RECLAMATION

Managing Water in the West

Draft Environmental Assessment Logan & Northern Irrigation Company Piping & Pressurization Project Cache County, Utah

PRO-EA-15-005

Provo Area Office
Provo, Utah
Upper Colorado Region

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

July 2015

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

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

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Provo Area Office
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prepared by: *Rick Baxter*
Provo Area Office
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Chapter 1 Purpose and Need for the Proposed Action

1.1 Introduction

This Environmental Assessment (EA) has been prepared for the Bureau of Reclamation (Reclamation) and the Logan and Northern Irrigation Company (LNIC), to assess the potential environmental impacts of the proposed improvements to the LNIC's irrigation delivery system. The Federal action evaluated in this EA is whether Reclamation should authorize LNIC to enclose, pressurize, and meter a section of the LNIC Canal located in Cache County, Utah. This document has been prepared as required by the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ), and the U.S. Department of Interior's (Interior) NEPA implementing regulations. If potentially significant impacts to environmental resources are identified, an Environmental Impact Statement (EIS) will be prepared. If no significant impacts are identified, a Finding of No Significant Impact (FONSI) will be issued.

1.2 Background

1.2.1 WaterSMART

As Interior's primary water management agency, Reclamation's mission is to manage, develop and protect water and water related resources in an environmentally and economically sound manner. A key component of Reclamation's activities is to support water conservation and to assist resource managers in making decisions regarding water use. Reclamation's WaterSMART program administers grants, funds scientific studies, and provides technical assistance to state and local entities to support conservation activities. Established in February 2010, by U.S. Secretary of the Interior, Mr. Ken Salazar, the WaterSMART program was developed to meet the goals of the Omnibus Public Lands Management Act of 2009. Subtitle F of the Act, also known as the SECURE Water Act, established that "adequate and safe supplies of water are fundamental to the health, economy, and ecology of the United States" and authorizes Federal agencies to work with local entities to address issues that jeopardize the security and supply of water (Reclamation 2015).

1.2.2 The Logan and Northern Irrigation Canal

Originally known as the Temple Ditch Canal, the LNIC Canal was constructed in 1887, to provide water to the Logan Latter Day Saints Temple and the residents of Logan bench. In the early 1900s, the canal was expanded to serve agricultural users in Richmond, Smithfield, and Hyde Park. The LNIC Canal runs from the

Logan River in Logan Canyon, through Logan City and north to the City of Richmond. The canal is approximately 13 miles long and serves 3,279 acres of irrigated land in Cache County (Figure 1.1 Project Location Map).

