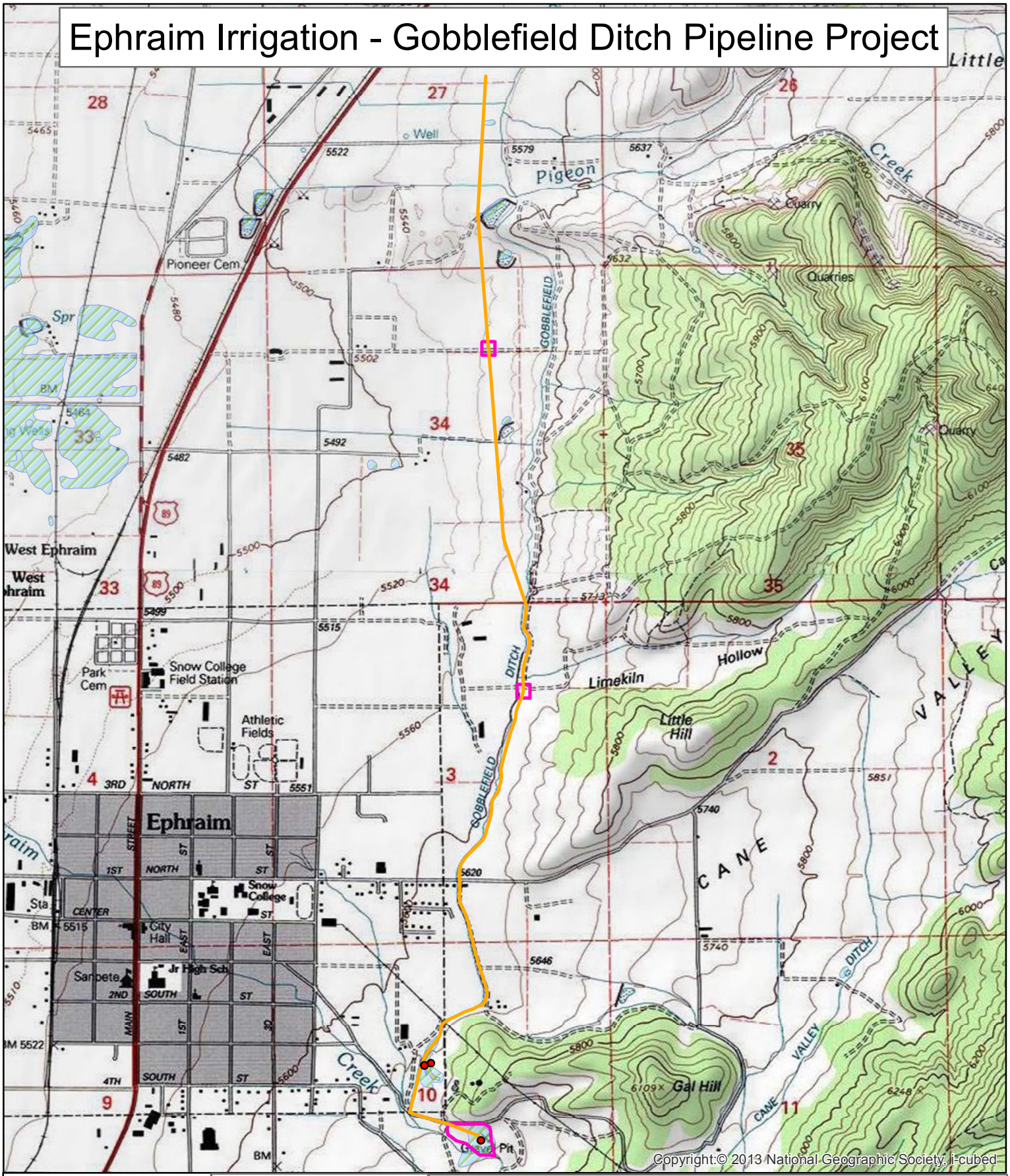
APPENDIX A
MAPS

Ephraim Irrigation - Gobblefield Ditch Pipeline Project



Gobblefield Ditch Pipeline

- Gobblefield Ditch Pipeline
- Containment Areas
- Delineated Wetland
- Sample Points
- NWI Wetlands

