I-5: SOUTH JEFFERSON INTERCHANGE TO US 20 INTERCHANGE

Design Baseline Evaluation

December 2015

Prepared by:

Region 2 Headquarters
455 Airport Road, Building B
Salem, Oregon 97301-5395

This page intentionally left blank.

Introduction

The I-5: South Jefferson Interchange to US 20 Interchange Design Baseline Evaluation ("Design Baseline Evaluation")—this document--summarizes ODOT's evaluation of potential environmental impacts resulting from a project that is designed to address documented deficiencies on this segment of I-5. This Design Baseline Evaluation document summarizes key information and analysis that can be used to help prioritize future project elements for funding, guide future design refinements to the project, and determine the need for any additional analysis of potential environmental impacts. This Design Baseline Evaluation:

- identifies the Project Location,
- describes the Purpose and Need for a project,
- describes the proposed project (the Build Alternative) and how the Build Alternative was developed to address the Purpose and Need while avoiding or minimizing potential impacts, and
- summarizes the evaluation of environmental impacts resulting from construction and operation of the project.

The I-5: South Jefferson Interchange to US 20 Interchange Design Baseline Evaluation ("Design Baseline Evaluation")—this document--summarizes ODOT's evaluation of environmental impacts resulting from a project that is designed to address deficiencies on this segment of I-5. This Design Baseline Evaluation document summarizes key information and analysis that can be used to help prioritize future project elements for funding, guide future design refinements to the project, and determine the need for any additional analysis of potential environmental impacts. Because this document was originally intended as a NEPA document, the organization of the document follows in a format that is consistent with a NEPA analysis. The assessment of environmental impacts in this Design Baseline Evaluation was conducted for the Build Alternative as a whole, again consistent with a NEPA analysis. This Design Baseline Evaluation identifies elements of the Build Alternative that could be built in phases, but it does not identify discrete elements that could be built as stand-alone projects. This document also does not assess potential environmental impacts associated with stand-alone projects smaller than the Build Alternative as a whole. ODOT determined that an assessment of impacts associated with smaller stand-alone projects is not needed at this time given the results of the evaluation for the Build Alternative as a whole, our likely phased approach to the project over time, and our anticipation that any future assessment of environmental impacts associated with stand-alone projects will need to be updated when the projects are selected for construction.

Project Overview

Interstate 5 (I-5) is the main Interstate Highway on the west coast of the United States. I-5 plays a major role in supporting regional livability and economic activity by facilitating efficient travel. The operation of I-5 and its interchanges is also vital for supporting livability and economic activity in the Albany-Millersburg area of Linn County, Oregon. The proposed project—called the Build Alternative in this Design Baseline Evaluation--is designed to reduce congestion and improve the operational efficiency and safety of I-5 and the interchanges serving the Albany-Millersburg area. The proposed project consists of reconstructing and modernizing I-5 and the interchanges in the Albany and Millersburg area. In addition, improvements are proposed to the local system that will help keep I-5 and its interchanges operational.

Project Area

The project area is located along an approximately 5-mile stretch of I-5 that begins north of Millersburg at the South Jefferson Interchange (mile point [MP] 238.2) and ends at the US 20 Interchange (MP 233.2). There are five existing interchanges in the project area (listed from north to south): South Jefferson, Viewcrest (MP 237.7), Murder Creek

(MP 235.7), Knox Butte (MP 234.2), and US 20. The project area includes this portion of I-5, the five existing interchanges, and land in the vicinity of proposed improvements to I-5, its interchanges, and associated local roadways in the cities of Albany and Millersburg and in unincorporated Linn County.

Purpose and Need

The purpose of the proposed project is to correct design deficiencies, improve operations, reduce congestion, and improve safety for mainline I-5, its interchanges, and associated local roadway connections in the Albany-Millersburg area of Linn County, Oregon. The need for the proposed project is based on the following issues in the project area:

- **Roadway Geometric Deficiencies** – The existing interchanges and its' interchange in the project area experience operational issues, such as weaving and traffic slow-down, resulting from deficiencies that include closely-spaced interchanges, interchanges lacking full movements, inadequate acceleration and deceleration ramp lengths, and substandard ramp curvature that create challenging conditions for freight trucks.
- **Congestion** – Traffic projections indicate that without improvements, most roadway segments and signalized intersections in the project area will operate in excess of State mobility targets by 2035.
- **Safety** – The 2012 Safety Priority Index Report System (SPIS) identifies two locations in the project area as having a crash rating in the top 5 percent of similar roadway segments in Oregon. The SPIS site on US 20 is at the Waverly Drive intersection west of the US 20 interchange, and the SPIS site on Oregon Highway 99 East is at the Killdeer Avenue intersection east of the Knox Butte interchange. There are no SPIS locations with accident rates in the top 5 percent of similar roadway segments identified on the I-5 mainline in the project area.

Project Alternatives

Two alternatives are evaluated in this analysis: a No Build Alternative and a Build Alternative. Future (2035) conditions resulting from the Build Alternative are compared to future (2035) conditions under the No Build Alternative to determine potential environmental impacts resulting from the Build Alternative.

No Build Alternative

The No Build Alternative typically starts with a description of current (existing) conditions in the project area. Future (2035) conditions with the No Build Alternative provides a baseline for assessment of potential environmental impacts of the proposed project. Under the No Build Alternative, I-5 and the current interchanges would remain in place in their current configurations in into 2035, with only routine maintenance to prevent deterioration. Only planned and programmed improvements to the local transportation system would occur.