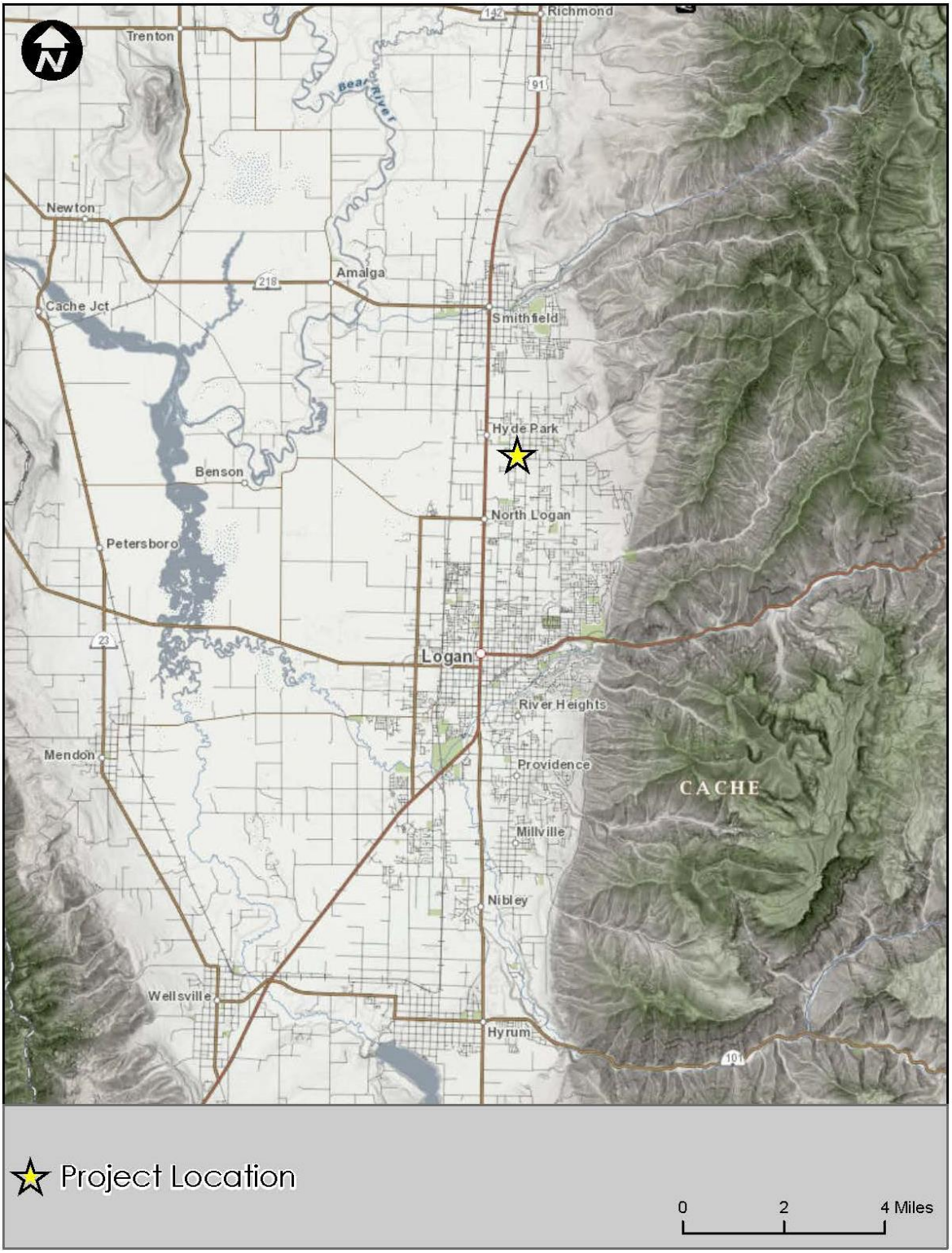


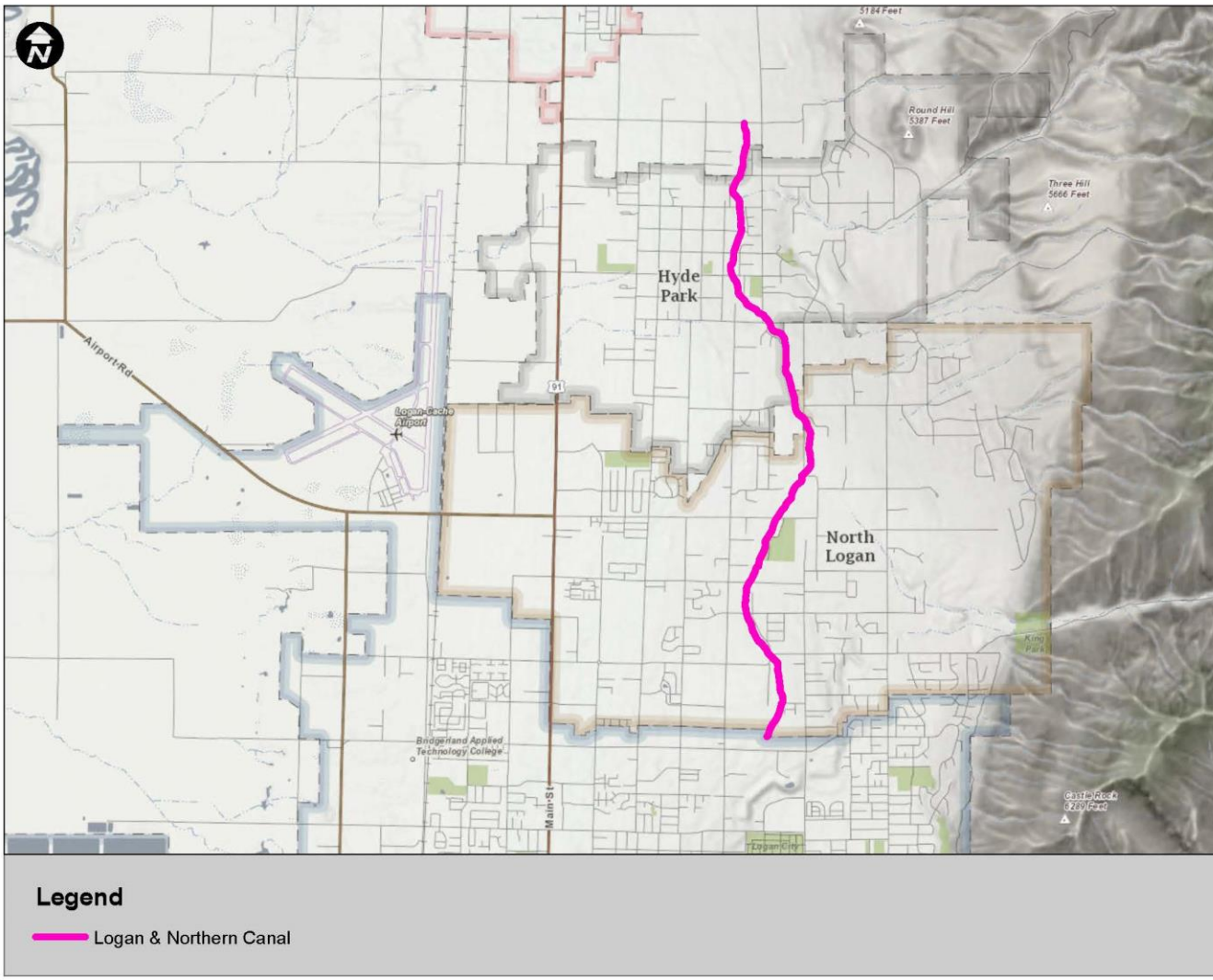
Figure 1.1 Project Location Map

Over the years, the composition of the LNIC irrigation system users has changed. Today there are 75 agricultural users who use the LNIC water to irrigate alfalfa, barley, and corn crops. Many of the other 800 shareholders use the water for irrigating lawns and residential gardens. In addition to agricultural and residential uses, the LNIC Canal provides secondary water for parks, golf courses, and other municipal needs in Logan, North Logan, Hyde Park, and Smithfield.

The Logan River is the primary source of water for the LNIC Canal. The river is fed primarily by runoff from mountains located in Cache County, Utah, and in the southern portions of Franklin County, Idaho. When the Logan River water level decreases in the late summer and fall, water for the LNIC Canal is supplemented by two large wells located along the Logan Bench area. Approximately, 1,530 acre-feet (AF) of water is lost annually to seepage along the open, unlined portions of the LNIC Canal.

1.3 Purpose and Need for the Proposed Action

The purpose of the proposed action is to enclose a 4.2 mile section of the open, unlined LNIC Canal and to provide a pressurized and metered irrigation delivery system (Figure 1.2 Proposed Alignment). The need for the proposed action, consistent with Reclamation's WaterSMART program, is to improve the efficiency of the existing system and reduce the amount of water lost to seepage, evapotranspiration, and operational water losses.



1.4 Decisions to be Made

Reclamation must decide whether to authorize LNIC to construct the pipeline by enclosing 4.2-miles of the LNIC Canal and associated improvements, to provide a pressurized water delivery system.

1.5 Permits and Authorizations

If the proposed action is approved, the following permits may be required prior to project implementation:

- Utah Pollution Discharge Elimination Permit (UPDES) – This permit would be issued to the applicant by the Utah Division of Water Quality (UDWQ), and would comply with Section 402 of the Clean Water Act

(CWA) for actions disturbing more than one acre of ground or for projects that discharge into Waters of the State of Utah.

- Easements with Landowners – Right-of-way, if necessary, would be obtained through Grants of Easement. These easements would be required for the following project objectives:
    - To protect LNIC's facilities from encroachment
    - Ensure the ability to access and perform operations and maintenance on LNIC's facilities
- Construction permit – A construction permit would be obtained from Cache County for excavation activities.

Compliance with the following laws and Executive Orders (E.O.) are also required prior to and during project implementation:

1.5.1 Natural Resource Protection Laws

- Endangered Species Act (ESA) of 1973 as amended (16 U.S.C. 1531-1544, 87 Stat. 884)
- Clean Water Act (CWA) of 1972 as amended (33 U.S.C. 1251 et seq.)
- Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-712)
- Bald and Golden Eagle Protection Act (BGEPA) of 1940 (16 U.S.C. 668-668c)
- Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980 (42 U.S.C. 9601)
- Superfund Amendments and Reauthorization Act (SARA) of 1986 (6 U.S.C. Public Law 107-296)
- Resource Conservation and Recovery Act (RCRA) of 1979 (42 U.S.C. 9601)

1.5.2 Cultural Resource Laws

- National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470 et seq.)
- Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C. 470aa-470mm et seq.)
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 U.S.C. 3001 et seq.)
- Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 FR 44716)
- American Indian Religious Freedom Act (AIRF) of 1978 (42 U.S.C. Public Law 95-341)

1.5.3 Paleontological Resource Laws

- Paleontological Resources Preservation Act (PRPA) of 2009 [Section 6301-6312 of the Omnibus Land Management Act of 2009 (Public Law 111-11 123 Stat. 991-1456)]

1.6 Relationship to Other Projects

In 2013, the Natural Resources Conservation Service (NRCS) funded the Cache Water Restoration Project (CWRP) using Emergency Watershed Protection (EWP) funds. The CWRP project piped and pressurized 2.6 miles of the LNIC Canal. The CWRP project also replaced the diversion structure located on the Logan River in Logan Canyon. The new diversion structure, which is located on U.S. Forest Service (USFS) land, includes a screening mechanism to protect native fish in the Logan River.

The CWRP provided the infrastructure necessary to pipe the lower sections of the LNIC (those improvements evaluated in this EA). The proposed LNIC piping and pressurization project would continue the piping and pressurization of the LNIC. The proposed project is a separate and complete action with independent utility from the CWRP.

Chapter 2 Alternatives

2.1 Introduction

The proposed action analyzed in this EA is to construct a pipeline to enclose 4.2 miles of the LNIC Canal, and make the improvements needed to provide a pressurized and metered water delivery system. Information contained within this EA will be used to determine the potential effects on the human and natural environment, and will serve to guide Reclamation's decision regarding whether to authorize the proposed action. The proposed action (Action Alternative) is analyzed in comparison to a No Action Alternative in order to determine potential environmental impacts.

If Reclamation decides to implement the proposed action, LNIC would be authorized to proceed with the piping of the LNIC Canal, including water conveyance system improvements associated with the pressurizing and metering of the LNIC system. If authorized to proceed, LNIC would construct, operate, and maintain the new pipeline in place of the existing open canal. The new water conveyance system's existing and newly acquired easements would be owned and operated by LNIC.

2.2 No Action Alternative

Under the No Action Alternative, Reclamation would not authorize construction of the project, which would pipe, pressurize, and meter the LNIC Canal. The existing open, unlined canal would continue to deliver water with no improvements for reducing the amount of water lost to seepage, evapotranspiration, and operational inefficiencies. Under the No Action Alternative, 1,530 AF of water (approximately 13 percent of the irrigation water) would continue to be lost annually through the existing LNIC facilities. Under the No Action Alternative, maintenance and operations of the LNIC Canal would continue in its current state.

2.3 Action Alternative

Under the Action Alternative, Reclamation would authorize the construction and use of Federal funds to pipe, pressurize and meter the existing LNIC Canal. The action is anticipated to increase the efficiency of the existing water delivery system by approximately 13 percent and would conserve 1,530 AF of water annually.

Currently, storm water is carried along with irrigation water in the open section of the LNIC Canal. The Action Alternative would include the installation of 22,090 linear feet of high-density polyethylene (HDPE) pipe within the bank of the existing canal (Figure 2.1 Conceptual Design). The pipe would range from 34-inch diameter at the start of the project (approximately 1500 North), to 12-inch diameter at the end of the line. The project would install ultrasonic flowmeters at each turnout to better manage the water delivery system. The existing open channel would remain open for the conveyance of storm water. The project would include the installation of ten air release valves.

