



Central Oregon Irrigation District Pilot Butte Canal EIS Draft Visual Resources 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 Visual Resources Technical Report

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CERTIFICATION

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ACRONYMS, INITIALISMS, AND ABBREVIATIONS

BLM	Bureau of Land Management
COID	Central Oregon Irrigation District
District	Central Oregon Irrigation District
EIS	environmental impact statement
GIS	geographic information system
KOP	key observation point
LM	landscape management combining zone
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OAR	Oregon Administrative Rules
OS&C	open space and conservation
PA	programmatic agreement
PBC	Pilot Butte Canal
Project	Pilot Butte Canal Project
ROW	right-of-way
SHPO	State Historic Preservation Office
UGB	urban growth boundary
USDA	U.S. Department of Agriculture
VCR	visual contrast rating

EXECUTIVE SUMMARY

The Pilot Butte Canal (PBC) is an open canal that passes through a range of visual settings along its length, including urban development, residential neighborhoods, agriculture, and open space. In some areas it is immediately adjacent to existing homes, trails, and parks, where some people consider it as a water feature during the irrigation season, enhancing the aesthetic environment. In other areas, the canal is difficult to see because of surrounding vegetation or topography.

Long-term adverse impacts on visual resources in the Study Area ranging from minor to moderate are expected under the Modernization Alternative. Long-term impacts are primarily indirect, and they would be associated with the removal of the open canal as a visual and aesthetic resource of affected properties, especially those with a direct or indirect view of the existing PBC.

Temporary construction activities would include visual impacts on surrounding properties from construction work such as removal of vegetation, the use of heavy equipment, or pipe laying, which would be visible within the Study Area. Visual disruptions from Central Oregon Irrigation District (District) machinery and trucks currently occur in the Study Area when the District is running water during the irrigation season and conducting canal maintenance during the non-irrigation season; they are not an uncommon feature in the landscape.

Mitigation measures would include revegetation and recontouring of all areas disturbed during construction. If the Modernization Alternative is selected, mitigation of the removal of the PBC as a visual and aesthetic feature may incorporate measures to enhance the ground above the buried pipe where the canal formerly ran, such as seeding with native plants or creating a trail along the alignment.

1. INTRODUCTION

As a part of the preparation of the Environmental Impact Statement (EIS) for the Pilot Butte Canal (PBC) Project (Project), this technical report has been prepared to identify and evaluate visual resources within the Project's 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* (USDA, NRCS 2020). Additional portions along the existing alignment that have been piped or converted to box culverts during previous construction projects the following:

- Major freeway or roadway crossings of US 97, OR 20, and OR 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.

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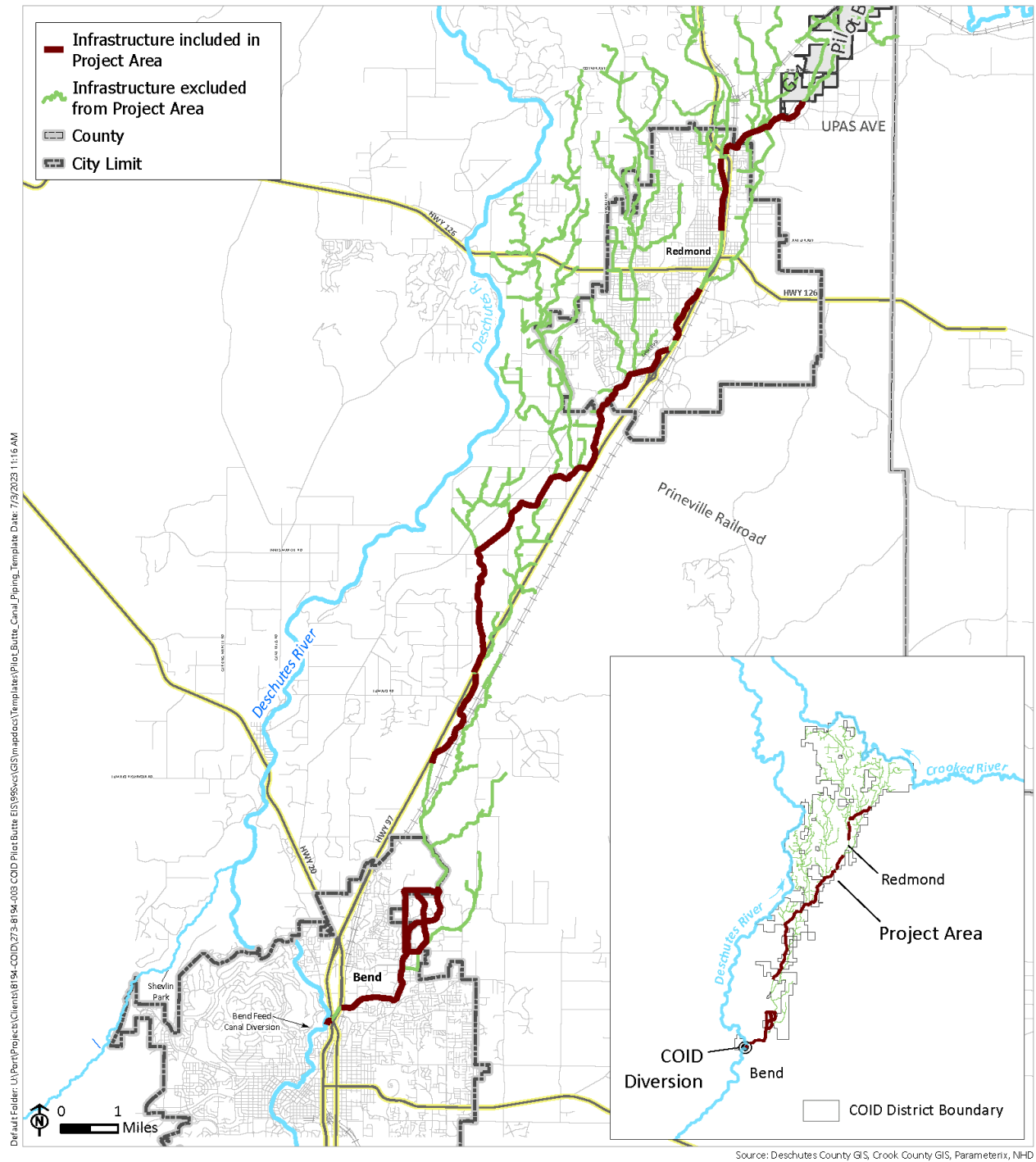


Figure 1. Project Area

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, 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 (USDA, NRCS 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 and 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.

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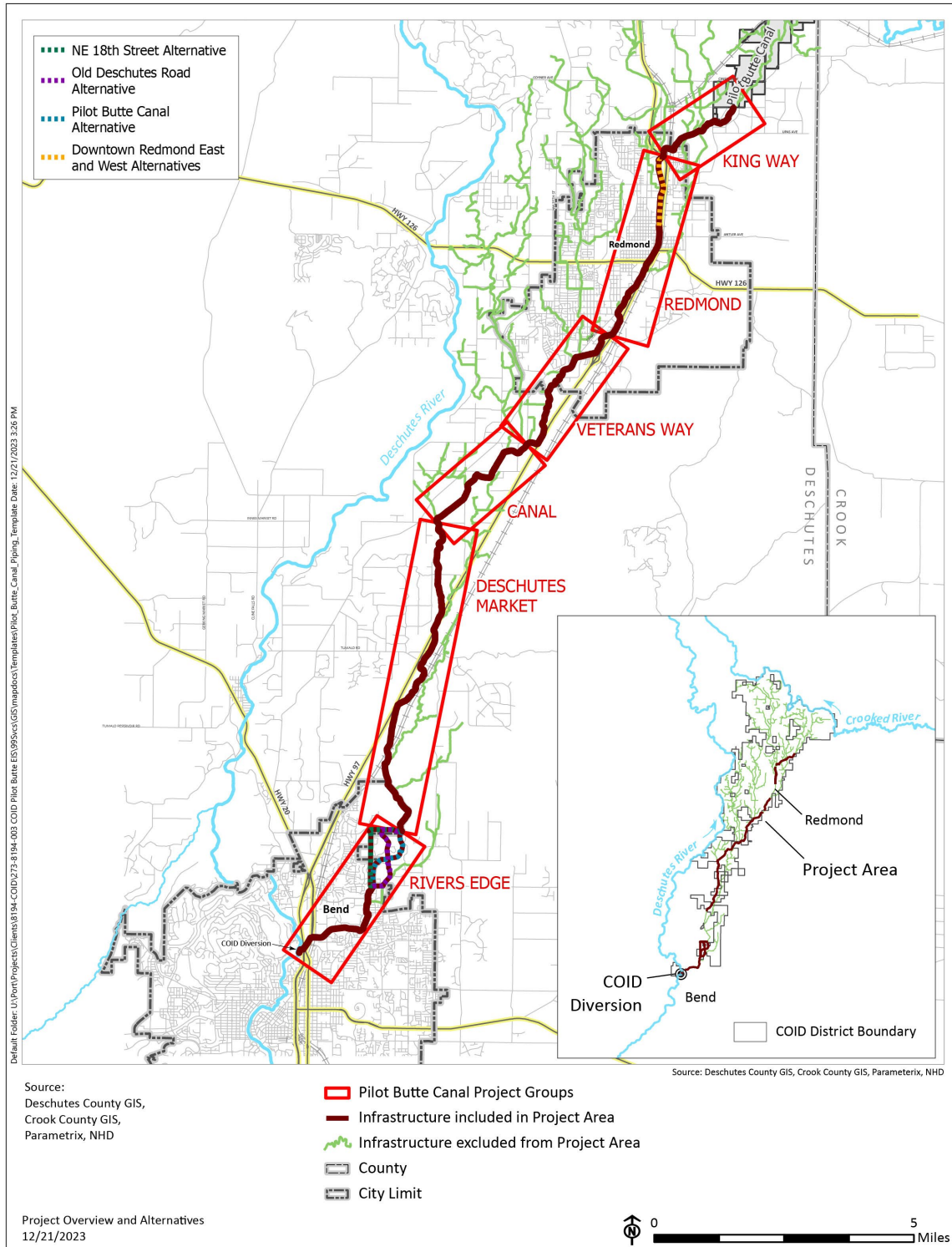


Figure 2. Project Groups

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 a pressure reducing station south of 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.