Build Alternative

The proposed Build Alternative includes all of the following components in place by 2035:

- Add one 12-foot travel lane in each direction to the I-5 mainline within the project area.
- Add a new, fully directional interchange at Millersburg and close the existing Viewcrest and Murder Creek interchanges.
- Reconfigure the existing Knox Butte and US 20 interchanges to improve their operation and to add a southbound I-5 access ramp at Knox Butte.

- Improve connectivity between the Knox Butte and US 20 interchanges. These closely spaced interchanges function as a connected system. Two operational options for improved connectivity and safety between the interchanges are being considered (see Figure 2.2-2 and Figure 2.2-3):
    - Auxiliary Lanes on I-5
    - Collector Distributor System roads adjacent to I-5
- Improve local roadway system connections to the proposed new and improved interchanges. Proposed local system improvements would be needed to ensure interchange area operation meets adopted performance targets, accommodate the proposed interchange improvements, meet current design standards, and address neighborhood concerns about local traffic conditions.

Evaluation of Environmental Resources

The sections that follow provide a summary of potential environmental conditions under the No Build Alternative and how those conditions change under the Build Alternative. This summary of potential impacts is organized by type (starting with Transportation); as those conditions determine the level of the environmental documentation needed for the project. The Build Alternative sections also identify actions that could would avoid, minimize, and mitigate potential impacts.

Transportation

No Build Alternative

The No Build Alternative would not change the performance and operations the highway and interchanges; projected design year (2035) traffic conditions would worsen, causing many parts of the project area to be over capacity and severely congested. Congestion and the obsolete roadway geometrics at interchanges in the project area can be expected to lead to an increase in the number and frequency of collisions. By 2035, several segments of I-5 and signalized intersections in the project area are expected to fail to meet Oregon Highway Plan (OHP) mobility targets, or to operate with a volume-to-capacity ratio close to the OHP target.

Build Alternative

The Build Alternative would result in improved conditions and safety for all modes of travel; including bicyclists and pedestrians on local roads. Although the volume of traffic may increase over time and some congestion would remain, most intersections in the project area would meet current mobility targets and could still handle traffic projected for 2035. Under the provisions of the Americans with Disabilities Act (ADA), ADA-compliant sidewalks and designated bike lanes would be provided on the appropriate features of new interchanges and reconstructed roadways (except on I-5), improving conditions for pedestrians and cyclists in the project area relative to the No Build Alternative.

Land Use

No Build Alternative

The No Build Alternative would result in congestion beyond the OHP mobility targets in much of the project area, including most of the I-5 mainline, interchange ramps, and a number of signalized intersections. Lack of improvements to the transportation system would likely inhibit future growth from planned land uses near the interchanges due to congestion caused by the lack of transportation capacity and efficient access.

Build Alternative

The Build Alternative would require acquisition of up to between 74 and 75 acres of land, depending on the design option connection between the Knox Butte and US 20 interchanges. This land would be converted to a transportation-related use, including approximately 8 acres of residential, 17 to 18 acres of commercial/industrial, 41 acres of exclusive farm use (EFU), 4 acres of farm/forest, and 4 acres of Urban Growth Area land. While the Build Alternative would change the local connections to some properties, these changes are not anticipated to make the areas undesirable for their planned land uses. The Build Alternative would provide transportation capacity and access necessary for land development to occur as planned, in accordance with zoning regulations and local and State land use plans. An amendment to Linn County's Comprehensive Plan for development within an EFU-zoned parcel at the new Millersburg interchange would be needed in order for the proposed project to be compatible with local and State plans, which are required to be in compliance with Oregon's Statewide Planning Goals.

Right-of-Way

No Build Alternative

The No Build Alternative would not directly result in the acquisition of right-of-way. With the No Build Alternative, traffic and congestion may eventually create conditions where turning movements allowed at driveways or street intersections may be restricted to address safety issues or protect operation of the roadway.

Build Alternative

Under the Build Alternative, between 74 and 75 acres of land would be required, depending on the design option, resulting in permanent impacts affecting up to 15 businesses, 4 owner-occupied residences, and 4 or 5 tenant-occupied residences. Property owners would be offered Just Compensation for the required properties. Temporary impacts may also affect adjacent or nearby properties as a result of construction activity. The nature and extent of these impacts may include traffic detours and traffic diversion; noise, dirt, and dust; and temporary construction permits to accommodate project blending to adjacent properties or space needed for necessary construction actions. Most temporary impacts are general community inconveniences and will be addressed with appropriate property owners and occupants at the time of the project activity.

Socioeconomic

No Build Alternative

Under the No Build Alternative, no new right-of-way would be acquired by ODOT, no residences or businesses would be displaced, and property taxes would not change due to the proposed project. The No Build Alternative would have no new effects on low-income, minority or minority protected populations.

Build Alternative

The following socioeconomic impacts are anticipated as a result of the Build Alternative:

- Construction would result in lane closures, temporary detours, noise, dust, and similar construction-related impacts to some businesses and residences located near construction areas. These impacts could result in reduced hours or lost jobs at affected businesses and reduced access to services for affected residents. Additional jobs from project construction would contribute to positive effects on the local and regional economies over the years during which construction would occur. The location, timing, and duration of construction-related

impacts would depend on the elements funded for construction and the phasing of that construction, which has not been determined at this time.