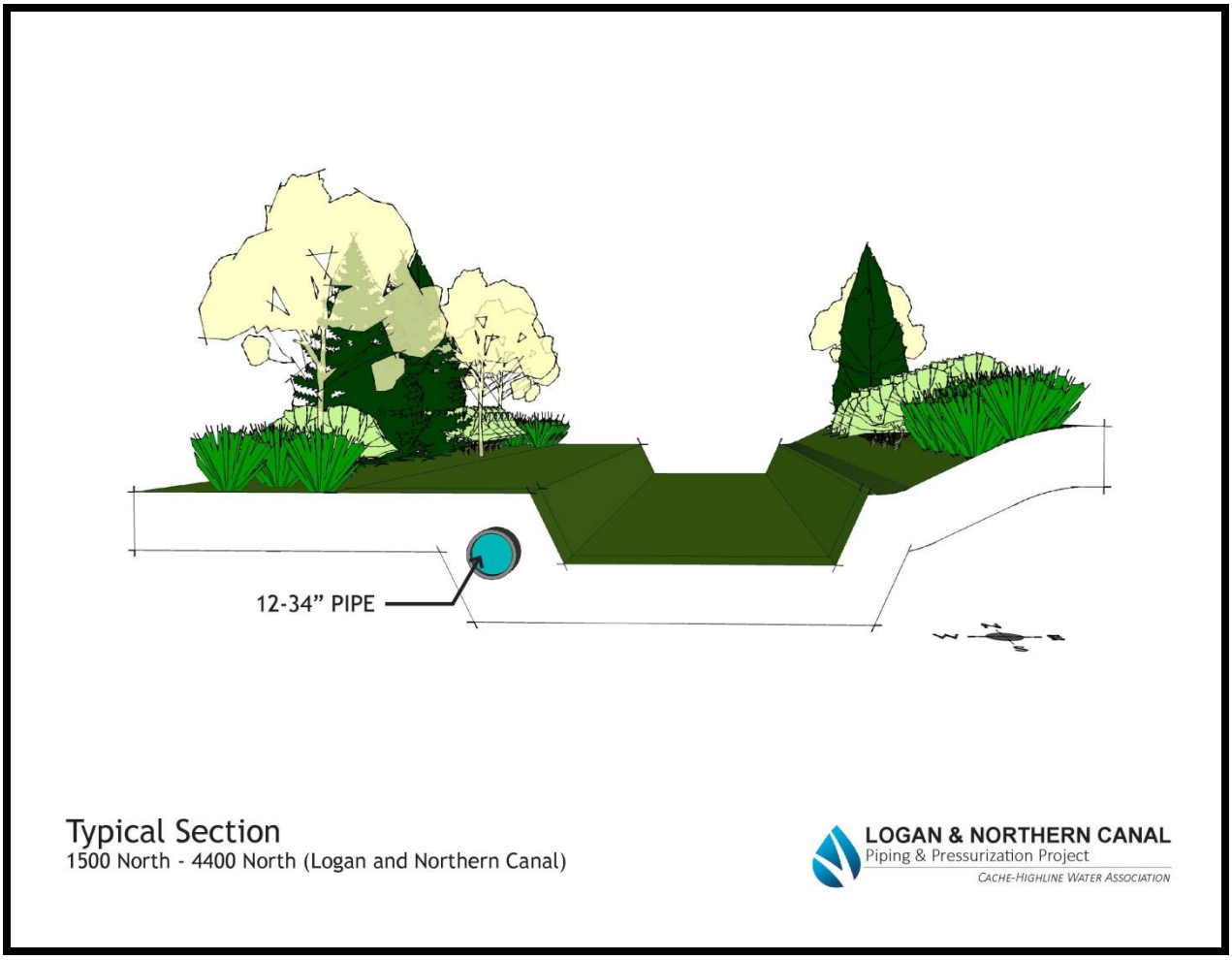


Figure 2.1 Conceptual Design

Forty six turnouts would be installed, ranging from 4 to 12-inches in diameter, at existing turnout locations. As the pipeline is constructed, existing pumps would be disconnected and pressurized turnouts would be installed.

No permanent easements would be required for the implementation of the proposed action. All project improvements would take place on the existing prescriptive easement (approximately 60-feet wide) held by LNIC for the operation and maintenance of the LNIC Canal. All construction activities would take place within existing easements.

2.3.1 Construction Procedures

Construction activities would commence with the staking of the construction area, mobilization of construction equipment, and delivery of construction material. Activities associated with the construction of the proposed action include the clearing of vegetation along the bank of the canal; excavation of the pipeline trenches; pipe fusing; placement of the pipe in the trench; backfilling and compaction of over the trenched areas; and restoration work including reseeding disturbed areas. Construction would take place outside of the irrigation season and would run from October 15 through April 15.

2.3.1.1 Trench Excavation

Trenches ranging from 3 to 5 feet-wide and 4 to 8 feet-deep, would be excavated for the installation of the pipe in the bank of the existing open channel. Excavation in all areas would be performed with the use of appropriately sized construction equipment to minimize land disturbance. Excavated material would be stockpiled and used as backfill after pipe and bedding installation.

2.3.1.2 Crossings

The project would maintain the locations where the canal crosses under roadways. These crossings would be upgraded with the installation of new pipe. The pipe would be laid by an open cut across the pavement or bored beneath the road surface, depending on the existing conditions at each street crossing.

Construction activities at these crossings may require temporary lane restrictions, but are not anticipated to result in the full closure of the roadways. All crossings would occur beneath local streets. No State or Federal highways would be impacted by the Action Alternative.

2.3.1.3 Quality Control Procedures

Quality control procedures would be implemented throughout the construction of the Action Alternative. A visual inspection of the project area would be conducted to provide a final quality control check after the completion of construction and restoration activities.

2.3.1.4 Construction Staging Areas

Areas used for the staging of construction material and equipment would be located throughout the project area and contained entirely within the existing

LNIC easement, or within the city right-of-way. Staging areas have been included in the area of potential effect for the Action Alternative and have been evaluated for potential resource impacts.

2.3.1.5 Land Disturbance

The proposed pipeline alignment is approximately 4.2 miles in length and requires a maximum 30-foot disturbance area for construction. Construction activities would be confined to the existing 60-foot wide canal easement.

2.3.1.6 Transportation and Revegetation Requirements

Existing roadways would be used whenever possible to minimize disturbance to the existing vegetation. All new transportation routes would be within the existing canal easement. All areas of temporary disturbance would be contoured and re-vegetated with native or agricultural plant material, as appropriate, following the completion of construction. An access road exists along the canal alignment and would be used for ongoing operation and maintenance.

2.3.1.7 Standard Operating Procedures

Standard Operating Procedures (SOPs) from Reclamation would be followed, except in unforeseen conditions, during construction, operation, and maintenance of the proposed action. The SOPs and features of the proposed action have been designed to avoid or minimize adverse impacts to resources in the area. A preconstruction meeting with Reclamation, the contractor and LNIC's representative, would be held prior to commencing construction on the project to review and assess standard SOPs, environmental commitments and other prescribed measures. Weekly project team meetings would be held during construction to assess the progress of the work.

Chapter 3 Affected Environment and Environmental Consequences

3.1 Introduction

This chapter describes the existing conditions of the project area and analyzes potential impacts from the No Action and the Action Alternatives to the environment. The present conditions and characteristics of each resource are described. The existing conditions section is followed by an analysis of the potential impacts under the No Action and the Action Alternatives.

3.2 Project Area

The project area for the proposed action is located along the existing alignment of the LNIC Canal in the cities of North Logan, Hyde Park, and Smithfield. The project begins at approximately 1500 North in North Logan, and runs to approximately 4400 North in Hyde Park. The project area is contained within secs 2, 11, 14 and 23, T. 12 N., R. 1 E., Salt Lake Base and Meridian, Cache County, Utah. The elevation within the project area ranges from 4,600 to 4,650 feet above mean sea level. Land use in the project area is primarily residential and agricultural with a few commercial land uses in the general vicinity.

3.3 Resources Eliminated from Further Analysis

Resources that do not exist or would not be affected within the project area and were not carried forward for additional analysis are described in Table 3.1.

Table 3.1
Resources Eliminated from Further Analysis

Resource	Rationale for Elimination from Further Analysis
Noise	There would be no long-term increases to the ambient noise levels from the implementation of the proposed action. However, there would be a temporary increase in noise during construction. Noise impacts would be minimized by reducing construction activities to daylight hours and using mufflers on construction equipment. The contractor would be required to follow all local noise ordinances.
Urban Quality and Design of the Built Environment	The project area is located entirely within the existing canal easement that extends along agricultural and residential areas. There are no urban resources that would be impacted by the proposed action.
Wilderness and Wild and Scenic Rivers	There is no designated Wilderness or Wild and Scenic Rivers within or adjacent to the project area (NPS 2015 and BLM 2013).

3.4 Affected Environment

3.4.1 Air Quality

Air quality in the State of Utah is regulated by the U.S. Environmental Protection Agency (EPA) and the Utah Division of Air Quality (UDAQ). The National Ambient Air Quality Standards (NAAQS) established by the EPA under the Clean Air Act (CAA), specify limits of air pollutants levels for seven criteria pollutants: carbon monoxide, particulate matter (PM) 10, PM 2.5, ozone, sulfur dioxide, lead, and nitrogen.

The project is located in an area of nonattainment for PM 2.5 (UDAQ 2015). The Utah Air Quality Board adopted the Logan, UT-ID PM2.5 Nonattainment State Implementation Plan (SIP), on December 5, 2012. The SIP includes area source control strategies and emission standards to bring the Logan airshed into compliance with the NAAQS.

