Medford Irrigation District
Joint System Canal Modernization Project
Land Use Technical Report

Prepared for

U.S. Department of Agriculture Natural Resources Conservation Service, Lead Federal Agency, in cooperation with the Medford Irrigation District

April 2025

Parametrix

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Acronyms and Abbreviations

AR	aggregate removal
BLM	Bureau of Land Management
DEQ	Department of Environmental Quality
EFU	exclusive farm use
ESA	Endangered Species Act
FOS	forest open space
FR	forest resource
JSC	Joint System Canal
LDO	land development ordinance
MID	Medford Irrigation District
OAR	Oregon Administrative Rule
ORS	Oregon Revised Statute
OSR	open space reserve
Project	Joint System Canal Infrastructure Modernization Project
RMP	resource management plan
RRVID	Rogue River Valley Irrigation District
RS	rural service
SCADA	supervisory control and data acquisition
WR	woodland resource

Executive Summary

The Modernization Alternative would result in minor temporary impacts to land uses along the Joint System Canal alignment during construction of the Joint System Canal Infrastructure Modernization Project (Project), unless blasting as a construction method was used, which would result in moderate short term effects. No residential or commercial displacements would occur through the Modernization Alternative. Following completion of construction, the Project would not be expected to result in long-term effects on land use. Because there would be no permanent impacts to land uses on adjacent properties, compensation assistance would not be required to mitigate effects on adjacent property owners whose economic use of their land may be temporarily adversely affected. Compliance with local land use plans, design guidelines, and standards would be expected to provide sufficient mitigation for effects on adjacent uses.

1. Introduction

This technical report has been prepared as a part of the preparation of the Watershed Plan–Environmental Impact Statement (Plan-EIS) for the Joint System Canal Infrastructure Modernization Project (Project). The following sections identify and evaluate land use conditions within the Project Area and the potential effects of the project alternatives on land use.

2. Definitions

The following terminology is used when discussing geographic areas in this technical report.

Project Area. The area within which improvements associated with the project alternatives would occur and the area needed to construct these improvements. The Project Area consists of all parcels that are crossed by or adjacent to the existing JSC and potential new siphon alignments. This represents the potential footprint of all modernization improvements proposed under the alternatives, including proposed siphons; and areas needed for construction of permanent infrastructure, staging and storage, and temporary construction access.

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 soil resources), the geographic extent of the Study Area is the same as that for the Project Area. For other topics (such as fish and aquatic species) the Study Area is substantially larger to account for impacts that could occur outside of the Project Area. The Study Area for land use, which encompasses all parcels within a half-mile buffer to either side of the existing JSC, is defined in greater detail in Section 4.1.

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

3. Legal Regulations and Standards

3.1 Laws, Plans, Policies, and Regulations

3.1.1 State of Oregon

3.1.1.1 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 particularly 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 4: Forest Lands. Goal 4 protects working forest land around the state, preserving it for commercial forestry while recognizing its value for fish and wildlife habitat, recreation, and protection of air and water quality.
- 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.

3.1.1.2 Oregon Irrigation District Law (Oregon Revised Statute Chapter 545)

The Oregon Irrigation District Law, ORS Chapter 545, provides the foundations for the formation, development, operation, and governance of irrigation districts in Oregon. The following are of particular relevance to the Project's potential effects on land use:

- ORS 545.221, Powers and duties of board as to management of district; water deliveries.
- ORS 545.237, Right to enter upon lands for inspection and maintenance of water works.

3.1.2 Jackson County

3.1.2.1 Comprehensive Plan

The Jackson County Comprehensive Plan is the County's official long-range land use policy document. The plan sets forth general land use planning policies and allocates land uses into resource, residential, commercial and industrial categories. The plan serves as the basis for the coordinated development of physical resources and the development or redevelopment of the county based on physical, social, economic and environmental factors (Jackson County 2006). See Figure 3-1 for a map of comprehensive plan designations within the Study Area.

