



Central Oregon Irrigation District Pilot Butte Canal EIS Draft Land Use Technical Report Deschutes County, Oregon

Prepared for

Central Oregon Irrigation District



May 2024

Prepared by

Parametrix

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Central Oregon Irrigation District Pilot Butte Canal EIS Draft Land Use Technical Report

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CITATION

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CERTIFICATION

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Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

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ACRONYMS, INITIALISMS, AND ABBREVIATIONS

ac	acre
COID	Central Oregon Irrigation District
District	Central Oregon Irrigation District
EIS	environmental impact statement
GIS	geographic information system
NRHP	National Register of Historic Places
OAR	Oregon Administrative Rules
ORS	Oregon Revised Statute
Project	Pilot Butte Canal (PBC) Piping Project
PBC	Pilot Butte Canal
ROW	right-of-way
TCE	temporary construction easements
UGB	urban growth boundary

EXECUTIVE SUMMARY

There are a wide range of land uses within the Project Area, including agricultural, residential, commercial, industrial, institutional, and open space uses. Zoning within the Project Area is administered by Deschutes County, the City of Bend, and the City of Redmond.

The NE 18th Street, Old Deschutes Road, Watermaster's Access Road piping options would all result in permanent partial acquisitions of properties in the Study Area. All piping alternatives and options would result in temporary impacts to land uses along the PBC alignment during construction of the piping project. Both the North Bend and Redmond Pilot Butte Canal piping options would result in the removal of historic resources listed on the NRHP, creating long-term major adverse effects.

For all alternatives and options, excluding the No Action Alternative, construction activities and equipment would create short-term visual, noise, and vibration impacts to land uses surrounding the PBC alignment. Road closures and traffic detours would occur where construction activities take place in areas where the PBC crosses road right-of-way or where piping would be installed in road right-of-way.

If the Modernization Alternative is selected, compensation and relocation assistance would mitigate the effects on affected property owners and tenants of properties that would experience permanent impacts. Compliance with local land use plans, design guidelines, and standards would provide additional mitigation.

Mitigation for temporary construction impacts may include best management practices to reduce noise and vibration, such as equipment mufflers, and limiting construction times to certain hours. It is recommended that a blasting plan be developed for each area where blasting would be required. Adjacent and nearby property owners and tenants should be notified before construction activity begins. For more information on noise and vibration impact mitigation measures, see the Noise and Vibration Technical Report.

1. INTRODUCTION

As a part of the preparation of the Environmental Impact Statement (EIS) for the Pilot Butte Canal (PBC) Piping Project (Project), this technical report has been prepared to identify and evaluate land use within the Study Area.

1.1 Project Location

The Central Oregon Irrigation District (COID or District) is analyzing piping approximately 18 to 21 miles of the PBC from NE 17th Street in Redmond, Oregon, to the diversion point from the Deschutes River in Bend, Oregon (Figure 1). The piping would extend from the piped section of the PBC approved under the 2020 *Smith Rock-King Way Infrastructure Modernization Project Final Watershed Plan-Environmental Assessment* (NRCS, USDA 2020). Additional portions along the existing alignment that have been piped or converted to box culverts during previous construction projects include the following:

- Major freeway or roadway crossings of US 97, Hwy 20, and Hwy 126, in Bend and Redmond (0.2 miles)
- Within the City of Bend and Deschutes County for the Juniper Ridge hydroelectric plant (3.3 miles)
- Within Deschutes County north of the Juniper Ridge hydroelectric plant (0.1 miles)
- Within urbanized Redmond (1.5 miles)

The portions to be piped for this Project are shown in Figure 1.

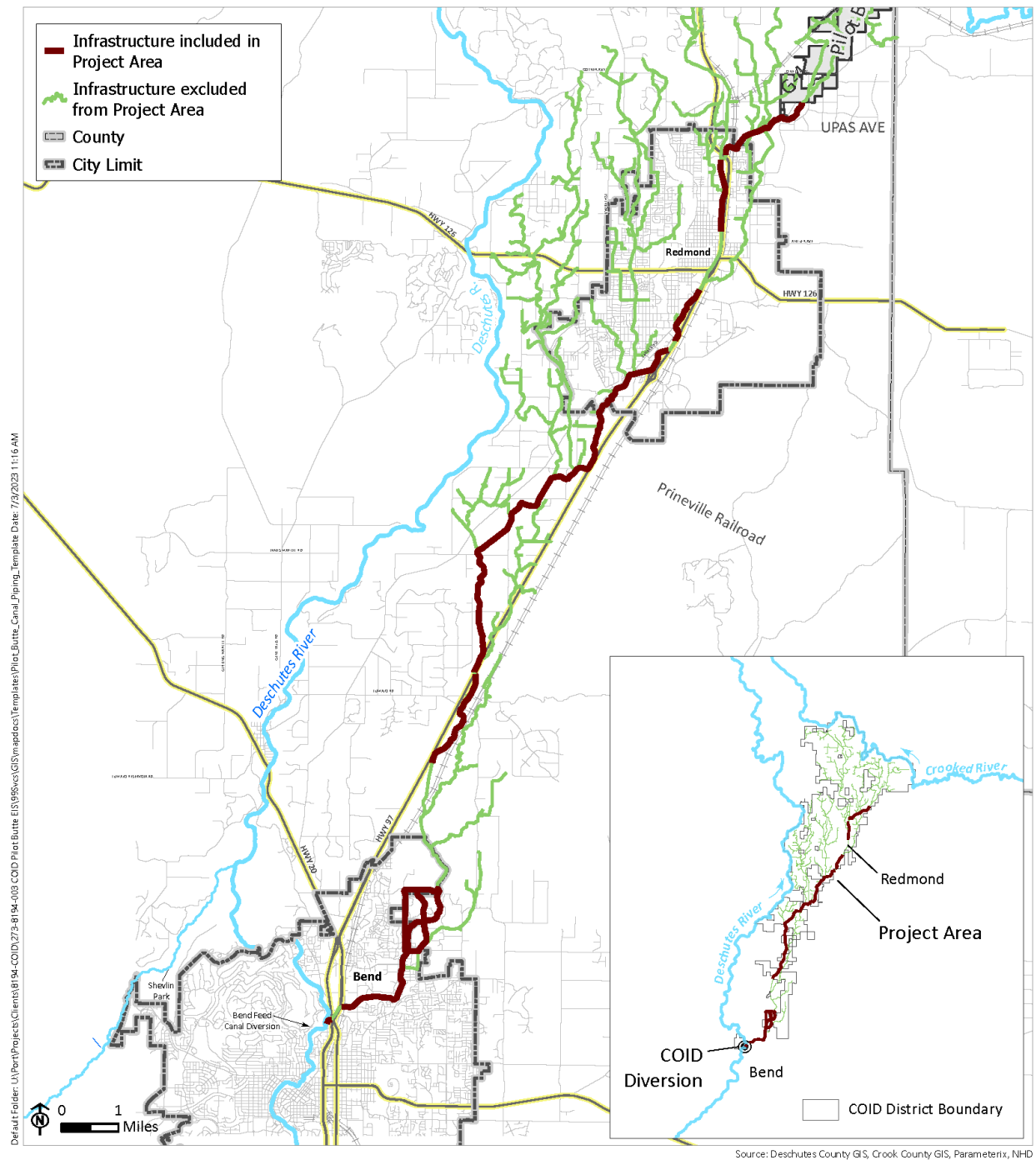


Figure 1. Project Area

1.2 Project Purpose and Need

The purpose of this project is agricultural water management through irrigation water conservation in District-owned infrastructure, improvement of water delivery reliability to District patrons, and reduction of long-term operation and maintenance costs on approximately 21 miles of the

District-owned PBC. The Project is needed to address the following watershed problems and resource concerns: water loss in District conveyance systems and water delivery and operation and maintenance inefficiencies. Implementation of the proposed action would address the sponsors' objectives and goals to reduce seepage loss and provide better-managed water diversions for farm use; support agricultural land use; improve streamflow for fish, aquatic, and riparian habitat; and increase public safety.

2. PROJECT ALTERNATIVES

2.1 No Action (Future without Federal Investment)

Under the No Action Alternative, the District would continue to operate and maintain the existing delivery system within the Project Area in its current condition. This alternative assumes that modernization of the District's infrastructure would not be reasonably certain to occur, as funding at the scale necessary to modernize District infrastructure is not anticipated from other sources. The No Action Alternative would be a continuation of the District's current operations and maintenance.

The No Action Alternative would not meet the project purpose and need. Water would continue to be lost to seepage and evaporation in District infrastructure. Inefficiencies in water delivery reliability for farmers; streamflow and habitat conditions for fish and aquatic species; public safety; and sediment levels in irrigation water would not improve. The No Action Alternative would fail to achieve the goal of maximizing sustainable economic development, as identified in the Federal Objective to protect the environment. It would not resolve current water supply problems stemming from the loss of water from District infrastructure. Further, it would not foster the economic well-being of present and future generations through sustainable use and management of water resources to provide water supply and water quality for irrigated agriculture in the Deschutes basin.

2.2 Modernization Alternative (Future with Federal Investment)

The Modernization Alternative would focus on a single priority infrastructure modernization project: the District would replace the existing open PBC within the Project Area with a pressurized, closed conduit pipeline system (see Figure 2). When completed, the pipe would extend over approximately 18 to 21 miles of the COID system from the diversion point from the Deschutes River in Bend, Oregon, to NE 17th Street in Redmond, Oregon. Pipeline construction would begin in the northern portion of the Project Area at the piped section of the PBC that was approved under the 2020 *Smith Rock-King Way Infrastructure Modernization Project Final Watershed Plan-Environmental Assessment* (NRCS, USDA 2020), and progress south to the North Canal Dam. Construction of the Modernization Alternative would occur over the course of 3 years; two project groups would be constructed each construction season. The six project groups are described in Table 1.

Table 1. Project Group Construction Sequence

Project Groups	Project Group Length (feet)	Construction Year	Construction Start	Construction End
1 – King Way	11,000	0	October 2026	April 2027
2 – Redmond				
Pilot Butte Canal Alignment Option	13,500	1	October 2027	April 2028
Watermaster Road Alignment Option	13,500	1	October 2027	April 2028
NW Canal Boulevard Alignment Option	13,500	1	October 2027	April 2028
3 – Veterans Way	16,700	2	October 2028	April 2029
4 – Canal	13,900	2	October 2028	April 2029
5 – Deschutes Market	22,000	1	October 2027	April 2028
6 – Rivers Edge				
Pilot Butte Canal Alignment Option	18,100	0	October 2026	April 2027
18th Street Alignment Option	19,300	0	October 2026	April 2027
Old Deschutes Road Alignment Option	19,800	0	October 2026	April 2027

Construction would occur during the non-irrigation season (October to April), with Project Group 1 (King Way) and Project Group 6 (Rivers Edge) construction beginning as early as the 2026–2027 non-irrigation season. The construction sequencing may be changed to provide flexibility for the construction contractor. Construction of each project group is anticipated to require one non-irrigation season to complete, and all six project groups would be completed over the course of three construction seasons. Two project groups—Redmond and Rivers Edge—each contain a segment with multiple alignment options. The alignment options are discussed below. Under the Modernization Alternative, federal funding through Public Law 83-566 would be available and would be expected to cover approximately 75% of total costs. The District would cover the remaining 25% of total costs.

A section of the PBC in Deschutes County just south of the Juniper Ridge hydroelectric facility, in the Rivers Edge project group, and another section in the downtown area of Redmond, in the Redmond project group, include historic features listed in the National Register of Historic Places (NRHP). In 2019, a Section 106 programmatic agreement was signed by COID, the Oregon State Historic Preservation Office, and the Bureau of Reclamation. The Natural Resources Conservation Service (NRCS) was added as a signatory in 2023. The programmatic agreement identified that COID will maintain the downtown Redmond reach “such that the historic integrity of and identification of the historic property as representative of an irrigation conveyance system will not be adversely affected.” The alignment options for the Deschutes County/North Bend (in the Rivers Edge project group) and the City of Redmond (in the Redmond project group) NRHP-listed historic sections of the Project Area are described in Section 2.2.1 and Section 2.2.2, respectively.

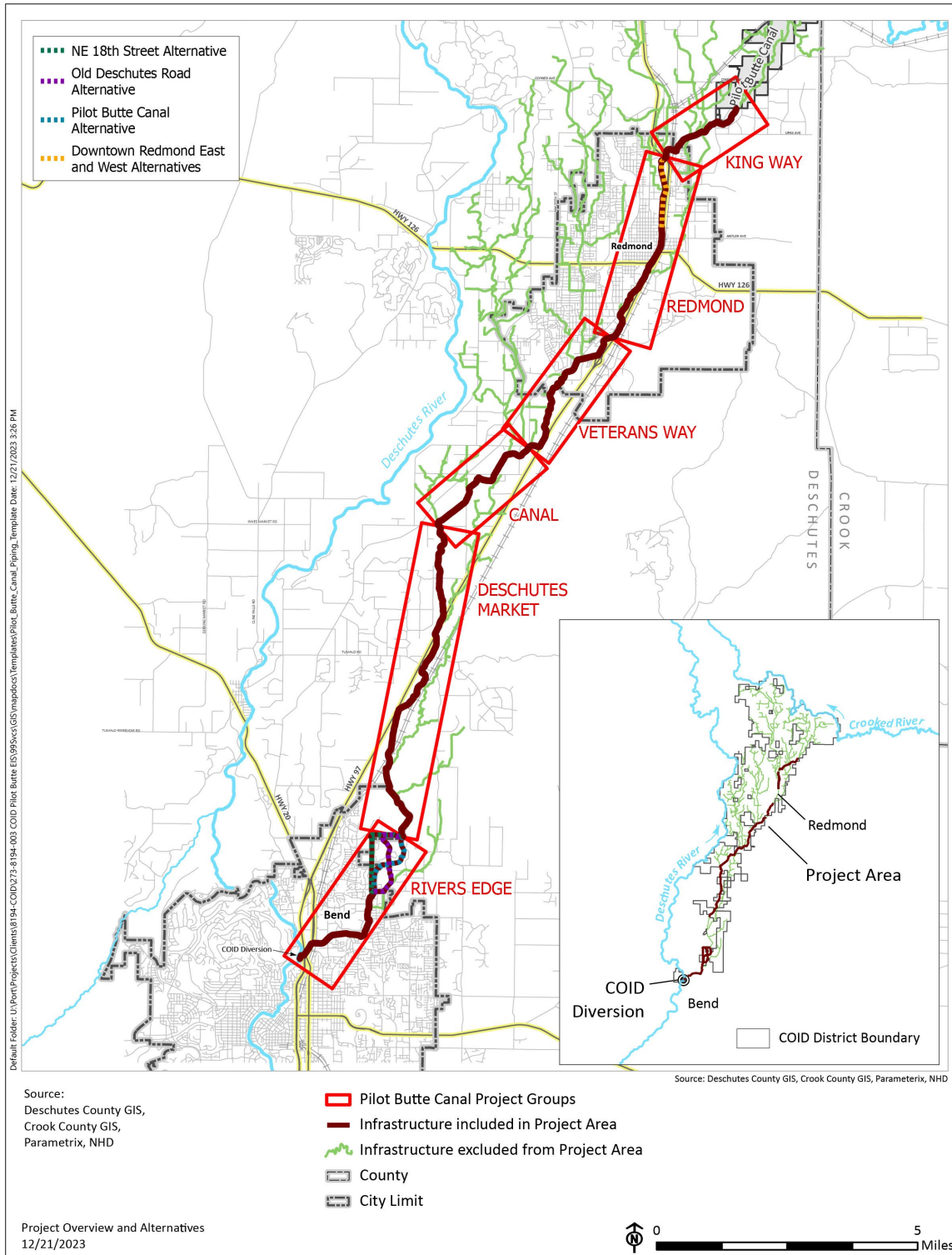


Figure 2. Project Groups

2.2.1 Deschutes County/North Bend Alignment Options

The Modernization Alternative has four options for piping between Yeoman Road and Cooley Road in Deschutes County and north Bend (see Figure 3).

- No Modernization within this Segment (no piping)
- Pilot Butte Canal Alignment (existing canal alignment)
- NE 18th Street Alignment
- Old Deschutes Road Alignment

2.2.1.1 No Modernization within this Segment (No Piping)

This alignment option would keep the 7,800-foot NRHP-listed stretch of the PBC between Yeoman and Cooley Roads in its current configuration and functionality as an open canal. This option would require an energy dissipation structure at Yeoman Road to slow the flow velocity as it exits the pressurized pipe so that the existing open canal can function as currently designed.

2.2.1.2 Pilot Butte Canal Alignment (Existing Canal Route)

This alignment option would replace the open channel with pipe directly within the existing open channel alignment. This alignment option would be built wholly within the section of canal that is listed in the NRHP. This option would not pipe the open channel section immediately south of the Juniper Ridge hydroelectric facility (approximately 170 feet), and it would require installing a pressure reducing station prior to where flow enters the hydroelectric facility.