3.4.2 Water Resources

The majority of the water diverted through the LNIC Canal comes directly from the Logan River. The Logan River is fed primarily from runoff from the Bear River Range which is located in Cache County, Utah, and Franklin County, Idaho. The Logan River flows through Logan Canyon into the south end of Cutler Reservoir (Kariya et al. 1994). There are no natural rivers or streams within the project area.

3.4.3 Water Quality

Section 303 of the Clean Water Act, requires states to identify water bodies that do not support their designated beneficial uses. Beneficial use categories define the resources, services, and qualities of an aquatic system. Beneficial uses assigned to Utah waterways include domestic drinking, agricultural use, aquatic life, and recreation. The UDWQ does not require water quality monitoring on irrigation canals. Therefore, water quality information for Logan River (as the primary source of water in LNIC system) was analyzed. The Logan River is designated as an impaired waterway for cold water aquatic life uses due to high nutrient levels (EPA 2015). Runoff from agricultural areas, grazing lands, urban storm water, and instream pollutants contribute to pollutants in the Logan River.

3.4.4 Upland Vegetation

The proposed action area is located within the Intermountain Semi-desert and Desert Province of the Western United States (Bailey 1995). The land surrounding the project area is almost exclusively developed. Land cover throughout the project area is dominated by residential development and agricultural fields. The vegetation that exists within the nearby agricultural fields consists primarily of alfalfa, clover, and other pasture grasses. Vegetation in the project footprint is limited and includes various bunch and cultivated grasses, ornamental trees/shrubs, and non-native species.

3.4.5 Wetland and Riparian Resources

The majority of the hydrology within the project area is derived from irrigation waters that are drawn from the Logan River. The existing canal is a man-made feature that does not contain any wetland areas within the existing canal prism. The majority of the existing habitat within the canal is highly disturbed with minimal amounts of native vegetation. The canal carries storm water in addition to LNIC irrigation water. The canal is primarily dry outside of the irrigation season (i.e. May-October), except during or directly after storm events.

3.4.6 Fish and Wildlife Resources

The project area contains human-altered residential and agricultural environments. Species that may use the residential areas and agricultural lands include: mule deer (*Odocoileus hemionus*), raccoons (*Procyon lotor*), California quail (*Callipepla californica*) and small rodents. Fish bearing habitat is not present along the canal alignment. No aquatic animal or fish species were identified in the laterals or canals within the project area. Habitat in the project action area can be characterized as pre-developed, since most of the project action area does not contain natural, undisturbed habitat. The entire length of the new piping project would be placed along the existing, pre-developed canal alignment.

3.4.7 Special Status Species

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531-1543) protects federally listed threatened or endangered plant and animal species (T&E species) and their critical habitats. Threatened species are those that are likely to become endangered in the foreseeable future, throughout all or a significant portion of

their range. Endangered species are those that are at a serious risk of becoming extinct. Additionally, species designated as "proposed" are those for which the USFWS has been petitioned to list under the ESA. Candidate species are those for which the U. S. Fish and Wildlife Service (USFWS) has sufficient data to list as threatened or endangered, but for which proposed rules have not yet been issued. Neither proposed nor candidate species receive the same protections afforded T&E species. Often they are included as sensitive species.

3.4.7.1 Federally Listed Species

In order to identify species of concern associated with the proposed project action, a species list was obtained from the USFWS Information, Planning, and Conservation (IPaC) system. According to a report generated by the IPaC system (dated January 22, 2015), three species listed as threatened, and one listed as a candidate for listing, have the potential to exist within the project action area. Consultation with the Utah Division of Wildlife Resources (UDWR) was also performed to obtain additional information on ESA species, as well as state sensitive species, in the vicinity of the proposed project area. A biological field investigation was performed for the project area by a qualified biologist in October 2014 (Appendix A, Biological Resources).

Threatened Species

Canada Lynx

The Canada lynx (*Lynx canadensis*) is normally found in dense forested areas with an abundance of windfalls, swamps and brushy thickets (Maas 1997). Lynx require heavy cover for concealment when stalking prey. In terms of their prey base, lynx depend on snowshoe hares and red squirrels. In addition, lynx are most likely to persist in areas that receive deep snow, for which the lynx is highly adapted (Maas 1997). In the western U.S., lynx occurrences generally are found only above 4,000 feet in elevation (McKelvey et al. 2000).

Based on information obtained from the UDWR, there are no recent documented occurrences of the Canada lynx near the defined project area. The highly disturbed urban/residential environment and relatively small amount of heavy cover surrounding the defined project action area is unsuitable habitat for this species.

Ute Ladies'-tresses

Ute ladies'-tresses (*Spiranthes diluvialis*) is a member of the orchid family. It was first described in 1984 and was federally listed as threatened by the USFWS under the ESA in January 1992 (USFWS 1995). Populations have been found in Utah, Colorado, Wyoming, Montana, Nevada, Idaho, and Washington. The elevation ranges in which populations have been found vary from 750 to 7,000 feet, with most populations above 4,000 feet. It is found in wetlands and riparian areas, including spring habitats, mesic meadows, river meanders, and floodplains. They require open habitats, and populations decline if trees and shrubs invade the habitat. They are not tolerant of permanent standing water, and do not compete well with aggressive species such as reed canary grass (*Phalaris arundinacea*).

The survey time for the species, as identified by the USFWS (1995), is mid-August through mid-September.

Based on information obtained from the UDWR, there are no recent documented occurrences of the Ute ladies'-tresses near the defined project action area (see enclosed UDWR letter). The project footprint contains a developed setting linked to the existing agricultural/residential developments and is not be considered to be suitable habitat. Immediately adjacent to the canal and within the defined project footprint, there are large amounts of croplands and manicured lawns, which are not conducive to occurrences of Ute ladies'-tresses. A site survey was performed by biologists from JUB Engineering, Inc., Reclamation, and USFWS on April 28, 2105, which concluded that the project area does not contain suitable habitat for the Ute ladies'-tresses.

Yellow-billed Cuckoo (YBC)

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

The YBCs are considered a riparian obligate and are usually found in large tracts of cottonwood/willow habitats with dense sub-canopies (below 33 feet). More specifically, the Proposed Rule for Critical habitat in the Federal Register (Vol. 79 No. 158 Pp. 48548-48652) describes habitat and space needs for normal life history behavior (non-critical habitat). Therein (Pp. 48551), it describes that YBC require "large tracts of willow-cottonwood or mesquite (Prosopis sp.) forest or woodland for nesting season habitat. Western YBCs rarely nest at sites less than 50 acres in size and sites less than 37 acres are considered unsuitable habitat." Based on our analysis, it is estimated that the project area, taking into consideration the entire length (4.2 miles) and width of the canal right-of-way, contains approximately 3.6 acres of fragmented habitat through a mix of residential and agricultural areas.

Although there may have been a historical record of a sighting recorded by the UDWR in 1941 along the Logan River (approximately 1.7 miles south of the project action area), the current habitat along the project corridor does not meet the requirements of suitable habitat as outlined in the Federal Register.

Candidate Species

Greater Sage-grouse

The greater sage-grouse (*Centrocercus urophasianus*) is considered a candidate species for Federal listing under the ESA. As the name implies, greater sage-grouse are found only in areas where sagebrush is abundant. The largest of all grouse, the greater sage-grouse, is up to 30-inches long, 2-feet-tall, and weighs from 2 to 7 pounds (USFWS 2014). Their diet consists of sagebrush shoots and leaves, forb blossoms and leaves, buds, and insects (Alsop 2001). The species is dependent on sagebrush for food and cover and it requires a variable mosaic of sagebrush habitats consisting of relatively open flats or rolling hills at elevations ranging from 4,000 to 9,000 feet above sea level (USFWS 2014). Habitat fragmentation and degradation due to human development are documented threats to this species' habitat.

Based on information obtained from the UDWR, there are no recent documented occurrences of greater sage-grouse near the defined project area. Habitat requirements for the greater sage-grouse are not present within the project area. The project area does not contain abundant sagebrush in which this species is dependent on for food and cover.

3.4.7.2 State Sensitive Species

Section 06D of the ESA, defines State Sensitive Species as those species that could become endangered or extinct within the state. A letter obtained from the UDWR dated November 26, 2014, indicates that there are documented recent occurrences of six State Sensitive Species: bobolink (*Dolichonyx oryzivorus*), grasshopper sparrow (*Ammodrammus savannarum*), least chub (*Lotichthys phlegethontis*), Lewis's woodpecker (*Melanerpes lewis*) and long-billed curlew (*Numenius americanus*). There are also documented historical occurrences for the black swift (*Cypseloides niger*), lyrate mountainsnail (*Oreohelix haydeni*) and western toad (*Bufo boreas*). Table 3.2 describes the habitat requirements for each species and whether or not they were eliminated from further analysis.