Bighorn Archaeological Consultants, LLC

0 0.25 0.5 1 1.5 Miles

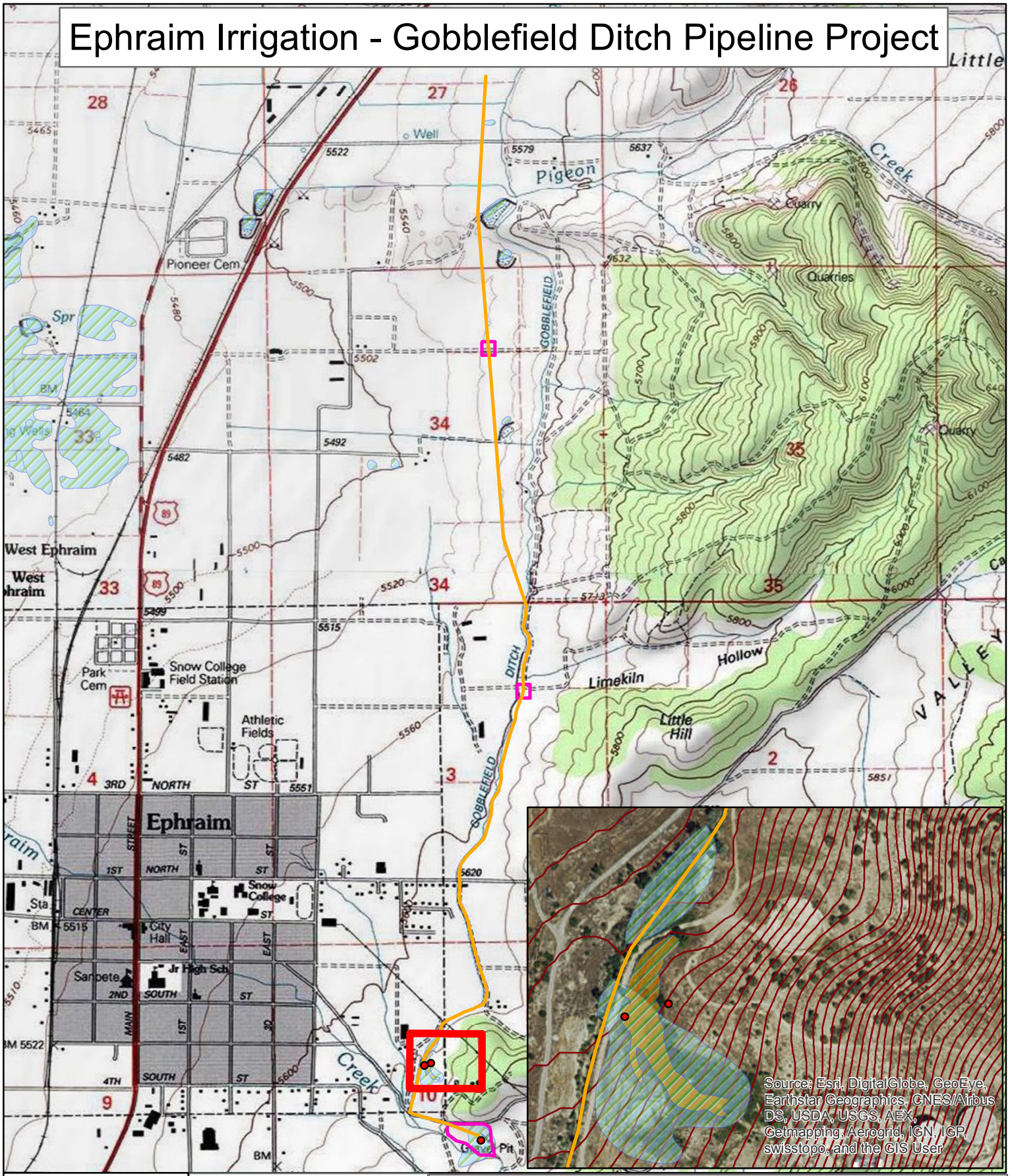
N

Scale: 1:24,000

Map Author: Bryan Watt
Date: 12/18/2015

Field Data Collection:
Bryan Watt
Dave Aldercks
Date: 12/03/2015

Ephraim Irrigation - Gobblefield Ditch Pipeline Project



Gobblefield Ditch Pipeline

- Sample Points
- Gobblefield Ditch Pipeline
- Containment Areas
- Delineated Wetland
- NWI Wetlands
- 1-Meter Contours

Bighorn Archaeological Consultants, LLC

0 0.25 0.5 1 1.5 Miles

N

Scale: 1:24,000

Delineated Wetlands

0.76 Acres

Map Author: Bryan Watt
Date: 12/18/2015

Field Data Collection:
Bryan Watt
Dave Aldercks
Date: 12/03/2015

APPENDIX B
WETLAND DATA SHEETS

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Gobble Ditch Pipeline Project City/County: Ephraim/Sanpete Sampling Date: 12/03/2015