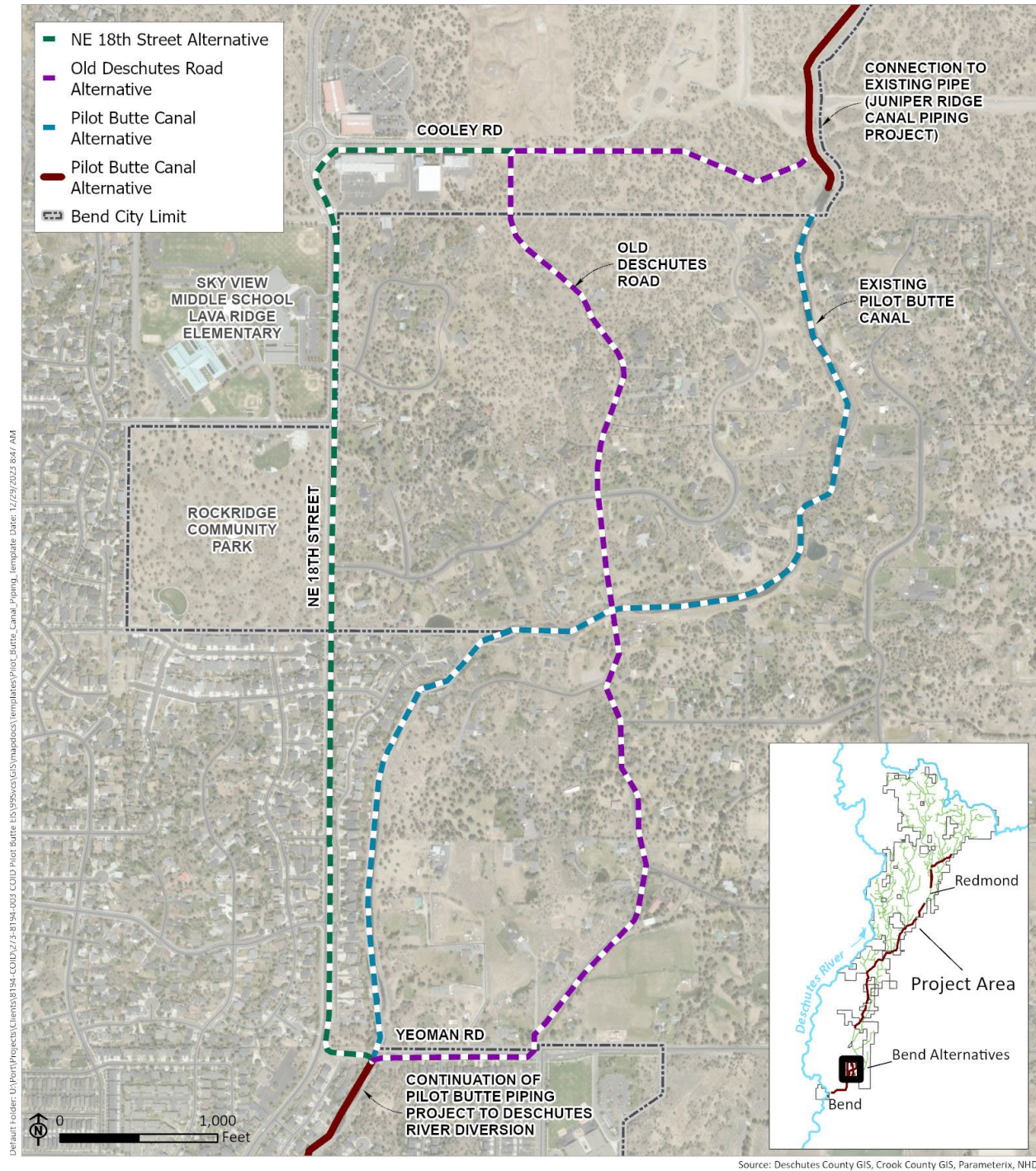


Figure 3. Deschutes County/North Bend Alignment Options

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.

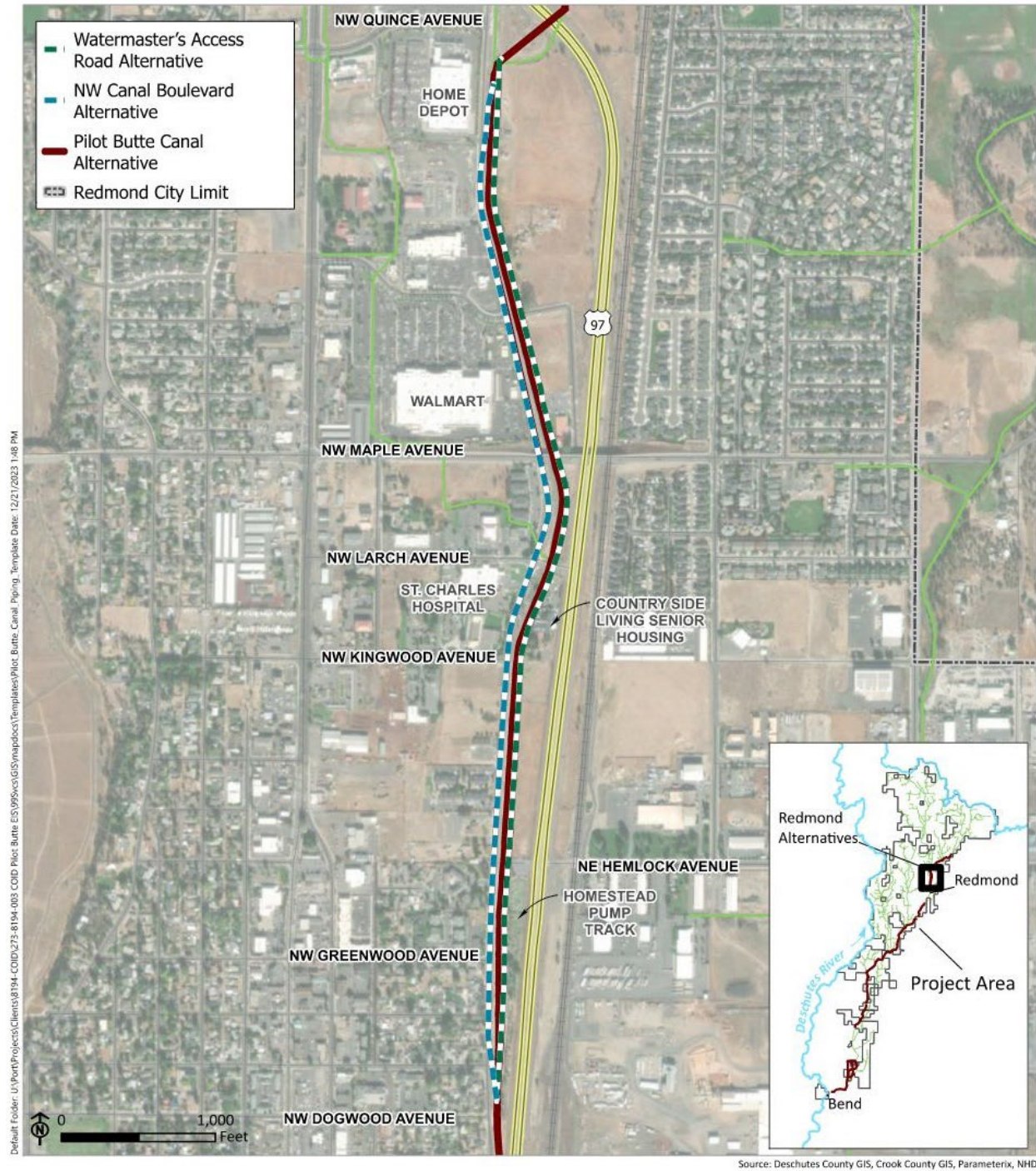


Figure 4. Redmond Alignment Options

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 visual resources 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

4.1.1 Federal

4.1.1.1 Bureau of Land Management Visual Contrast Rating

The U.S. Department of the Interior, Bureau of Land Management (BLM), has a formal process for assessing the visual impacts of projects on BLM-managed land, the Visual Contrast Rating (VCR). The VCR process is used as the basis for conducting visual impact assessments to characterize impacts on visual resources and potential viewers (BLM 2023). BLM manages two parcels of land along the PBC between Bend and Redmond (Figure 5).

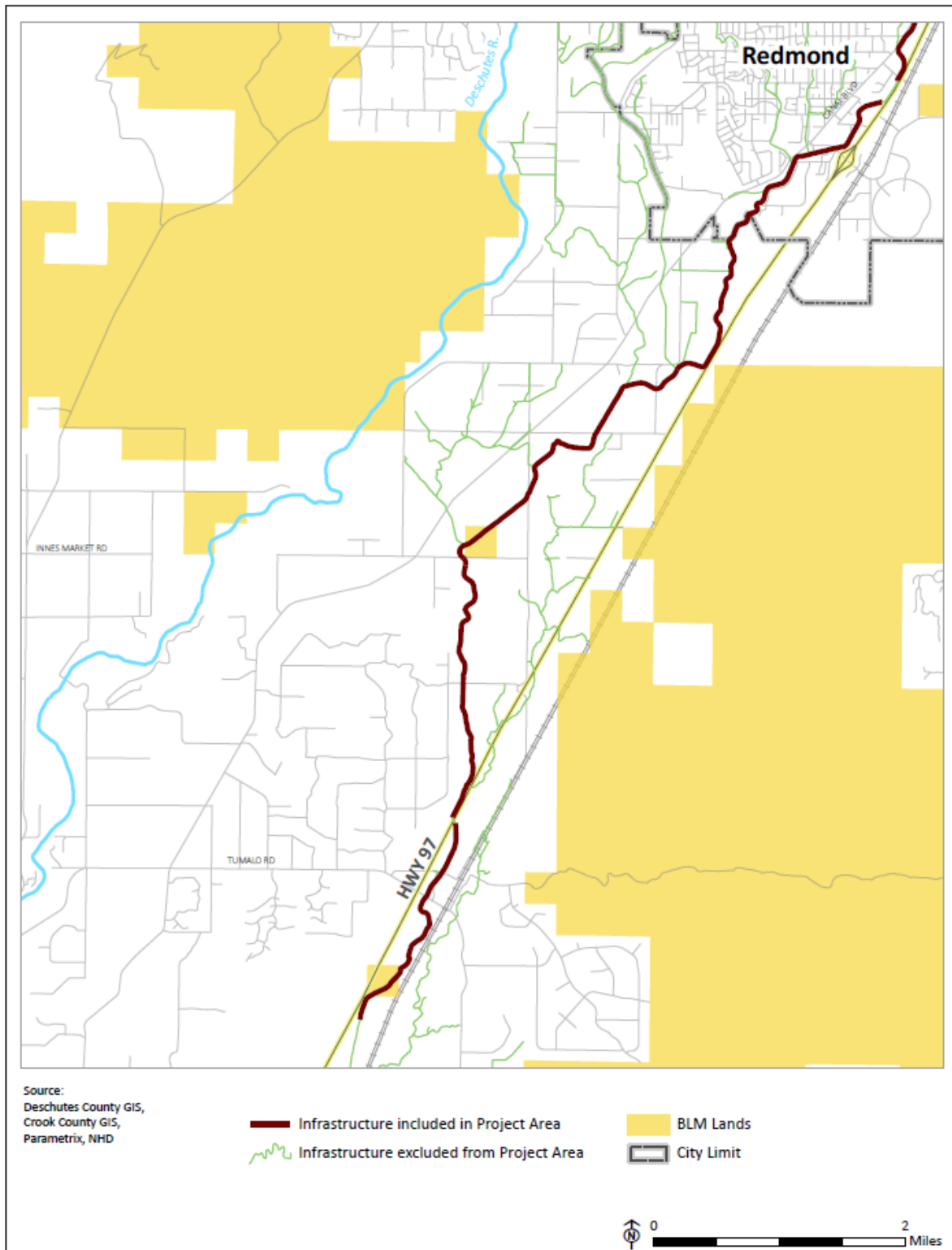


Figure 5. BLM-Owned Land

4.1.2 State of Oregon

4.1.2.1 Statewide Land Use Planning Goals

Oregon Administrative Rules (OAR) 660-015 establishes 19 statewide planning goals that express the state's policies on land use planning and include policies related to visual resources and scenic areas. These policies are enacted on a local level by comprehensive planning (DLCD 2023). The following goal is relevant to the PBC piping project:

- 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.

4.1.3 Local

4.1.3.1 Deschutes County

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, including goals and policies for scenic and historic areas (Deschutes County 2011).

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).

Landscape Management Combining Zone (LM)

This overlay zone is intended to maintain scenic and natural resources of the 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 0.25 mile of roads identified as landscape management corridors in the Comprehensive Plan and the County Zoning Map. This area includes US 97 between Bend and Redmond's urban growth boundaries (UGBs).

Open Space and Conservation (OS&C)

This zone is intended to protect designated areas of scenic and natural resources; to restrict development in areas with fragile, unusual, or unique qualities; to protect and improve the quality of the air, water, and land resources; and to plan development that will conserve open space. The PBC crosses two parcels zoned OS&C along US 97 between Bend and Redmond.