Table 3.2
Sensitive Species Habitat Potential for Presence/Absence in the Project Area

Common Name	Habitat Requirements	Rationale for Further Analysis
Black swift	Mountainous riparian waterfalls and cliffs.	Eliminated from further analysis because there is no suitable habitat in the project area.
Bobolink	Wet meadows and irrigated or abandoned hayfields, not cut during nesting season.	Irrigated hayfields exist near the project area, further analysis required.
Grasshopper sparrow	Grasslands and hayfields, with some scattered shrubs but not cut during the nesting season.	Irrigated hayfields exist near the project area, further analysis is required.
Least chub	Perennial springs and associated streams with slow moving water and moderate vegetation.	Eliminated from further analysis because there is no suitable fish habitat in the project area.
Lewis's woodpecker	Mixed conifer, open pine, or riparian/oak woodlands.	Eliminated from further analysis because there is no suitable habitat in the project area.
Long-billed curlew	Dense grasslands with bare areas and abundant prey.	Eliminated from further analysis because there is no suitable habitat in the project area.
Lyrate mountainsnail	Limestone talus and outcrops.	Eliminated from further analysis because there is no suitable habitat in the project area.
Western toad	Aquatic areas including wetlands, ponds, and riparian areas.	The canal may contain suitable habitat, further analysis is required.

Bobolink

The bobolink has one of the longest annual migrations of any North American songbird (approximately 12,500 miles) (UDWR 2014). These birds typically arrive in Utah in early May and start their migration south around mid-August. They primarily nest and forage in wet meadows and irrigated but unmanaged, or abandoned hayfields. The nests are built on the ground, often near the base of large forbs or the transition into sedges (UDWR 2014). The female generally lays three to seven eggs and exclusively incubates them for eleven to thirteen days.

Young fledge after approximately 10-14 days. Only one brood is produced each year. Forage includes insects, grass seeds and grain (Alsop 2001).

Information obtained from the UDWR indicates there are recent documented occurrences (within the last five years) of the bobolink within a 2 mile radius of the project action area. Irrigated hayfields do exist along several portions of the canal alignment. These areas are unlikely to present suitable habitat because they are heavily disturbed and frequently mowed/maintained.

Grasshopper Sparrow

The grasshopper sparrow is named for their insect-like song and is commonly found in cultivated hayfields, grasslands and open prairies (Alsop 2001). These sparrows primarily feed on insects. The breeding season commences in April after the nest is typically built on the ground at the bases of grass clumps (UDWR 2014). The female generally lays four to five eggs and incubates them for eleven to twelve days and young fledge after nine to ten days. In a growing season, two to three broods have the potential of being produced. Population decline of grasshopper sparrows is correlated to grassland losses and agricultural uses, including early season cutting or burning of hayfields. Breeding pairs have been identified in northern Utah and the species is on the Utah Sensitive Species List (UDWR 2014).

Information obtained from the UDWR, indicates there are recent documented occurrences (within the last five years) of the grasshopper sparrow within a 2 mile radius of the project area. Irrigated and cultivated agricultural fields exist along several portions of the canal alignment, however, the fields in the area are heavily managed and are unlikely to contain suitable habitat.

Western Toad

The western toad frequents a variety of aquatic habitats that include: wetlands, slow moving streams, ponds, lakes, meadows, and riparian woodlands (UDWR 2014). Adult toads have a dusky gray to greenish matrix color with sizeable dark blotching on their back and belly, and a light-colored strip along their back. This toad is inactive during the winter; they generally retreat to burrows dug by other small animals or dig their own burrow. The breeding season is usually in the late spring, but varies depending on geographic location (UDWR 2014).

Information obtained from the UDWR indicates there are historical documented occurrences of the western toad within a 2 mile radius of the project action area. The aquatic environment within the canal could qualify as potentially suitable habitat for the western toad.

3.4.7.3 Migratory Birds

The Migratory Bird Treaty Act of 1981 (MBTA), prohibits the take, capture, or killing of any migratory birds, and any parts, nests, or eggs of any such birds [16 U.S.C. 703 (a)]. Under the MBTA, Federal agencies are liable for both intentional and unintentional takes of migratory birds. Migratory birds known to

frequent the general vicinity of the project area include: the yellow warbler (*Setophaga petechi*), lazuli bunting (*Passerina amoena*), white crowned sparrow (*Zonotrichia leucophrys*), American kestrel (*Falco sparverius*) and red-tailed hawk (*Buteo jamaicensis*). No migratory bird nests were observed in the proposed project disturbance area during the biological evaluation site visits.

3.4.8 Cultural Resources

Cultural resources are defined as physical or other expressions of human activity or occupation. Section 106 of the NHPA, requires Federal agencies to take into account the potential effects of a proposed Federal undertaking on historic properties. Historic properties are any prehistoric or historic district, site, building, structure, or object included in, or eligible for, inclusion in the National Register of Historic Places (NRHP).

The affected environment for cultural resources is identified as the area of potential effects (APE), in compliance with the regulations in 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 the proposed action consists of the existing canal easement. The 25.4 acre APE encompasses the area of potential ground disturbance associated with the proposed pipeline and pressurization improvements, including all staging areas.

A Class I literature review and a Class III cultural resource inventory survey for the APE was completed in November 2014. The Logan Northern Canal site (42CA000156) is located within the project area.

In accordance with 36 CFR 800.4, the site was evaluated for significance in terms of NRHP eligibility. The significance criteria applied to evaluate cultural resources are defined in 36 CFR 60.4 as the quality of significance in American history, architecture, archaeology, engineering and cultural is present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or

B. that are associated with the lives of persons significant in our past; or

C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important in prehistory or history.

The cultural resource survey indicates that Site 42CA000156 was determined eligible for the NRHP under Criteria A and C, as a result of consultation completed in 2011. Approximately 2.2 miles of the canal segment documented in 2011 is located in the project's APE. It was also recommended that the additional 2 miles of the canal also be considered eligible for the NRHP. Consultation with State Historic Preservation Office (SHPO) is pending.

3.4.9 Paleontological Resources

A paleontological file search of the potential impact was conducted for the Utah Geological Survey (USGS), Appendix B, Cultural and Paleontological Resources. *UGS consultation is pending.*

3.4.10 Soil Sedimentation and Erosion

The elevation of the project area ranges from 4,600 feet to 4,650 feet. The terrain slopes gently to the west. Soils in the area have been highly altered due to agricultural and residential uses. The soil consists primarily of silty loam (Appendix C, Soil Survey). The project would be located in a previously disturbed area that is currently used for delivering irrigation water and collecting storm water. The area surrounding the proposed project is also previously disturbed by residential and agricultural uses.

3.4.11 Indian Trust Assets

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

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

Reclamation contacted the Bureau of Indian Affairs (BIA) to identify any potential impacts to ITAs within the APE. No ITAs were identified by the BIA within or adjacent to the project area.

3.4.12 Environmental Justice

Environmental justice, established as a Federal priority in E.O. 12898, ensures that minority and low income populations are not disproportionately impacted by Federal actions. The demographic information for the project area indicates that a minority population exists within the general vicinity of the project area. The information obtained from the U.S. Census Bureau indicates that 96.5 percent of the residents in the general vicinity of the project area (Census Tracks 4.03 and 4.01) self-identified as Caucasian. This information indicates that approximately 3.5 percent of the population may be considered an ethnic minority population. It is also likely that low income population exists in the general vicinity. The median income for Census Tract 4.03 is $65,511 and for Census Tract 4.01 is $47,833 (U.S. Census 2010).

Both of these populations would be protected under the environmental justice regulations.

3.4.13 Public Safety, Access, and Transportation

Major transportation routes in the general vicinity of the project area include U.S. Highway 91 (located approximately one mile from the project area) and Utah State Route 252 (located approximately 1.35 miles from the project area). Major local roads in the project area include Center Street in Hyde Park and 2500 North in North Logan.

The North Logan Fire Department is located approximately 0.28 miles from the project area. There are no other known public safety facilities in the vicinity of the project area.

3.4.14 Prime, Unique, and Statewide Important Farmland

The Federal Farmland Protection Policy Act (FPPA)[Subtitled I of Title XV, Section 1539-1549 of the Agricultural and Food Act of 1981 (Public Law 97-98)] requires Federal agencies to minimize, to the extent possible, the conversion of farmland to nonagricultural uses and to assure that Federal programs will be compatible with state, local government, and private policies to protect farmland.

A review of the NRCS's Web Soil Survey, indicates that adjacent to the project area there are farmlands of statewide importance and land that would be considered prime farmland if irrigated (Appendix C, Soil Survey). However, no prime, unique, or statewide important farmland exists within the project disturbance area.

3.4.15 Energy Requirements and Conservation Potential

Irrigation water is currently delivered along the LNIC Canal through an open-flow channel in the project area. Shareholders must currently pump the water to increase pressure for irrigation activities. Pumping activities along the canal are estimated to use 285,000 kWh of power annually.