2.2.1.3 NE 18th Street Alignment

This option would pipe the PBC within a new alignment beginning at the intersection of the existing alignment and Yeoman Road. It would travel west and then north to follow NE 18th Street to its intersection with Cooley Road. At Cooley Road, the alignment option would make an approximately 90-degree turn to follow an alignment extending from near the eastern terminus of Cooley Road to the existing PBC. This option would avoid impacts to a portion of the PBC that is listed in the NRHP. The historic section of canal would be left in place, but it would no longer receive irrigation water from the COID system.

2.2.1.4 Old Deschutes Road Alignment

The Old Deschutes Road Alignment option would place pipe in a new alignment beginning at Yeoman Road. It would travel east along Yeoman Road and then northeast to follow Old Deschutes Road. The alignment would travel generally north, cross the existing PBC, then continue north to Cooley Road. The alignment would make an approximately 90-degree turn to follow Cooley Road to the existing PBC. This option would avoid impacts to the NRHP-listed portion of PBC. The historic section of canal would be left in place, but it would no longer receive irrigation water from the COID system.

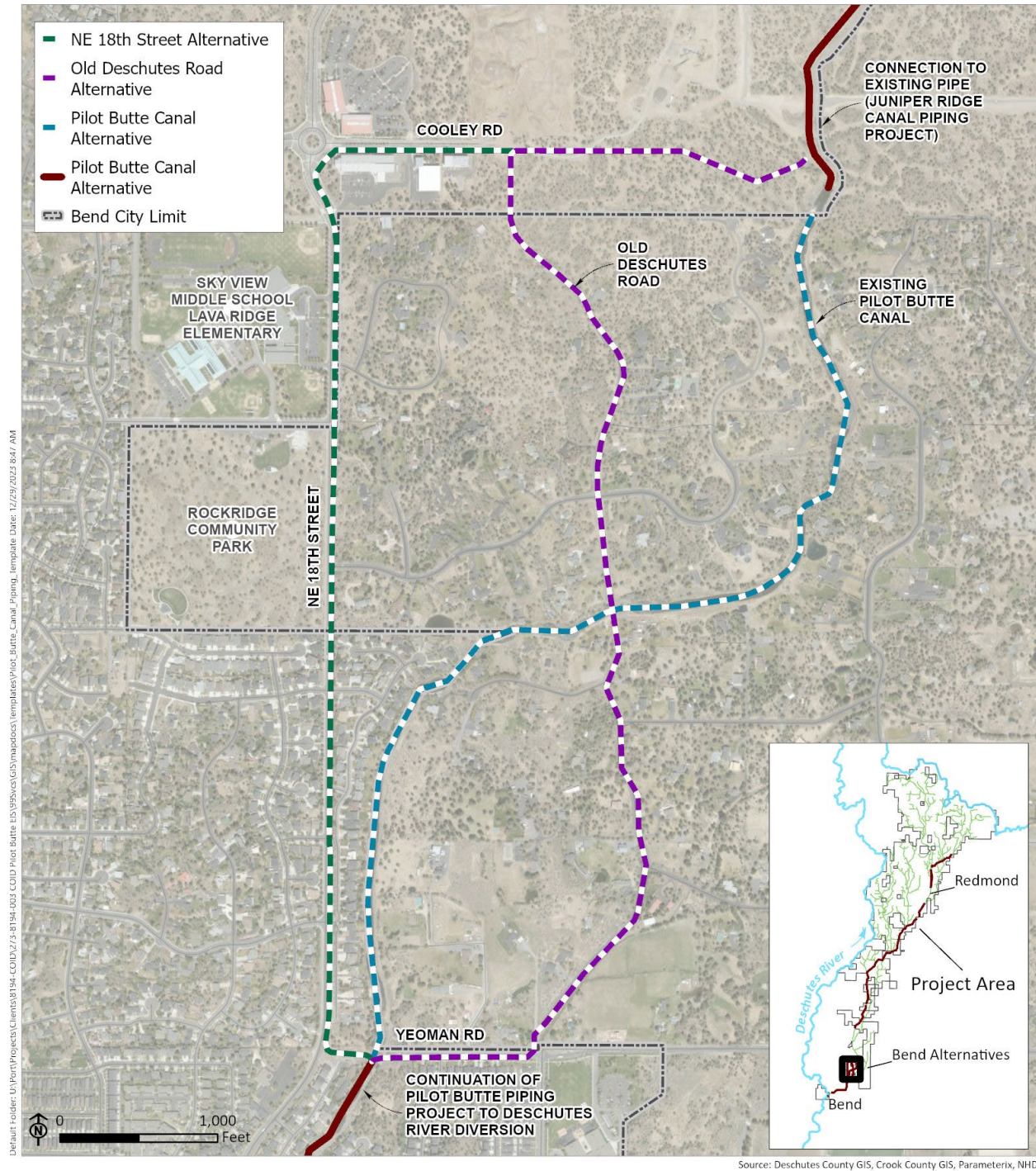


Figure 3. Deschutes County/North Bend Alignment Options

2.2.2 City of Redmond Alignment Options

The Modernization Alternative has four options for piping within the NRHP-listed historic Downtown Redmond section between NW Dogwood Avenue and NW Quince Avenue (see Figure 4).

- No Modernization within this Segment (no piping)
- Pilot Butte Canal Alignment (existing canal alignment)
- Piping to the east in the Watermaster's Access Road
- Piping to the west within Northwest Canal Boulevard

2.2.2.1 No Modernization within this Segment (No Piping)

This alignment option would keep the 6,800-foot NRHP-listed stretch of the PBC in Redmond in its current configuration and functionality as an open canal. This option would require installing a pressure reducing station near the intersection of SW Veteran's Way and US 97 to slow the flow velocity as it exits the pressurized pipe so that the existing open canal can function as currently designed.

2.2.2.2 Pilot Butte Canal Alignment (Existing Canal Route)

This alignment option would replace the open channel with pipe directly within the existing open channel alignment. This alignment option would be built wholly within the section of canal that is listed in the NRHP.

2.2.2.3 Piping to the east in the Watermaster's Access Road

This alignment option would install pipe to the east of the existing PBC and avoid impacts to the section of canal that is listed in the NRHP. The historic section of canal would be left in place, but it would no longer receive irrigation water from the COID system.

2.2.2.4 Piping to the west within Northwest Canal Boulevard

This alignment option would pipe to the west of the existing PBC, primarily within NW Canal Boulevard, and avoid impacts to the section of canal that is listed in the NRHP. The historic section of canal would be left in place, but it would no longer receive irrigation water from the COID system.

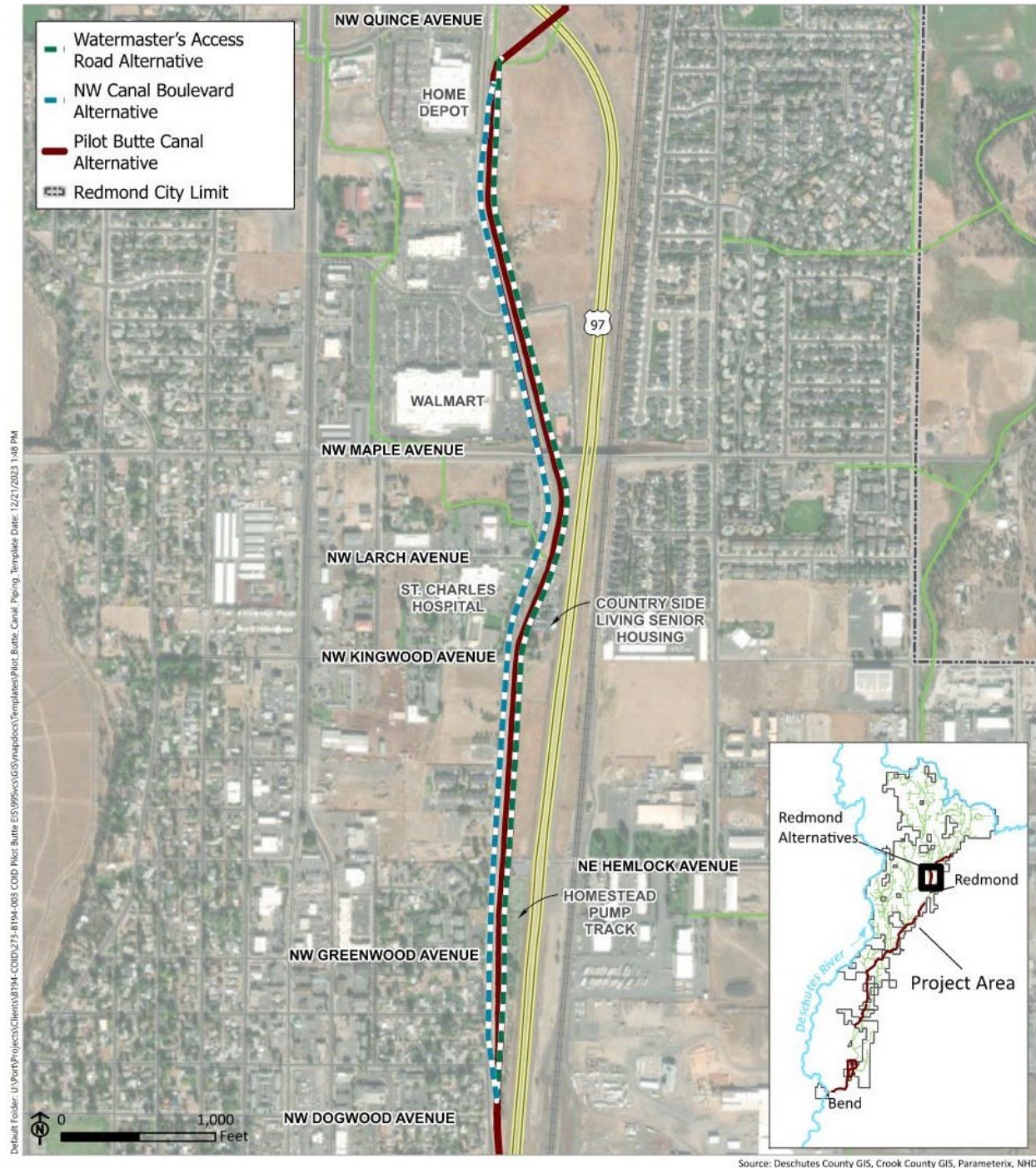


Figure 4. Redmond Alignment Options

3. DEFINITIONS

The following terminology is used when discussing geographic areas in the EIS.

Project Area. The area within which improvements associated with the project alignment options would occur and the area needed to construct these improvements. The Project Area includes the area needed to construct all permanent infrastructure, including adjacent parcels where modifications would be required for associated work such as utility realignments or upgrades.

Study Area. This is the general geographic area within which physical impacts to the environment could occur with the project alternatives. The Study Area is resource-specific and differs depending on the environmental topic being addressed. For all topics, the Study Area encompasses the Project Area, and for some topics (such as for utilities), the geographic extent of the Study Area is the same as that for the Project Area. For other topics (such as transportation) the Study Area is substantially larger to account for impacts that could occur outside of the Project Area. The Study Area for land use is defined in Section 5.1.

Project vicinity. The environs surrounding the Project Area. The project vicinity does not have a distinct geographic boundary but is used in general discussion to denote the larger area.

4. LEGAL REGULATIONS AND STANDARDS

4.1 Laws, Plans, Policies, and Regulations

Land uses in the Study Area are regulated by a number of state, local, and regional laws, plans, policies, and regulations.

4.1.1 State of Oregon

4.1.1.1 Oregon Revised Statutes Chapter 545 – Irrigation Districts

Chapter 545 of the Oregon Revised Statutes (ORS) defines the rules and rights afforded to irrigation districts in the Oregon. Subsections of the statute include the District's rights to acquire and access land (ORS 545.237 – 545.257)

4.1.1.2 Statewide Land Use Planning Goals

OAR 660-015 establishes 19 statewide planning goals that express the state's policies on land use planning, which are enacted on a local level by comprehensive planning (DLCD 2023). The following goals are especially relevant to the Project:

- Goal 3: Agricultural Lands. Goal 3 protects farmland for the continued production of agricultural products and seeks to minimize land uses that conflict with farming.
- Goal 5: Natural Resources, Scenic and Historic Areas, and Open Spaces. Goal 5 protects a range of natural and cultural resources, including riparian corridors, wetlands, wildlife habitat, scenic rivers and waterways, groundwater resources, recreation trails, natural and wilderness areas, mineral resources, energy sources, and cultural and historic areas and resources.

4.1.2 Deschutes County

4.1.2.1 Comprehensive Plan

The Deschutes County Comprehensive Plan, adopted in 2011, contains issues, goals, and policies to guide the County's land use planning decisions and public investments over a 20-year planning horizon (Deschutes County 2011).

4.1.2.2 Development Code

Deschutes County Code Title 18 establishes zoning districts and regulations governing the development and use of land within unincorporated Deschutes County (Deschutes County 2023a).

4.1.3 City of Bend

4.1.3.1 Comprehensive Plan

The City of Bend Comprehensive Plan, most recently updated in 2016, is a long-range planning guide for making land use decisions regarding future development and growth within Bend's urban growth boundary (UGB) (City of Bend 2021).

4.1.3.2 Development Code

Title 10 of the City of Bend Code establishes land use districts and development regulations and standards for all land within the incorporated city limits of Bend (City of Bend 2023a).

4.1.4 City of Redmond

4.1.4.1 Comprehensive Plan

Adopted in 2020, Redmond's 2040 Comprehensive Plan is a guide to future growth, development, and redevelopment of the Redmond urban area (City of Redmond 2020).

4.1.4.2 Development Code

Chapter 8 of the Redmond City Code provides development regulations and established zoning districts and provisions for the city (City of Redmond 2023a).

4.1.5 Central Oregon Irrigation District

4.1.5.1 Development Handbook

The COID Development Handbook provides guidance for design and construction of facilities on or near COID easements, as well as guidelines for proper crossing and piping of COID easements and canals.

4.2 Design Standards

The Project Area falls within a wide range of zoning designations in the city of Bend, Deschutes County, and the city of Redmond throughout its existing alignment and the proposed alignment alternatives. These zones are discussed in further detail in the Existing Conditions section of this report. These zones establish development standards regulating the height, bulk, lot coverage, setbacks, design, and other physical aspects of buildings and structures. Further guidance regarding development in or alongside COID canal alignments, along with standards for canal piping and crossings, is available in the Central Oregon Irrigation District Development Handbook. Allowed uses and activities are further defined by COID's Carey Act right-of-way. All relevant design standards will be reviewed in detail during the permitting process for the piping project.

5. AFFECTED ENVIRONMENT

5.1 Study Area

This land use analysis considers two study areas: one being the immediate Project Area and the other being the larger region. The regional study area considers compatibility with state, county, and local land use plans within the boundaries of the city of Bend, city of Redmond, Deschutes County, and the COID service area. The Project Area includes the impacts to land uses on parcels immediately adjacent to the existing canal alignment and proposed alignment alternatives, including a 70-foot buffer on either side of the canal to account for construction impacts.

5.2 Resource Identification and Evaluation Methods

5.2.1 Published Sources and Databases

Sources used to conduct this land use analysis include the following:

- Deschutes County GIS
 - Zoning designation
 - Comprehensive Plan designation
- City of Bend GIS
 - Zoning designation
 - Comprehensive Plan designation
 - Special Planned Districts
 - Historic Districts
- City of Redmond GIS
 - Zoning designation
 - Comprehensive Plan designation

- Deschutes County Development Code
- City of Bend Development Code
- City of Redmond Development Code
- Deschutes County Comprehensive Plan
- Bend Comprehensive Plan
- Redmond 2040 Comprehensive Plan
- Central Oregon Irrigation District Pilot Butte Canal EIS Draft Right-of-Way, Displacements, and Relocations Technical Report

5.2.2 Field Visits and Surveys

No field visits or surveys were conducted as part of the land use analysis.

5.3 Existing Conditions

5.3.1 Existing Zoning

Zoning within the Project Area is administered by Deschutes County, the City of Bend, and the City of Redmond. Zones describe what uses are allowed, limited, or prohibited on the property, provide guidance on use intensity, and set development standards. Zoning in an area is generally indicative of existing land uses and intended future land uses.

5.3.1.1 Deschutes County

The applicable zones in Deschutes County are described in Table 2 and shown in Figure 5.

Table 2. Study Area Parcels and Zoning by Alternative – Unincorporated Deschutes County

Alternative	Zoning District	Parcels
Pilot Butte Canal Option	Commercial Limited (CL)*	2
	Exclusive Farm Use, Alfalfa Subzone (EFUAL)	3
	Exclusive Farm Use, Tumalo/Redmond/Bend Subzone (EFUTRB)	52
	General Industrial (IG)*	4
	Light Industrial (IL)*	29
	Rural Industrial (RI)	4
	Multiple Use Agricultural (MUA10)	6
	Open Space and Conservation (OS&C)	1
	Medium Density Residential (RM)*	18
	Rural Residential (RR10)	19
	Standard Residential (RS)*	84
	Suburban Low Density Residential (SR 2-1/2)	43

Alternative	Zoning District	Parcels
NE 18th Street Option	Light Industrial (IL)*	6
	Public Facilities (PF)	2
	Medium Density Residential (RM)*	2
	Standard Residential (RS)*	56
	Suburban Low Density Residential (SR 2-1/2)	7
Old Deschutes Road Option	Light Industrial (IL)*	5
	Standard Residential (RS)*	13
	Suburban Low Density Residential (SR 2-1/2)	36

* These zoning designations are within the City of Bend. Analysis of parcel impacts in the PBC alignment does not uniformly follow jurisdictional boundaries.