4.1.3.2 City of 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. The plan includes policies for the preservation of significant visual resources (City of Bend 2021).

4.1.3.3 City of Redmond

Comprehensive Plan

Adopted in 2020, the *Redmond 2040 Comprehensive Plan* is a guide to future growth, development, and redevelopment of the Redmond urban area. The plan includes goals and policies to protect scenic resources (City of Redmond 2020).

4.2 Design Standards

The Project Area is 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 Land Use Technical Report. These zones establish development standards regulating visual characteristics of development such as 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 *COID Development Handbook* (COID 2008).

In Deschutes County, the Landscape Management Combining Zone (LM) sets design standards intended to protect and enhance scenic vistas. These include standards for the color of roofs and siding, exterior lighting, vegetative screening, and setbacks. A portion of the existing PBC alignment is within the LM Combining Zone along US 97 between Bend and Redmond.

5. AFFECTED ENVIRONMENT

5.1 Study Area

The Study Area for visual resources includes any areas from which the existing or future PBC alignments may be visible. Typically, this includes land immediately adjacent to or close to the canal, but this may vary widely along the canal's alignment due to views being obstructed or enhanced by existing development and structures, vegetation, or topography. The Study Area also includes elevated areas that may have a view of the canal from afar.

For the purposes of this analysis, the following categories of visual proximity have been identified:

1. Direct View: Parcel is directly adjacent to an unpiped section of the PBC.
2. Indirect View: Parcel is separated from an unpiped section of the PBC by a road right-of-way or undeveloped parcel.
3. Territorial View: Parcel is elevated and has a territorial view of an unpiped section of the PBC.

See Figure 6 for an illustration of the categories of visual proximity.

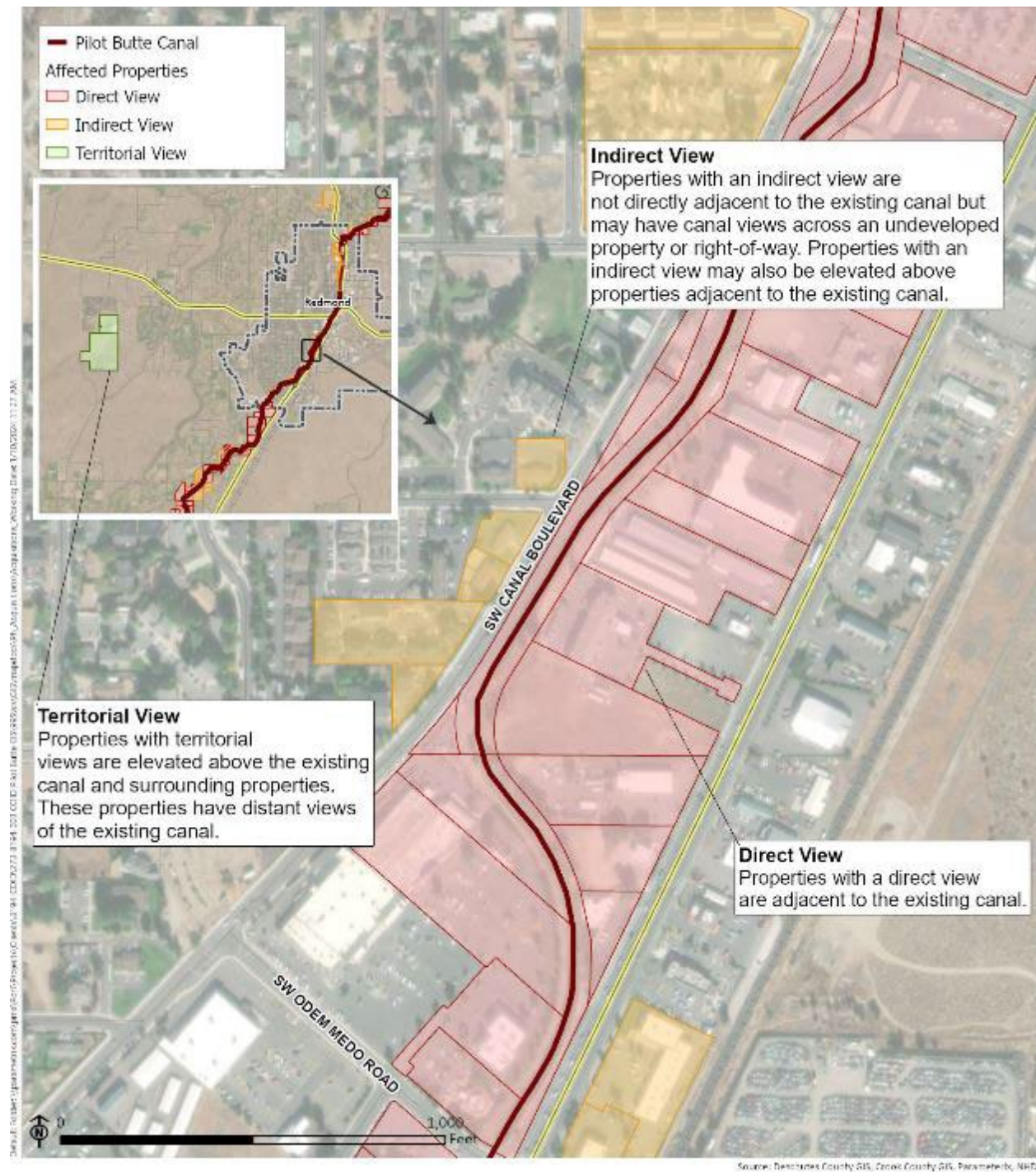


Figure 6. Example of Visual Proximity Categories

5.2 Resource Identification and Evaluation Methods

Properties with potential visual resource impacts in the Study Area were identified with the use of aerial and ground-level photography, along with geographic information system (GIS) analysis. GIS analysts created a viewshed analysis that identified all locations within Deschutes, Jefferson, and Crook Counties with views of the PBC based solely on topography. The analysis includes parcels from which there may even be a distant view of the PBC, where it may make up only a small part of the overall visual landscape. The results of the viewshed analysis were refined using GIS to identify parcels from which the PBC is likely to actually be visible from some part of those parcels considering distance, topography, and development. These parcels were then divided into the categories of Direct View, Indirect View, and Territorial View. These results were then summarized by zoning designation to determine the land uses of parcels with an existing view of the PBC. This analysis does not account for existing barriers such as fencing or vegetation, which may impede the view of the canal from a parcel.

5.2.1 Published Sources and Databases

Sources used to conduct this visual resources analysis include the following:

- Deschutes County GIS (Deschutes County 2023b)
 - Aerial photography
- City of Bend GIS (City of Bend 2023a)
- City of Redmond GIS (City of Redmond 2023b)
- Deschutes County Development Code
- Deschutes County Comprehensive Plan
- Bend Comprehensive Plan
- Redmond 2040 Comprehensive Plan
- Oregon’s Playground Prepares for the Future: A Greenprint for Deschutes County

5.2.2 Field Visits and Surveys

Images of the existing canal were captured during a field visit on October 14, 2021. As this visit occurred outside of the irrigation season, images show the canal in its dewatered state.

5.3 Existing Conditions

The PBC exists within the larger visual setting of Deschutes County. The *Deschutes County Comprehensive Plan* (Deschutes County 2011) acknowledges that the region’s farms, forests, open spaces, and mountain views “provide an inspirational setting for visitors and residents alike.”

Visual features of the canal vary along its alignment. In some areas it is immediately adjacent to existing homes, trails, and parks. In other areas, the canal is difficult to see because of surrounding vegetation or topography. The canal passes through a range of visual settings along its length, including urban development, residential neighborhoods, agriculture, and open space.

Views of the PBC change seasonally. The canal is filled with up to 6 feet of water during the irrigation season, which typically runs from May to October. Outside of the irrigation season, the canal does not carry irrigation water, and it often runs dry. The canal is carved directly into basalt rock, and its rocky, uneven bed is visible when the canal is dry. An unpaved operation and maintenance access road runs adjacent to the PBC through much of the Study Area. Vegetation removal maintenance is performed annually in the PBC and surrounding area within the COID easement.

Although the canal is not a naturally formed waterway, many property owners who live adjacent to the canal consider it an aesthetic amenity, and they derive enjoyment from the view of the canal and the wildlife that occurs in the Project Area.

The PBC alignment and proposed alternatives can be divided into three distinct segments that share common visual features: the city of Bend, unincorporated Deschutes County, and the city of Redmond. Figure 7 shows an overview of the full Study Area and the parcels in each visual proximity category. Figure 8 through Figure 14 provide a parcel level view of the categories. Table 2 summarizes the parcels in each of these three segments by existing visual proximity, and Table 3 shows proximity by zoning designation. For a summary of zoning designations in each jurisdiction, please see the Land Use Technical Report.

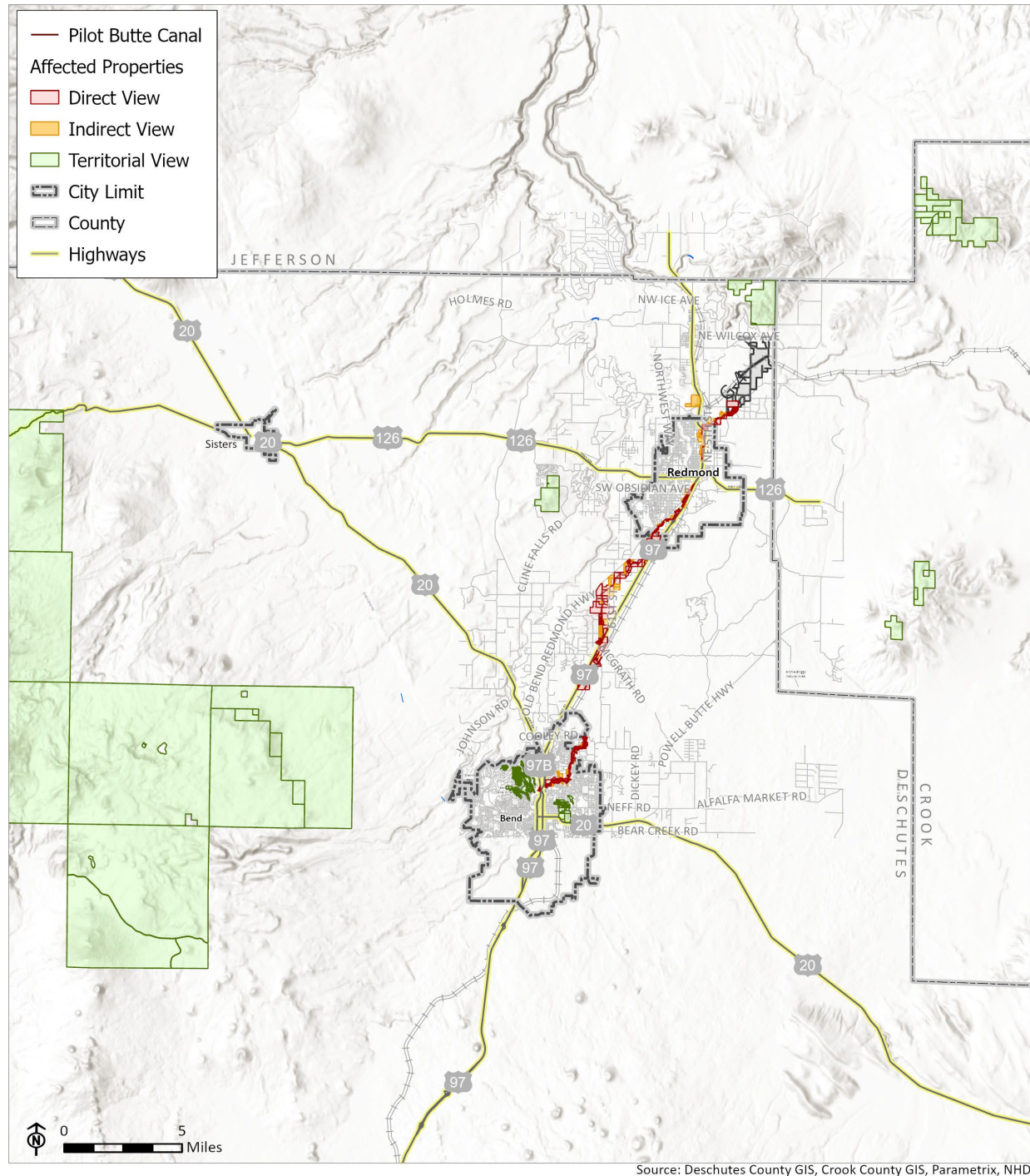


Figure 7. Parcels with Visual Proximity to the PBC - Region

Note: Parcel data for Jefferson County is not available. It can be assumed that some elevated areas within southern Jefferson County, including Smith Rock and Gray Butte, would have terrestrial views of portions of the PBC.