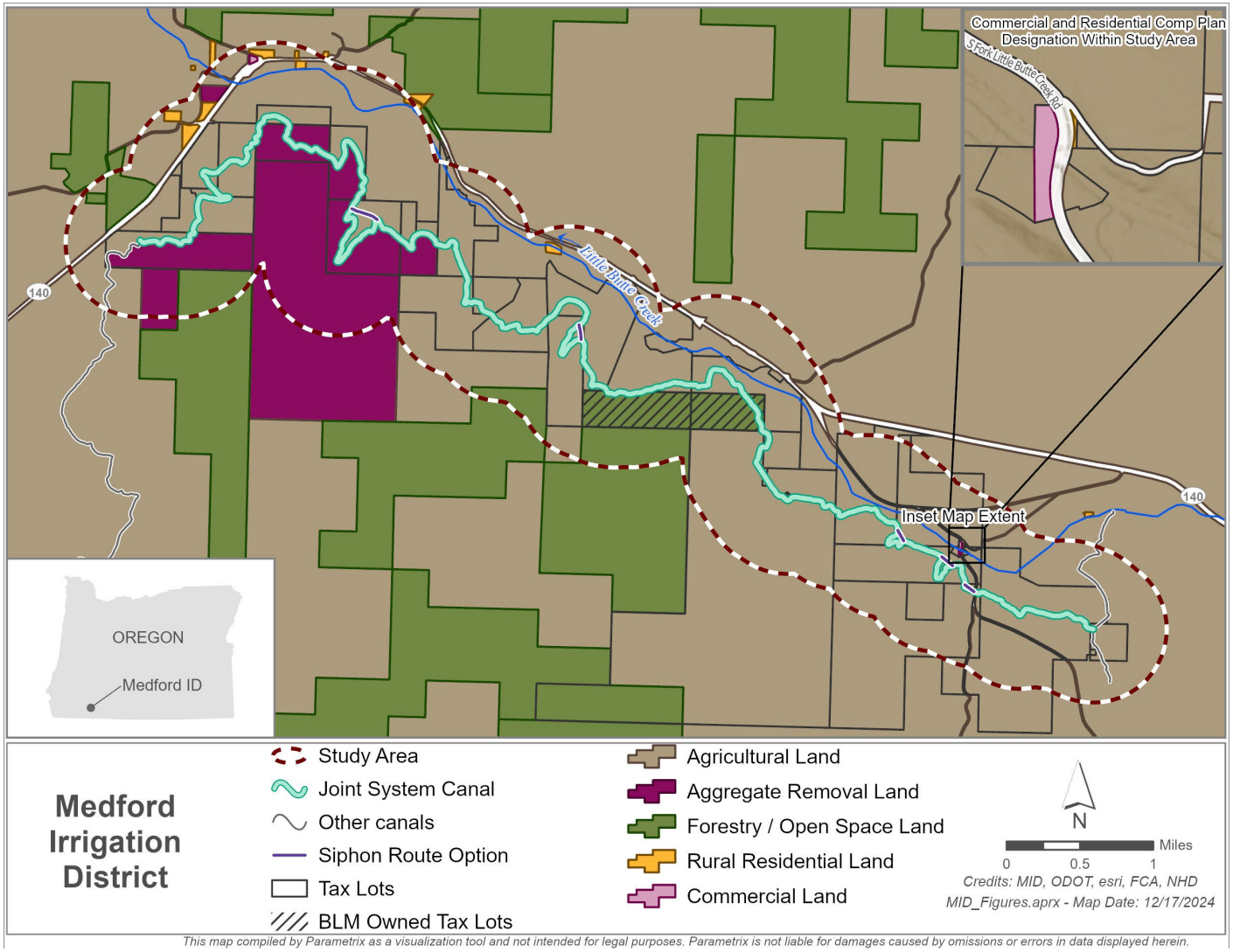

Figure 3-1. Comprehensive Plan Designations

3.1.2.2 Land Development Ordinance

The land use policies set forth in the Jackson County Comprehensive Plan are implemented through the Jackson County Land Development Ordinance (LDO). The Jackson County LDO 2004-2 establishes the base zones, zoning overlays, and associated regulations that govern development and use of land within unincorporated Jackson County. See Figure 3-2 for a map of zoning designations within the Study Area.

3.1.3 Medford Irrigation District

3.1.3.1 Medford Irrigation District Rules and Regulations

The MID Rules and Regulations are based on the statutory foundations provided by ORS Chapter 545. Among other functions, the MID Rules and Regulations govern the distribution and use of water throughout the irrigation district, set forth operations and maintenance requirements for canals, and enable MID to exercise privilege of right-of-way in the location, construction, operation, and maintenance of canals (MID 2005).

3.2 Design Standards

The Project Area falls within a range of zones throughout its existing and proposed alignment. These zones and their applicability to project development are discussed in further detail in Section 4.3 of this report, Existing Conditions. In addition to identifying allowable and prohibited uses, each zone establishes development standards regulating the height, bulk, lot coverage, setbacks, design, and other physical aspects of buildings, structures, and other development. All relevant design standards will be reviewed in detail during the permitting process for the piping project.