Exclusive Farm Use, Alfalfa Subzone (EFUAL)

Exclusive Farm Use Zones are intended to preserve and maintain agricultural lands and to serve as a sanctuary for farm uses. Proposed irrigated land divisions in the Alfalfa Subzone must be at least 36 irrigated acres in size.

Exclusive Farm Use, Tumalo/Redmond/Bend Subzone (EFUTRB)

Exclusive Farm Use Zones are intended to preserve and maintain agricultural lands and to serve as a sanctuary for farm uses. Proposed irrigated land divisions in the Tumalo/Redmond/Bend Subzone must be at least 23 irrigated acres in size.

Open Space and Conservation (OS&C)

The Open Space & Conservation Zone is intended to protect designated areas of scenic and natural resources; to restrict development in areas with fragile, unusual or unique qualities; and to protect and improve the quality of the air, water and land resources and to plan development that will conserve open space.

Rural Industrial (RI)

The Rural Industrial Zone is intended for industrial uses and their accessory uses, such as agricultural, horticultural, and lumber processing; freight, distribution, warehousing, and storage; and contractors, welding, and building materials businesses.

Rural Residential (RR10)

The Rural Residential Zone is intended to provide rural residential living environments by providing standards for rural land use and development consistent with desired rural character and the capability of land and natural resources, as well as to manage the extension of public services.

Multiple Use Agricultural (MUA10)

The Multiple Use Agricultural Zone is intended to preserve the rural character of various areas of Deschutes County while permitting development consistent with that character and with the capacity of the natural resources of the area.

Suburban Low Density Residential (SR 2-1/2)

The Suburban Low Density Residential Zone is intended to encourage, accommodate, maintain, and protect large-lot suburban-type residential development in areas with Oregon Department of Environmental Quality-permitted sewer systems, individual sewer systems in appropriate locations, and other areas well suited for such development.

Landscape Management Combining Zone (LM)

This combining zone is intended to maintain scenic and natural resources of designated areas and to maintain and enhance scenic vistas and natural landscapes as seen from designated roads, rivers, or streams. Provisions of this zone apply to all areas within one-quarter mile of roads identified as landscape management corridors in the Comprehensive Plan and the County Zoning Map. This area includes US 97 between Bend's and Redmond's UGBs.

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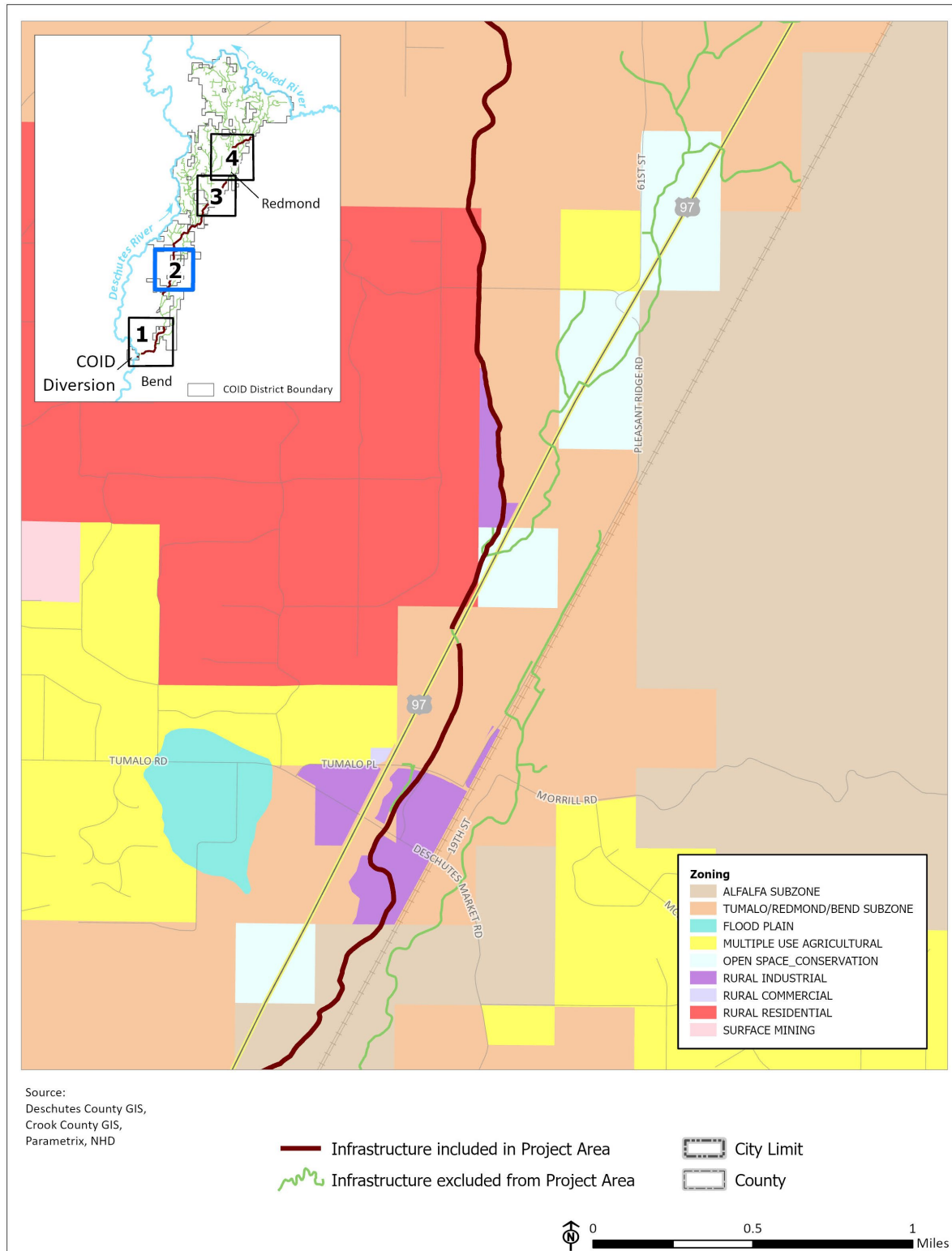


Figure 5. Existing Zoning – Tile 2

5.3.1.2 City of Bend

The applicable zones in the City of Bend are described in Table 3 and shown in Figure 6.

Table 3. Study Area Parcels and Zoning by Alternative – City of Bend

Alternative	Zoning District	Parcels
Pilot Butte Canal Option	Commercial Limited (CL)	2
	General Industrial (IG)	4
	Industrial Light (IL)	29
	Residential Urban Medium Density (RM)	18
	Residential Urban Standard Density (RS)	52

Commercial General (CG)

The Commercial General Zone is intended to provide a broad mix of commercial uses and for wholesale and heavier commercial uses in older, close-in sections of the community.

Commercial Limited (CL)

The Commercial Limited Zone is intended to establish locations for the development of commercial centers to provide for the shopping and service requirements for large sections of the community and to recognize existing uses both in centers and as parts of commercial strips.

Industrial Light (IL)

The Industrial Light Zone is intended to provide for those heavier commercial and light industrial uses located in existing built-up areas of the city.

Industrial General (IG)

The Industrial General Zone is intended to provide for the establishment of light and heavier industrial uses essential to the development of a balanced economic base in an industrial environment with a minimum of conflict between industrial and residential and light commercial uses.

Residential Urban Standard Density (RS)

The Urban Standard Density residential zone is intended to provide for the most common urban residential densities in places where community sewer services are or will be available, and to encourage, accommodate, maintain, and protect a suitable environment for family living.

Residential Urban Medium Density (RM)

The Urban Medium Density residential zone is intended to provide for the development of medium density multiple family residential structures where such buildings are reasonably spaced on the lot to provide for light, air, privacy, safety, and insulation against transmission of sound in areas with sewer and water service.

Public Facility (PF)

The Public Facility Zone is intended to provide area for buildings and facilities that are owned and operated by federal, state, or local governments; public utilities; special districts; or nonprofit organizations and which are occupied to provide governmental or public services. This zone also allows school sites, public park and recreational facilities, natural areas, trails, wetlands, and similar types of open space owned and managed by a local government or special district.

Lava Ridge Refinement Plan Area

The Lava Ridge Refinement Plan is intended to ease the transition to urban density residential zoning in the northeast area of Bend. The plan promotes a network of well-connected streets, neighborhood parks, and neighborhood commercial areas at the edge of residential neighborhoods.

Juniper Ridge Overlay

The Juniper Ridge Overlay is a Special Planned District established to encourage employment-based commercial and industrial uses, along with compatible residential uses.



5.3.1.3 City of Redmond

The applicable zones in the City of Redmond are described in Table 4 and shown in Figure 7 and Figure 8.

Table 4. Study Area Parcels and Zoning by Alternative – City of Redmond

Alternative	Zoning District	Parcels
Pilot Butte Canal Option	Strip Service Commercial (C1)	46
	Central Business District Commercial (C2)	2
	Special Service Commercial (C3)	4
	Park	4
	General Residential (R4)	54
	Urban Holding (UH10)	2
Watermaster's Access Road Option	Strip Service Commercial (C1)	12
	Central Business District Commercial (C2)	4
North Canal Boulevard Option	Strip Service Commercial (C1)	17
	Special Service Commercial (C3)	15
	High Density Residential (R5)	16

General Residential (R4)

The General Residential Zone is intended to provide high density residential neighborhoods with a mix of single-family residences, duplexes, and some conditionally permitted multifamily residential development. Limited commercial uses such as offices are also conditionally permitted where compatible with surrounding development.

High Density Residential (R5)

The High Density Residential Zone is intended to provide high density residential neighborhoods with a mix of single-family residences, duplexes, and multifamily residential development. Limited commercial uses such as offices are also conditionally permitted where compatible with surrounding development.

Park

The Park Zone is intended to provide for public park uses such as playgrounds, ball fields, and open space.

Strip Service Commercial (C1)

The Strip Service Commercial Zone allows for the development of most commercial, retail, public facility, and office uses. Auto-oriented businesses such as auto repair shops and car washes are conditional uses. Multifamily and attached single-family residential is allowed in this zone, while single-family detached residential is a conditional use.

Central Business District Commercial (C2)

The Central Business District Commercial Zone allows for the development of most commercial, retail, public facility, and office uses, including auto-oriented businesses such as auto repair shops and car washes. Single-family and multifamily residential is allowed in this zone.

Special Service Commercial (C3)

The Special Service Commercial Zone allows for the development of limited commercial and retail uses. Public facilities, including hospitals, and most office uses are allowed outright. Multifamily and attached single-family residential are allowed in this zone, while single-family detached residential is a conditional use.

Urban Holding (UH-10)

The City administers the UH-10 zone according to the provisions of Title 20 of the Deschutes County Code, Redmond Urban Area Zoning Ordinance. The ordinance is intended to protect the existing character of and values of land and buildings in the zone until it is ready to be developed for urban uses and is annexed into the city.

Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

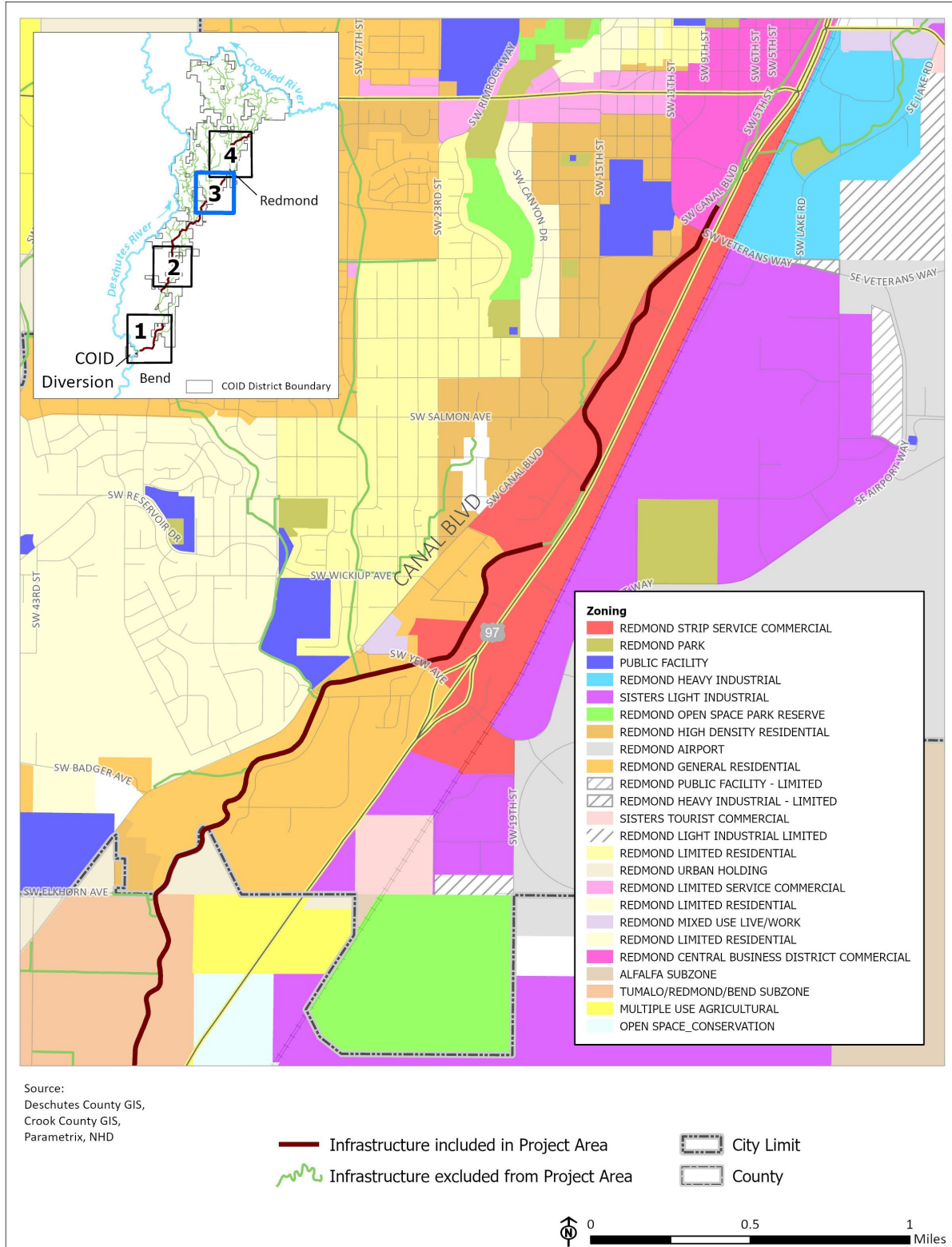


Figure 7. Existing Zoning – Tile 3

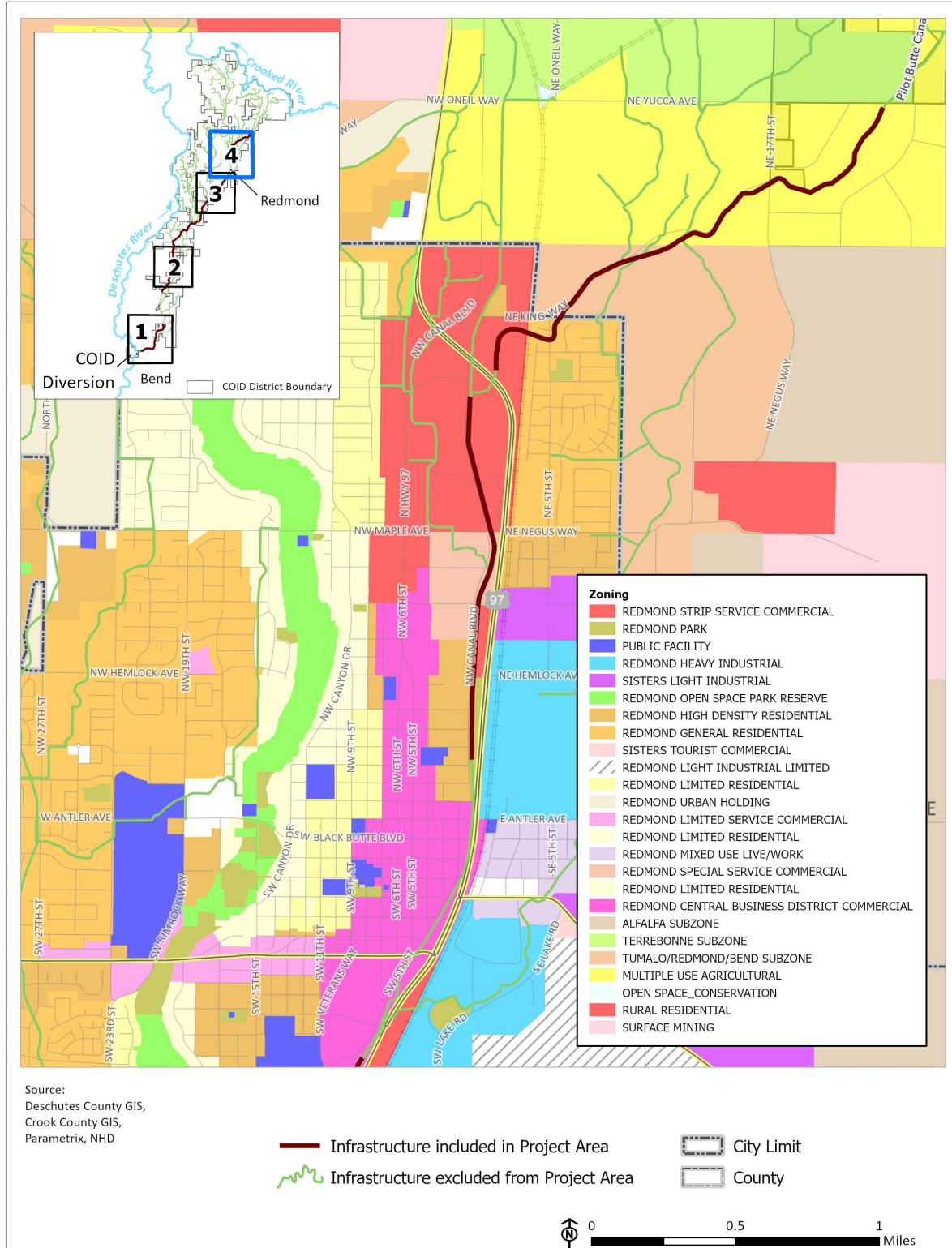


Figure 8. Existing Zoning – Tile 4

5.3.2 Existing Land Use

See Figure 9 for existing land uses in the Study Area.