- Acquisition of new right-of-way would require residential and commercial displacements, resulting in disruption to residents and businesses as they either relocate or rearrange their properties.
- The proposed project would generally improve traffic operations, which would be an overall beneficial effect for people and businesses.
- In portions of the project area, permanent changes in travel patterns and connectivity would change how patrons and suppliers travel to businesses and how residents travel to and from their homes.
- By improving operational efficiency, capacity, and travel routes, the Build Alternative would support future development of the local and regional economies.
- Traffic volumes on the new Millersburg interchange, new or reconstructed elements of other I-5 interchanges, and new or re-located local streets could result in increased noise and vibration and deterioration of air quality in parts of neighborhoods nearest the new, reconstructed, and re-located roadways.
- By reducing congestion and improving operational efficiency, the Build Alternative would support improved connectivity between I-5 and neighborhoods in Albany and Millersburg.
- Reduction of property taxes resulting from the Build Alternative is estimated to range from $210,031 to $220,503, depending on the design option. Over time, the reduction in property taxes could be offset partially or wholly by increases in property taxes at locations where relocated residents and businesses would move.

While some Environmental Justice populations will be affected by permanent and temporary construction impacts; increased traffic in their neighborhood, and displacement of businesses and residents as a result of the Build Alternative, at this time, these impacts are not expected to be disproportionately high or adverse relative to protected populations (low-income and minority groups).

Archaeological and Historic

No Build Alternative

Since no construction activities or right-of-way acquisition would take place under the No Build Alternative, no impacts to archaeological or historic resources are anticipated under this alternative.

Build Alternative

The Albany Municipal Airport Historic District is the only resource in the project area formally listed on the National Register of Historic Places (NRHP). An additional 23 resources occur within the project area that are potentially eligible for listing on the NRHP, or listed as meeting the age and integrity requirements for NHRP listing in the Oregon Historic Sites Database. None of these resources would be subject to a total taking that would require displacement. If project impacts are confined to the existing right-of-way, or if the historic character and setting of these resources is not substantially altered, then adverse effects to these resources are not anticipated. As project design progresses, it is possible that some of the eligible resources may be subject to effects, either directly or indirectly, but it is anticipated that any such effects can be avoided or reduced through project design.

No archaeological resources were identified within the project area; however, 10 high-probability areas were identified within existing ODOT right-of-way as locations where archaeological materials are likely to be found. Areas outside the existing ODOT right-of-way remain to be surveyed, and would require examination prior to construction of the proposed project. The 10 high-probability areas would also be examined prior to construction. If archaeological

resources are discovered during construction of the project, measures would be taken to ensure their identification and protection.

During initial project coordination the Siletz Tribe expressed a desire to transplant camas located within ODOT right-of-way; the camas plant is used for food and as a crafts material. Improvements associated with future projects must reinitiate the consultation process in order to ensure the tribe is adequately consulted.

Section 4(f)

No Build Alternative

Under the No Build Alternative, improvements would not be constructed and would therefore not result in "use," temporary occupancy, or "constructive use" of any 4(f) resources.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to Waverly Park, a Section 4(f) resource. Construction of roadway improvements at the Knox Butte Interchange would result in temporary noise and visual impacts to Waverly Park associated with roadway adjustments and vegetation removal. The Build Alternative would result in permanent impacts to about 1.1 acre of Waverly Park, which would constitute a use of a Section 4(f) resource. The use would not prevent or greatly change any of the current uses or facilities at Waverly Park and is therefore considered to be *de minimis effect*.

Section 6(f)(3) of the Land and Water Conservation Fund Act

No Build Alternative

The No Build Alternative would not result in any conversions of use or temporary non-conforming uses of Waverly Park, a Land and Water Conservation Fund protected property.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to Waverly Park, a Section 6(f)(3) resource. Construction of roadway improvements at the Knox Butte Interchange would result in temporary noise and visual impacts to Waverly Park associated with roadway adjustments and vegetation removal. The Build Alternative would result in permanent impacts to about 1.1 acre of Waverly Park, which would constitute a conversion of a Section 6(f)(3) encumbered resource. The use would not prevent or greatly change any of the current uses or facilities at Waverly Park. The conversion of about 1.1 acre of Waverly Park for non-outdoor recreation purposes would require that replacement property be approved per 36 Code of Federal Regulations 59. It should be noted that the replacement process takes approximately two-years to obtain federal and state approvals.

Noise

No Build Alternative

Noise levels under existing conditions exceed ODOT's noise abatement approach criteria (NAAC) throughout the project corridor, particularly at first-row properties adjacent to I-5. Under the No Build Alternative, traffic-related noise would continue to increase, resulting in additional future exceedances of the NAAC.

Build Alternative

The Build Alternative would cause between 32 and 33 additional exceedances of the NAAC over existing conditions. However, the Build Alternative would result in fewer noise level changes over existing peak hour noise levels when compared to the No Build Alternative. Noise level changes over existing peak noise hour levels under the future Build Alternative range from a reduction of 3 A-weighted decibels (dBA) to an increase of 9 dBA. Based on a preliminary feasibility analysis, there is potential for noise barriers to mitigate for permanent noise impacts in three areas. Potential noise barriers are described below:

- East Albany Neighborhood – A 6,160-foot-long, 14-foot-high barrier located on the east side of I-5 (between I-5 and Century Drive NE), from Scott Avenue NE to Knox Butte Road.
- Santiam Neighborhood – A 2,520-foot-long, 14-foot-high barrier located on the west side of I-5 and Airport Road SE, between North Shore Drive SE and US 20. Recommended under the Auxiliary design option, but is not feasible under the Collector Distributor design option.
- Santiam Neighborhood – A 4,080-foot-long, 12-foot-high barrier located on the west side of I-5 (between the I-5 southbound on-ramp and the residences to the west) from the US 20 Interchange south to 22nd Avenue.