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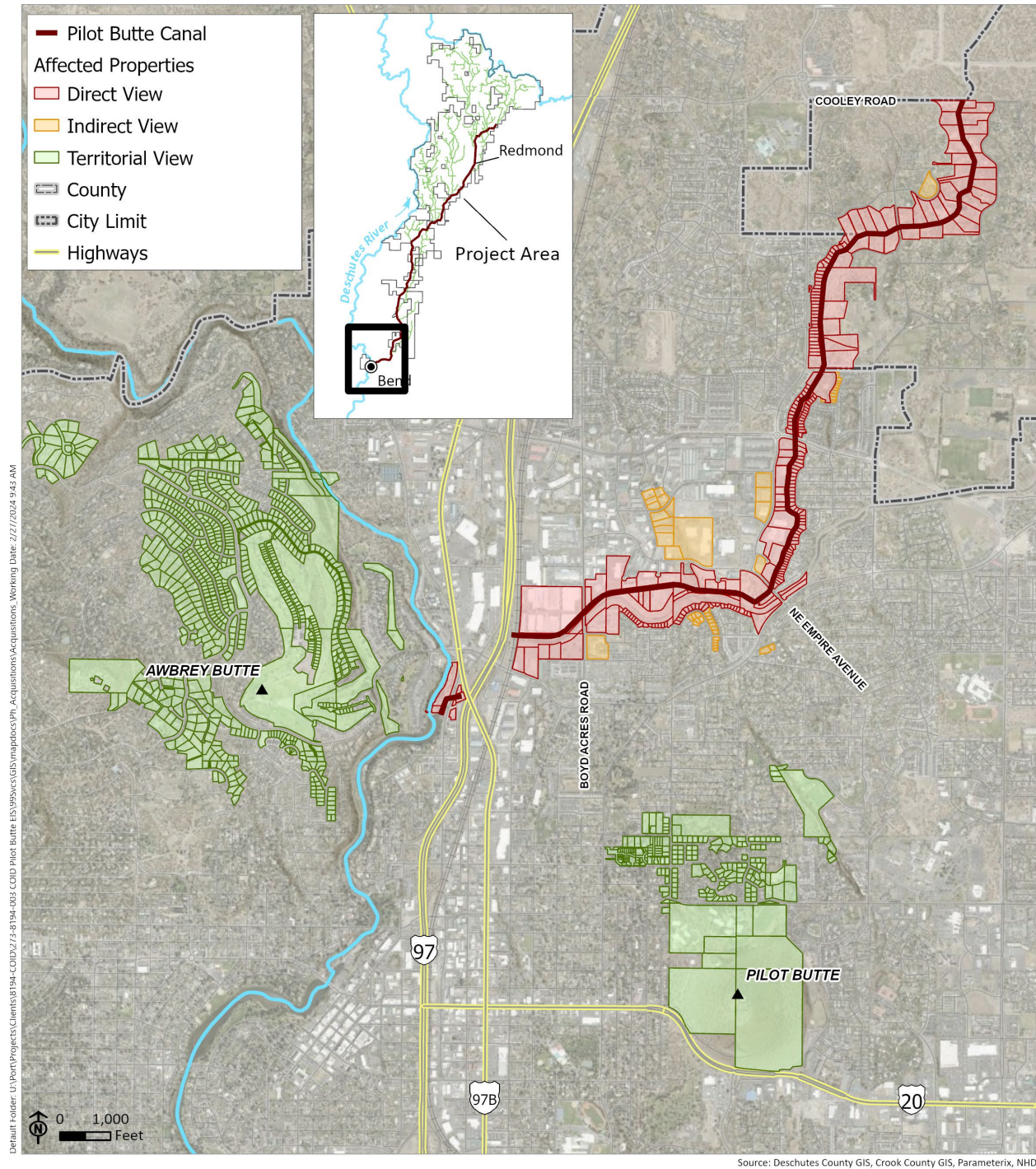


Figure 8. Parcels with Visual Proximity to the PBC – Bend

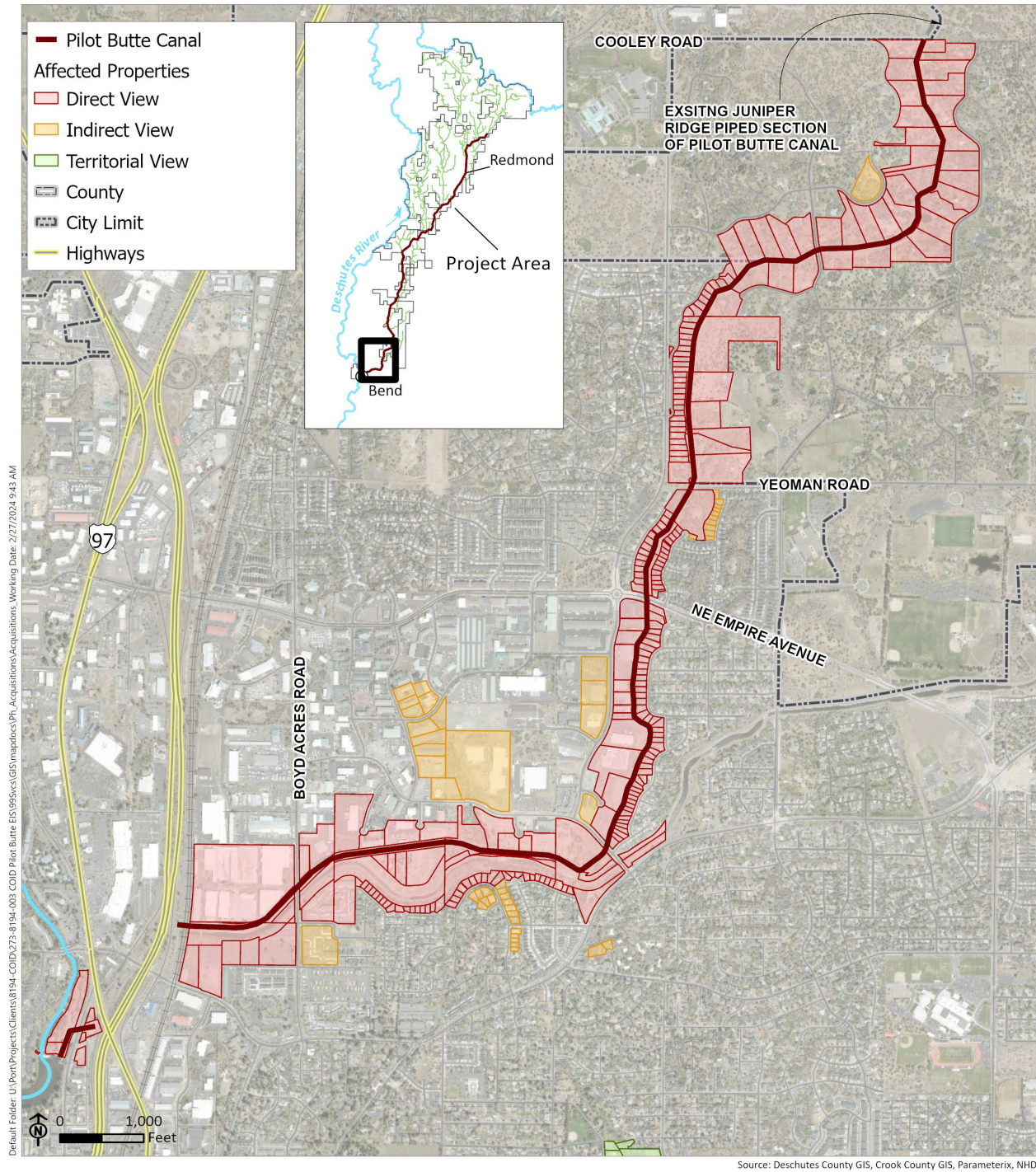


Figure 9. Parcels with Visual Proximity to the PBC – River's Edge

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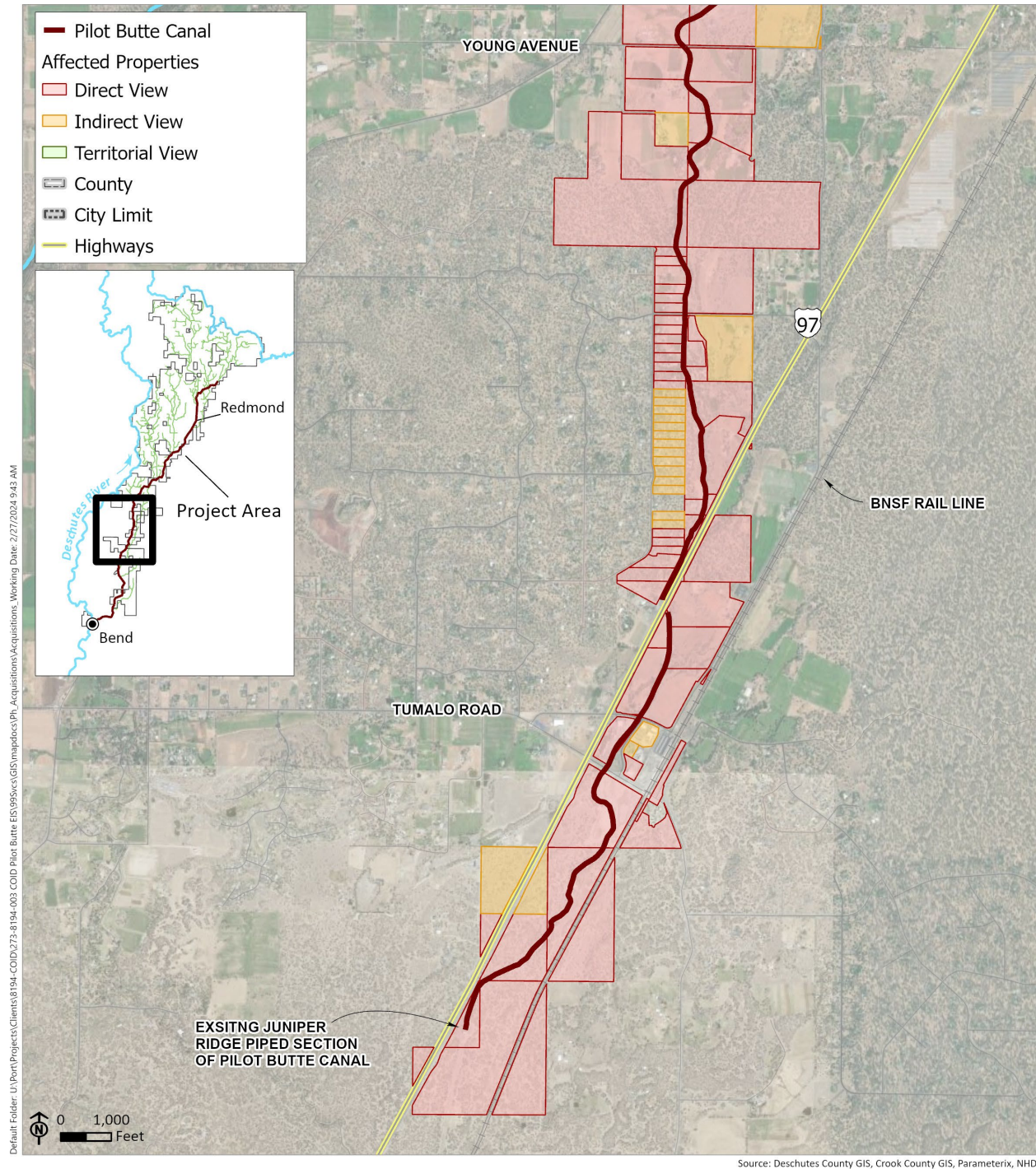