5.3.2.1 Existing Pilot Butte Canal Alignment

The primary use of land within the existing PBC alignment is the operation and maintenance of the canal. The existing PBC alignment abuts a wide variety of land uses throughout the Study Area. Within the cities of Bend and Redmond, these uses are primarily industrial, single-family residential, and commercial. Portions of the canal run alongside parks, trails, open space, and a golf course. Within unincorporated Deschutes County, land uses are primarily agricultural and open space, along with some industrial and residential uses. The canal runs alongside transportation facilities for a portion of its length, including US 97 and local streets in Bend and Redmond. A 1.5-mile section of the existing PBC alignment in Bend, from Yeoman Road to approximately Old Deschutes Road, is listed in the NRHP.

5.3.2.2 NE 18th Street Alignment Option

The land uses within the proposed NE 18th Street alignment option are the existing NE 18th Street and Cooley Road roadways and undeveloped open space between the terminus of Cooley Road and the existing PBC alignment.

The NE 18th Street alignment option abuts single-family residential, park, and institutional (elementary and middle school) uses. A portion of land alongside the alignment is currently vacant land, but is planned for industrial and other employment uses, including a future public works facility as part of the Juniper Ridge Special Planned District. The alternative shares an alignment with existing roads for much of its length.

5.3.2.3 Old Deschutes Road Alignment Option

The land uses within the proposed Old Deschutes Road alignment option are the existing Old Deschutes Road roadway and undeveloped open space between the terminus of Cooley Road and the existing PBC alignment.

The Old Deschutes Road alignment option abuts single-family residential, agricultural, and open space uses. A portion of land alongside the alignment is currently vacant land, but is planned for industrial and other employment uses, including a future public works facility as part of the Juniper Ridge Special Planned District. The alternative shares an alignment with existing roads for much of its length.

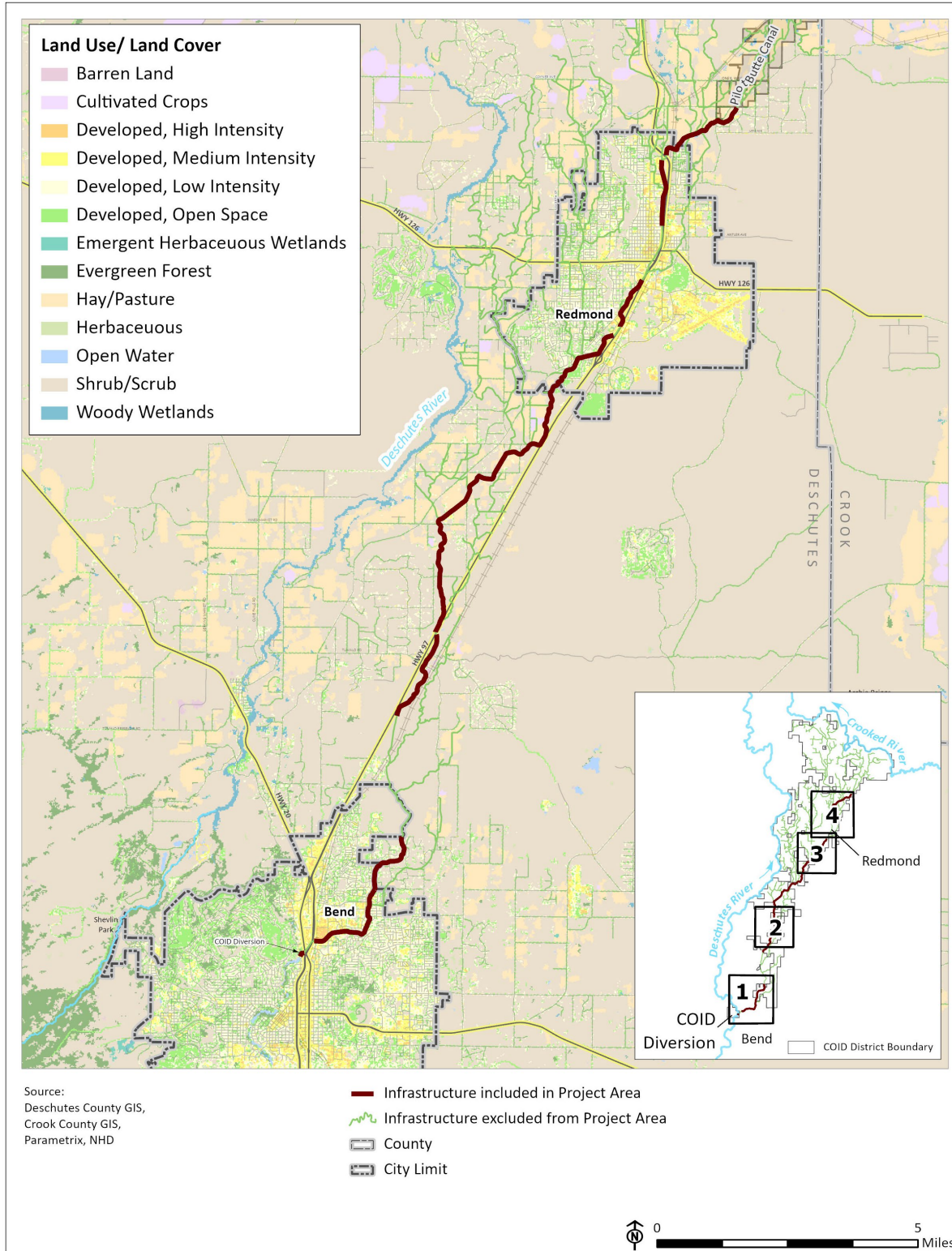


Figure 9. Existing Land Use

5.3.3 Long Range Plans

See Figure 10 through Figure 13 for maps of comprehensive plan designations.

5.3.3.1 Deschutes County Comprehensive Plan

The Deschutes County Comprehensive Plan, adopted in 2011, is a statement of issues, goals, and policies meant to guide future land use and public investment decisions in the County. The Deschutes County Comprehensive Plan Map designates land use categories that allow for a range of development types within unincorporated county lands. Comprehensive Plan designations along the PBC alignment are consistent with existing zoning in the area, and include Agriculture, Rural Residential, Open Space and Conservation, Rural Industrial, and Urban Reserve Area.

5.3.3.2 Bend Comprehensive Plan

The City of Bend Comprehensive Plan, most recently updated in 2016, is a long-range planning guide for making land use decisions regarding future development and growth within Bend's UGB. Bend Comprehensive Plan Map designations are consistent with existing zoning in the Project Area, and include Commercial Limited, Commercial General, Industrial General, Industrial Light, Residential Medium Density, and Residential Standard Density. A portion of the NE 18th Street alternative alignment abuts land designated for Public Facilities.

5.3.3.3 Redmond Comprehensive Plan

Adopted in 2020, Redmond's 2040 Comprehensive Plan is a guide to future growth, development, and redevelopment of the Redmond urban area. Bend Comprehensive Plan Map designations are consistent with existing zoning in the Project Area, and include General Residential, Strip Service Commercial, Central Business District Commercial, Light Industrial, Park, High Density Residential, and Special Service Commercial.