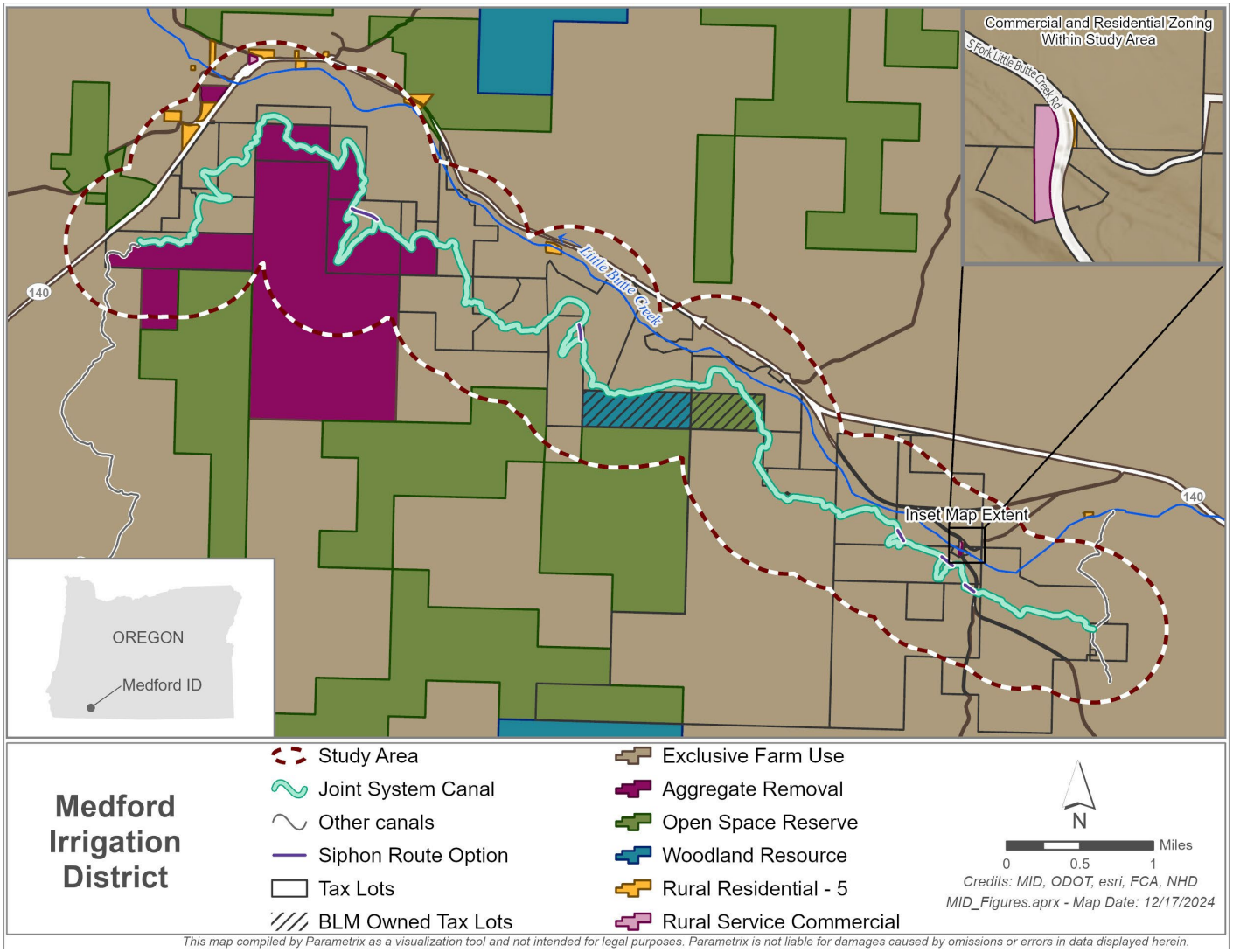

Figure 3-2. Zoning

4. Affected Environment

4.1 Study Area

The Study Area for this land use analysis includes the Project Area and all parcels within a half-mile buffer to either side of the existing JSC. This half-mile distance encompasses all parcels where MID patrons served by irrigation turnouts along the Project Area are currently using their water. It also encompasses all parcels adjacent to Highway 140 where existing uses could potentially experience temporary effects from construction vehicle traffic during project construction.

The Project Area includes parcels that are crossed by or adjacent to the existing JSC as well as the potential new siphon alignments that are proposed under the Modernization Alternative. The Project Area encompasses the footprint of all modernization improvements proposed under the alternatives, including areas needed for construction of permanent infrastructure, staging and storage areas, and temporary construction access.

4.2 Resource Identification and Evaluation Methods

The following data sources were used to identify existing conditions and provide the required information for analysis of the No Action Alternative (Future without Federal Investment) and Modernization Alternative (Future with Federal Investment), including the various siphon options.

4.2.1 Published Sources and Databases

- Jackson County GIS
  - → Zoning designations
  - → Comprehensive Plan designations
- Jackson County LDO
- Jackson County Comprehensive Plan
- Jackson County Tax Assessor Property Data

4.2.2 Field Visits and Surveys

No field visits or surveys were conducted as part of the land use analysis. Wetland and biological resources surveys conducted in spring and early summer of 2024 identified land uses adjacent to the canal as almost entirely pasture and grazing lands. Occasional residential uses, which are accessory to existing agricultural operations, were also identified near the canal alignment. Active rock quarrying operations were observed on adjacent lands near the northwestern limit of the Project Area.

4.3 Existing Conditions

4.3.1 Zoning

4.3.1.1 Study Area

Zoning within the Study Area, including baseline zoning designations as well as overlays, is administered by Jackson County according to the County's LDO, which implements the Jackson County Comprehensive Plan. The various zones—and overlays, as applicable—establish what uses are allowed, limited, or prohibited on a property, provide guidance on land use intensity, and set development standards. Zoning in an area is generally indicative of both existing land uses as well as planned future land uses as identified in the comprehensive plan. Comprehensive plan designations in the Study Area are shown in Figure 3-1. Zoning designations within the Study Area are shown in Figure 3-2 and are described below.

Exclusive Farm Use (EFU)

The majority of the Study Area (5,053 acres) is zoned EFU. EFU zones are established and regulated by state law and are intended to preserve the maximum amount of agricultural land for the continued practice of commercial farming. The EFU zone acts to conserve agricultural lands in Jackson County for farm use, and it implements Oregon Agricultural Land Use Policy (ORS 215.243), Oregon Administrative Rule (OAR) 660-033, and Statewide Planning Goal 3 (Agricultural Lands).

Woodland Resource (WR) and Open Space Reserve (OSR)

The Jackson County Comprehensive Plan identifies areas of the county as forest land, the purpose of which is to conserve forest lands for forest uses and ensure a continued yield of forest products. Forest lands are designated in the comprehensive plan and on comprehensive plan map(s) as Forest Open Space (FOS). The adopted Jackson County zoning map(s) divide FOS-designated lands into three types of zone: WR, OSR, and Forest Resource (FR).