Figure 10. Parcels with Visual Proximity to the PBC – Deschutes Market

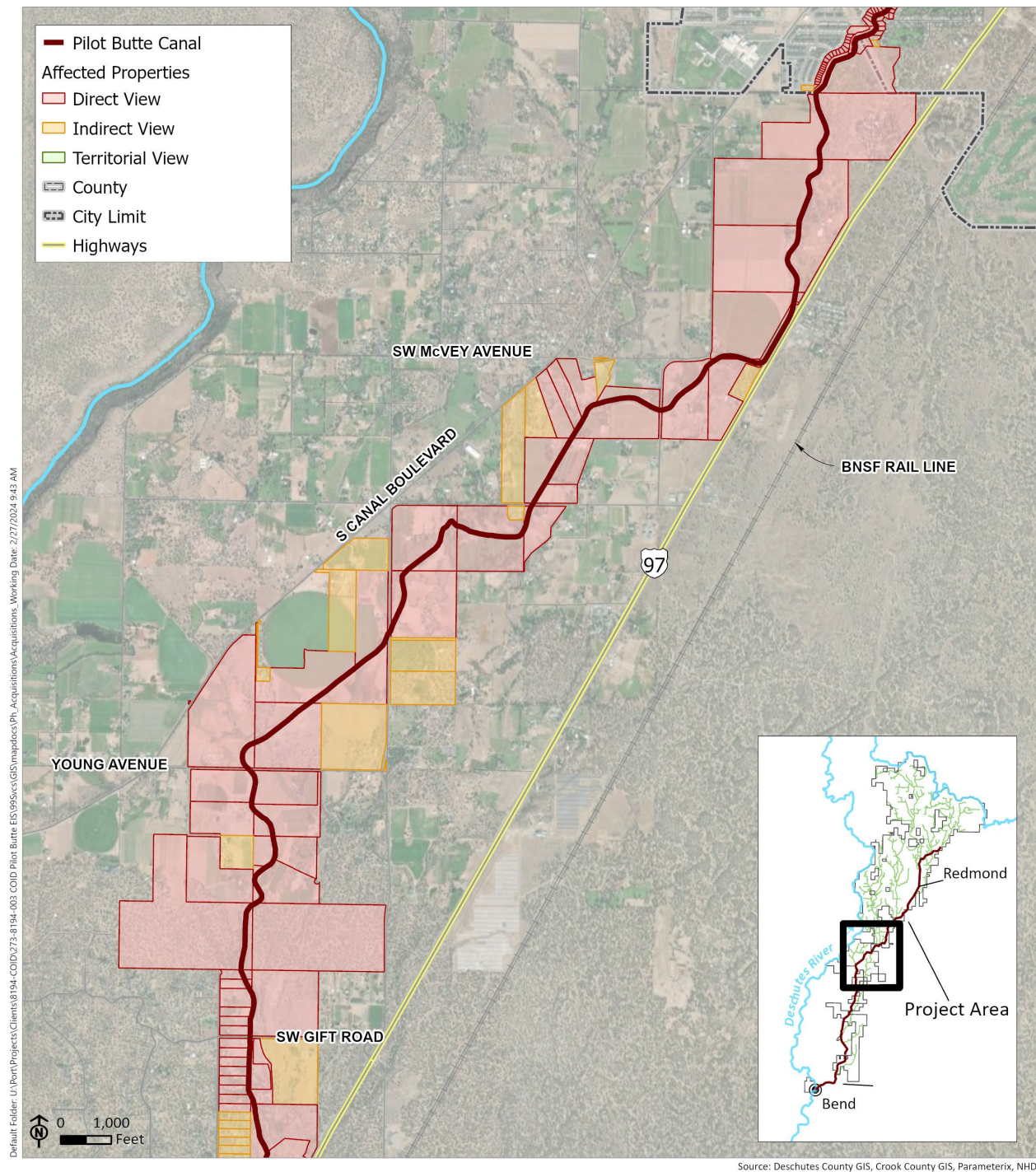


Figure 11. Parcels with Visual Proximity to the PBC – Primary Canal

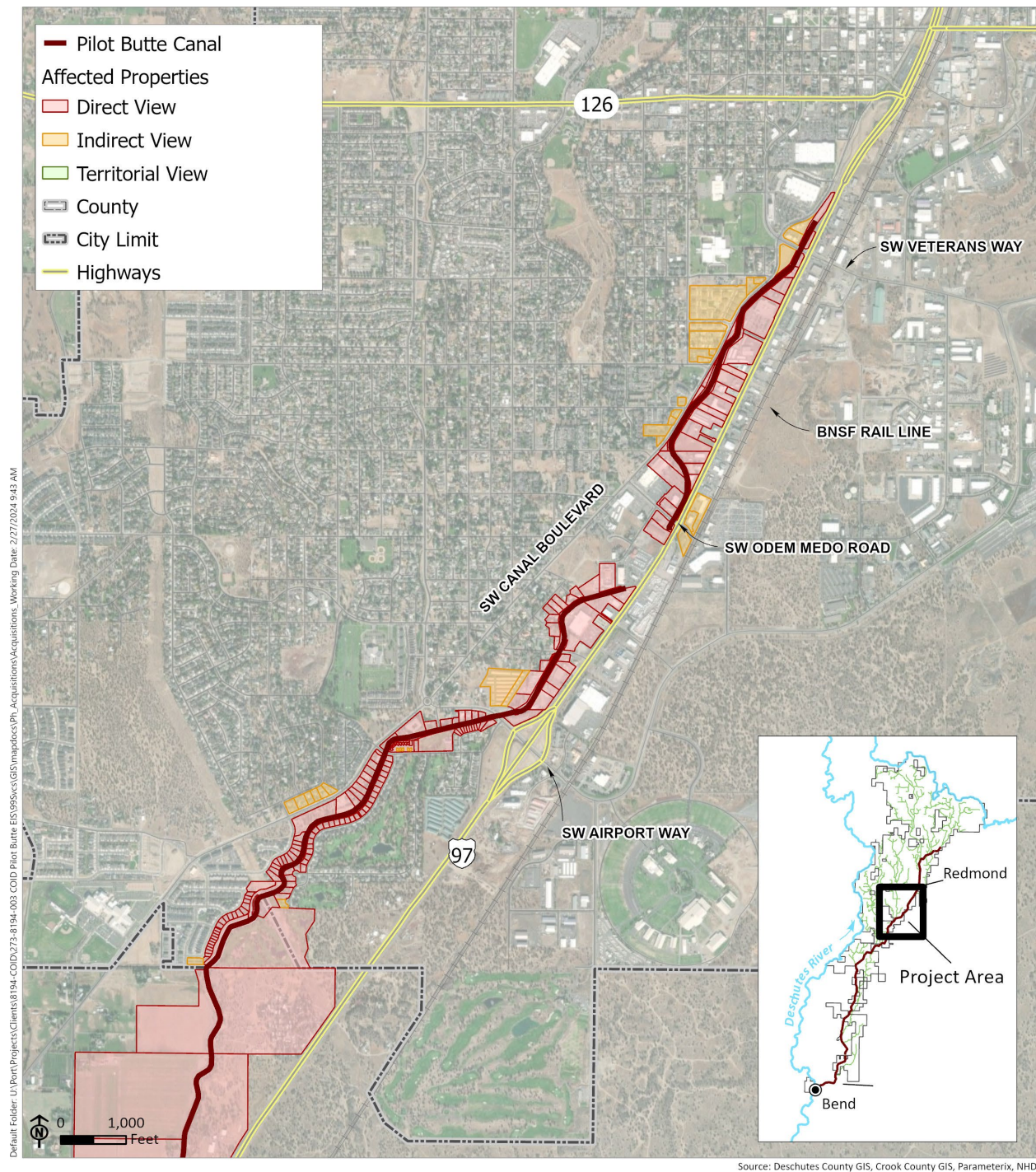


Figure 12. Parcels with Visual Proximity to the PBC – Redmond

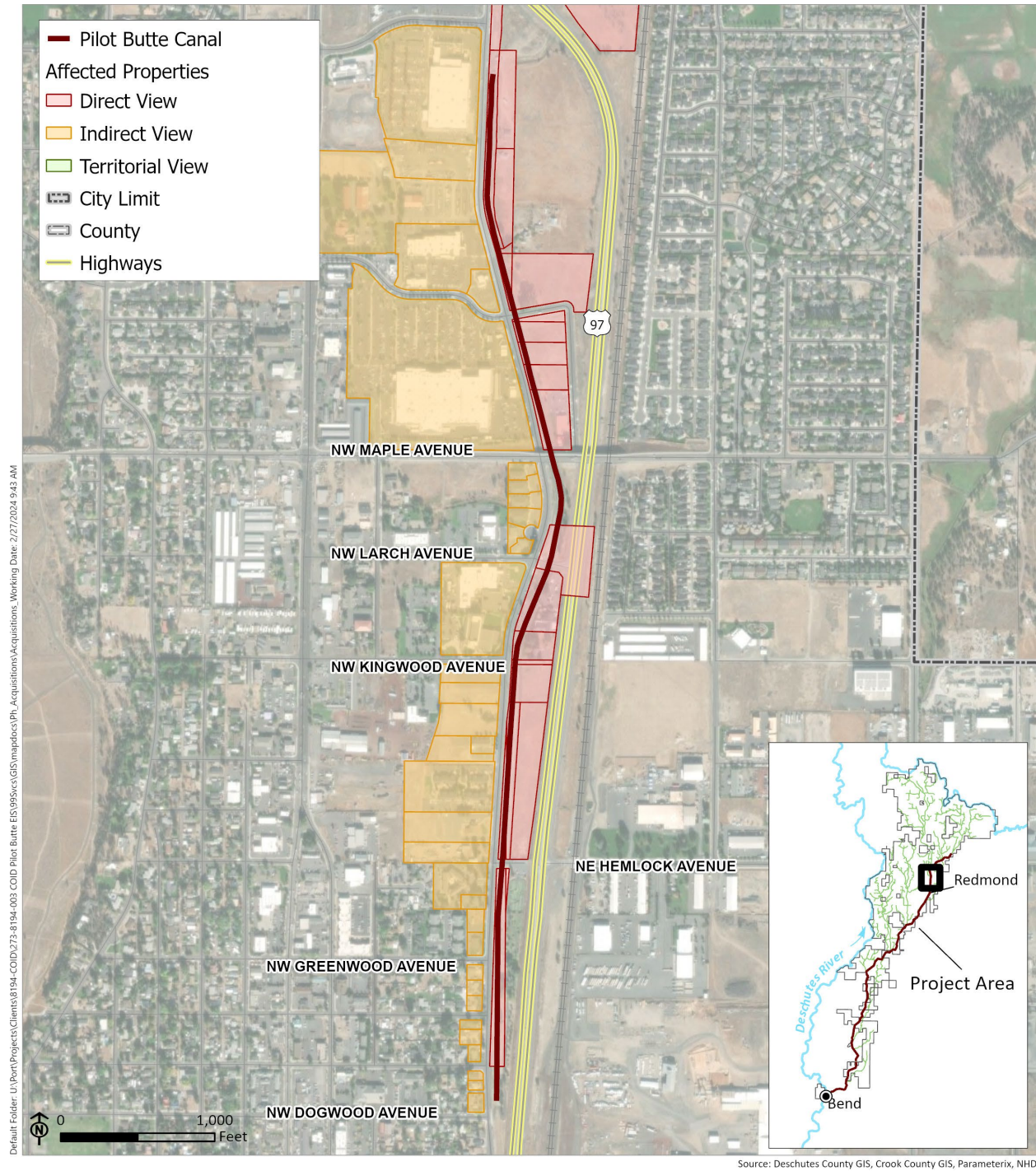


Figure 13. Parcels with Visual Proximity to the PBC – Downtown Redmond

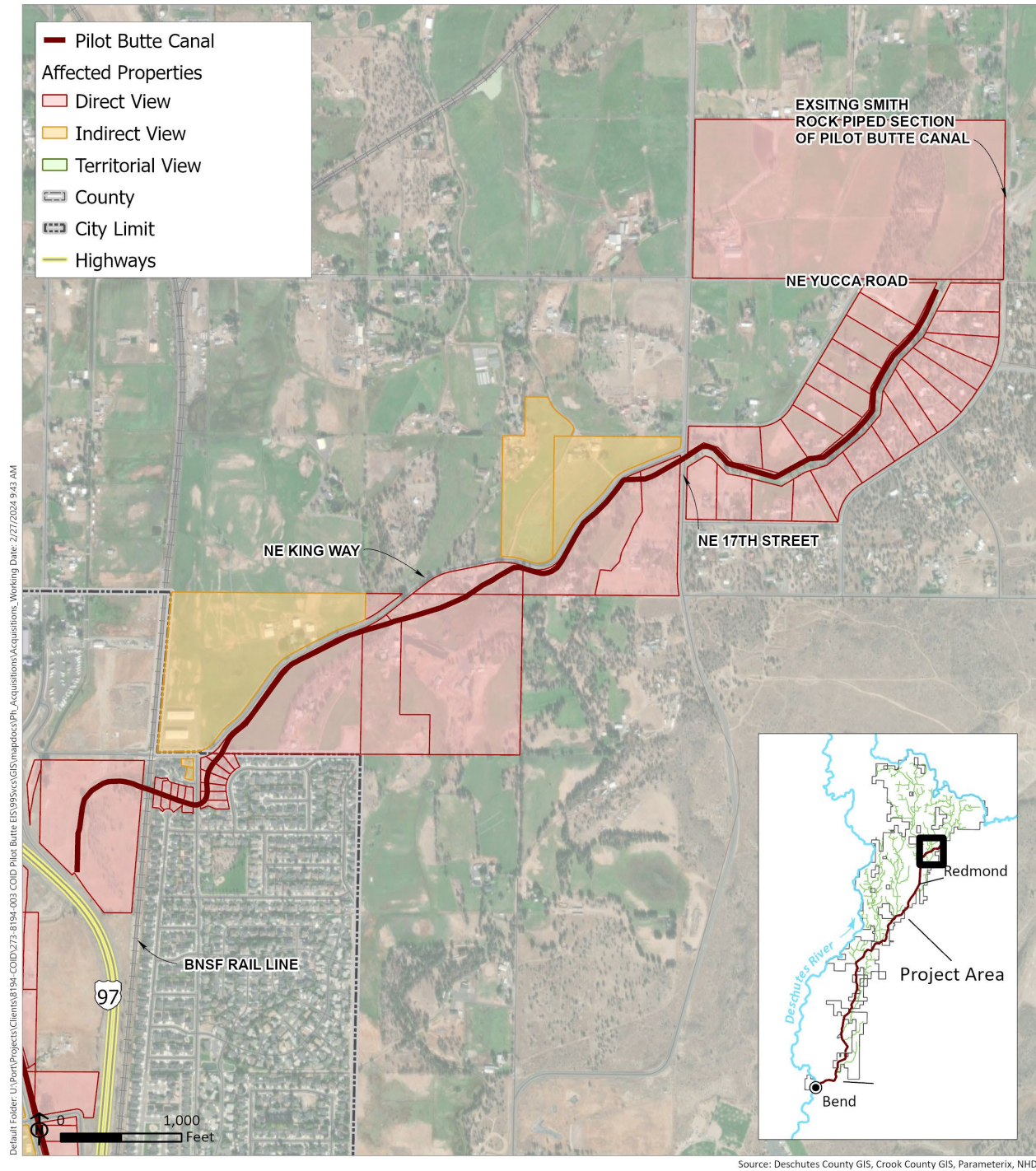


Figure 14. Parcels with Visual Proximity to the PBC – King Way

Table 2. Parcels with Visual Proximity to the PBC by Jurisdiction

Jurisdiction	Direct	Indirect	Territorial	Total
City of Bend	214	48	979	1,241
Deschutes County	154	39	15	208
City of Redmond	221	69	0	290
Total	589	156	994	1,739

Table 3. Visual Proximity by Zoning Designation for each Jurisdiction

Zoning Designation	Direct	Indirect	Territorial	Total
City of Bend	17.2%	3.9%	78.9%	100%
Commercial (CC, CL)	0.4%	0%	0.2%	0.6%
Industrial (IG, IL)	3.5%	1.3%	0%	4.8%
Residential (RM, RS)	13.4%	2.6%	77.6%	93.6%
Public Facility/Park (PF)	0%	0%	1%	1%
Deschutes County	74%	18.8%	7.2%	100%
Agricultural (EFU, MUA10)	41.3%	8.2%	1.4%	51%
Forest (F1)	0%	0%	5.3%	5.3%
Industrial/Mining (RI, SM)	1.9%	2.4%	0.5%	4.8%
Residential (RR10, SR2-1/2)	29.8%	7.7%	0%	37.5%
Open Space (OS&C)	1%	0.5%	0%	1.4%
City of Redmond	76.2%	23.8%	0%	100%
Commercial (C1, C2, C3)	23.8%	9%	0%	32.8%
Residential (R2, R4, R5)	48.6%	14.8%	0%	63.4%
Park (PARK)	3.1%	0%	0%	3.1%
Urban Holding (UH-10)	0.7%	0%	0%	0.7%

5.3.1 City of Bend

The PBC is not currently piped at any point of its alignment through the city of Bend. Scenery around the PBC in the city limits includes urban areas, industrial areas, residential areas, parks, and open spaces. The canal runs adjacent to many residential properties, and it may be considered a water feature on these properties during irrigation season. In some areas along the alignment, COID access roads are used as recreational trails. The PBC is visible from Riverview Park, Canal View Park, and the Lava Ridge Natural Area.

In the city of Bend, 1,241 parcels may have a view of the open PBC, including 214 parcels with a direct view, 48 parcels with an indirect view, and 979 parcels with a territorial view. Most of the parcels with a direct view are within residential zoning designations.

A portion of the existing alignment in northeast Bend, from approximately Yeoman Road to Cooley Road, is listed on the NRHP (Photograph 1). Visual features that contribute to its historic significance include the surrounding undisturbed natural setting, the size and shape of the canal, and markings indicative of the tools and methods used during the construction of the canal (Oregon Historic Sites Database 2022). For more information on the NRHP listing, see the Cultural Resources Technical Report.

The visual setting along the NE 18th Street alignment option includes residential areas, parks, schools, and open space. The area proposed for the new alignment is currently the NE 18th Street right-of-way (ROW): a paved, two-lane roadway with bike lanes and sidewalks.

The Old Deschutes Road alignment is within the existing road ROW: a paved roadway with gravel shoulders which runs through agricultural, rural residential, and open space areas. The northernmost portion of the ROW in this alignment is currently unimproved open space with no roadway infrastructure.



Photograph 1. PBC Alignment in Bend

5.3.2 Deschutes County

The existing PBC alignment between Bend and Redmond is largely within a rural setting, surrounded by open space and agricultural uses (Photograph 2). Open space in this area is high desert in nature, characterized by juniper trees and sagebrush. The canal runs alongside US 97 for much of its alignment between Bend and Redmond. The surrounding area is highly scenic, with views of the Cascade Mountains to the west.