Final noise barrier placement would be determined in the final design phases of the project and would be subject to public consent. Construction noise for the project would be minimized through implementation of noise abatement measures.

Air Quality

No Build Alternative

Air quality in the project area is currently in attainment with National Ambient Air Quality Standards (NAAQS), and future exceedance of the NAAQS is not likely under the No Build Alternative.

Build Alternative

Under the Build Alternative, construction activities could cause minor short-term increases in air pollutant emissions when specific project elements are being installed. These minor short-term impacts would occur under either design option. After completion of the proposed project, there would be an overall reduction in congestion, Vehicle Miles Traveled (VMT), and vehicle-related pollutant emissions when compared to the No Build Alternative. Given the current attainment status of the project area, the national trend in grams of vehicle-related pollutant emissions per VMT, and the reduction in both VMT and congestion predicted as a result of the project, future concentrations of criteria pollutants associated with the project are expected to remain below the NAAQS.

Visual Resources

No Build Alternative

The No Build Alternative would not result in any temporary or permanent impacts to visual resources because no construction or operation activities would occur.

Build Alternative

Permanent and temporary impacts are expected to result from construction activities. Temporary vegetation removal and ground disturbance would be restored to pre-construction conditions following the completion of construction. Permanent changes, both beneficial and adverse, to the visual environment would impact primarily views within or directly adjacent to the project area. In some areas, the removal of existing visual obstructions (i.e., Viewcrest overpass), addition of continuous sidewalks, removal of unkempt and/or invasive vegetation, new landscaping, and new updated structures would enhance views in the project area. In other areas, removal of ornamental vegetation, widening of roadways, or the addition of new structures that obstruct views or modify the line of sight would result in minor adverse impacts to the views in the project area. Given the existing highway presence in the project area, the project would not cause major changes to the overall visual quality and character of the project area.

Water Resources

No Build Alternative

The No Build Alternative would not directly impact water resources. Stormwater would continue to be conveyed into project area streams without treatment.

Build Alternative

Depending on the design option, a net increase of between 23 and 30 acres of impervious surface would be realized under the Build Alternative. However, actual pollutant loads would be lower than the pollutant loads under the No Build Alternative because water-quality treatment Best Management Practices (BMPs) would be built in as part of the project to remove pollutants from highway runoff before it would be discharged to receiving waters. Potential temporary impacts to water quality during construction would be mitigated through implementation of standard BMPs and erosion control practices.

Biology

No Build Alternative

The No Build Alternative would not result in any temporary or permanent impacts to biological resources because no construction would occur.

Build Alternative

Temporary impacts would be expected from construction activities and may include temporary vegetation clearing, construction noise, in-water work, and possible inadvertent hazardous materials spills and releases. Vegetation and habitats temporarily affected during construction would be mitigated or restored to their pre-existing conditions following the completion of work. Permanent impacts of the project may occur when habitat is permanently replaced with a project feature, or when fish or wildlife are directly disturbed. Habitat loss could displace fish and wildlife and fragment habitats. Most of the habitat that would be affected under the Build Alternative is urban or agricultural lands containing landscaped and/or non-native vegetation.

The proposed project would result in an increase of impervious surface area, which in turn could lead to decreased base flows, increased peak flows, and degraded water quality in project area streams. In the absence of treatment, these changes could adversely affect fish; however, stormwater would be treated to minimize impacts to water quality and in-stream flows in receiving water bodies.

The Build Alternative would eradicate some of the noxious weeds through vegetation and seed bank removal. Conversely, there is potential to introduce additional noxious and invasive species with the proposed improvements.

Wetlands and Waters of the U.S.

No Build Alternative

Wetlands in the project area have been significantly altered as a result of urban and rural (agricultural) development. Under the No Build Alternative, no direct impacts to wetlands or other waters of the U.S. would occur.

Build Alternative

Under the Build Alternative, permanent and temporary impacts would occur when wetlands and waters of the U.S. are filled or excavated to support project improvements. Approximately 62 acres of potentially jurisdictional wetlands have been identified within the project area. Wetlands temporarily impacted during construction as a result of vegetation removal would be restored to pre-existing conditions following the completion of construction. Permanent fill placement under the Build Alternative would impact up to approximately 13 acres of wetlands and 1 to 2 acres of waters of the U.S., depending on the design option. Most of the wetlands that would be impacted are emergent wetlands with disturbed vegetation communities; mitigating for impacts to wetlands with these functions is attainable. Substantial wetland loss to rare or unique resources would not occur. Compensatory mitigation would be implemented so the project would result in no net loss of wetland function in the watershed.

Hazardous Materials

No Build Alternative

Existing conditions for hazardous materials would persist under the No Build Alternative.

Build Alternative

Ten sites of high risk and five sites of moderate risk could be impacted by the Build Alternative. If encountered during construction, the presence of contaminated soil or groundwater could result in public health or environmental effects through the release and spread of contaminated soil, sediment, or groundwater; through alteration of the flow or generation of contaminated groundwater if dewatering is required; and through creation of pathways for contamination to migrate through the soil column. Although sites of high concern and sites of moderate concern could be impacted by the Build Alternative, standard mitigation measures would be utilized to decrease potential short-term exposure to hazardous materials. Additionally, the removal of potentially impacted materials in the construction area would provide long-term cleanup benefits due to removal of the contamination source.