3.4.16 Recreation Resources

Elkridge Park is located along the LNIC Canal, between 220 North and 2500 North in North Logan. The park is under the jurisdiction of North Logan. The approximately 34 acre facility contains three baseball diamonds, three soccer fields, a tennis court and pavilions. The park is access along 2500 North roadway east of the LNIC Canal. There are no other known recreational resources within the project area.

3.4.17 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 canal corridor. Viewers, including local residents, workers, and recreationists, have a perception of the existing physical characteristics. The physical characteristics of the canal alignment are large trees, shrubs, and grass with water being visible in the canal for approximately 6 months of the year.

3.5 Environmental Consequences

The following section describes the potential impacts of the No Action and Action Alternatives on the existing conditions of the human and natural environment.

3.5.1 Air Quality

No Action Alternative

The No Action Alternative would result in no impacts to air quality.

Action Alternative

The Action Alternative would not result in any long-term impacts to air quality. Impacts from the use of heavy equipment during construction activities, such as pollution and fugitive dust may have a temporary negative effect on air quality. Those effects would be short-lived and would cease once construction activities were completed. Construction activities would follow guidelines outlined in the Logan UT-ID PM2.5 SIP.

3.5.2 Water Resources

No Action Alternative

The existing unlined, earthen LNIC canal would continue to deliver irrigation water under the No Action Alternative. No improvements for reducing or eliminating seepage, evapotranspiration or operative losses would be implemented. Approximately 1,530 AF of water would continue to be lost along the LNIC each year. Water users would not be able to obtain or use their allotted shares. The continued loss of water through the project area is anticipated to have a long-term negative impact on water resources in the area.

Action Alternative

The Action Alternative would place a 4.2 mile pipe in the bank of the existing open unlined channel that would continue to deliver LNIC irrigation water. This

action is anticipated to increase the efficiency of the existing water delivery system and prevent the loss of water along the canal. The Action Alternative would prevent the loss of approximately 13 percent of the LNIC irrigation water that is currently lost to seepage, evapotranspiration, and operative inefficiencies. The proposed improvements would sure up the water required to meet existing water user allocations. The Action Alternative is likely to have a long-term beneficial effect on water resources in the area.

3.5.3 Water Quality

No Action Alternative

The No Action Alternative is not anticipated to have an effect on water quality.

Action Alternative

Under the Action Alternative, the LNIC irrigation water would be delivered through a pipe placed in the bank of the existing canal and the existing canal would remain open for the conveyance of storm water. The Action Alternative is not anticipated to have an impact on water quality.

3.5.4 Upland Vegetation

No Action Alternative

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

Action Alternative

Physical land disturbance under the Action Alternative would occur within the previously disturbed existing canal easement. The limited vegetation that exists in the area would be temporarily impacted by construction activities. To minimize impacts to native vegetation, areas disturbed during construction would be contoured and reseeded. Best Management Practices (BMPs), including those to reduce the infestation of non-native species, would be implemented to reduce impacts on vegetation. The Action Alternative would have no long-term effect on upland vegetation in the project area.

3.5.5 Wetland and Riparian Resources

No Action Alternative

The No Action Alternative would have no impact to wetland and riparian resources.

Action Alternative

Under the Action Alternative, the proposed areas of physical disturbance would occur within the existing canal easement and would not encroach upon any wetland areas. There would be no impacts to wetland areas from the Action Alternative.

To minimize impacts to native vegetation, previously disturbed areas would be used for construction activities, wherever possible. The BMPs would be followed to reduce construction impacts. After any surface disturbance, proper rehabilitation procedures would be followed to prevent the infestation of invasive species. This would include seeding mixtures of desirable native species.

The Action Alternative would result in temporary impacts to the LNIC Canal that may be deemed a jurisdictional waterway by the U.S. Army Corps of Engineers (USACE). Consultation with USACE is warranted prior to the construction to confirm whether the proposed project qualifies for an agricultural exemption as detailed in 33 CFR 323.4(a)(3), or if the project would require a Nationwide Permit for construction (Appendix D, USACE Correspondence) . *Consultation is pending.*

3.5.6 Fish and Wildlife Resources

No Action Alternative

Wildlife habitat would remain in its current condition experiencing no predictable gains or losses from the No Action Alternative.

Action Alternative

Land disturbance from construction activities related to the Action Alternative may result in short-term impacts to wildlife habitat. Construction would be contained within the existing canal prism. Impacts to small mammals, especially burrowing animals, could include direct mortality and displacement during construction activities. Small mammal species would likely experience reduced populations in direct proportion to the amount of disturbed habitat. These species and habitats are relatively common throughout the area, so the loss would be minor. Impacts to avian species would include minor short-term disturbance and displacement during construction, with no long-term impacts after construction.

The BMPs would be implemented throughout construction to minimize impacts to wildlife. Disturbed areas would be contoured, replanted, and reseeded. Procedures to prevent the infestation of invasive species would also be required and would assist in the reestablishment of habitat.

3.5.7 Special Status Species

3.5.7.1 Federally Listed Species

No Action Alternative

The No Action Alternative would have no effect on federally listed species.

Action Alternative

<u>Canada Lynx</u>

Based on information obtained from the UDWR, there are no recent documented occurrences of the Canada lynx near the defined project action area. The highly disturbed residential/agricultural environment and lack of multi-storied conifer cover surrounding the defined project action area is unsuitable habitat for this

species. Based on lack of suitable habitat in the project area, the Action Alternative would have no effect on the Canada lynx.

Ute Ladies'-tresses

The project footprint contains a developed setting linked to the existing agricultural/residential developments and is not considered to be suitable habitat. Immediately adjacent to the canal and within the defined project footprint, there are large amounts of croplands and manicured lawns, which are not conducive to occurrences of Ute ladies'-tresses. Based on the current setting of the project footprint, and lack of documented occurrences, the Action Alternative would have no effect on the Ute ladies'-tresses.

Yellow-billed Cuckoo

The project area contains only scattered and narrow cottonwood stands that parallel portions of the canal through residential areas, which do not meet the requirements of this species. The proposed changes to the canal would not qualify as a loss or degradation of this riparian habitat. Therefore, based on the lack of suitable habitat in the project area, the Action Alternative would have no effect on the yellow-billed cuckoo.

Greater Sage-grouse

There are no recent documented occurrences of greater sage-grouse near the project action. Habitat requirements for the greater sage-grouse are not present within the project action area. The project action area does not contain abundant sagebrush in which this species is dependent on for food and cover. Therefore, the Action Alternative would have no effect on the greater sage-grouse.

3.5.7.2 State Sensitive Species

No Action Alternative

The No Action Alternative would have no effect on State Sensitive Species.

Action Alternative

Bobolink

Information obtained from the UDWR, indicates there have been recent documented occurrences of the bobolink within a 2 mile radius of the project action area. Irrigated agricultural fields do exist along several portions of the canal alignment, which could be potentially suitable but likely poor habitat for the bobolink due to the managed land use of those fields. The species may arrive in early May when construction activities are being completed. This could cause displacement of the birds that attempt to nest along the canal prism. However, the number of bobolink affected and the short-term (one season) duration of the construction activities precludes major effects. Since the majority of construction would occur outside the window of time when bobolink are present and very few acres of potentially suitable habitat would be affected, effects to the species are minimal and would not contribute to a trend toward federal listing.

Grasshopper Sparrow

Information obtained from the UDWR, indicates there have been recent documented occurrences of the grasshopper sparrow within a 2 mile radius of the project area. Irrigated and cultivated agricultural fields do exist along several portions of the canal alignment, which could be potentially suitable but likely poor habitat for the grasshopper sparrow due to the managed land use of those fields. The species would generally arrive in the project area in April/May towards the end of construction activities. This could cause displacement of the birds that attempt to nest along the canal prism and in nearby irrigated or cultivated fields. However, due to the lineal nature of the project, the number of sparrows affected and the short-term (one season) duration of the construction activities precludes major effects. Since the majority of construction would occur outside the window of time when grasshopper sparrow are present and very few acres of suitable habitat would be affected, effects to the species are minimal and would not contribute to a trend toward federal listing.

Western Toad

Information obtained from the UDWR, indicates there are historical documented occurrences of the western toad within a 2 mile radius of the project action area. The aquatic environment within the canal could qualify as potentially suitable habitat due to the slow moving ephemeral hydrology. However, there have been no known documented occurrences within the project area. Therefore, if the toad was present during the fall, winter, and early spring seasons, which is not likely, there may negative impacts. Some of those impacts could include degradation of habitat, destruction of a winter hibernaculum, and displacement due to the use of heavy equipment. If a toad was hibernating in a mud hole in or near the canal it could be killed. All of these effects are not likely due to the lack of western toads in the project area. The species would likely be affected minimally and thus not trend toward Federal listing.