Approximately 117 acres of the Study Area are located in the WR zone, and another roughly 388.8 acres are located in the OSR zone. The WR and OSR zones implement Statewide Planning Goal 4 (Forest Lands) and OAR 660.006, which governs the conservation of forest lands as defined by Goal 4 and defines standards for compliance with implementing statutes.

Aggregate Removal (AR)

Approximately 903 acres of land in the northwestern portion of the Study Area are designated as AR. These lands include the site of the Panther Quarry and Panther Crushing Company. The purpose of the AR zone is to allow the development and use of significant mineral and aggregate resources subject to uniform operating standards; to balance and resolve conflicts between surface mining activities and activities on surrounding land; and to ensure the protection of natural resources and the reclamation of mined land. The AR zone is intended to protect the resource from incompatible uses, particularly residential uses, which may inhibit the extraction, crushing, and transportation of the resource.

Rural Residential Zone (RR-5)

The purpose of the rural residential zones is to provide for large-lot residential areas consistent with the predominant rural character of the area and the physical capability of the land. Approximately 31.2 acres of the Study Area are within the RR-5 zone

Rural Service Commercial (RS)

The purpose of the RS zone is to provide basic commodities to rural areas for which a specialized rural service district has not been adopted. Adequate area must be available to buffer the commercial uses from nearby residential, farm, forest, and industrial uses. Approximately 2.7 acres of the Study Area are within the RS zone.

Overlays

The purpose of overlays is to protect site-specific environmental and cultural resources through the application of additional development regulations and requirements. Uses within the overlays are governed by the underlying zoning regulations as well as the special regulations set forth in Chapter 7 of the LDO. Overlays identified within the Study Area include the Aggregate Conflicting Use Impact Area and the Floodplain Overlay.

Aggregate Conflicting Use Impact Area

The Aggregate Conflicting Use Impact Area overlay consists of the area surrounding properties zoned AR, where the potential may exist for new uses or development to adversely affect or interfere with mining and processing operations. This overlay generally extends 1,500 feet from the boundaries of a mining area, but it may extend a greater distance where significant potential conflicts have been identified. Portions of the Project Area located adjacent to AR-zoned lands are assumed to lie within the Aggregate Conflicting Use Impact Area. The extent of this overlay, if greater than 1,500 feet from the boundaries of AR-zoned lands, would be confirmed during a pre-application conference with the Jackson County Planning Department prior to submittal of a land use permit application.

Floodplain Overlay

The Floodplain Overlay applies to all areas within the 100-year floodplain within the jurisdiction of Jackson County, as shown on Flood Boundary and Floodway Maps or Federal Emergency Management Agency Flood Insurance Rate Maps. The purpose of this overlay is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas. The Floodplain Overlay overlaps with approximately 0.14 acres (6,191 square feet) of the Project Area near the junction of North Fork Canal and South Fork Canal.

4.3.1.2 Project Area

The Project Area includes most of the zones present in the larger Study Area. Zoning in the Project Area and the number of parcels located within each zone are identified in Table 4-1.

Table 4-1. Project Area Parcels and Zoning

Zoning	Parcels	Acres
Exclusive Farm Use Zone (EFU)	29	4,353.1
Aggregate Removal (AR)	5	394.1
Open Space Reserve (OSR)	2	240.2
Woodland Resource Zone (WR)	1	117.0

Parcels within the Project Area are predominantly zoned EFU (approximately 4,353 acres). In the EFU zone, “irrigation canals, delivery lines, and accessory structures and facilities associated with a district” are allowed via a Type 2 development permitting process, per Jackson County LDO

Section 4.2.2. Type 2 uses are subject to administrative review. These decisions are discretionary and therefore require a notice of decision and opportunity for a public hearing. Five parcels totaling approximately 394.1 acres are zoned AR. The LDO does not identify irrigation district use or structures as either an allowed or prohibited use in the AR zone. The most similar allowed use is utility facilities, which is also a Type 2 use (LDO Section 4.4.3). Two parcels zoned OSR and one zoned WR, totaling approximately 357.2 acres, make up the remainder of the Project Area. In FR zones, including the OSR and WR zones, "water intake facilities, canals, and distribution lines for farm irrigation and ponds" are allowed by right (LDO Section 4.3.3). Uses allowed by right in a given zone may be permitted via a Type I review process, which is the least complex type of land use permit review. A Type 1 review involves ministerial approval by the Jackson County planning director without discretionary review by the County planning commission or a requirement for public notification. However, because development in the segments of the Project Area that traverse EFU- and AR-zoned lands would require a Type 2 review, it is anticipated that the entire Project would be permitted via a single Type 2 development permitting process. Review of the Project's compliance with the provisions of the Aggregate Conflicting Use Impact Area and Floodplain Overlay would likewise take place as part of the same Type 2 development review.

4.3.2 Land Ownership and Use

The majority of the land in the Study Area is privately owned. Approximately 1,560 acres within the Study Area, distributed over six parcels, are owned by the Bureau of Land Management (BLM) Medford District. These lands are designated by the BLM's current Southwest Oregon Resource Management Plan (RMP) as District-Designated Reserve – Timber Production Capability Classification and Riparian Reserve – Dry.