A portion of the canal runs through the unincorporated community of Deschutes, where it is surrounded by light industrial and rural residential structures and uses. The Redmond-Bend Juniper State Scenic Corridor consists of 10 parcels owned by the Oregon Parks and Recreation Department in this area. The parcels are intended for the preservation of old growth juniper trees. The PBC runs through or adjacent to several of these parcels.

The PBC alignment north of Redmond to the end of the Study Area is primarily surrounded by agricultural uses and rural residential development. Some segments of the PBC have previously been piped in this area. These segments are outside of the Study Area for this Project.

In unincorporated Deschutes County, 208 parcels may have a view of an unpiped portion of the PBC, including 154 parcels with a direct view, 39 parcels with an indirect view, and 15 parcels with a territorial view. Most of these parcels with a direct view are within agricultural and residential zoning designations.



Photograph 2. PBC Alignment in Unincorporated Deschutes County

5.3.3 City of Redmond

The PBC alignment in the city of Redmond crosses through a variety of urban and suburban settings, including residential neighborhoods, industrial and commercial areas, and parks and open space. A portion of the canal runs adjacent to the Greens at Redmond Golf Course, where it acts as a water feature during irrigation season, and it is advertised as an amenity of the course. The canal is also a feature of Homestead Park, and it runs adjacent to the Homestead Canal Trail and the Yew Avenue

Nature Trail. Portions of the alignment run alongside existing roadways, including US 97 and Canal Boulevard (Photograph 3). Some segments of the PBC have been piped within Redmond city limits; these segments are not included in the Study Area.

In the city of Redmond, 290 parcels may have a view of an unpiped portion of the PBC, including 221 parcels with a direct view and 69 parcels with an indirect view. There are no parcels with a territorial view within the city. Most of the parcels with a direct view are within residential zoning designations.



Photograph 3. PBC Alignment in Redmond

6. IMPACT ASSESSMENT METHODOLOGY AND DATA SOURCES

6.1 Long-Term Impact Assessment Methods

Existing visual resources within the Study Area were evaluated for potential long-term impacts. Preliminary project design and engineering were reviewed to determine potential impacts on the Study Area. The analysis of long-term impacts considered the permanent alteration of the visual appearance of the canal due to piping, as well as other impacts on the Study Area, such as the removal of trees or construction of new structures accessory to the canal.

6.2 Short-Term Impact Assessment Methods

Short-term impacts would be primarily related to the temporary effects of construction during the PBC piping project. These impacts may include temporary vegetation removal or increased levels of dust, light pollution, visible construction equipment, and other construction impacts that would temporarily alter the appearance of the Study Area.

6.3 Indirect Impact Assessment Methods

Indirect impacts on parks and recreation resulting from the Project would include changes to the surrounding environment that may not have a direct impact to visual resources, but could affect long-term access to, use of, or enjoyment of visual resources. Assessment of these indirect impacts would consider how the long-term changes resulting from the project could influence noise, accessibility, or other factors that may improve or diminish the experience of visual resources.

6.4 Cumulative Impact Assessment Methods

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

7. ENVIRONMENTAL CONSEQUENCES

7.1 Long-Term Impacts

7.1.1 No Action Alternative

Under the No Action Alternative, piping of the PBC would not occur, and there would be no changes in the visual appearance of the Study Area.