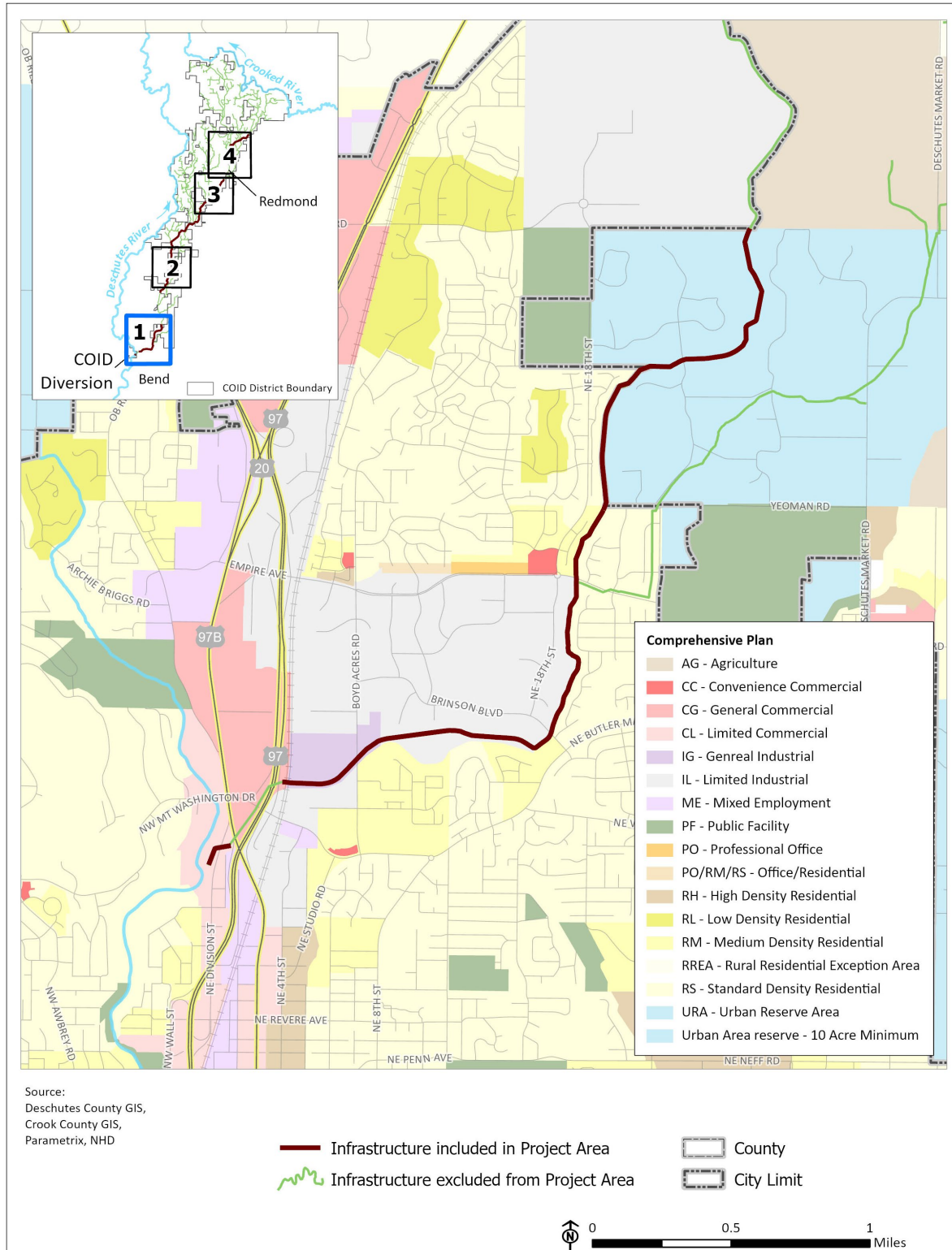


Figure 10. Comprehensive Plan Designations – Tile 1

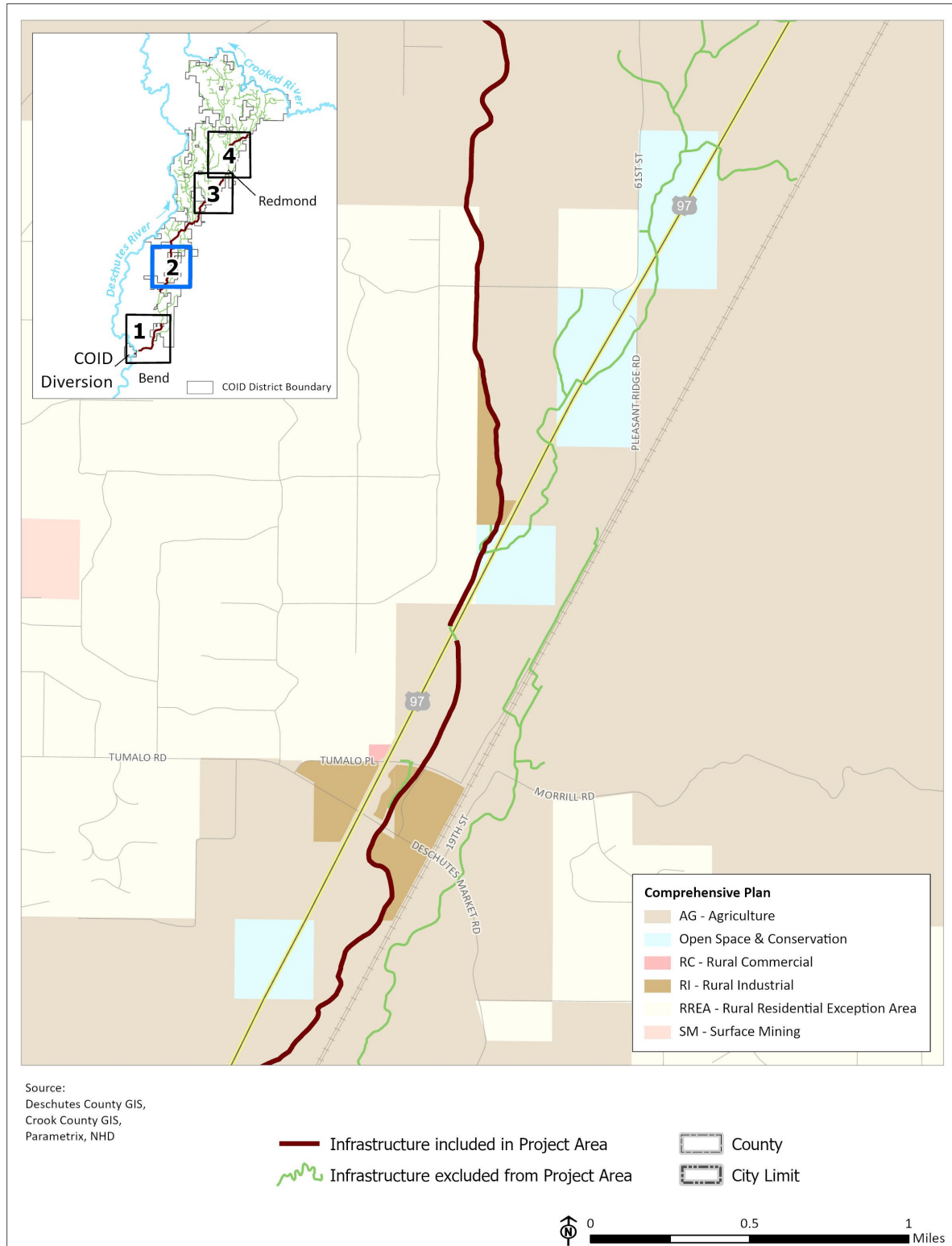


Figure 11. Comprehensive Plan Designations – Tile 2

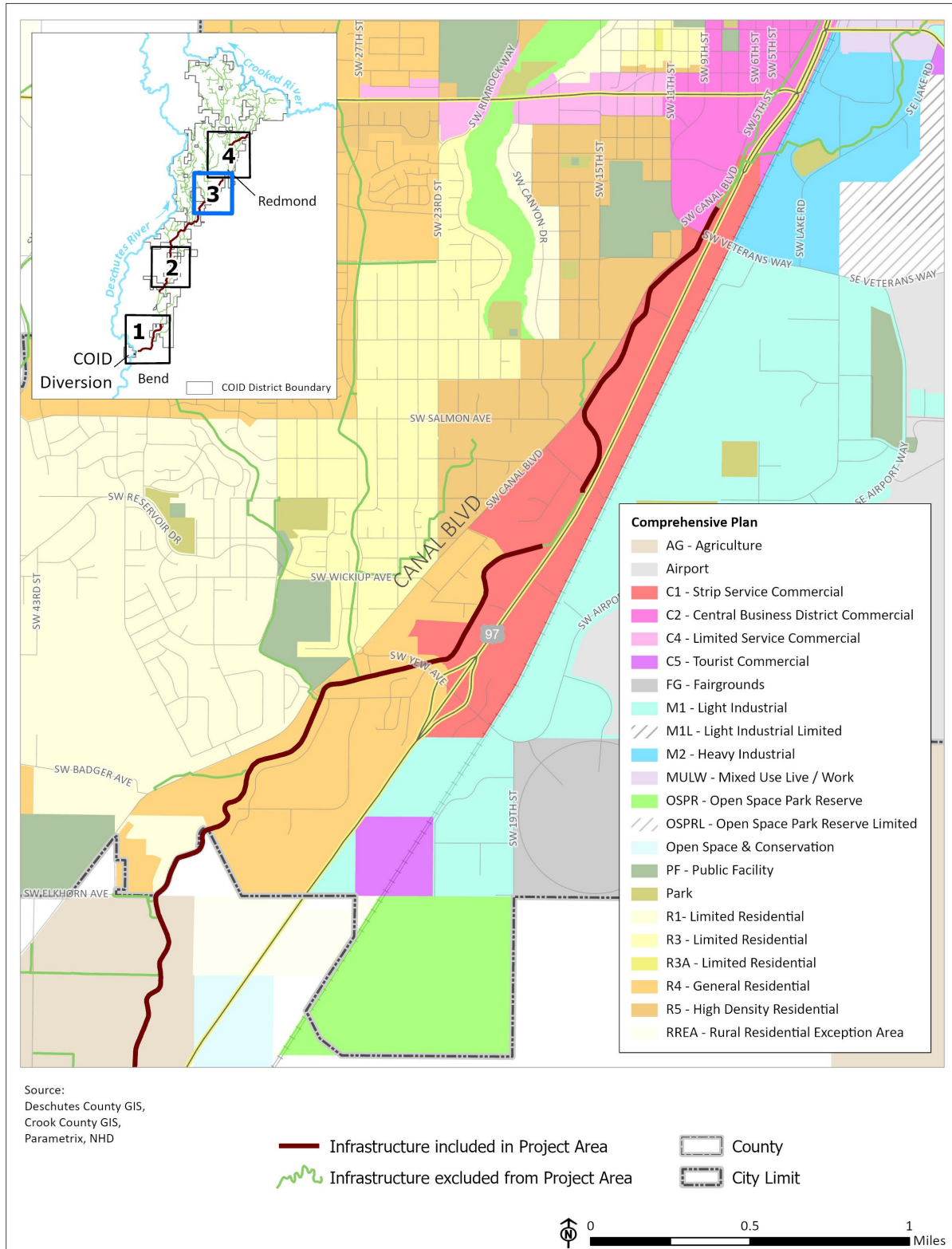


Figure 12. Comprehensive Plan Designations – Tile 3

Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

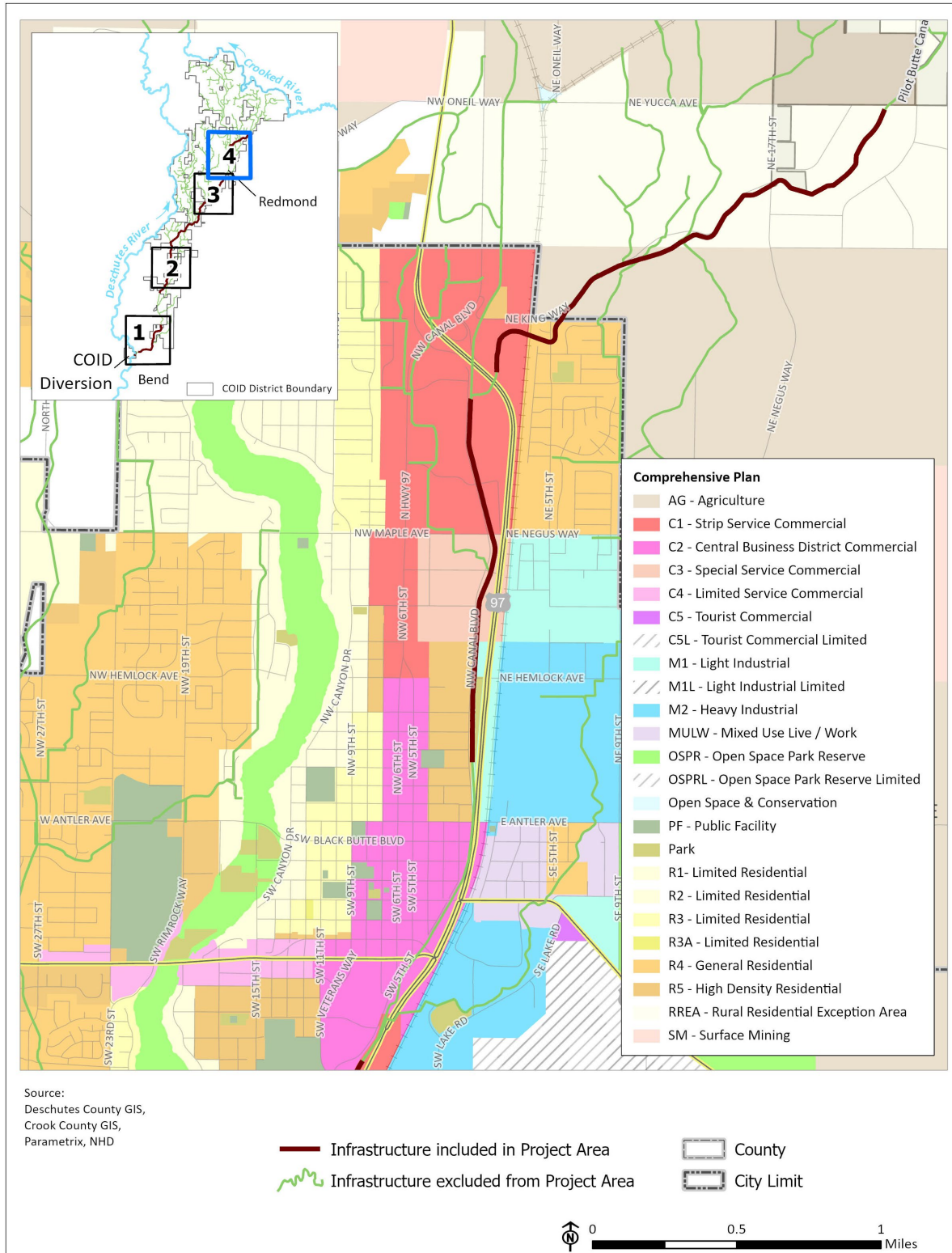


Figure 13. Comprehensive Plan Designations – Tile 4

6. IMPACT ASSESSMENT METHODOLOGY AND DATA SOURCES

6.1 Long-Term Impact Assessment Methods

All existing land uses within the Project Area are evaluated for potential long-term impacts. Project design and engineering and anticipated acquisitions and displacements are evaluated alongside property boundary maps to determine potential physical impacts. Additional impacts to other topic areas such as visual resources, vegetation, wildlife, and noise are also considered. The analysis of long-term impacts considers the permanent displacement of existing non-irrigation uses, as well as impacts to surrounding properties resulting from the conversion of land uses.

6.2 Short-Term Impact Assessment Methods

Short-term impacts are primarily related to the effects of construction during the PBC piping project that would be temporary in nature. These impacts may include increased levels of noise, dust, vibration, light pollution, and other construction impacts that are typically incompatible with existing land uses. Impacts may also occur due to detours or increased traffic due to construction disruptions, or the locations of construction staging areas on or adjacent to residential, commercial, or other land uses.

6.3 Indirect Impact Assessment Methods

Indirect impacts are changes in land use based on how the project alternatives would affect existing and future land uses in the Project Area. This analysis includes consideration of how displacements may affect future development or redevelopment potential in the Project Area, and how piping of the PBC may impact the success of agricultural land uses that rely on it for irrigation.

6.4 Cumulative Impact Assessment Methods

The cumulative impacts analysis will address the long-term and short-term cumulative impacts of the project alternatives. Other projects considered in the analysis will include major transportation, development, utility infrastructure, and environmental enhancement projects recently constructed, under development, or scheduled for construction, as well as the planned projects that are reasonably likely to be constructed.

7. ENVIRONMENTAL CONSEQUENCES

7.1 Introduction

Displacements and relocations by alternative are summarized in Table 5. For more information on displacements and relocations, see the Right-of-Way, Displacements, and Relocations Technical Report. For locations of potential displacements and relocations, see Appendix A.

Table 5. Displacements and Relocations by Alternative and Alignment Option

Alternative	Permanent Impact Footprint (acres)	Temporary Construction Footprint (acres)	Permanent (Fee) Property Impacts (acres)	Temporary Construction Property Impacts (acres)	Properties Requiring Permanent (Fee) Acquisition	Properties Requiring Temporary Construction Easement	Permanent Right-of-way Impacts (acres) ^b	Temporary Right-of-way Impacts (acres) ^c
No Action Alternative	0	0	0	0	0	0	0	0
Modernization Alternative (Full Piping)	18.3^a	212	0	163	0	284	0	1.1
Deschutes County/North Bend Option								
No Modernization within the Segment (no piping) ^d	0	0	0	0	0	0	0	0
Pilot Butte Canal Option	2 ^a	21.1	0	19.3	0	75	0	0.4
NE 18th Street Option	2.3	27.5	0.4	13.7	1	75	1.9	0
Deschutes Market Road Option	2.1	28.1	0.4	17.8	1	54	1.7	0
City of Redmond Option								
No Modernization within this segment (no piping) ^d	0	0	0	0	0	0	0	0
Pilot Butte Canal Alignment	1.6 ^a	15.7	0	4.5	0	16	0	0.17
Piping to the east in the Watermaster's Access Road	1.8	22.6	0.7	10.5	14	16	0.20	0
Piping to the west within Northwest Canal Boulevard	1.6	22	0	7.9	0	47	1.53	0

- a PBC impacts would be within the limits of the existing canal.
- b Permanent right-of-way impacts are defined as right-of-way locations where the canal does not currently exist.
- c Temporary right-of-way impacts are defined as right-of-way locations where the canal currently exists but would be disturbed for construction of the proposed project.
- d Displacements and relocations for the Deschutes County/North Bend and City of Redmond No Modernization options will be updated with impacts from energy dissipation pond construction when size and location are determined.

7.2 Long-Term Impacts

7.2.1 No Action Alternative

Under the No Action Alternative, piping of the PBC would not occur, and there would be no changes to land use within the Study Area.

7.2.2 Modernization Alternative (Full Piping)

Under the Modernization Alternative, all piping would be within the existing canal bed. There would be no acquisitions or permanent changes to land use.

The existing canal would be relocated underground, and the canal would no longer be a visible, above-ground irrigation use. There would be a minor, long-term indirect effect on residences, businesses, and recreation resources that would no longer have a view of the existing canal. See the Visual Resources Technical Report for additional details.

7.2.2.1 Deschutes County/North Bend Options

No Modernization within this Segment (No Piping)

Under this option, there would be permanent impacts associated with the construction of the energy dissipation pond at Yeoman Road. The exact size and location of the pond are to be determined.

Pilot Butte Canal Alignment (Existing Canal Route)

Under this piping option, all permanent impacts would be within the existing canal bed. There would be no acquisitions or permanent changes to land use outside of the existing canal bed.

The existing canal would be relocated underground, and the canal would no longer be a visible, aboveground irrigation use. A view of the existing canal is an amenity of many existing residences, businesses, and recreation areas; there would be a minor, long-term effect on these land uses that would no longer have a view of the existing canal. See the Visual Resources Technical Report for additional details.

This piping option would install an underground pipe and remove the existing PBC in this segment, a historic resource listed on the NRHP and identified in the Deschutes County Comprehensive Plan Goal 5 Inventory. While the NRHP-listed portion of the canal would be removed, it would remain as open space once construction is completed. This would create a long-term moderate adverse effect on land use within the Study Area in this portion of the alignment. See the Cultural Resources Technical Report for details about cultural resources impacts and Section 106 compliance.

NE 18th Street Option and Old Deschutes Road Option

Both of these options share one permanent property impact. A permanent, partial property acquisition of 0.4 acres would occur on a parcel owned by the City of Bend (Deschutes County Map Taxlot Number 1712100000100, Figures A-2 and A-3). The impacted parcel is currently vacant land but is within the Juniper Ridge Overlay Special Planned District.

There is no existing irrigation infrastructure in these areas, and all modernization improvements would be located underground at the conclusion of construction. There would be no permanent impact created by changes to visual or aesthetic features on land uses in these areas; however, permanent use restrictions would be in place within easements surrounding the pipeline.

Under both piping options, the existing PBC would remain in place, but would be permanently dewatered. While the canal is currently dry outside of the irrigation season, this alternative would create a minor indirect long-term impact by removing water from the canal on a permanent basis. Removal of water in the canal would alter the land use of the existing alignment, as it would no longer be used for the conveyance of irrigation water and would alter the setting of residences in this portion of the alignment during irrigation season.

7.2.2.2 City of Redmond Options

No Modernization within this Segment (No Piping)

Under this option, there would be permanent impacts associated with the construction of the energy dissipation pond at Dogwood Avenue. The exact size and location of the pond are to be determined. There would be no other permanent impacts to land use under this option.

Pilot Butte Canal Alignment (Existing Canal Route)

Under this piping option, all permanent impacts would be within the existing canal bed. There would be no acquisitions or permanent changes to land use outside of the existing canal bed.

The existing canal would be relocated underground, and the canal would no longer be a visible, above-ground irrigation use. There would be a minor, long-term indirect effect on residences, businesses, and recreation resources that would no longer have a view of the existing canal. See the Visual Resources Technical Report for additional information.

This piping option would remove the existing PBC in this segment, a historic resource listed on the NRHP. While the NRHP-listed portion of the canal would be removed, it would remain as open space once construction is completed. This would create a long-term moderate adverse effect on land use in the Study Area within this portion of the alignment.

Piping to the East in the Watermaster's Access Road

Under this piping option, there would be permanent impacts to 14 parcels, including both City of Redmond land and privately owned properties. These impacts would extend outside of existing COID easements and total 0.7 acres. Land uses on impacted parcels include medical office, senior living, commercial, and residential uses. There would not be any displacements of residents, businesses, parking, or access, and no impacts to structures are anticipated.

Under this piping option, the existing PBC would remain in place, but would be permanently dewatered. While the canal is currently dry outside of the irrigation season, this alternative would create a minor long-term indirect impact by removing water from the canal on a permanent basis, altering the visual character of residences, businesses, and recreation resources in this portion of the alignment during irrigation season.

Piping to the West within Northwest Canal Boulevard

Under this piping option, there would be no permanent impacts and there would not be any displacements of residents or businesses.

Under this piping option, the existing PBC would remain in place, but would be permanently dewatered. While the canal is currently dry outside of the irrigation season, this alternative would create a minor long-term indirect impact by removing water from the canal on a permanent basis, altering the visual character of residences, businesses, and recreation resources in this portion of the alignment during irrigation season.

7.3 Construction Impacts

For all alternatives and options, excluding the No Action Alternative, construction activities and equipment would create short-term visual, noise, and vibration impacts to land uses surrounding the PBC alignment. For more information, see the Visual Resources Technical Report and the Noise and Vibration Technical Report. Road closures and traffic detours would occur where construction activities take place in areas where the PBC crosses road right-of-way or where piping would be installed in road right-of-way. For more information, see the Traffic Technical Report.

7.3.1 Modernization Alternative (Full Piping)

Under the Modernization Alternative, there would be temporary construction easements (TCEs) required for 284 properties, totaling 163 acres. This includes impacts to 253 private properties, 7 City of Bend properties, 11 City of Redmond properties, 5 Deschutes County properties, 2 North Unit Irrigation District properties, 1 Oregon Department of Transportation property, 1 Oregon Parks and Recreation Department property, and 4 federal properties. Impacted land uses include commercial, industrial, residential, agriculture, recreation, and open space. Access to and use of these portions of these properties may be limited during construction activities. No impacts to structures are anticipated.

Noise, vibration, and dust generated during construction activities, especially blasting, may impact sensitive land uses, such as residential developments and health care facilities. See the Noise and Vibration Technical Report for additional information. Exact locations of blasting activities will be determined with additional geotechnical investigations.