The proposed project would widen the roadway and improve the geometry of the facility, improving safety and mobility, thus decreasing the likelihood of vehicle accidents and resulting spills of hazardous materials. In addition, the Build Alternative would reduce the potential for transport of hazardous materials (i.e., petroleum products) from the highway, because stormwater would be managed and treated prior to infiltration into soil or being released to surface waters.

Geology

No Build Alternative

There would be no direct geologic impacts associated with the No Build Alternative. Under the No Build Alternative, substandard structures (e.g., bridges, culverts, and retaining walls) would remain in place and could expose the public to structure failure during a seismic event.

Build Alternative

With the Build Alternative, existing structures would be replaced with structures that meet current design standards for seismicity. Temporary impacts during construction could occur, but permanent impacts are not expected. Revegetation of disturbed ground would provide soil stabilization once construction is complete.

Utilities

No Build Alternative

Under the No Build Alternative, no construction activities would occur that require relocation or adjustment of utilities; therefore, no impacts would occur to existing utilities.

Build Alternative

Utilities in the project area include high-pressure natural gas lines, storm drains, water, sanitary sewer, electricity (above ground and buried), and phone/communication lines. Utility modifications and relocations would be coordinated with the utility owners and every effort would be made to reduce disruptions to utilities during construction. Costs associated with potential adjustments are anticipated to be substantial.

Climate Change and Greenhouse Gas Emissions

The issue of greenhouse gas (GHG) emissions and global climate change is an important national and global concern that is being addressed by various State and Federal agencies, including ODOT and the Federal Highway Administration. GHG emission analyses may be informative at regional, state, or national levels when conducted during local and regional land use planning processes; however, there are no Federal laws that specifically require GHG emissions analysis in project-level NEPA documents. Although GHG emissions are currently not regulated in the state of Oregon, strategies to reduce GHG emissions are currently being addressed by ODOT and other State agencies throughout Oregon.