The District-Designated Reserve – Timber Production Capability Classification applies to forest lands that are identified as unsuitable for sustained-yield timber production. These lands are managed primarily for ecosystem protection purposes, while allowing for some commercial use of forest resources as appropriate. For example, the RMP provides the following directives for management of these lands (BLM 2016):

- Maintain access to roads and facilities by removing hazard trees and blowdown. Such logs may be retained as down woody material, moved for placement in streams for fish habitat restoration, or removed through a commercial harvest or special forest products sale.
- Apply silvicultural or fuels treatments, including prescribed fire, that restore or maintain community-level structural characteristics, promote desired species composition, and emulate ecological conditions produced by historical fire regimes.

Lands designated as Riparian Reserve – Dry are managed generally for the purposes of protecting riparian and aquatic habitat resources and preserving water quality. Management objectives include the following (BLM 2016):

- Contribute to the conservation and recovery of ESA-listed fish species and their habitats and provide for conservation of Bureau Special Status fish and other Bureau Special Status riparian-associated species.
- Maintain and restore natural channel dynamics, processes, and the proper functioning condition of riparian areas, stream channels, and wetlands by providing forest shade, sediment filtering, wood recruitment, stream bank and channel stability, water storage and release, vegetation diversity, nutrient cycling, and cool and moist microclimates.

- Maintain water quality and streamflows within the range of natural variability to protect aquatic biodiversity and provide quality water for contact recreation and drinking water sources.
- Meet Oregon Department of Environmental Quality (DEQ) water quality criteria. Maintain high quality water and contribute to the restoration of degraded water quality for Section 303(d)-listed streams.
- Maintain high quality waters within DEQ-designated Source Water Protection watersheds.

The BLM also holds permanent easements across several privately owned parcels within the Study Area to facilitate access to BLM lands and management of forest resources. In addition, the Southern Oregon Land Conservancy owns six permanent conservation easements totaling approximately 2,208 acres on private farm and forest lands in the Little Butte Creek Watershed. Portions of one of these easements are located within the Study Area slightly less than 0.5 miles east of the eastern terminus of the pipe, but they do not adjoin or intersect the Project Area (SOLC 2022).

Existing land use throughout the Study Area is primarily characterized by agriculture. MID delivers water to irrigate approximately 12,000 total acres of farms and orchards in Jackson County (MID 2017; MID 2022). Crops grown within the MID service area are generally reflective of crop types grown in Jackson County as a whole consisting of pears, wine grapes, and other fruit, as well as hay and forage (88 FR 46136 [July 19, 2023]), hemp, and vegetables. Table 4-2 presents the most recent available agricultural information for MID based on the MID Updated Water Management and Conservation Plan (MID 2017) and for Jackson County based on the USDA-National Agricultural Statistics Service (NASS) 2022 Census of Agriculture. Livestock forage and orchard crops account for the majority of the acreage in cultivation in both the MID service area and Jackson County overall.

Table 4-2. Top Crops Grown within the MID Service Area and Jackson County

Crop	MID Acreage (2016) [a]	Acreage in Jackson County (2022) [b]
Cereals	612	986
Forage (hay/haylage, alfalfa, other pasture crops; includes golf courses, schools, and cemeteries)	6,154	17,772
Orchard crops (pears, apples, peaches)	3,288	4,190
Grapes and Berries	490	3,314
Vegetables	586	291
Hemp (cannabis)	N/A	369
Other (yard, garden, etc.)	1,070	N/A
Total	**12,200**	**26,922**

a MID, 2017, Water Management and Conservation Plan.

b USDA-NASS, 2022, 2022 Census Full Report.

Approximately 903 acres in the northwestern portion of the Study Area are in aggregate extraction use and occupied by a quarry and rock crushing operation. Forestry and open space uses are also sporadically present throughout the Study Area. Intermittent rural residential development is located along the Highway 140 corridor, primarily concentrated in the unincorporated community of Brownsboro. Many of the residences are associated with adjacent farming and ranching operations.

One vacant 2.7-acre commercial-zoned property is located at the intersection of Highway 140 and Brownsboro-Eagle Point Highway in the northwesternmost portion of the Study Area.

5. Impact Assessment Methodology and Data Sources

5.1 Long-Term Impact Assessment Methods

All existing land uses within the Project Area were evaluated for potential long-term impacts. Project design and engineering and anticipated acquisitions for new easements for siphons outside of the existing JSC easement were evaluated alongside property boundary maps to determine potential physical impacts. Impacts to other resources analyzed in the Plan-EIS such as visual resources, vegetation, and noise were also considered, as such impacts could potentially create disruptions for existing land uses within the Project Area. The analysis of long-term impacts considered the permanent displacement of existing non-irrigation uses (i.e., rural residential, forestry, and aggregate mining) as well as impacts to surrounding properties resulting from the conversion of land uses.

5.2 Short-Term Impact Assessment Methods

Short-term impacts are primarily related to the effects of project construction 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, agricultural, aggregate mining, or other land uses.

5.3 Indirect Impact Assessment Methods

Indirect impacts consist of changes in land use patterns throughout the broader surrounding region based on how the project alternatives would affect existing and future land uses in the Project Area. The indirect impacts analysis includes consideration of how displacements, if they were to occur, may affect future development or redevelopment potential in the Project Area and vicinity, as well as how piping of the JSC may impact the success of agricultural land uses that rely on it for irrigation water conveyance.