Preliminary geotechnical investigations in the northern portion of the alignment (King Way Project Group) have been evaluated during design. In order to reach approximately 15 feet of depth below existing grade for the pipe trench, the bottom two to ten feet of the pipe trench would require blasting. The variation is due to different geologic conditions as the alignment progresses from south to north in the King Way Project Group. Although detailed geological investigations have not been completed along the entire alignment, it is anticipated that similar ground conditions would be encountered through the entirety of the alignment.

7.3.1.1 Deschutes County/North Bend Option

No Modernization within this Segment (No Piping)

Under this option, there would be temporary impacts associated with the construction of the energy dissipation pond at Yeoman Road. The exact size and location of the pond are to be determined.

Pilot Butte Canal Option

Under this piping option, there would be TCEs required for 75 properties, totaling 19.3 acres. All impacted properties are privately owned. Impacted land uses are primarily single-family residential.

NE 18th Street Option

Under this piping option, there would be TCEs required for 75 properties, totaling 19.3 acres. Impacted properties include 72 private properties, 1 Bend School District Property, and 2 City of Bend properties. Impacted land uses are single-family residential, parks and recreation, school, and commercial.

Old Deschutes Road Option

Under this piping option, there would be TCEs required for 54 properties, totaling 17.8 acres. Impacted properties include 50 private properties and 4 City of Bend properties. Impacted land uses are primarily single-family residential.

7.3.1.2 City of Redmond Option

No Modernization within this Segment (No Piping)

Under this option, there would be temporary impacts associated with the construction of the energy dissipation pond at Dogwood Avenue. The exact size and location of the pond are to be determined.

Pilot Butte Canal Alignment (Existing Canal Route)

Under this piping option, there would be TCEs required for 16 properties, totaling 4.5 acres. Impacted properties include 12 private properties, 1 State of Oregon property, and 3 City of Redmond properties. Land uses on impacted parcels include medical office, senior living, commercial, recreation, and residential uses.

Piping to the East in the Watermaster's Access Road

Under this piping option, there would be TCEs required for 16 properties, totaling 10.5 acres. Impacted properties include 12 private properties, 1 State of Oregon property, and 3 City of Redmond properties. Land uses on impacted parcels include medical office, senior living, commercial, recreation, and residential uses.

Piping to the West within Northwest Canal Boulevard

Under this piping option, there would be TCEs required for 47 properties, totaling 7.9 acres. Impacted properties include 41 private properties, 1 State of Oregon property, 2 Central Oregon Electrical Co-Op properties, and 3 City of Redmond properties. Land uses on impacted parcels include hospital and medical offices, senior living, commercial, recreation, and residential uses.

7.3.2 Potential Off-Site Staging Areas

The construction contractor may use one or more off-site staging areas outside the Study Area to store or assemble materials that would then be transported by truck to the construction site. Off-site staging could occur with any of the alternatives. Whether, where, and how to use such sites would be the choice of the contractor; therefore, the actual site or sites cannot be known at this time. Given this uncertainty, detailed analysis of impacts is not possible at this time. It is assumed that because of

regulatory and time constraints on the contractor, any site they choose would need to be already developed with road access. It is also assumed that the contractor would be responsible for relevant permitting or mitigation that could be required for use of a chosen site. The EIS identifies the types of impacts that could occur from off-site staging, based on the above assumptions. This analysis is not intended to “clear” any specific site, but rather to ensure disclosure of the general types of impacts.

If a contractor chooses to use an off-site staging area, the following local, state and federal regulations could apply. Deschutes County, City of Bend, or City of Redmond zoning, development standards, and comprehensive plan documents would apply to any staging areas. Permits from these local and county agencies may be required for temporary occupancy and utility connections.

7.4 Cumulative Effects

No cumulative impacts are expected from the Modernization Alternative or any of the alignment options. The Pilot Butte Canal Piping Project is not anticipated to result in long-term changes to land use. Temporary occupancies needed during construction would be returned to their pre-construction conditions.

7.5 Compliance with Laws, Regulations, and Standards

7.5.1 State of Oregon

7.5.1.1 Statewide Land Use Planning Goals

The Project is consistent with Oregon’s Statewide Land Use Planning Goal 3, Agricultural Lands. Piping of the PBC and improved reliability of water delivery to COID patrons would support agricultural land uses in the Study Area and in lands served by COID and would improve reliability for North Unit Irrigation District patrons.

The North Bend and Redmond PBC piping options that propose piping in the existing PBC alignment do not support Statewide Land Use Planning Goal 5. Both of these options would remove segments of the PBC that are currently listed in the NRHP. Other alignment options would be supportive of Goal 5, as they would leave the historic canal sections in place. Construction activities for all piping options have the potential for impacts to archaeological resources. For more information on impacts to the historic built environment and archaeological resources, see the Cultural Resources Technical Report.

7.5.2 Deschutes County

7.5.2.1 Comprehensive Plan

The Project is consistent with the Deschutes County Comprehensive Plan’s Agricultural Lands Policies. Piping of the PBC and improved reliability of water delivery to COID patrons would preserve and maintain agricultural land uses in the Study Area and in lands served by COID within the county.

The North Bend Piping option does not support the Historic and Cultural Resources Policies in the Deschutes County Comprehensive Plan, which include “encouraging the preservation of lands with significant historic or cultural resources.” This option would remove a segment of the PBC that is currently listed on the Comprehensive Plan’s Goal 5 Inventory of Cultural and Historic Resources.

7.5.2.2 Development Code

The Project is consistent with the Deschutes County Development Code. Zoning designations within Deschutes County, including EFUAL, EFUTRB, RI, MUA10, OS&C, and RR10, identify the operation, maintenance, and piping of existing irrigation systems as an outright permitted use within these zones.

The SR 2-1/2 zone does not list irrigation infrastructure as an outright permitted, conditional, or prohibited use. Further coordination with the County to determine the proper permitting procedures for piping in this segment of the canal is needed.

7.5.3 City of Bend

7.5.3.1 Comprehensive Plan

The Project is consistent with the Natural Features and Open Space goals and policies of the City of Bend Comprehensive Plan. The plan identifies irrigation canals as an example of “corridor or linear” open space that is found within the city. While piping of the PBC would remove the canal as a linear open space water feature, the land above the piped canal alignment would remain a vegetated, undeveloped open space feature. Per Policy 2-10, the City would coordinate with COID to protect open space within the city.

7.5.3.2 Development Code

City of Bend zoning designations, including CL, CG, RM, RS, and PF, do not identify irrigation infrastructure as an outright permitted, conditional, or prohibited use within the zones. Irrigation district facilities are permitted in the IG and IL zones. Further coordination with City of Bend is recommended to determine the appropriate permitting procedures for each of these zones.

Potential permitting process may include:

- Type I Minimum Development Standards Review, which may be decided administratively by the Community and Economic Development Director without public notice or hearing.
- Type II Site Plan Review, which may be decided administratively by the Community and Economic Development Director with public notice. The Community and Economic Development Director may, at their discretion, elevate this to a Type III process to include a public hearing before Planning Commission or the Hearings Body.
- Type II Conditional Use Review, which may be decided administratively by the Community and Economic Development Director with public notice. The Community and Economic Development Director may, at their discretion, elevate this to a Type III process to include a public hearing before Planning Commission or the Hearings Body.

7.5.4 City of Redmond

7.5.4.1 Comprehensive Plan

The Project would comply with the City of Redmond Comprehensive Plan Recreational Needs goals, policies, and principles. The plan includes policies to utilize canals as recreation linkages for trails throughout the city and to coordinate with COID to provide a connected trail network. The plan also

includes a principle that multiuse trails shall be provided adjacent to canals and laterals, subject to COID review and approval. Piping of the canal would create additional linear space that may be used for a future trail alignment, if an easement or use agreement can be obtained from COID. COID should coordinate with the City of Redmond to ensure that the Project allows for construction of future trails within their easements after completion of the piping project.

7.5.4.2 Development Code

City of Redmond zoning designations, including C1, C2, C3, CG, and RM, do not identify irrigation infrastructure as an outright permitted, conditional, or prohibited use within the zones. Further coordination with City of Redmond is recommended to determine the appropriate permitting procedures for each of these zones. The UH-10 zone identifies the operation, maintenance, and piping of existing irrigation systems as an outright permitted use.

Potential permitting processes may include:

- Site and Design Review, which is a land use action that may be decided administratively by the Community Development Director with or without public notice. The Community Development Director may, at their discretion, elevate this to a public hearing before the Hearings Body.
- Conditional Use Review, which is a land use action that may be decided administratively by the Community Development Director with or without public notice. The Community Development Director may, at their discretion, elevate this to a public hearing before the Hearings Body.

7.6 Conclusion

The NE 18th Street, Old Deschutes Road, Watermaster's Access Road piping options would all result in permanent partial acquisitions of properties in the Study Area. All piping alternatives and options would result in temporary impacts to land uses along the PBC alignment during construction of the piping project. Both the North Bend and Redmond PBC piping options would result in the removal of historic resources listed on the NRHP, creating long-term major adverse effects.

8. MITIGATION MEASURES

For properties that would experience permanent impacts, compensation and relocation assistance described in the Right-of-Way, Relocations, and Displacements Technical Report would mitigate the effects on affected property owners and tenants. Compliance with local land use plans, design guidelines, and standards would provide additional mitigation.

Mitigation for long-term adverse visual impacts may include restoration of contours and revegetation after construction is complete and installation of trails, vegetated corridors, or other linear open space features that create visual interest in the absence of the open canal. For more information on visual impact mitigation measures, see the Visual Resources Technical Report.

Mitigation for temporary construction impacts may include best management practices to reduce noise and vibration, such as equipment mufflers, and limiting construction times to certain hours. It is recommended that a blasting plan be developed for each area where blasting would be required. Adjacent and nearby property owners and tenants should be notified before construction activity begins.

For more information on noise and vibration impact mitigation measures, see the Noise and Vibration Technical Report.

Mitigation for impacts to historic resources is detailed in the Cultural Resources Technical Report. Please refer to individual technical reports for additional mitigation measures for specific land uses including (but not limited to) Noise and Vibration, Parks and Recreation, Socioeconomic, and Traffic.

9. CONTACTS AND COORDINATION

Peter Gutowski, Deschutes County Community Development Director.

10. PREPARERS

Name	Professional Affiliation	Education	Years of Experience
Cassandra Dobson	Parametrix	MURP, Land Use Specialty BA Political Science	6

11. REFERENCES

- City of Bend. 2021. City of Bend Comprehensive Plan. Accessed August 2023.
<https://bend.municipal.codes/CompPlan>.
- City of Bend. 2023a. City of Bend Development Code. Accessed August 2023.
<https://bend.municipal.codes/BDC>.
- City of Bend. 2023b. City of Bend Community Development Data Explorer. Accessed August 2023.
<https://bendoregon.maps.arcgis.com/apps/webappviewer/index.html?id=e9ee48099785425f82f23bf92473b0de>.
- City of Redmond. 2020. Redmond 2040 Comprehensive Plan. Accessed August 2023.
<https://www.redmondoregon.gov/home/showpublisheddocument/22576/637528649112970000>.
- City of Redmond 2023a. City of Redmond Development Code. Access August 2023.
<https://www.redmondoregon.gov/home/showpublisheddocument/3426/638118904341770000>.
- City of Redmond. 2023b. City of Redmond Interactive Map. Accessed August 2023.
<https://redmondoregon.maps.arcgis.com/apps/webappviewer/index.html?id=e48ab340ca2c4c748acca76122155b41>.
- Deschutes County. 2011. Deschutes County Comprehensive Plan. Accessed August 2023.
https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/11807/comprehensive_plan_chapter_2_resource_management.pdf.
- Deschutes County. 2023a. Deschutes County Zoning Ordinance. Accessed August 2023.
https://deschutescounty.municipalcodeonline.com/book?type=ordinances#name=TITLE_18_COUNTY_ZONING.
- Deschutes County. 2023b. Deschutes DIAL Property Information. Accessed August 2023.
<https://dial.deschutes.org/Real/InteractiveMap>.
- DLCD (Oregon Department of Land Conservation and Development). 2023. Oregon's Statewide Land Use Planning Goals. Accessed September 2023. <https://www.oregon.gov/lcd/op/pages/goals.aspx>.
- NRCS, USDA (Natural Resources Conservation Service, United States Department of Agriculture). 2020. Smith Rock-King Way Infrastructure Modernization Project. Accessed October 8, 2023.
https://img1.wsimg.com/blobby/go/4c8b915d-c9c0-4a10-86d6-3ac6eb749f65/downloads/COID%20Final%20Plan%20EA%207.8.2020_compress.pdf?ver=1608009561477.

Appendix A

Displacement and Relocation Figures



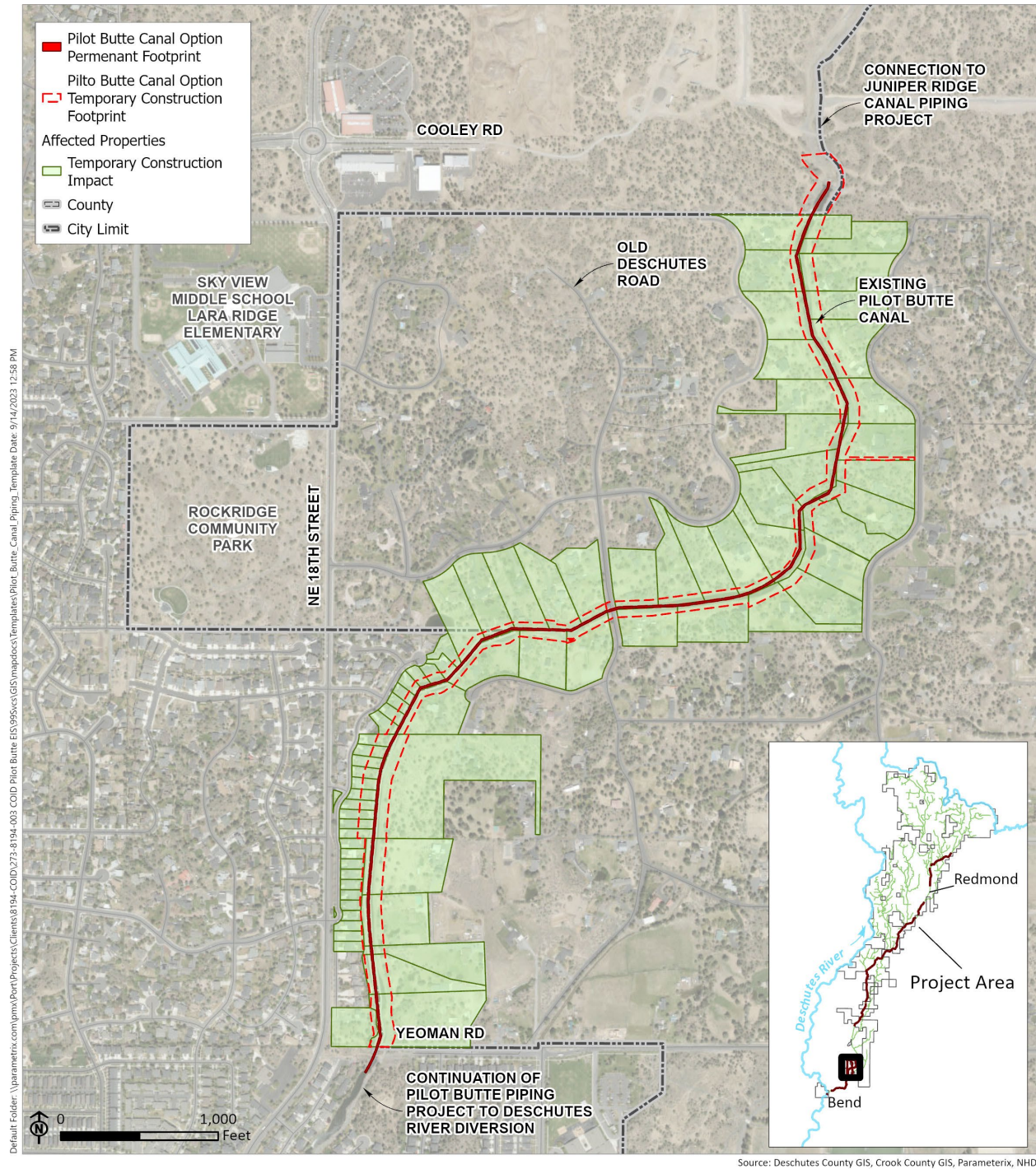


Figure A-1.

Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

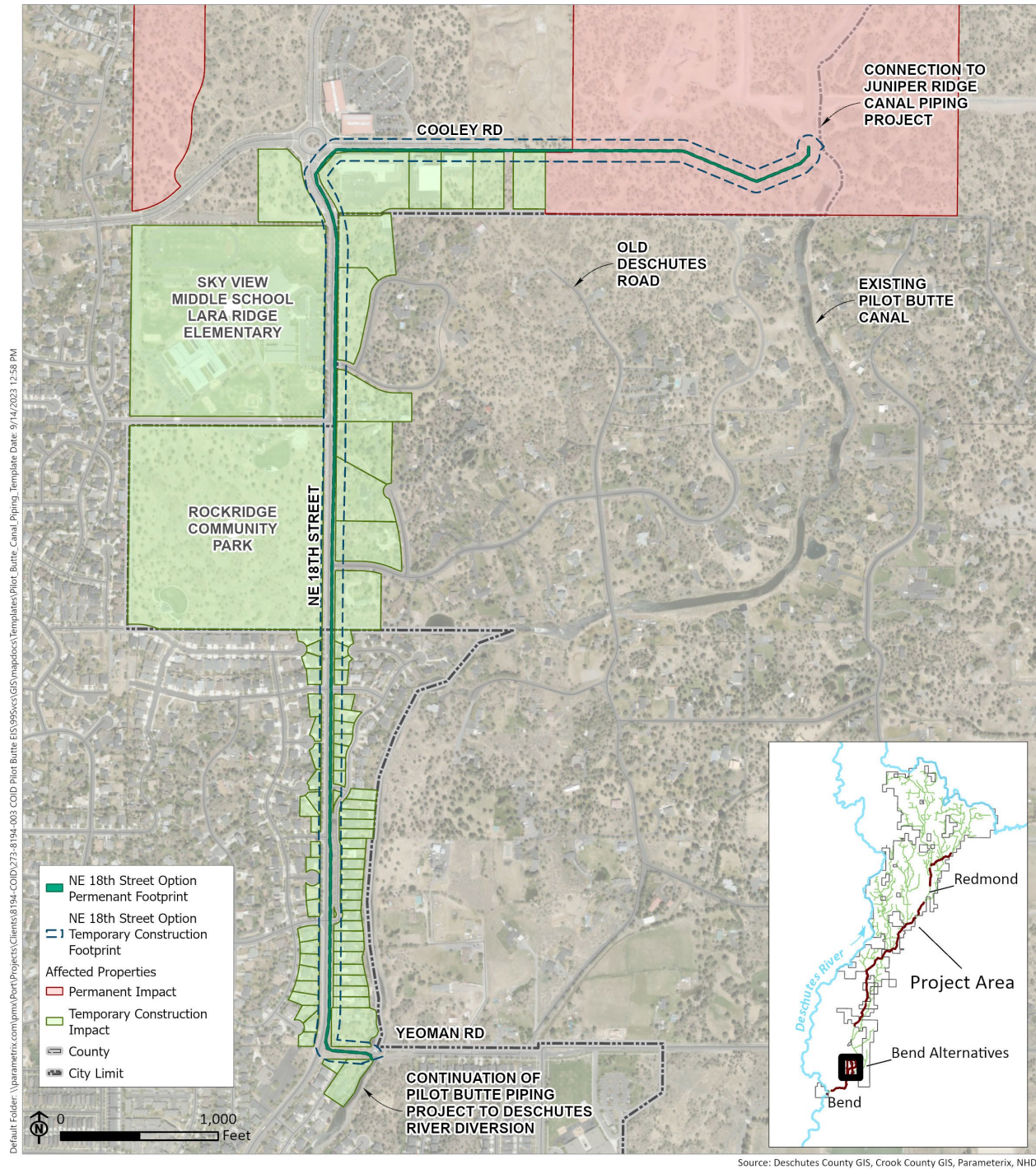


Figure A-2.

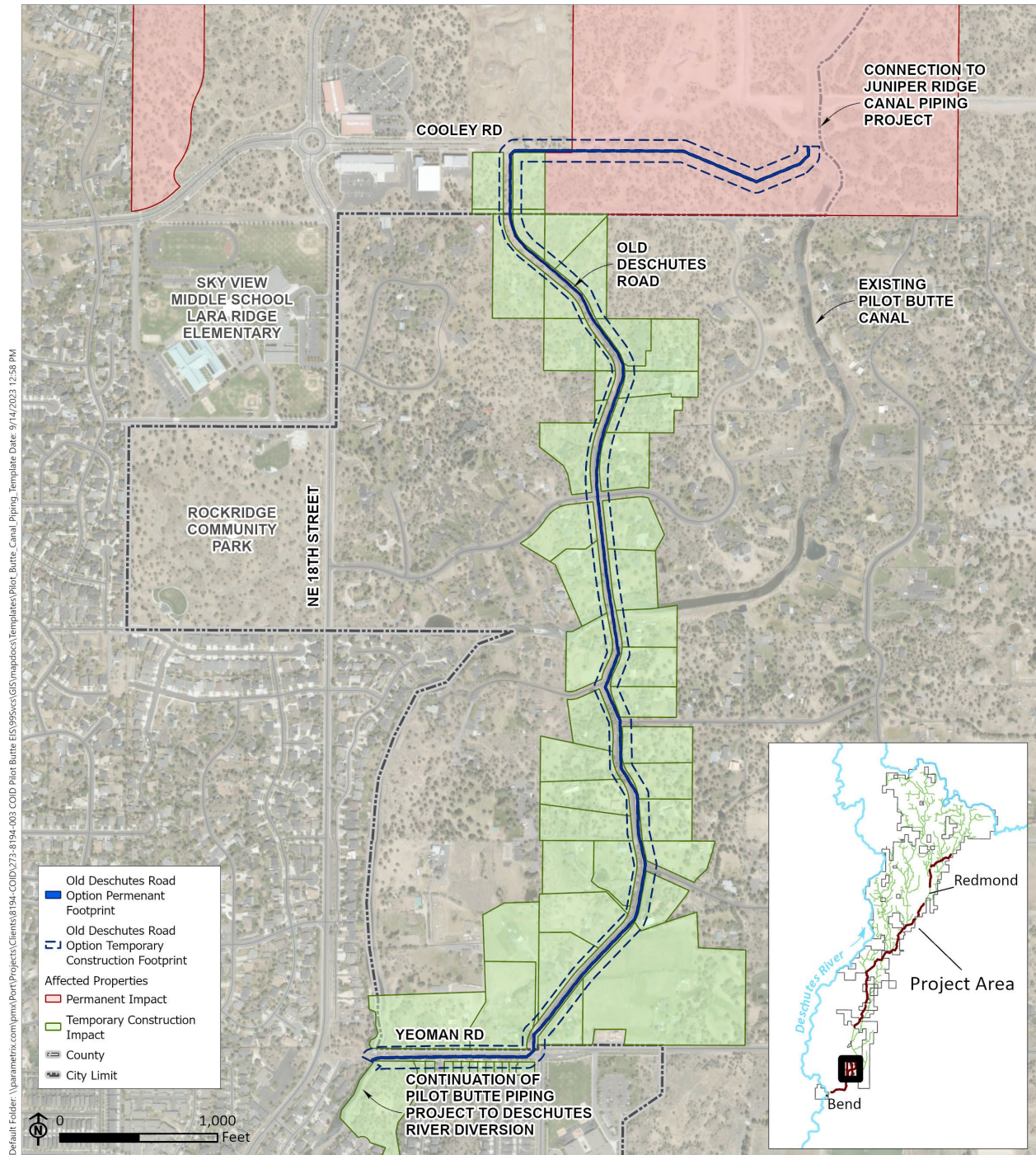


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Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

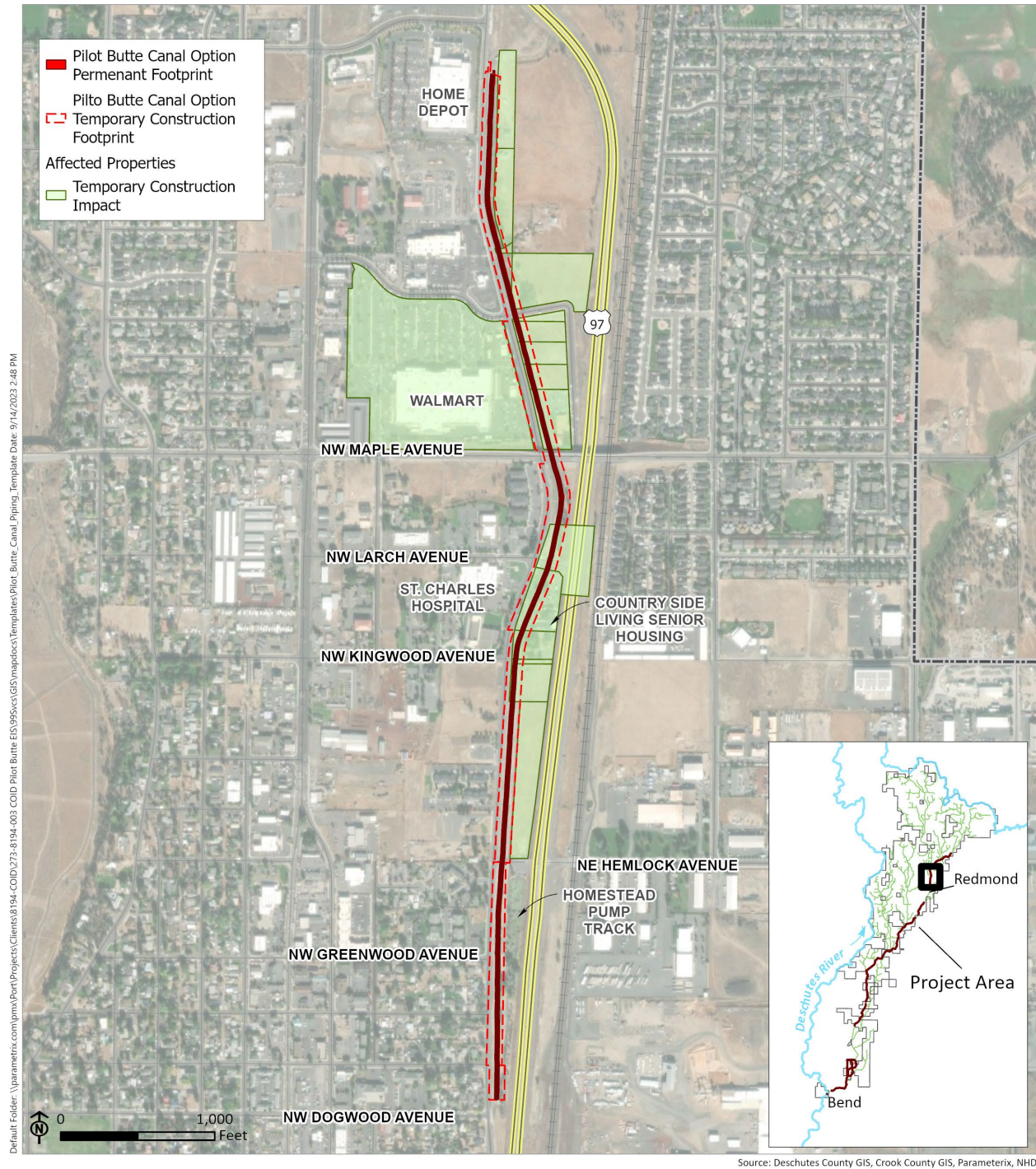


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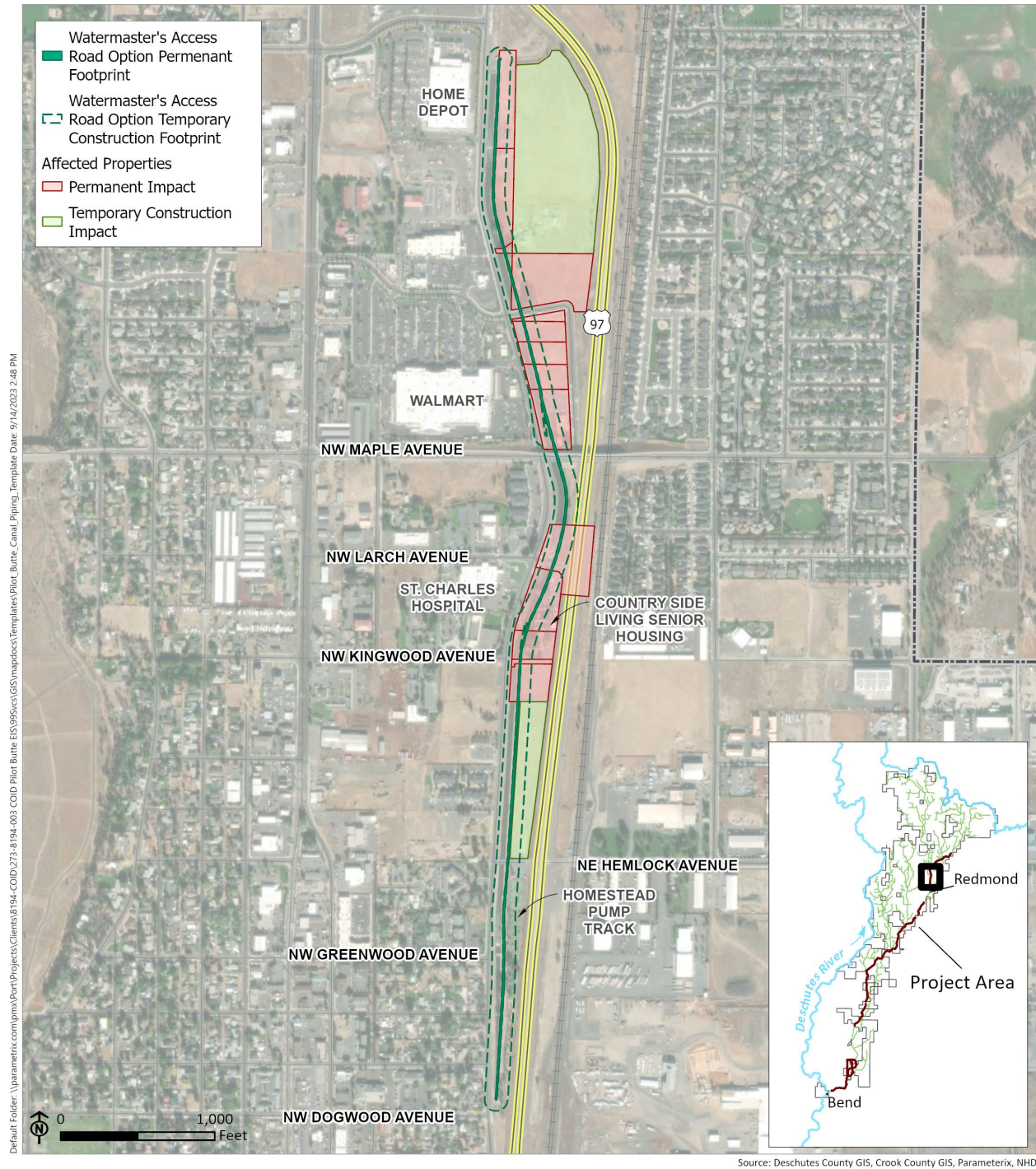


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Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