Table of Contents

1.0 PURPOSE AND NEED FOR ACTION 1-1

1.1 General Setting 1-1

1.1.1 Existing Road System 1-1

1.2 Purpose and Need Statement 1-5

1.2.1 Purpose of the Proposed Action 1-5

1.2.2 Need for the Proposed Action 1-5

1.3 Roadway Geometric Deficiencies 1-5

1.4 Mobility 1-6

1.5 Safety 1-7

1.5.1 Safety Priority Index System (SPIS) 1-7

1.5.2 Project Segment Crash Rates 1-8

1.6 Project Goals and Objectives 1-8

1.7 Criteria for Determining Design Options in the Build Alternative 1-9

2.0 PROJECT ALTERNATIVES 2-1

2.1 No Build Alternative 2-1

2.2 Build Alternative 2-1

2.2.1 Additional Travel Lanes on I-5 Mainline 2-2

2.2.2 New Millersburg Interchange 2-2

2.2.3 Knox Butte Interchange Improvements 2-7

2.2.4 US 20 Interchange Improvements 2-7

2.2.5 Knox Butte Interchange to US 20 Interchange Connection Options 2-7

2.2.6 Local System Improvements 2-17

2.2.7 Phasing 2-17

2.3 Development of the Build Alternative 2-17

2.3.1 Scoping 2-18

2.3.2 Initial Screening of Conceptual Alternatives 2-18

2.3.3 Value Engineering Study 2-18

2.3.4 Evaluation of Design Options 2-19

2.3.5 Airport Road 2-19

2.4 Final Design and Construction 2-20

3.0 ENVIRONMENTAL RESOURCES, IMPACTS, AND MITIGATION 3-1

3.1 Transportation Resources 3-2

3.1.1 Transportation System Impacts 3-7

3.1.2 Methodology for Assessment of Mobility 3-7

3.1.3 Mobility Impacts 3-7

3.1.4 Safety Conditions 3-11

3.1.5 Transportation Impacts 3-12

3.1.6 Temporary Impacts from Construction 3-13

3.1.7 Interchange Spacing 3-13

3.1.8 Bicycle and Pedestrian Facilities 3-14

3.1.9 Minimization, Avoidance, and Mitigation Measures 3-14

3.1.10 Conclusion 3-14

3.2 Land Use Resources 3-15

3.2.1 Existing Conditions 3-15

3.2.2 Land Use Impacts 1

3.2.3 Compatibility with Applicable Plans and Policies 3-6

3.2.4 Minimization, Avoidance, and Mitigation Measures 3-8

3.2.5 Indirect Impacts 3-8

3.2.6 Cumulative Impacts 3-8

3.2.7 Conclusion 3-8

3.3 Right-of-Way Resources 3-9

3.3.1 Existing Conditions 3-9

3.3.2 Right-of-Way Impacts 3-9

3.3.3 Minimization, Avoidance, and Mitigation Measures 3-17

3.3.4 Indirect Impacts 3-18

3.3.5 Cumulative Impacts 3-18

3.3.6 Conclusion 3-18

3.4 Socioeconomics Resources 3-19

3.4.1 Existing Conditions 3-19

3.4.2 Socioeconomic Impacts 3-29

3.4.3 Minimization, Avoidance, and Mitigation Measures 3-36

3.4.4 Indirect Impacts 3-36

3.4.5 Cumulative Impacts 3-37

3.4.6 Conclusion 3-37

3.5 Archaeological and Historic Resources 3-37
3.5.1 Existing Conditions 3-38
3.5.2 Cultural Resources Impacts 3-43
3.5.3 Minimization, Avoidance, and Mitigation Measures 3-43
3.5.4 Indirect Impacts 3-44
3.5.5 Cumulative Impacts 3-44
3.5.6 Conclusion 3-44
3.6 Section 4(f) 3-44
3.6.1 Section 4(f) Process and Resources 3-44
3.6.2 Section 4(f) Resource Impacts 3-49
3.6.3 Minimization, Avoidance, and Mitigation Measures 3-50
3.6.4 Indirect Impacts 3-50
3.6.5 Cumulative Impacts 3-50
3.6.6 Conclusion 3-50
3.7 Section 6(f)(3) of the Land and Water Conservation Fund Act 3-50
3.7.1 Section 6(f)(3) Process and Resources 3-50
3.7.2 Section 6(f)(3) Resource Impacts 3-51
3.7.3 Minimization, Avoidance, and Mitigation Measures 3-52
3.7.4 Indirect Impacts 3-52
3.7.5 Cumulative Impacts 3-52
3.7.6 Conclusion 3-52
3.8 Noise 3-53
3.8.1 Relevant Laws and Regulations 3-53
3.8.2 Methods 3-55
3.8.3 Existing Conditions 3-56
3.8.4 Noise Impacts 3-56
3.8.5 Minimization, Avoidance, and Mitigation Measures 3-59
3.8.6 Noise Contours for Activity Category G Land Uses 3-59
3.8.7 Indirect Impacts 3-67
3.8.8 Cumulative Impacts 3-67
3.8.9 Conclusion 3-67
3.9 Air Quality 3-67
3.9.1 Existing Conditions 3-67
3.9.2 Air Quality Impacts 3-68
3.9.3 Minimization, Avoidance, and Mitigation Measures 3-69
3.9.4 Indirect Impacts 3-70

3.9.5 Cumulative Impacts 3-70
3.9.6 Conclusion 3-70
3.10 Visual Resources 3-70
3.10.1 Existing Conditions 3-70
3.10.1 Visual Resource Impacts 3-75
3.10.2 Minimization, Avoidance, and Mitigation Measures 3-89
3.10.3 Indirect Impacts 3-89
3.10.4 Cumulative Impacts 3-89
3.10.5 Conclusion 3-89
3.11 Water Resources 3-90
3.11.1 Existing Conditions 3-90
3.11.2 Water Resource Impacts 3-97
3.11.3 Avoidance, Minimization, and Mitigation Measures 3-101
3.11.4 Operational 3-102
3.11.5 Indirect Impacts 3-103
3.11.6 Cumulative Impacts 3-103
3.11.7 Conclusion 3-103
3.12 Biology 3-104
3.12.1 Existing Conditions 3-104
3.12.2 Biological Resource Impacts 3-112
3.12.3 Minimization, Avoidance, and Mitigation Measures 3-114
3.12.4 Indirect Impacts 3-115
3.12.5 Cumulative Impacts 3-116
3.12.6 Conclusion 3-116
3.13 Wetlands and Waters of the U.S. 3-116
3.13.1 Existing Conditions 3-117
3.13.2 Wetlands Impacts 3-123
3.13.3 Minimization, Avoidance, and Mitigation Measures 3-125
3.13.4 Indirect Impacts 3-126
3.13.5 Cumulative Impacts 3-126
3.13.6 Conclusion 3-126
3.14 Hazardous Materials 3-126
3.14.1 Existing Conditions 3-126
3.14.2 Hazardous Materials Impacts 3-127
3.14.3 Minimization, Avoidance, and Mitigation Measures 3-134
3.14.4 Indirect Impacts 3-135

3.14.5 Cumulative Impacts 3-135
3.14.6 Conclusion 3-135
3.15 Geology 3-135
3.15.1 Existing Conditions 3-136
3.15.2 Geology Impacts 3-136
3.15.3 Minimization, Avoidance, and Mitigation Measures 3-137
3.15.4 Indirect Impacts 3-137
3.15.5 Cumulative Impacts 3-137
3.15.6 Conclusion 3-138
3.16 Utilities 3-138
3.16.1 Existing Conditions 3-138
3.16.2 Utilities Impacts 3-139
3.16.3 Minimization, Avoidance, and Mitigation Measures 3-142
3.16.4 Indirect Impacts 3-142
3.16.5 Cumulative Impacts 3-142
3.16.6 Conclusion 3-142
3.17 Climate Change and Greenhouse Gas Emissions 3-142
3.17.1 Greenhouse Gas Impacts and Global Climate Change 3-142
3.17.2 Oregon and USDOT Strategies 3-143
3.17.3 Conclusion 3-144
3.18 Probable Permits and Approvals Needed 3-144

4.0 SUMMARY OF PROPOSED MITIGATION AND CONSERVATION MEASURES 4-1

5.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION 5-1
5.1 Project Partners 5-1
5.1.1 Project Management Team 5-2
5.1.2 Steering Committee 5-2
5.1.3 Project Development Team 5-2
5.1.4 Stakeholder Advisory Team 5-2
5.2 Public Involvement 5-2
5.2.1 Public Open Houses 5-3
5.2.2 Additional Public Outreach 5-3
5.2.3 Newsletters/Mailings 5-5
5.2.4 Project Website 5-5