7.1.2 Modernization Alternative (Full Piping)

Piping of the PBC would remove the open canal as a visual resource along its alignment in the Study Area. After construction, the pipe would be buried, and it would not be visible. Areas adjacent to the canal would be restored to near-prior contours, and the area over the pipe would be graded to blend with the surrounding landscape. Disturbed areas, including those areas above the newly buried pipes, would be planted with a seed mix of native grasses and forbs in consultation with NRCS. The view of the Project Area would change from an open canal (with or without water depending on the season) to a corridor of native upland vegetation in areas where construction would take place. The maintenance road within the COID ROW would remain in place for District access.

Mature trees would only be removed if they presented a safety risk to crews during construction, if access to the construction site was infeasible without tree removal, or if a tree's close proximity to the pipe posed a risk of damage to the pipe from ongoing root growth. Tree protection would be installed

during construction to assist construction crews in avoiding impacts to existing mature trees to the greatest extent feasible. Tree removal, where unavoidable, would be mitigated through on-site and in-kind replacement to the greatest extent feasible. Where permanent tree removal would be necessary due to potential pipe damage from tree roots, alternative mitigation approaches would be implemented in accordance with Bend's, Redmond's, or Deschutes County's tree protection code through coordination with the appropriate City or County jurisdiction.

Overall, the Modernization Alternative would have a moderate long-term effect on visual resources. The visual change would most affect properties adjacent to the Project Area with direct or indirect views of the PBC. The Modernization Alternative would have lesser effects on those properties with a territorial view of the PBC from afar, as the PBC is only a small component of the total view from these properties. Piping of the PBC throughout the Project Area would result in visual impacts to 589 parcels with a direct view of the canal, 156 parcels with an indirect view of the canal, and 994 parcels with a territorial view of the canal. Following construction and revegetation, the revegetated corridor would blend in with the natural landscape.

7.1.2.1 Deschutes County/North Bend Options

No Modernization within this Segment (No Piping)

Under this option, a pressure reducing station would be constructed south of the intersection of the PBC with Yeoman Road. While the location of this pressure reducing station is yet to be determined, it may be located within or adjacent to the Lava Ridge Natural Area and trail, altering the aesthetic character of the area. This would create a minor long-term impact to this portion of the alignment.

Under this alternative, the open canal in this portion of the alignment would remain unpiPED and water would run through the canal during irrigation season. Aside from the installation of the pressure reducing station, the visual appearance of the canal under this alternative would remain unchanged in this portion of the alignment.

Pilot Butte Canal Option

This option would pipe the canal in its existing alignment. Piping would remove and fill in the open canal running adjacent to the natural areas and residences along this portion of the alignment. There are 81 parcels with a direct view of the canal, and 1 parcel with an indirect view of the canal that would be removed with this piping option (Figure 15). This option would create a moderate long-term impact to the visual and aesthetic features visible from these properties.

NE 18th Street Option

Under the NE 18th Street Option, the existing PBC would remain in its current state in this portion of its alignment, but it would no longer receive irrigation water from COID facilities. While the canal is currently dry outside of the irrigation season, this option would create a minor long-term impact by permanently removing water from the canal, altering the visual character of this portion of the canal during irrigation season for those parcels that have a view of the existing PBC alignment (Figure 15).

After construction on NE 18th Street, the pipe would be located underground beneath the existing NE 18th Street and Cooley Road roadways and the undeveloped area between the terminus of Cooley Road and the existing PBC. It would not have any long-term visual impacts to the parcels adjacent to the alignment, as the buried irrigation pipe will not be visible post-construction.

Old Deschutes Road Option

Under the Old Deschutes Road Option, the existing PBC would remain in its current state in this portion of its alignment, but it would no longer receive irrigation water from COID facilities. While the canal is currently dry outside of the irrigation season, this option would create a minor long-term impact by permanently removing water from the canal, altering the visual character of this portion of the canal during the irrigation season for those parcels that have a view of the existing PBC alignment (Figure 15).

After construction on Old Deschutes Road, the pipe would be located underground beneath the existing Yeoman Road and Old Deschutes Road roadways, the unimproved portion of the Old Deschutes Road ROW, and the undeveloped area between Cooley Road and the existing PBC. It would not have any long-term visual impacts to the parcels adjacent to the alignment, as the buried irrigation pipe will not be visible post-construction.

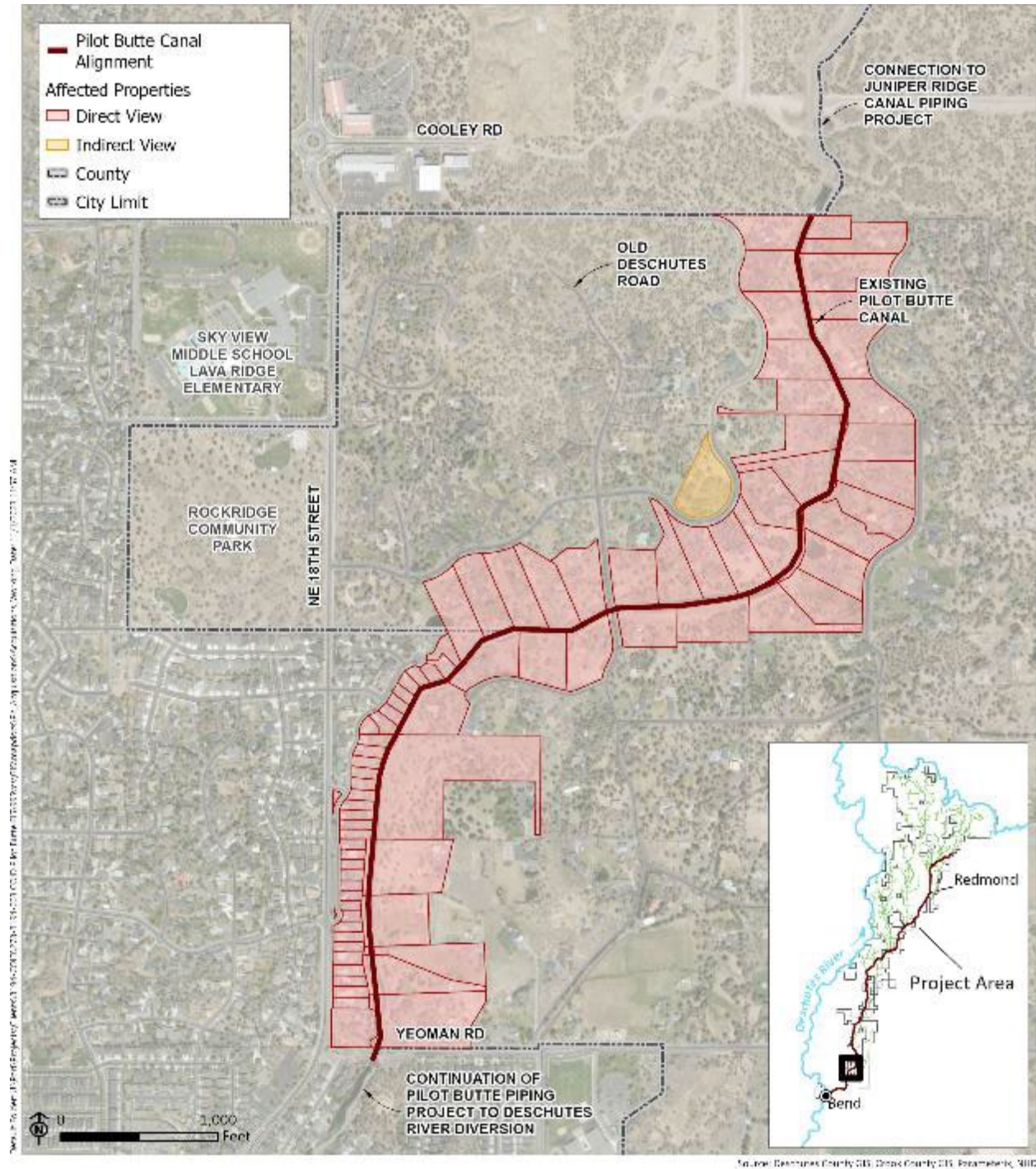


Figure 15. Parcels with Visual Proximity to the PBC in the North Bend Pilot Butte Canal Option Alignment

7.1.2.2 City of Redmond Option

No Modernization within this Segment (No Piping)

Under this option, a pressure reducing station near the intersection of SW Veteran's Way and US 97. While the location of this pressure reducing station is yet to be determined, it may be located within the alignment of or adjacent to the Homestead Canal Trail, altering the aesthetic character of the area. This would create a minor, long-term impact to this portion of the alignment.

Under this option, the open canal in this portion of the alignment would remain unpiPED and water would run through the canal during irrigation season. Aside from the installation of the pressure reducing station, the visual appearance of the canal under this alternative would remain unchanged in this portion of the alignment.

Pilot Butte Canal Option

This option would pipe the canal in its existing alignment. Piping would remove and fill in the open canal running adjacent to properties and ROW along this portion of the alignment. There are 22 parcels with a direct view of the canal and 34 parcels with an indirect view of the canal that would be removed with this piping option (Figure 16). This option would create a moderate long-term impact to the visual and aesthetic features visible from these properties.

Watermaster's Access Road Alignment

Under the Watermaster's Access Road Option, the existing PBC would remain in its current state in this portion of its alignment, but it would no longer receive irrigation water from COID facilities. While the canal is currently dry outside of the irrigation season, this option would create a minor, long-term impact by permanently removing water from the canal, altering the visual character of the canal during irrigation season for those parcels that have a view of the existing PBC alignment (Figure 16).

After construction on Watermaster's Access Road, the pipe would be located underground adjacent to the existing PBC alignment. The buried irrigation pipe would not be visible from adjacent parcels and would not cause any long-term visual impacts.

North Canal Boulevard Alignment

Under the North Canal Boulevard Option, the existing PBC would remain in its current state in this portion of its alignment, but it would no longer receive irrigation water from COID facilities. While the canal is currently dry outside of the irrigation season, this option would create a minor long-term impact by removing water from the canal on a permanent basis, altering the visual character of the canal during irrigation season for those parcels that have a view of the existing PBC alignment (Figure 16).

After construction on North Canal Boulevard, the pipe would be located underground, primarily beneath the Canal Boulevard roadway. The buried irrigation pipe would not be visible from adjacent parcels and would not cause any long-term visual impacts.