5.4 Cumulative Impact Assessment Methods

The cumulative impacts analysis addressed the long-term and short-term cumulative impacts of the project alternatives. Other projects considered in the analysis 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.

6. Environmental Consequences

6.1 Long-Term Impacts

6.1.1 No Action (Future without Federal Investment)

Under the No Action Alternative, the JSC would not be piped. As a result, there would be no changes to existing land use within the Study Area and no potential inconsistencies or incompatibilities with the existing zoning.

6.1.2 Modernization Alternative (Future with Federal Investment)

6.1.2.1 Joint System Canal

The Modernization Alternative would install a pressurized underground pipe within the existing JSC alignment, which would replace the open canal. Under this alternative, the majority of permanent impacts would be within the existing canal bed. Where new siphons are proposed, new permanent easements would be needed along the siphon alignments to allow access for periodic siphon maintenance and for vegetation management to ensure that deep-rooted vegetation does not establish atop the pipe. The zoning and general land use characteristics in the proposed new siphon alignment locations would be the same as along the sections of canal bypassed by the siphons; therefore, there would be no permanent changes to existing land use or changes in consistency with existing zoning outside of the existing canal bed. Permanent conversion of existing uses or displacement of existing residents, businesses, or structures is not expected to occur as a result of the Project, since the Project would occur largely within the alignment of the existing JSC. The proposed new siphon locations are not in developed areas where existing uses would be subject to displacement.

Because the existing open canal would be replaced by an underground piped conveyance system, the canal would no longer be a visible, aboveground irrigation use. The existing land uses adjacent to the canal alignment consist almost exclusively of cattle grazing and, in the northwestern portion of the Project Area, aggregate mining. Therefore, there are no residences, businesses, or recreation resources that would be indirectly affected by losing views of the existing canal. There would be no acquisitions or permanent changes to existing land uses or ownership outside of the existing canal alignment. However, permanent use restrictions would be in place within easements along the new pipeline alignment. The pipeline would be relocated underground, and the canal—an aboveground irrigation conveyance use—would no longer be present. Upland habitat created by replacing the canal with a buried, piped conveyance could potentially provide for other uses, such as cattle grazing, depending on the allowed, existing, and adjacent uses at a given location along the canal.

The Project is consistent with Oregon's Statewide Land Use Planning Goal 3, Agricultural Lands, and Goal 4, Forest Lands. Due to the protections that the land uses in the Project Area are afforded through the statewide planning goals, land uses in the Project Area are not expected to change. Overall, the Project Area would continue to be characterized by agricultural, forest, and aggregate extraction uses.

Piping the JSC and improved water delivery reliability to MID and RRVID patrons would support agricultural land uses in Jackson County and on lands served by the JSC. Piping the JSC would not affect forest lands on parcels that are zoned OSR and WR. On BLM-owned lands, the Project would

not be inconsistent with the existing RMP designations of District-Designated Reserve – Timber Production Capability Classification and Riparian Reserve – Dry. The new MID easements along the pipeline alignment would prohibit tree growth in order to protect the pipe from potential damage by tree roots. However, tree growth is only currently occurring at the edges of the JSC, and the prevention of additional tree growth along the alignment would not have overall effects on surrounding forest use.

6.1.2.2 Existing Siphon Updates and Canal Loop Improvements

Under the Modernization Alternative, six siphons were evaluated, including three existing siphons which would be reconstructed in place and three new siphons that would bypass sections of the existing JSC. All of the siphons would be underground. There is no existing irrigation infrastructure in the areas considered for new siphons. For all siphons, as well as the sections of the JSC that would be bypassed by the siphons and retired, there would be no anticipated permanent impact created by changes to visual or aesthetic features on land uses in these areas. Permanent use restrictions such as prohibitions on tree growth and limits on heavy equipment and vehicle use would be in place within easements surrounding the siphons.

Lake Creek Siphon

Option 1 (Existing Alignment) and Option 2 (Adjacent Alignment)

The existing 563-foot-long siphon could be upgraded in its current alignment, either through slip lining or replacement, and all permanent impacts would be within the existing canal alignment. Alternatively, a new siphon could be built adjacent to the existing siphon with the existing siphon retired in place. The current siphon alignment is in EFU zoning on both sides of the canal at either end of the siphon, and there would be no change to existing zoning or land uses.

Wyant Gulch Siphon

Option 1 (Existing Alignment)

Under this route option, the existing 145-foot-long siphon could be upgraded in its current alignment, either through slip lining or replacement, and all permanent impacts would be within the existing canal alignment. Alternatively, a new siphon could be built adjacent to the existing siphon with the existing siphon retired in place. There would be no change to the current EFU zoning or the existing land use on either side of the canal or at either end of the siphon alignment.

Option 2 (New Alignment)

Under this option, a new siphon would be constructed downslope of the existing canal under Wyant Gulch. The new siphon would be approximately 512 feet in length and would avoid approximately 1,689 feet of in-canal piping and the need to upgrade the existing siphon. The new Wyant Siphon would be installed in EFU zoning, which is the same zoning as the existing canal alignment. The 1,689-foot section of canal bypassed by the new siphon would be retired and left open. In the long term, it is expected that the retired section of canal would become revegetated with upland vegetation.

Osborne Creek Siphon

Option 1 (Existing Alignment) and Option 2 (Adjacent Alignment)

The existing 1,094-foot-long siphon could be upgraded in its current alignment, either through slip lining or replacement, and all permanent impacts would be within the existing canal alignment.