5.3 Agency Coordination **5-6**
5.4 Public Involvement Integration in Project Development **5-7**

6.0 REFERENCES **6-1**
6.1 List of Preparers and Reviewers **6-1**
6.1.1 Oregon Department of Transportation 6-1
6.1.2 Federal Highway Administration 6-2
6.1.3 Linn County 6-2
6.1.4 City of Albany 6-2
6.1.5 City of Millersburg 6-2
6.1.6 HDR 6-2
6.1.7 Sub-consultants 6-3
6.2 Technical Reports Prepared for this Project **6-3**
6.3 Works Cited **6-5**

List of Figures

Figure 1.1-1: Project Vicinity and Existing Interchanges 1-3
Figure 2.2-1: Build Alternative Millersburg Interchange 2-5
Figure 2.2-2: Knox Butte and US 20 Interchanges Build Alternative 2-9
Figure 2.2-3: Build Alternative Southbound Sections 2-11
Figure 2.2-4: Typical Cross Section (Auxiliary Lane and Collector Distributor Options) 2-13
Figure 2.2-5: Typical Cross Section (General Mainline Addition) 2-15
Figure 3.1-1: Project Area 3-3
Figure 3.1-2: Reasonably Foreseeable Future Projects 3-5
Figure 3.2-1: Project Area Existing Land Use: North 3-17
Figure 3.2-2: Project Area Existing Land Use: South 3-19
Figure 3.2-3: Project Area Zoning: North 3-21
Figure 3.2-4: Project Area Zoning: South 3-23
Figure 3.3-1: Right-of-Way Impacts: North 3-12
Figure 3.3-2: Right-of-Way Impacts: South 3-14
Figure 3.4-1: Project Area Census Tracts 3-22
Figure 3.5-1: Albany Municipal Airport 3-41
Figure 3.6-1: Parks, Recreational Facilities and Historic Sites 3-47
Figure 3.8-1: Noise Receptors and Noise Walls-North 3-63
Figure 3.8-2: Noise Receptors and Noise Walls-South 3-65
Figure 3.10-1: Landscape Units and Key Viewpoints 3-73
Figure 3.10-2: Visual Simulation: View 1 3-77
Figure 3.10-3: Visual Simulation: View 4 3-79

Figure 3.10-4: Visual Simulation: View 5 3-81
Figure 3.10-5: Visual Simulation: View 6 3-83
Figure 3.10-6: Views 7 and 8 (No Build Alternative) 3-85
Figure 3.10-7: Visual Simulation: View 9 3-87
Figure 3.11-1: Project Area Water Resources: North 3-93
Figure 3.11-2: Project Area Water Resources: South 3-95
Figure 3.12-1: Cox Creek 3-105
Figure 3.12-2: Burkhart Creek 3-105
Figure 3.12-3: Truax Creek 3-106
Figure 3.12-4: Murder Creek 3-107
Figure 3.12-5: Crooks Creek 3-107
Figure 3.13-1: Project Area Wetlands and Waters of the US: North 3-119
Figure 3.13-2: Project Area Wetlands and Waters of the US: South 3-121
Figure 3.14-1: Moderate- and High-Risk Sites: North 3-129
Figure 3.14-2: Moderate- and High-Risk Sites: South 3-131
Figure 5.1-1: Project Team Roles and Relationships 5-1

List of Tables

Table 1-1: No Build Conditions at Signalized Intersections (2008 and 2035, p.m. Peak Hour) 1-6
Table 1-2: No Build Conditions on I-5 Mainline Segments (2008 and 2035, p.m. Peak Hour) 1-6
Table 1-3: Safety Priority Index System Ranking (2012) for I-5 South Jefferson to US 20 Project Locations 1-7
Table 1-4: Segment Crash Rate Analysis (2007 – 2012) 1-8
Table 3-1: Past, Present, and Reasonably Foreseeable Future Projects 3-1
Table 3-2: Interstate Mobility under 2008 No Build, 2035 No Build, and 2035 Build Alternatives (Auxiliary Lanes and Collector Distributor System Options) 3-8
Table 3-3: Signalized Intersection Mobility under 2008 No Build, 2035 No Build, and 2035 Build Alternatives (Auxiliary Lanes and Collector Distributor System Options) 3-9
Table 3-4: Unsignalized Intersection Mobility under 2008 No Build, 2035 No Build, and 2035 Build Alternatives (Auxiliary Lanes and Collector Distributor System Options) 3-9
Table 3-5: Potential Impacts by Zoning Designation 3-4
Table 3-6: Project Right-of-Way Estimate Summary 3-10
Table 3-7: Proposed Millersburg Interchange Area Displacements 3-16
Table 3-8: Proposed Knox Butte Interchange Area Displacements 3-17
Table 3-9: Proposed US 20 Interchange Area Displacements 3-17
Table 3-10: Population, Housing, and Employment 3-20
Table 3-11: Race and Ethnicity 3-24
Table 3-12: Number of Housing Units and Vacancy Rates in Oregon, Linn County, Albany, Millersburg, and Selected Census Tracts and Blocks, April 1, 2010 3-24