3.5.7.3 Migratory Birds

No Action Alternative

The No Action Alternative would have no effect to migratory birds.

Action Alternative

Construction of the Action Alternative would take place outside of the irrigation season and would commence in the fall of each year with continuous construction taking place until early spring. Therefore, construction would not commence during the nesting season, and all vegetative clearing would take place in the fall when migratory birds are not likely to be in the project area. Migratory birds may experience minor short-term disturbance and displacement towards the end of construction. The area surrounding the proposed project area contains a large amount of open water habitat including the Logan River, Bear Lake, and several nearby reservoirs, ponds, and wetlands. Birds that currently use the open portions of the canal could move to adjacent wetlands and open water habitat during construction. There would be no permanent long-term effects on migratory birds.

3.5.8 Cultural Resources

No Action Alternative

There would be no impact on cultural resources from the No Action Alternative.

Action Alternative

One cultural resource site, the Logan Northern Canal (site 42CA000156), exists within the project area. Under the Action Alternative, the existing open channel of the Logan Northern Canal would not be altered in dimensions or form. The channel would remain open to carry storm water runoff. Therefore, the Action Alternative would have no adverse effect on cultural resources.

3.5.9 Paleontological Resources

No Action Alternative

The No Action Alternative would have no effect on paleontological resources.

Action Alternative

There would be no effect on paleontological resources from the Action Alternative.

3.5.10 Soil Sedimentation and Erosion

No Action Alternative

Soil erosion would continue in the project area at the current rate under the No Action Alternative.

Action Alternative

Under the Action Alternative, soil would be excavated, compacted, and graded during construction. The BMPs would be employed to minimize erosion and sedimentation from construction activities. Areas disturbed during construction would be restored and re-vegetated to pre-project conditions. The Action Alternative would, therefore, have no long-term effect on soil sedimentation and erosion.

3.5.11 Indian Trust Assets

No Action Alternative

There would be no foreseeable impacts to ITAs under the No Action Alternative.

Action Alternative

There are no identified ITAs in the project area and the implementation of the Action Alternative and is therefore not anticipated to have an effect on ITAs.

3.5.12 Environmental Justice

No Action Alternative

The No Action Alternative would have no effect on environmental justice populations.

Action Alternative
Data from the U.S. Census Bureau indicates that there is a potential for a small environmental justice population near the project area. Implementation of the Action Alternative would not disproportionately affect any low-income or minority communities in the area. Furthermore, the Action Alternative would not involve relocations, health hazards, hazardous waste, property takings, or substantial economic impacts. The Action Alternative would, therefore, have no adverse effects on human health or the environment and would not disproportionately affect environmental justice populations.

3.5.13 Public Safety, Access, and Transportation

No Action Alternative
The No Action Alternative would have no impact on transportation resources within the project area.

Action Alternative
The proposed action may cause limited delays along roadways adjacent to the project area, due to construction vehicles entering and exiting roadways. Service from the fire station located in the project area would not be impacted by the Action Alternative. Although no road closures are planned, any unforeseen temporary road or access closures would be coordinated with local law enforcement and emergency services. The Action Alternative would have no long-term effect on public safety, access, and transportation.

3.5.14 Prime, Unique, and Statewide Important Farmland

No Action Alternative
Under the No Action Alternative, the delivery of irrigation water through the open channel would continue to result in 1,530 AF of water being lost annually through the open segment of the LNIC Canal. This loss of water has the potential to adversely impact agricultural land in the project area if agricultural users are not able to obtain their water shares. Therefore, the No Action Alternative may result in a negative long-term impact to farmland.

Action Alternative
The construction and implementation of the Action Alternative would have no long-term negative impacts on farmland within the project area, and no farmland would be converted to non-agricultural use. Furthermore, the Action Alternative is anticipated to increase the efficiency of the existing water delivery system to agricultural users in the area. Therefore, the Action Alternative is likely to have a beneficial impact to farmland in the project area.

3.5.15 Energy Requirements and Conservation Potential

No Action Alternative
The No Action Alternative would have no effect on energy requirements in the project area.

Action Alternative
The proposed project would not require any additional energy resources. Water that is conserved after the implementation of Action Alternative, would be available to the existing Logan City Light and Power Hydroelectric Facility. An estimated 314,500 kWh of power could be produced each year with the water conserved under the Action Alternative. In addition, existing pumps would be removed along the proposed alignment as the system would become. Removing the pumps is estimated to conserve approximately 285,000 kWh of power a year. Therefore, the Action Alternative would likely have a beneficial effect on energy requirements and conservation potential within the project area.

3.5.16 Recreation Resources

No Action Alternative
The No Action Alternative would have no effect on the recreation resources in the project area.

Action Alternative
Although Elkridge Park is located along the project corridor, the proposed project improvements would not require any right-of-way from the park, nor would it include any impacts on the existing facilities at the park. Access would be maintained throughout construction. Minor temporary impacts may result to park users from increased noise in the project area due to construction activities. These noise impacts would be short in duration and are not anticipated to impact or change the use of the recreation facility. The Action Alternative would not result in any long term impacts to recreation resources.

3.5.17 Visual Resources

No Action Alternative
The No Action Alternative would have no effect on the visual resources in the project area.

Action Alternative
Under the Action Alternative, it is not anticipated that there would be direct or indirect impacts to the visual resources along the canal alignment due to construction of the project. The canal will be left open for storm water collection.

Additionally, there would be no impact from constructing a pipeline adjacent to the canal to the overall visual character for the close-range to mid-range to long-range viewers. The canal would remain open.

Potential impacts to the existing vegetation could occur, in the form of mortality to older trees. Currently in some locations there are large old growth trees that are dependent on the water source and could be killed because of lack of water. If those trees are killed the canal alignment could change visually over time. By leaving the canal open for storm water collection, this will minimize the potential impact to the old growth trees.

3.6 Summary of Environmental Consequences

Table 3.3 provides a summary of environmental consequence for the resources evaluated in this EA. Resource impacts are outlined for both the No Action and the Action Alternatives. Mitigation, if required, is also described.

Table 3.3
Summary of Environmental Consequences

Resource	No Action Alternative	Action Alternative
Air Quality	No Effect	Minor short-term impacts due to fugitive dust and equipment exhaust from construction activities. Mitigate with BMPs including a fugitive dust mitigation plan. Construction specifications would meet guidelines outlined in the Logan UT-ID OM 2.5 SIP.
Water Resources	Long-term negative impact from the loss of water through the open channel.	Likely beneficial impact to water resources from the increased efficiency of the water delivery system.
Water Quality	No Effect	Likely beneficial impact to water quality from the piping of the water delivery system.
Upland Vegetation	No Effect	Temporary impacts from construction activities Mitigate with BMPs including contouring and reseeding disturbed areas.
Wetland and Riparian Resources	No Effect	No Effect
Fish and Wildlife Resources	No Effect	Minor-short disturbance and displacement during construction.
Federally Listed Species	No Effect	No Effect
Species of Special Concern	No Effect	May effect the bobolink, grasshopper sparrow, and western toad.
Migratory Birds	No Effect	Minor short-term disturbance and displacement during construction.
Cultural Resources	No Effect	No Adverse Effect
Paleontological Resources	No Effect	No Effect

Resource	No Action Alternative	Action Alternative
Indian Trust Assets	No Effect	No Effect
Environmental Justice	No Effect	No Effect
Public Safety, Access, and Transportation	No Effect	No Effect
Prime, Unique and Statewide Important Farmland	Potential long-term negative impact to farmland from continued water loss along the open canal.	Likely beneficial impact from the increase in the efficiency of the water delivery system.
Energy Requirements and Conservation Potential	No Effect	Likely beneficial impact from the reduction in energy requirements from the pressurization of the irrigation system and the potential to use conserved water for power generation.
Recreation Resources	No Effect	No long term impacts. Potential short term noise impacts from construction activities.
Visual Resources	No Effect	Minor impacts, potentially mitigated by keeping canal open for storm water.
Cumulative Effects	No Effect	Cumulative impacts from the Action Alternative and related actions were assessed during the resource evaluation. This analysis determined that there would be no adverse cumulative impacts.

Chapter 4 Environmental Commitments

The following environmental commitments would be implemented as an integral part of the proposed improvements to the LNIC Canal:

1. **Reclamation Standard Operating Procedures –** Reclamation Standard Operating Procedures (SOPs), as outlined in Reclamation's Facilities Instructions, Standards and Techniques Volume 1-2 (November 2000) and Reclamations' Manual – Directive and Standards, would be applied during construction activities to minimize environmental impacts, and would be implemented by construction personnel and included in contract specifications.

2. **Additional Analysis –** If the proposed action were to change significantly from the alternative described in this EA, additional environmental analyses would be undertaken as necessary.