Alternatively, a new siphon could be built adjacent to the existing siphon with the existing siphon retired in place. There would be no change to the current EFU zoning or existing land use on either side of the canal or at either end of the siphon alignment.

Grasshopper Segment

Option 1 (Existing Alignment)

Under this route option, no siphon would be constructed at Grasshopper Gulch. The new pipeline would be installed in the existing canal alignment, and all permanent impacts would be within the existing canal alignment. There would be no impacts to the existing EFU zoning or existing land uses in this portion of the Project Area.

Option 2 (Siphon)

Under this option, a new siphon would be constructed downslope of the existing canal under Grasshopper Gulch. The new siphon would be approximately 438 feet in length and would avoid 1,521 feet of in-canal piping. The new Grasshopper Siphon route option would be installed in EFU zoning, which is the same zoning as the existing canal alignment. The 1,521-foot section of canal bypassed by the new siphon would be retired and left open. In the long term, it is expected that the retired section of canal would become revegetated with upland vegetation.

Owens Segment

Option 1 (Existing Alignment)

Under this route option, no siphon would be constructed at Owens Gulch and the new pipeline would be installed in the existing canal alignment. All permanent impacts would be within the existing canal alignment. There would be no change to the current EFU zoning or impacts to existing land use on either side of the canal.

Option 2 (Siphon)

Under this option the new Owens Siphon would be constructed downslope of the existing canal under Owens Gulch. The siphon would be approximately 537 feet in length and would avoid 2,268 feet of in-canal piping. The new Owens Siphon would be installed in EFU zoning, which is the same zoning as the existing canal alignment. The 2,268-foot section of canal bypassed by the new siphon would be retired and left open. In the long term, it is expected that the retired section of canal would become revegetated with upland vegetation.

Eagle Gulch Segment

Option 1 (Existing Alignment)

Under this route option, no siphon would be constructed at Eagle Gulch. The new pipeline would be installed in the existing canal alignment, and all permanent impacts would be within the existing canal alignment. The new pipeline would be consistent with the existing zoning in this portion of the Project Area; zoning is split between AR on the upslope side of the canal and EFU on the downslope side.

Option 2 (Siphon)

Under this option, a new siphon would be constructed downslope of the existing canal under Eagle Gulch. The new siphon would be approximately 1,001 feet in length and would avoid 4,802 feet of in-canal piping. The new Eagle Gulch Siphon would be installed in EFU zoning, which is the same

zoning as the downslope side of the existing canal alignment. The 1,001-foot section of canal bypassed by the new siphon would be retired and left open. In the long term, it is expected that the retired section of canal would become revegetated with upland vegetation.

6.2 Construction Impacts

6.2.1 Impacts from Construction

Under the Modernization Alternative and all siphon options, construction activities would include vegetation clearing, trenching, equipment mobilization and staging, and backfilling of trenches after pipe installation. All of these activities could potentially result in short-term visual, noise, and vibration impacts to land uses surrounding the JSC alignment. Because the existing land uses adjoining the JSC include agricultural operations, timber management, and aggregate mining, visual impacts, noise, and vibration from construction activities would not be expected to substantially affect existing uses. Temporary construction easements may be needed, potentially limiting access to and use of portions of properties along the canal during construction. No impacts to structures are anticipated.

Temporary lane closures and delays may occur if construction access and construction vehicle and equipment movements result in the disruption of normal vehicle traffic on Highway 140. Related disruption of access to properties along Highway 140 could result in minor, short-term effects on existing land uses.

The pipeline route may be slightly adjusted within the Project Area based on the presence of rock outcroppings which are seen along the existing canal in the northwestern portion of the alignment. Jackhammering, blasting, or other methods may be required to remove rock if the pipeline is unable to be relocated to an alternate route., If blasting would be used, this could result in localized disturbance that could temporarily affect land uses along the alignment and in the surrounding vicinity. Blasting is anticipated to take place in areas currently zoned for aggregate extraction and used for rock quarrying and crushing operations; thus, the existing noise from current land uses would be expected to moderate the potential additive effects of blasting noise on neighboring uses. As a result, minor to moderate short-term effects on existing land uses would be expected. Prior to construction, pre-engineering feasibility studies would be conducted to determine the needed extent of blasting and identify potential for unique construction considerations.

6.2.2 Potential Off-Site Staging Areas

The construction contractor could potentially select one or more off-site staging areas outside the Project Area. These sites would be used to store or assemble materials that would then be transported by truck to the construction site.

Areas that have been previously disturbed and are accessible via existing access routes would be prioritized. In some locations, specifically at new siphons, construction access would need to be created before delivering pipe or equipment into construction areas. This could include vegetation clearing within the construction area and temporary disruption of existing land uses. Appropriately sized construction equipment would be used to minimize disturbance in the construction area.

Potential staging areas have been identified at the following locations:

- Three areas within Jackson County Tax Lot 362E5500:
  - → Adjacent to the JSC west of the junction of North Fork Canal and South Fork Canal (Bench Flume 1 staging area).