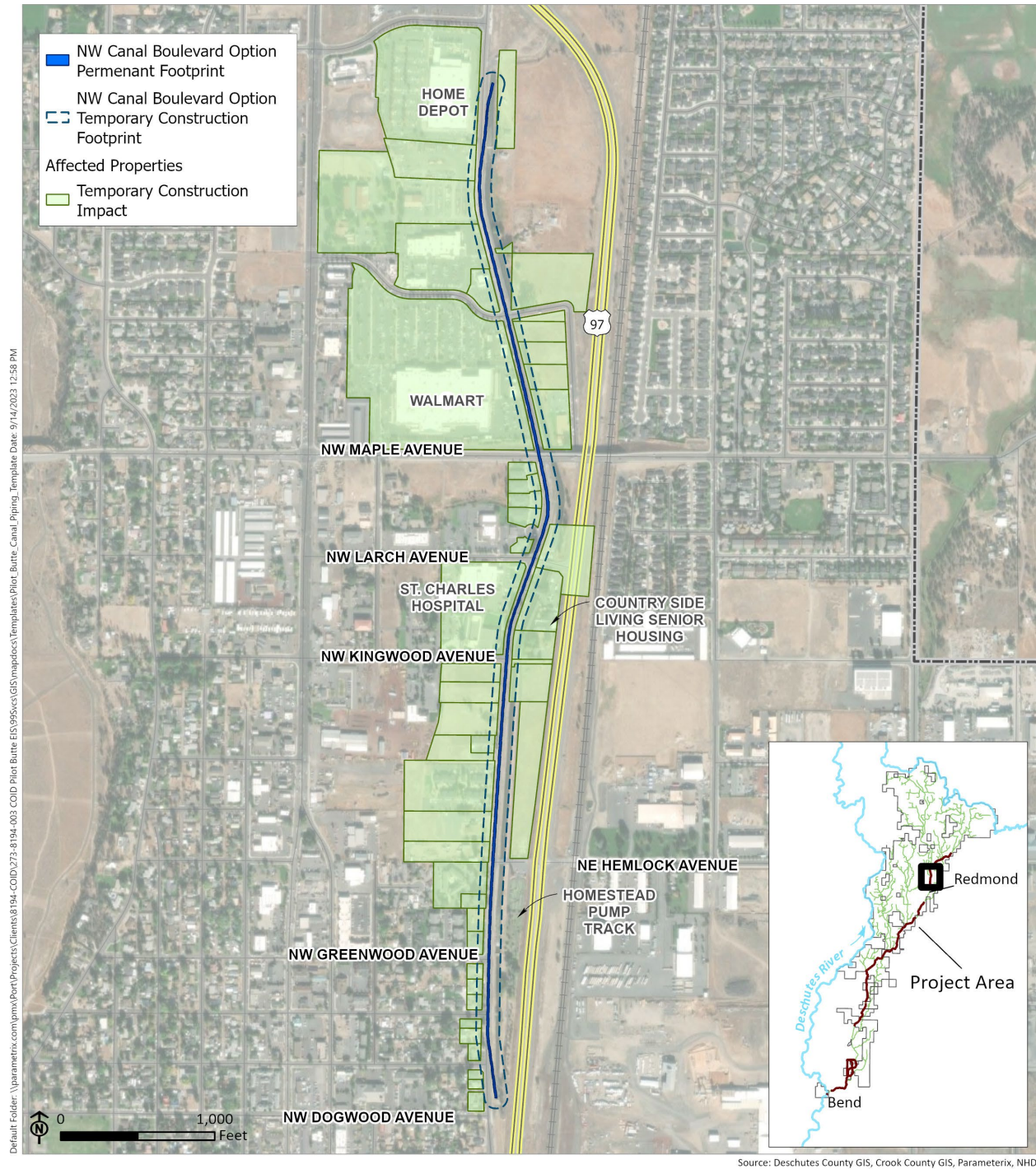


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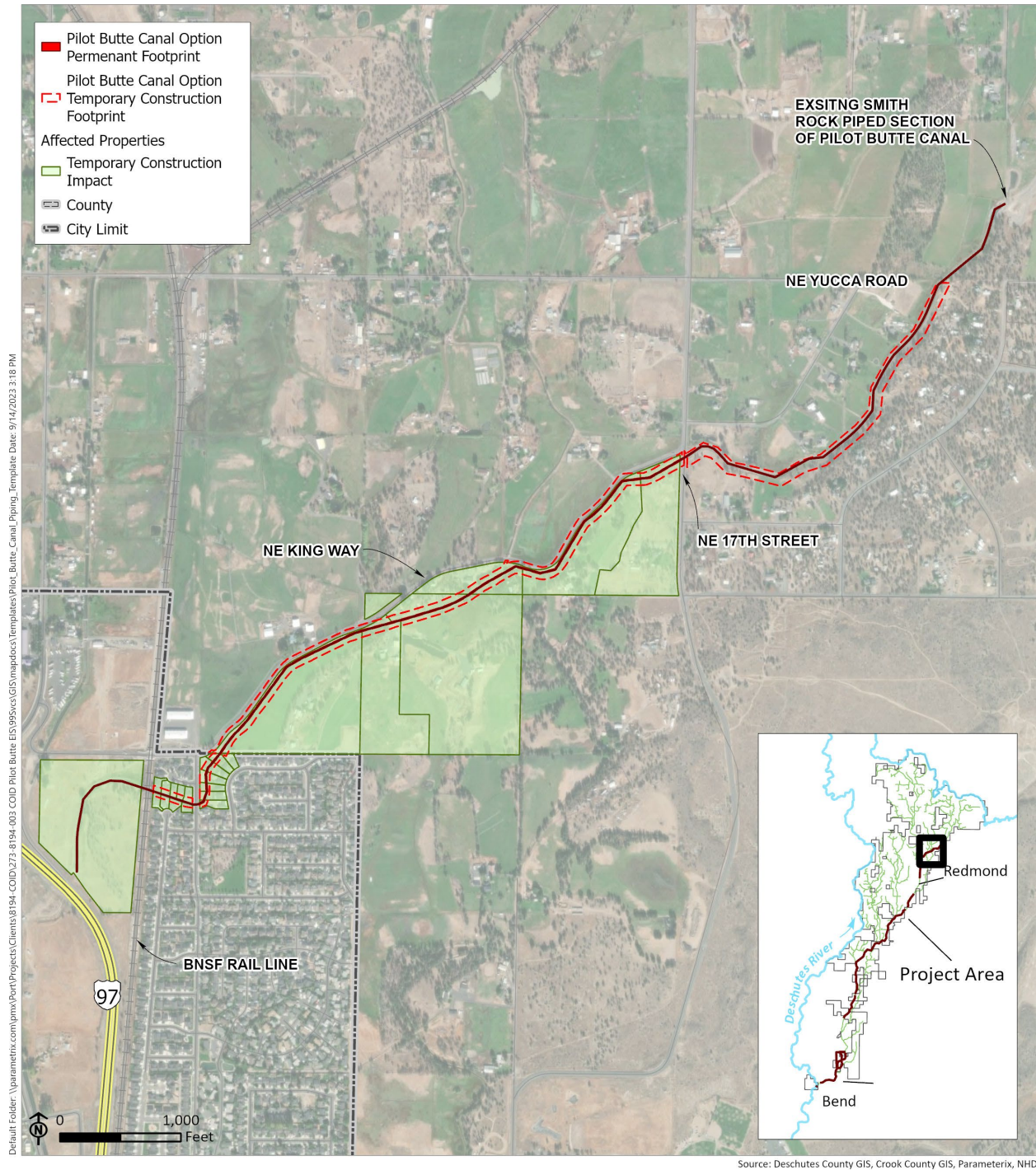


Figure A-7.

Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

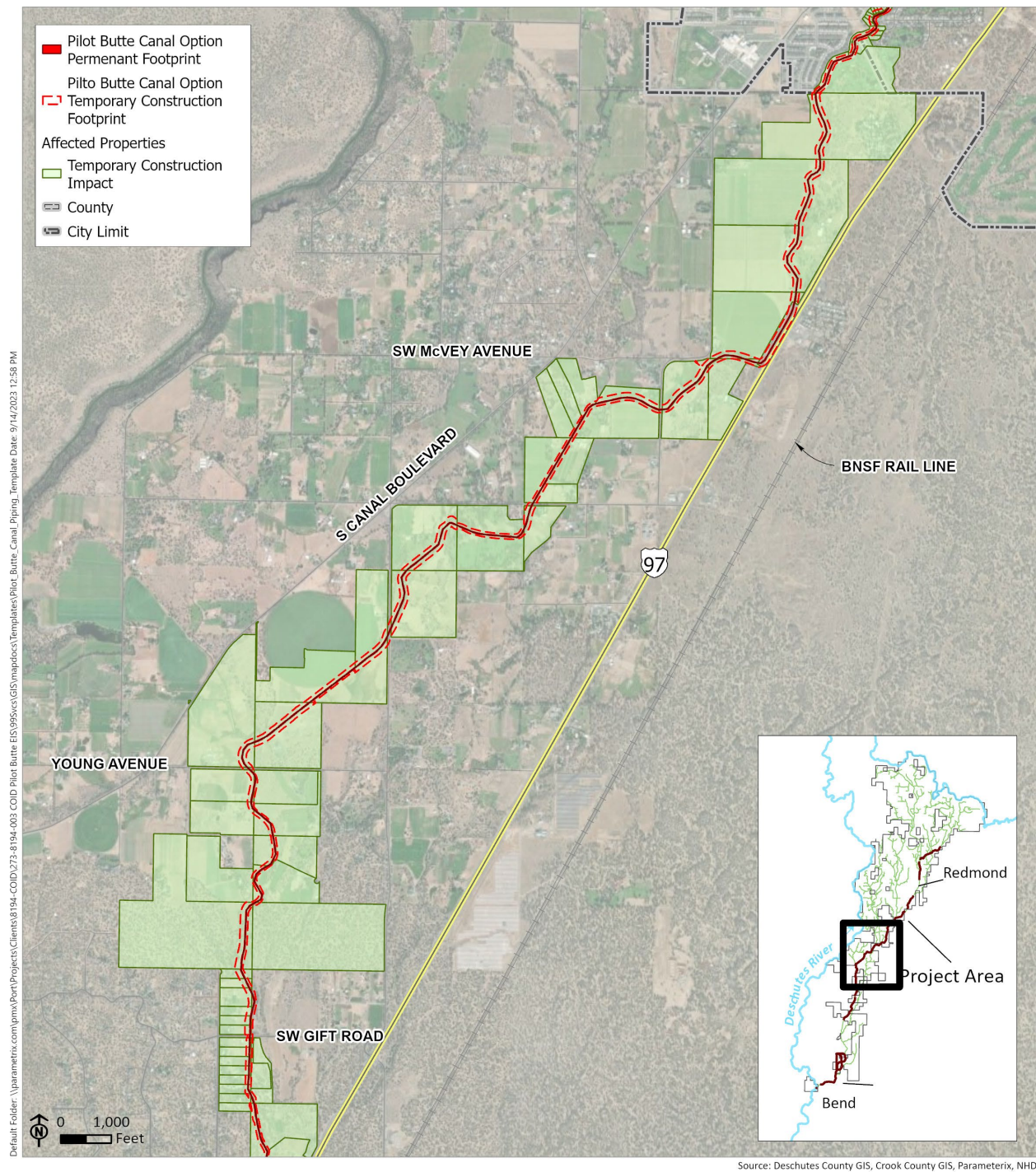


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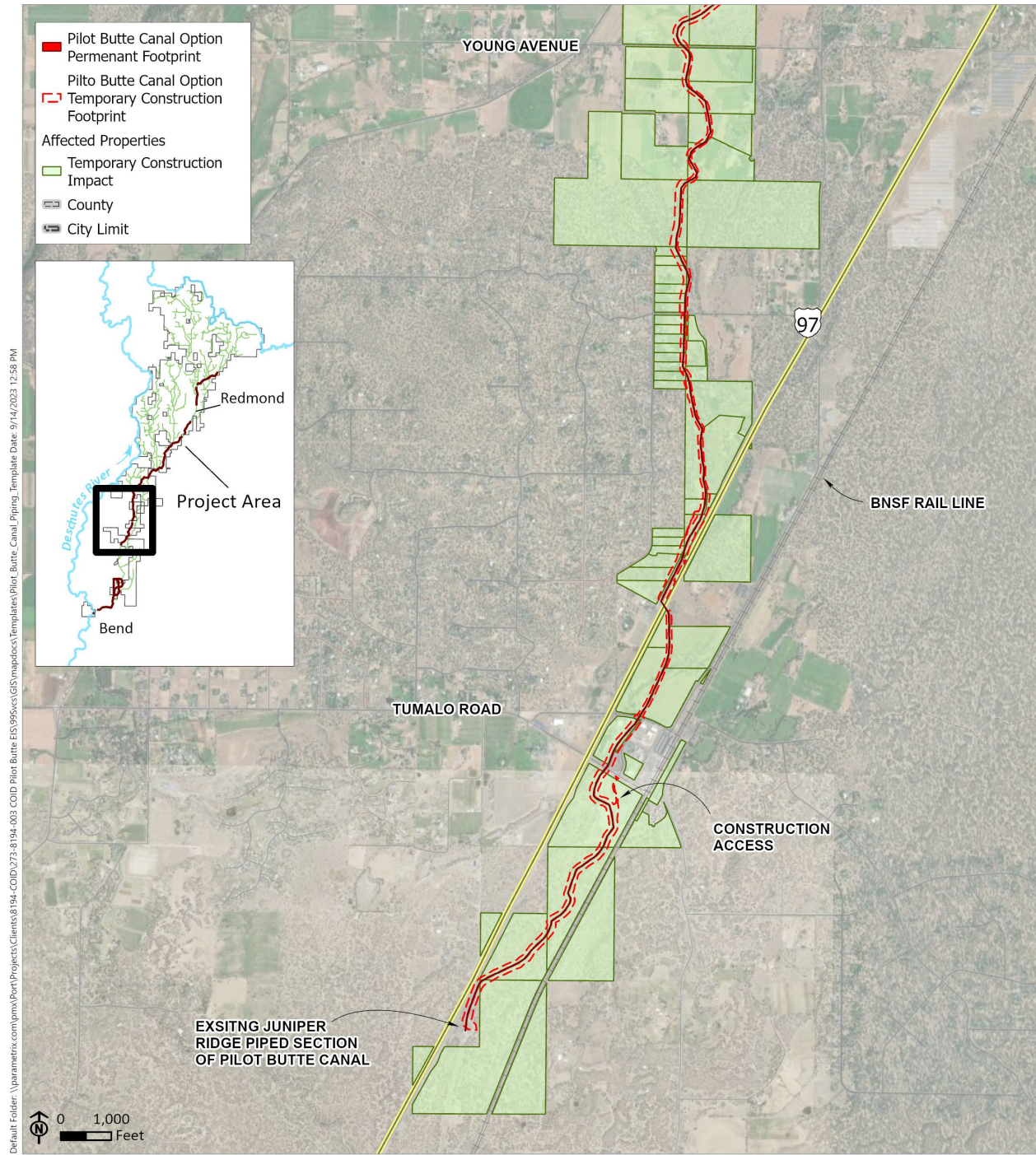


Figure A-9.

Central Oregon Irrigation District
Pilot Butte Canal EIS
Draft Land Use Technical Report
Central Oregon Irrigation District

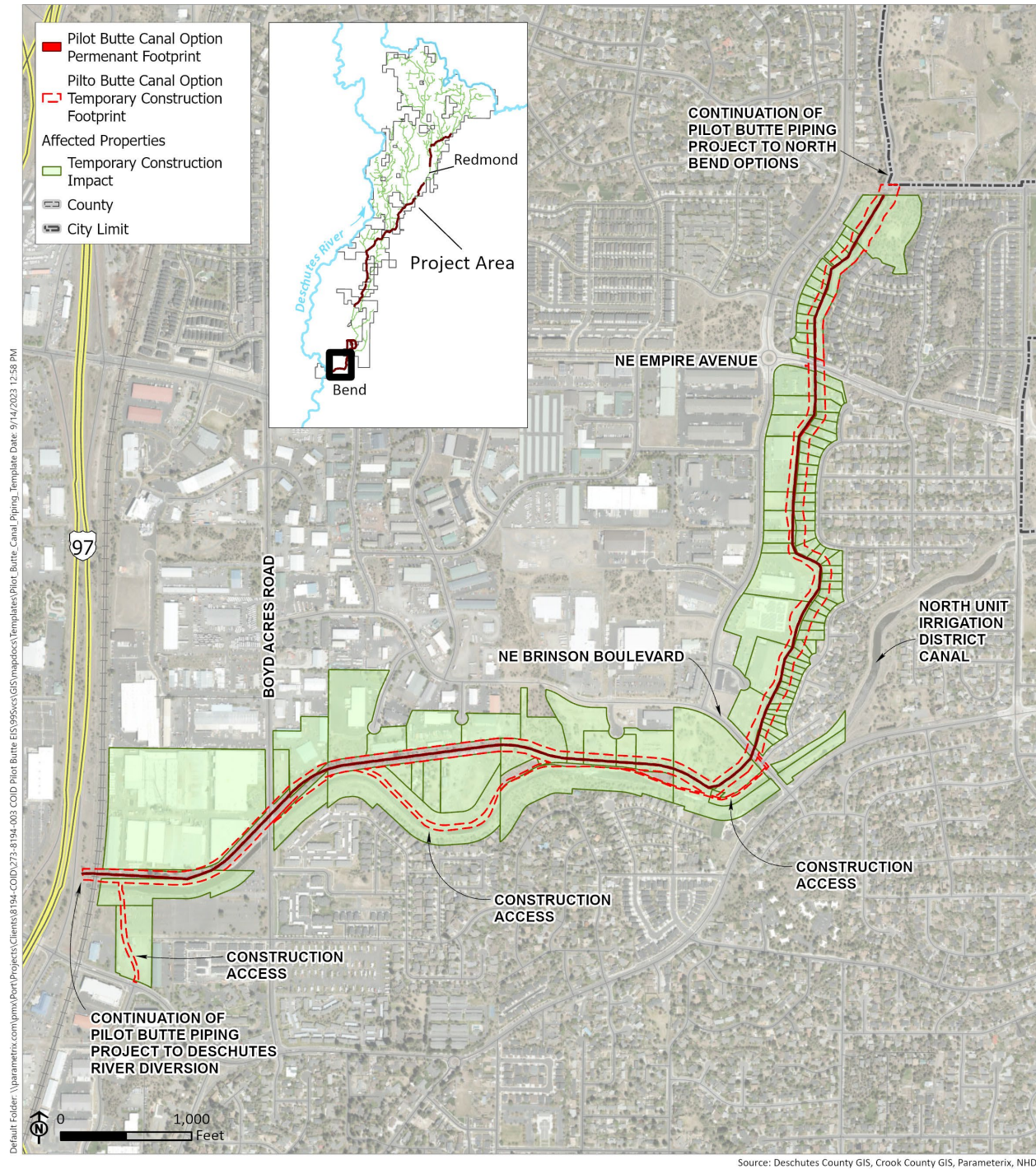


Figure A-10.