Applicant/Owner: Ephraim Irrigation State: Utah Sampling Point: 1

Investigator(s): Bryan Watt, Dave Aldercks Section, Township, Range: Section 10, Township 17 South, Range 10 East

Landform (hillslope, terrace, etc.): Pond (man-made) Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR): Interior Deserts (D) Lat: 451069 Long: 4355803 Datum: NAD 83 UT

Soil Map Unit Name: Sanpete Valley Area, Utah, Parts of Utah and Sanpete Counties NWI classification: Freshwater Forested/Sh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil ✓, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix exigua	5	Y	FACW
2. Populus tremuloides	2	N	FACU
3.			
4.			
	7	= Total Cover	
Sapling/Shrub Stratum (Plot size: 6' x 6')			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
Herb Stratum (Plot size: 6' x 6')			
1. Bromus tectorum	67	Y	NL
2. Halogeton glomeratus	15	N	NL
3. Sisymbrium altissimum	5	N	FACU
4. Carduus nutans	1	N	FACU
5.			
6.			
7.			
8.			
	88	= Total Cover	
Woody Vine Stratum (Plot size: 6' x 6')			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 5	x 2 =	10
FAC species	x 3 =	
FACU species 8	x 4 =	32
UPL species	x 5 =	
Column Totals: 13 (A)		42 (B)

Prevalence Index = B/A = 42/13

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/3	100					Clay Loam	
12-18	10YR 6/3	100					Sandy Gr	Sandy Gravely Loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Gobblefield Ditch Pipeline Project City/County: Ephraim/Sanpete Sampling Date: 12/03/2015

Applicant/Owner: Ephraim Irrigation State: Utah Sampling Point: 2

Investigator(s): Bryan Watt, Dave Aldercks Section, Township, Range: Section 10, Township 17 South, Range 3 East

Landform (hillslope, terrace, etc.): Meadow Local relief (concave, convex, none): Concave Slope (%): 1-3

Subregion (LRR): Interior Deserts (D) Lat: 450796 Long: 4356165 Datum: NAD 83 UTM

Soil Map Unit Name: Sanpete Valley Area, Utah, Parts of Utah and Sanpete Counties NWI classification: Freshwater Emergent

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology ✓ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 6' x 6')			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 6' x 6')			
1. Alopecurus geniculatus	90	Y	OBL
2. Lemna minuta	6	N	OBL
3. Rumex crispus	4	N	FAC
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: 6' x 6')			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 96	x 1 =	96
FACW species _____	x 2 =	_____
FAC species 4	x 3 =	12
FACU species _____	x 4 =	_____
UPL species _____	x 5 =	_____
Column Totals: 100 (A)		_____ (B)

Prevalence Index = B/A = 108/100

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-11	2.5Y 4/2	100					Clay	
11+								Water Table

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ✓ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

This area appears to be a relatively new wetland area. Obviously with water-tank water flowing through area it appears that surface obligates are beginning to establish, but soil conditions are not strong. However, with continued flow this appears to be well on its way to becoming more established as a wetland with the potential for more indicators to arise. No redoximorphic features in stratum.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 0

Water Table Present? Yes ✓ No ___ Depth (inches): 11+

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 0-11

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Gobblefield Ditch Pipeline Project City/County: Ephraim/Sanpete Sampling Date: 12/03/2015

Applicant/Owner: Ephraim Irrigation State: Utah Sampling Point: 3

Investigator(s): Bryan Watt, Dave Aldercks Section, Township, Range: Section 10, Township 17 South, Range 3 East

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5-6

Subregion (LRR): Interior Deserts Lat: 450828 Long: 4356175 Datum: NAD 83 UTM

Soil Map Unit Name: Sanpete Valley Area, Utah, Parts of Utah and Sanpete Counties NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 6' x 6')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 6' x 6')			
1. Ericameria nauseosa	35	Y	NL
2.			
3.			
4.			
5.			
	35 = Total Cover		
Herb Stratum (Plot size: 6' x 6')			
1. Bromus tectorum	45	y	NL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: 6' x 6')			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 0 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = 0/0

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks:

All plant species identified within the sample area were not listed in the NWPL Viewer.

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 5/4	100					Gravelly l	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Extremely gravely. Could not dig any deeper. Upland was justified by vegetation community shifts and slope change.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

There was a little snow on top of the ground. melting had occurred in the first two inches of the stratum, but was dry/well drained underneath.