  - → Adjacent to S Fork Little Butte Creek Road west of an unnamed creek crossing this road south of the JSC (Diversion Road staging area).
  - → Adjacent to the JSC east of the existing Lake Creek Siphon (Turnaround staging area).
- One area within Jackson County Tax Lot 362E7701 adjacent to the JSC at the west end of the existing Lake Creek Siphon (Lake Creek Siphon staging area).
- One area within Jackson County Tax Lot 362E19100 adjacent to the JSC at the south end of the proposed Grasshopper Siphon (Grasshopper Siphon staging area).
- One area overlapping Jackson County Tax Lots 361E10300 and 361E10302 adjacent to the JSC south of the northward turn of Little Butte Creek south of Lake Creek Loop Road (Bench Flume 2 staging area).
- Two areas wholly within Jackson County Tax Lot 361E10302:
  - → Adjacent to the JSC at the south end of the Osborne Siphon (Osborne staging area 1).
  - → Adjacent to the JSC at the north end of the Osborne Siphon (Osborne staging area 2).
- One area within Jackson County Tax Lot 361E14100 north of the JSC between two unnamed creek drainages south of Little Butte Creek (Panther Crushing staging area).
- One area within Jackson County Tax Lot 361E08700 west of the Bradshaw Drop and north of the Hopkins Canal.

While the contractor could choose to use one of these or another site, the contractor would be responsible for relevant local land use and/or local, state, or federal environmental permitting required for use of a chosen site. Therefore, it is assumed that because of regulatory and time constraints on the contractor, any site chosen would need to be already developed with road access Whether, where, and how to use such sites would be the contractor's choice, and therefore, the actual site or sites selected cannot be known currently.

6.3 Cumulative Effects

There are no ongoing or reasonably foreseeable projects within the Study Area that could result in potential cumulative effects on land use. Because the Project itself is not expected to result in long-term changes to land use, the Modernization Alternative would not contribute to cumulative effects. Temporary occupancy of lands within the Project Area may cause short-term disruption to existing land uses during construction. However, after completion of construction, land use in the Study Area would approximate pre-construction conditions.

6.4 Compliance with Laws, Regulations, and Standards

6.4.1 State of Oregon

6.4.1.1 Statewide Land Use Planning Goals

The Project is consistent with Oregon's Statewide Land Use Planning Goal 3, Agricultural Lands, and Goal 4, Forest Lands. Piping the JSC and improved water delivery reliability to MID and RRVID patrons would support agricultural land uses in Jackson County and on lands served by the JSC that are planned and zoned for agricultural use. Piping of the JSC in areas zoned for forest use may require permanent tree removal and vegetation management along the pipe alignment to ensure

deep-rooted vegetation does not establish atop the pipe; however, this would not preclude the continued management of adjacent areas for forest uses.

6.4.2 Jackson County

6.4.2.1 Comprehensive Plan

The Project is consistent with the Jackson County Comprehensive Plan's Agricultural Lands Policies, the fundamental goal of which is to preserve and maintain agricultural land. Piping the JSC would improve water delivery reliability for MID patrons, which would help to preserve and maintain agricultural land uses in the Study Area. In addition, it would help to improve irrigation water availability and delivery efficiency for other lands within the county served by the JSC.

6.4.2.2 Land Development Ordinance

The Project is consistent with the Jackson County LDO as discussed in Section 4.3.1.2. Zoning designations within the Project Area allow for construction, operation, maintenance, and piping of irrigation systems either as an outright permitted use or via a discretionary review by the planning director. The Project would not require construction within the Floodplain Overlay, and portions of the Project within the Aggregate Conflicting Use Impact Area are not expected to adversely affect or interfere with aggregate extraction activities. Because piping of the canal is likely to require a Type 2 review in the EFU and AR zones, it is anticipated that the Project would be permitted via a Type 2 development permitting process.

A Type 2 Review is a land use permitting action that may be authorized administratively based on the planning director's discretion. The Type 2 review requires public notice and the publication of a notice of decision. The community development director may approve the action as proposed, attach conditions of approval to the permit authorization, or elevate the land use review to a public hearing before a hearings body.

6.5 Conclusion

The Modernization Alternative would result in minor temporary impacts to land uses within the Project Area during construction of the Project. No residential or commercial displacements would occur through the Modernization Alternative. Following completion of construction, the Project would not be expected to result in long-term effects on land use.

7. Mitigation Measures

Because there would be no permanent impacts to land uses on adjacent properties, compensation would not be required to mitigate effects on adjacent property owners whose economic use of their land may be temporarily adversely affected. Compliance with local land use plans, design guidelines, and standards would be expected to provide sufficient mitigation for effects on adjacent uses.

Mitigation for construction-phase ground-disturbance impacts may include restoration of pre-construction contours and revegetation with an NRCS-approved seed mix after construction is complete. This would eliminate any potential for construction-phase ground disturbance to affect the productive use of lands within the Project Area in the long term.

Mitigation for temporary noise impacts during construction would include the use of best management practices to reduce noise and vibration; practices may include but not be limited to equipment mufflers and restrictions on the hours when active construction could take place. If blasting is required, a blasting plan would be developed for blasting areas. Adjacent and nearby property owners and tenants would be notified before construction activity begins.

Mitigation for impacts to historic resources is detailed in the Cultural Resources Technical Report. Refer to individual technical reports for additional mitigation measures for specific resource topics.

8. Contacts and Coordination

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

9. Preparers

Name	Professional Affiliation	Education	Years of Experience
Jason Medema	Parametrix	MS Environmental Studies BA International Affairs	19

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