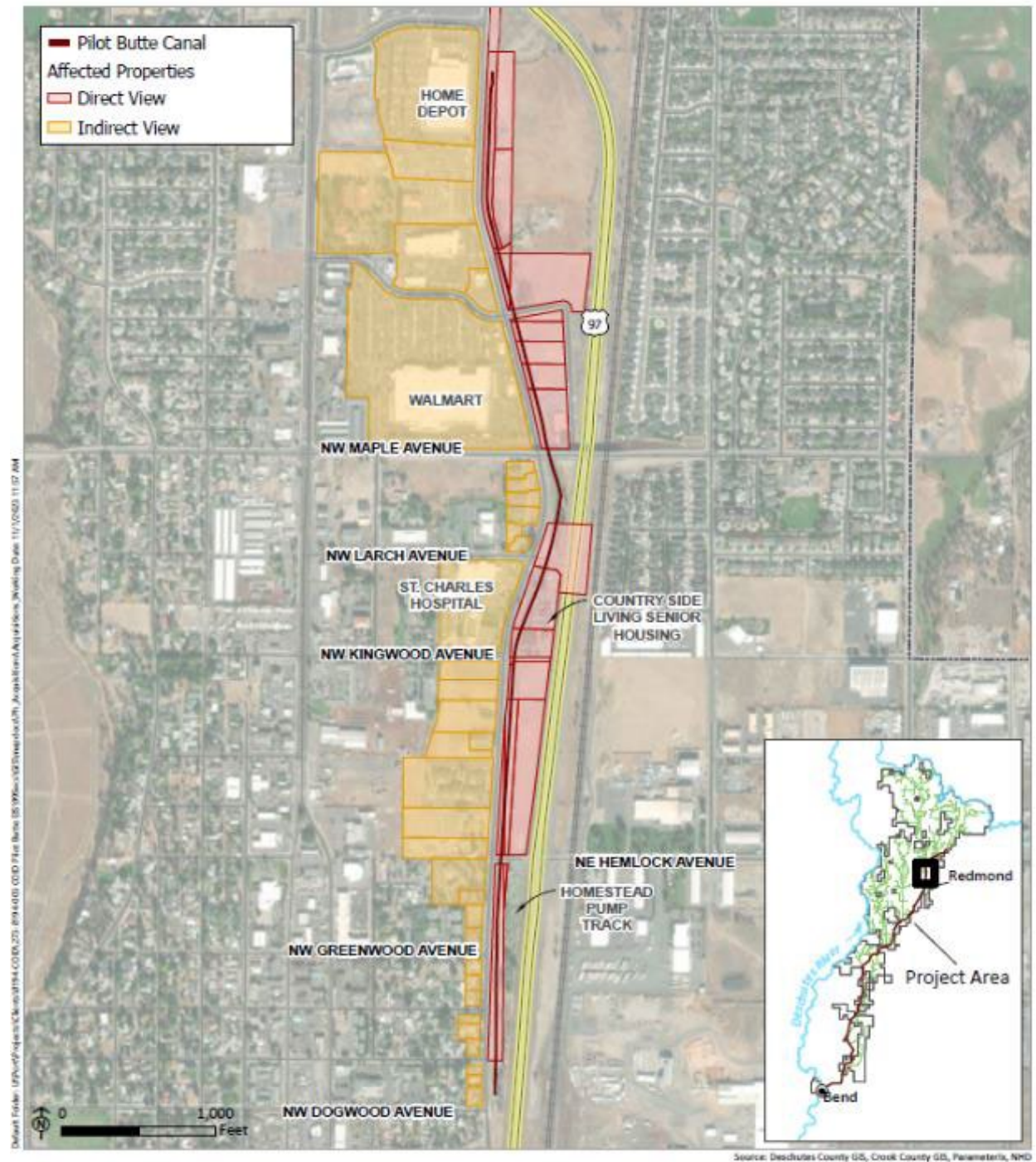


Figure 16. Parcels with Visual Proximity to the PBC in the Redmond Pilot Butte Canal Option Alignment

7.2 Construction Impacts

7.2.1 Modernization Alternative (Full Piping)

Under the Modernization Alternative, construction activities would take place during the non-irrigation season. The Modernization Alternative would be constructed in phases; therefore, visual disruptions associated with construction would be limited to the phase or part of the phase under construction. Construction activities would include vegetation clearing, trenching, equipment mobilizing and staging, and backfill of trenches after pipe installation. Vegetation clearing would be minimized to the extent practicable, and reseeded would be completed after construction.

Tree removal would be avoided as much as possible, only occurring in instances when there would be no other way to access the construction site, or if the tree would pose a safety threat to construction crews. Tree removal, where unavoidable, would be mitigated through on-site and in-kind replacement to the greatest extent feasible. Where permanent tree removal would be necessary due to potential pipe damage from tree roots, alternative mitigation approaches would be implemented in accordance with Bend's, Redmond's, or Deschutes County's tree protection code through coordination with the appropriate City or County jurisdiction.

Construction activities, such as the use of heavy equipment or pipe laying, would be visible to residents and motorists within the Study Area. Visual disruptions from District machinery and trucks would occur in the Project Area when the District is running water during the irrigation season and conducting canal maintenance during the non-irrigation season; they are not an uncommon feature in the landscape.

In residential areas where the open canal is adjacent to the backyards of houses, construction activities would be temporarily pronounced. However, effects would be minimized through best management practices such as limiting construction to daytime hours. Construction activities would be less pronounced in the segments of the Project Area that pass through agricultural land because there would be fewer residences with a direct view of the canal in those areas.

7.2.1.1 Deschutes County/North Bend Option

No Modernization within this Segment (No Piping)

Under this option, visual impacts related to construction would occur during the construction of the energy dissipation pond at the intersection with Yeoman Road, including the visibility of construction equipment and temporary vegetation removal.

Deschutes County/North Bend Alignment Options

All three Deschutes County/North Bend alignment options—the Pilot Butte Canal Option, the NE 18th Street Option, and the Old Deschutes Road Option—would result in temporary construction impacts to visual resources in the Study Area, including the visibility of construction equipment and activities and temporary vegetation removal.

7.2.1.2 City of Redmond Option

No Modernization within this Segment (No Piping)

Under this option, visual impacts related to construction would occur during the construction of the energy dissipation pond at the intersection with Dogwood Street, including the visibility of construction equipment and temporary vegetation removal.

City of Redmond Piping Options

All three city of Redmond Piping options—the Pilot Butte Canal alignment, piping to the east in Watermaster’s Access Road, and piping to the west within Northwest Canal Boulevard—would result in temporary construction impacts on visual resources in the Study Area, including the visibility of construction equipment and activities and temporary vegetation removal.

7.2.2 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 defined at this time. Given this uncertainty, detailed analysis of impacts is not currently possible. 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; it is intended to ensure disclosure of the general types of impacts.

If a contractor were to choose to use an off-site staging area, all federal, state, and local regulations relating to visual resources would be followed, where applicable.

The following impacts could occur from off-site staging:

- If off-site staging areas were selected, temporary impacts to visual resources from construction activities would be likely.

7.3 Cumulative Effects

This project, when combined with other current or future projects may cause short- or long-term cumulative effects on visual resources. Current or future projects considered for this analysis include infrastructure and land use development projects and other irrigation modernization projects in the region.

Currently proposed infrastructure projects that may be visible from within the Study Area include the US 97 South Redmond Corridor Project, the US 97 Redmond to Bend Project, the Hamhook Road Bridge Replacement Project, and the City of Bend’s Parkway Connection Improvement projects. Piping of the PBC could contribute to visual impacts caused by the temporary presence of construction activities and equipment associated with the projects, or long-term changes associated with the appearance of new or altered roadway infrastructure.

Ongoing and proposed land use development plans and projects that may be visible from the Study Area include Juniper Ridge and the Northeast – Butler Market Expansion Area in Bend, the Southwest Area Plan in Redmond, and new policies for the Redmond Urban Reserve Areas being developed in the Deschutes County 2040 Comprehensive Plan Update. Visual impacts from these projects may include temporary impacts from the presence of construction equipment and activities and long-term impacts from the development of visible structures, roadways, public facilities, and other infrastructure needed to support new development.

When considered alongside other past and future irrigation district modernization projects in the region, piping of the PBC would contribute to a long-term impact on visual resources. Piping of the PBC and canals in nearby irrigation districts would lead to the loss of the existing open canals as a visual resource throughout the region.

7.4 Compliance with Laws, Regulations, and Standards

7.4.1 Federal

7.4.1.1 BLM Visual Impact Assessment

The PBC alignment between Bend and Redmond passes through two parcels owned and managed by BLM (Deschutes County tax lots 1612110000900 and 1612340000100). Development on this land is subject to a BLM Visual Assessment and Visual Contrast Rating (BLM 2023). The *Upper Deschutes Resource Management Plan* Visual Resource Management Classes Map designates both of these parcels as Class 4 (BLM 2005).

Objectives for Class 4 areas are as follows: “Allow major modifications of existing character of landscapes. Manage VRM Class 4 lands for moderate levels of change to the characteristic landscape. Management activities may dominate the view and be the major focus of viewer attention. Every attempt will be made to minimize the effect of management actions through careful location, minimal disturbance, and repeating the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape. the characteristic landscape.”

The General Visual Contrast Rating Process requires identification of key observation points (KOPs) from which the landscape is viewed. These two parcels do not have public access or developed recreation features; therefore, the KOPs may be defined as the roads running adjacent to the parcels, US 97 and Young Avenue. The existing PBC is not visible from the KOPs at each of these parcels. As such, any visual impacts caused by the piping of the PBC are likely to be low contrast and meet the visual resource management class objectives.

7.4.2 State

7.4.2.1 Statewide Land Use Planning Goals

The project would comply with Oregon Statewide Planning Goal 5, Natural Resources, Scenic and Historic Area, and Open Spaces. Visual impacts caused by piping the PBC would not adversely impact any locally designated scenic areas (DLCD 2023).

7.4.3 Local

7.4.3.1 Deschutes County

Comprehensive Plan

The project is consistent with the Open Spaces, Scenic Views, and Sites goals and policies of the *Deschutes County Comprehensive Plan* (Deschutes County 2011). A portion of the PBC alignment falls within an inventoried LM Area along US 97 between Bend and Redmond. Regulations for this area are administered by LM Combining Zone in the Deschutes County Development Code. No portion of the PBC falls within inventoried Areas of Special Concern.

Development Code

Landscape Management Combining Zone

Portions of the PBC alignment fall within the LM Combining Zone, which extends 0.25 mile on both sides of the centerline of US 97 between Bend and Redmond's UGB. Site plan approval is required for all new structures or substantial exterior alterations of structures within the combining zone.

Open Space and Conservation

Portions of the PBC alignment fall within the OS&C, including those parcels that are a part of the Redmond-Bend Juniper State Scenic Corridor. Operation, maintenance, and piping of existing irrigation systems operated by an irrigation district are uses permitted outright within the OS&C zone.

7.4.3.2 City of Bend

Comprehensive Plan

The project is consistent with the goals and policies of the *City of Bend Comprehensive Plan* (City of Bend 2023a). The plan identifies Areas of Special Interest that represent the features of Central Oregon and acknowledges that keeping these features intact will protect the natural character of the region as the community grows. The PBC alignment in Bend does not cross through any of these areas, though one Area of Special Interest in the Lava Ridge Natural Area is adjacent to the existing canal near the intersection of Desert Sage Street and Yeoman Road.

7.4.3.3 City of Redmond

Comprehensive Plan

The Project is consistent with the City of Redmond Comprehensive Plan (City of Redmond 2020) goals and policies to conserve open space and to protect natural and scenic resources. These policies state that the city should use canals, ROWs, and easements as recreation linkages for bike paths and hiking and jogging trails throughout the urban area. Piping of the canal will create space that could potentially be used for a future trail alignment, dependent on an easement or use agreement from COID. COID should coordinate with the city of Redmond to determine whether the Project could allow for construction of future trails within its easements after completion of the piping project.

7.5 Conclusion

The PBC acts as a visual and aesthetic resource along its alignment as an open water feature during irrigation season. Piping of the canal would remove this visual and aesthetic feature, creating long-term minor to moderate adverse effects.

Temporary adverse impacts on visual resources would occur due to the presence of construction equipment, activities, and ground disturbance of ground and vegetation within the resources during construction.

8. MITIGATION MEASURES

Mitigation for long-term visual and aesthetic impacts may incorporate measures to create visual interest in the alignment where the canal was visible before piping. This may include measures such as seeding with native plants or installation of landscaping, depending on the setting. Recreation uses such as linear parks or trails may be created along the alignment. The alignment may be used for the installation of public art or other aesthetic features that provide visual interest.

Mitigation of temporary construction impacts would include minimization of vegetation removal to the extent practicable. Vegetation removal should only occur within COID's easement and ROWs. Upon construction completion, these areas would be reseeded, and any removed landscaping would be restored.

Notice of all construction activities would be provided to surrounding residents and property owners. Construction activities would be limited to daytime hours.

9. CONTACTS AND COORDINATION

No individuals or organizations were contacted as part of the preparation of this technical report.

10. PREPARERS

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

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