3. **Construction Activities Confined to the Surveyed Corridor –** All construction activities would be confined to the width of the canal corridor that has been surveyed for cultural, paleontological, and biological resources.

4. **Cultural Resources –** If cultural resources are encountered during construction, all construction in the area of the discovery would cease until Reclamation's Provo Area Office archaeologist is notified and an assessment of the resource and recommendations for further work can be made. Any person who knows or has reason to know that he/she has inadvertently discovered possible human remains, must immediately provide 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. 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 (NAGPRA) and the ARPA of 1979.

5. **Paleontological Resources –** Should vertebrate fossils be encountered during ground disturbing activities, construction must be suspended until a permitted paleontologist can be contacted to assess the find.

6. **Roads –** Existing roads would be used for project activities whenever possible. The contractor shall obtain all necessary permits through Cache County for work within and adjacent to all county roads

7. **Air Quality –** The BMPs would be implemented to control fugitive dust during construction. The contractor would follow the EPA's recommended control methods for aggregate storage pile emissions to minimize fugitive dust generation, including periodic watering of equipment, staging areas, and dirt/gravel roads. Additionally the contractor would comply with all local, state, and Federal air quality regulations.

8. **Noise Impacts –**Work would take place during daylight hours and the contractor would follow all local noise ordinances, including those of the local municipalities and Cache County.

9. **Fish and Wildlife** – Implement spatial and seasonal buffers from Romin and Muck (2002) guidelines for raptor protection if nests or roosting eagles are found.

Chapter 5 Consultation and Coordination

5.1 Introduction

Reclamation's public involvement process presents the public with opportunities to obtain information about a given project, and allows interested parties to participate in the project through written comments. The key objective is to create and maintain a well-informed, active public that assists decision makers throughout the process, culminating in the implementation of an alternative. This chapter discusses public involvement activities undertaken to date for the proposed action.

5.2 Public Involvement

The LNIC conducted a public involvement process to inform stakeholders throughout the project area of the proposed project improvements. The public involvement process included one-on-one meetings with adjacent landowners, meetings with staff from the local municipalities, presentations to North Logan and Hyde Park City Councils, a project website (www.cachehighline.com) and a dedicated project phone line (435-770-4114) and an email address (email@cachewater.com) to provide stakeholders with an opportunity obtain information about the proposed project. For additional information regarding the public involvement refer to Appendix E, Public Involvement Summary.

5.3 Utah Geological Survey

A paleontological file search was requested from the UGS to determine the nature and extent of paleontological resources within the APE. *UGS consultation is pending.*

5.4 Utah State Historic Preservation Office

A copy of the Class III cultural resources inventory report and a determination of historic properties affected for the proposed action were submitted to the Utah SHPO. *Consultation with SHPO is pending.*

5.5 U.S. Army Corps of Engineers

A copy of the Irrigation Exemption Summary document is attached (Appendix D). *Consultation with U.S. Corps of Engineers is pending*

Chapter 6 Preparers

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

Table 6.1
List of Preparers

Name	Title/Position	Contributions
Agency Representatives		
Beth Reinhart	Environmental Resources Chief, Reclamation, Provo Area Office	Environmental Oversight
Scott Blake	Engineer, Reclamation, Provo Area Office	Project Engineer
Shane Mower	Biologist, Reclamation, Provo Area Office	Biological Resources
Rick Baxter	Biologist, Reclamation, Provo Area Office	Biological Resources
Peter Crookston	Biologist, Reclamation, Provo Area Office	Biological Resources
Calvin Jennings	Archaeologist, Reclamation, Provo Area Office	Cultural Resources, Paleontological Resources, Indian Trust Assets
Consultants		
Zan Murray	Project Engineer, J-U-B Engineers, Inc.	Project Manager
Marti Hoge	Senior Environmental Planner, J-U-B Engineers, Inc.	Environmental Project Manager
Vincent Barthels	Senior Biologist, J-U-B Engineers, Inc.	Biological and Wetland Resources
Roxann Hansen	Environmental Specialist, J-U-B Engineers, Inc.	Resource Evaluation
Paul Willardson	Design Engineer, J-U-B Engineers, Inc.	Alternative Analysis
Jordan Hansen	Designer, Gateway Mapping Inc.	GIS, Graphics

Sheri Murray Ellis	Owner/Principal Investigator, Certus Environmental Consultants	Cultural Resources

Chapter 7 References

Alsop, F. 2001. *Birds of North America (Western Region*). DK Publishing, Inc. New York, New York.

Bailey, R.G. 1995. Description of the ecoregions of the United States. 2nd ed. rev. and expanded (1st ed. 1980). Misc. Publ. No. 1391 (rev.), Washington, DC: USDA Forest Service.

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

Environmental Protection Agency (EPA). Status of SIP Requirements for Designated Areas, Utah Area by Pollutants. Updated on February 2, 1015. Accessed on February 17, 2015. http://www.epa.gov/airquality.

EPA. Watershed Assessment, Tracking and Environmental Results, 2010 Waterbody Report for Logan River -1. Accessed on February 17, 2015.

Johnsgard, Paul. 1986. *Birds of the Rocky Mountains*. University of Nebraska Press, London.

Kariya, K.A., D.M. Roark, and K.M. Hanson. Hydrology of Cache Valley, Cache County Utah and Adjacent Part of Idaho. State of Utah Department of Natural Resources Technical Publications No. 108. 1994.

Maas, D. 1997. *North American Game Animals.* Cowles Creative Publishing, Minnetonka, Minnesota.

McKelvey, K.S., K.B. Aubry, and U.K. Ortega. 2000. History and distribution of lynx in the contiguous United States. pp. 207-264. *In* Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, G.M Koehler, C.J. Krebs, K.S. McKelvey, and J.R. Squires. (Tech. Eds.) Ecology and conservation of lynx in the United States. Univ. Press of Colorado. Boulder, CO. 480 pp.

Montana State – Field Guide. Accessed December 1st, 2014. *Montana State Website*. Web address: http://fieldguide.mt.gov/detail_IMGASB5140.aspx

National Park Service (NPS). National Wild and Scenic Rivers System. Accessed on February 17, 2015. http://www.rivers.gov.

NatureServe. 2014. NatureServe Explorer: An online encyclopedia of life [On-line]. Version 7.1. NatureServe, Arlington, Virginia. Accessed December 1, 2014 at http://www.natureserve.org/explorer.

Romin, L. A, and J. A. Muck. 2002. Utah Field Office Guidelines for Raptor Protection from Human and Land Use Disturbances. U.S. Fish and Wildlife Service Office, Salt Lake City, Utah.

U.S. Bureau of Reclamation. WaterSMART. Accessed on January 15, 2015. http://www.usbr.gov/WaterSMART/water.html

U.S. Fish and Wildlife Service (USFWS). 1995. Ute ladies'-tresses (*Spiranthes diluvialis*) Draft Recovery Plan. Denver, Colorado.

U.S. Fish and Wildlife Service. 2014. *Greater Sage-Grouse*. Accessed 12/1/2014 at http://www.fws.gov/nevada/nv_species/sage_grouse.html.

Utah Division of Air Quality (UDAQ). Nonattainment Area Maps, updated January 2013. Accessed on Febraury 17, 2015. http://www.airquality.utah.gov.

Utah Division of Wildlife Resources (UDWR). Accessed December 1, 2014. *Utah Conservation Data Center*. Web address: http://dwrcdc.nr.utah.gov/ucdc/.

Chapter 8 Acronyms and Abbreviations

AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BMPs	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERLA	Comprehensive Environmental Response Compensation and Liability Act
CWA	Clean Water Act
CWRP	Cache Water Restoration Program
EA	Environmental Assessment
E.O.	Executive Order
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
EWP	Emergency Watershed Protection
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
HDPE	High-density Polyethylene
IPaC	Information, Planning, and Conservation System
Interior	U.S. Department of the Interior
ITAs	Indian Trust Assets

LNIC	Logan & Northern Irrigation Company
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
PM2.5	Particulate Matter 2.5 Micrograms for Cubic Meter
PM10	Particulate Matter 10 Micrograms for Cubic Meter
PRPA	Paleontological Resources Preservation Act
RCRA	Resource Conservation and Recovery Act
Reclamation	U.S. Bureau of Reclamation
SARA	Superfund Amendments and Reauthorization Act
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SOP	Standard Operating Procedures
UDAQ	Utah Division of Air Quality
UDEQ	Utah Department of Environmental Quality
UDWQ	Utah Division of Water Quality
UDWR	Utah Division of Wildlife Resources
UGS	Utah Geological Survey
UPDES	Utah Pollution Discharge Elimination Permit
USACE	U.S. Army Corps of Engineers
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

Appendix A

Biological Resources

Appendix B

Cultural and Paleontological Resources

Appendix C

Soil Survey

Appendix D

USACE Correspondence

Appendix E

Public Involvement Summary