Table 3-13: Income and Poverty Rates in Oregon, Linn County, Albany, Millersburg, Census Tract 201, and Census Tract 205, 5-Year Estimates, 2007-2011 3-25
Table 3-14: Employment by Industry, Oregon, Linn County, Albany, Millersburg, Census Tract 201, and Census Tract 205, 5-Year Estimates, 2007-2011 3-27
Table 3-15: NRHP and Eligible Historical Resources 3-38
Table 3-16: Noise Impact Guidelines by Land Use (L_{eq} – dBA) 3-54
Table 3-17: Typical Construction Noise Levels (dBA) 3-57
Table 3-18: Noise Impact Summary 3-58
Table 3-19: Predicted Distances to Activity Category B, C, and E Noise Impact Thresholds 3-60
Table 3-20: Pollution-Generating Impervious Areas Comparison 3-98
Table 3-21: Pollutant Load Comparison (lbs per year) 3-99
Table 3-22: Pollutant Loads after Treatment in Burkhart Creek and Cox Creek 3-101
Table 3-23: Native Migratory Fish in the Project Area 3-108
Table 3-24: Federal- and State-Listed Species Identified by ORBIC (2013) 3-111
Table 3-25: Build Alternative Options and Habitat Impacts[a] 3-114
Table 3-26: Estimated Wetland Impacts Summary (Permanent Fill or Removal) 3-124
Table 3-27: Estimated Waters of the U.S. Impacts (Permanent Fill or Removal) 3-124
Table 3-28: Moderate- and High-Risk Sites within Project Area 3-128
Table 3-29: Estimated Utility Relocation Costs 3-141
Table 3-30: Coordination, Permits, and Clearances from the Agencies/Jurisdictions 3-144
Table 4-1: Summary of Proposed Mitigation and Conservation Measures 4-1
Table 5-1: Cooperating Agency Request Responses 5-6

List of Appendices

Appendix A: Farmland Conversion Rating Form
Appendix B: Right-of-way Brochures
Appendix C: Historic Resources Summary and Commitments
Appendix D: Noise Impacts Summary
Appendix E: Biological Summary and Commitments

Acronyms and Abbreviations

AASHTO	American Association of State Highway Transportation Officials
ADA	Americans with Disabilities Act
APE	Area of Potential Effect
BLM	Bureau of Land Management
BMP	Best Management Practice
C	Capacity
CAA	Clean Air Act
CETAS	Collaborative Environmental and Transportation Agreement for Streamlining
CFR	Code of Federal Regulations
CO	Carbon Monoxide
Committee	Land Use and Transportation Committee
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted Decibel Scale
DEQ	Oregon Department of Environmental Quality
DLCD	Department of Land and Conservation and Development
DOGAMI	Department of Geology and Mineral Industries
DSL	Department of State Lands
EA	Environmental Assessment
EDR	Environmental Data Resources
EFU	Exclusive Farm Use
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESH	Essential Salmonid Habitat
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
GIS	Geographic Information System
I-5	Interstate 5
IAMP	Interchange Area Management Plan
ITS	Intelligent Transportation Systems
lb	Pound
LEP	Limited English Proficiency

LOS	Level of Service
LS	LightSpeed [Networks]
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
MP	Mile Point
MSATs	Mobile Source Air Toxics
NAAC	Noise Abatement Approach Criteria
NAC	Noise Abatement Criteria
NAAQS	National Ambient Air Quality Standards
NB	Northbound
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OHP	Oregon Highway Plan
OHW	Ordinary High Water
OPRD	Oregon Parks and Recreation Department
OR 99E	Oregon Highway 99 East
ORBIC	Oregon Biodiversity Information Center
OTC	Oregon Transportation Commission
OWRD	Oregon Water Resources Department
PEM	Palustrine Emergent
PDT	Project Development Team
PFO	Palustrine Forested
PGIS	Pollutant Generating Impervious Surfaces
PM	Particulate Matter
PMT	Project Management Team
Prior Rights	Prior Property Rights
PSS	Palustrine Scrub-Shrub
SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equality Act: A Legacy for Users

SAT	Stakeholder Advisory Team
SB	Southbound
SC	Steering Committee
SHPO	State Historic Preservation Office
SPIS	Safety Priority Index Report System
SPUI	Single Point Urban Interchange
T	Tolerable Soil Loss
TMDL	Total Maximum Daily Load
TMP	Traffic Management Plan
TNM	Traffic Noise Model
TP	Total Phosphorus
TPAU	Traffic Planning and Analysis Unit
TSP	Transportation System Plan
TSS	Total Suspended Solids
UGB	Urban Growth Boundary
URA	Uniform Relocation Assistance and Real Property Acquisition Polices Act
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
US 20	US Highway 20
v	Volume
v/c	Volume-to-Capacity
VE	Value Engineering
VMT	Vehicle Miles Traveled

1.0 PURPOSE AND NEED FOR ACTION

The I-5 South Jefferson Interchange to US 20 Interchange Design Baseline Evaluation ("Design Baseline Evaluation")—this document--summarizes ODOT's evaluation of environmental impacts resulting from a project that is designed to address deficiencies on this segment of I-5. This Design Baseline Evaluation document summarizes key information and analysis that can be used to help prioritize future project elements for funding, guide future design refinements to the project, and determine the need for any additional analysis of potential environmental impacts.

The I-5: South Jefferson Interchange to US 20 Interchange Design Baseline Evaluation ("Design Baseline Evaluation")—this document--summarizes ODOT's evaluation of environmental impacts resulting from a project that is designed to address deficiencies on this segment of I-5. This Design Baseline Evaluation document summarizes key information and analysis that can be used to help prioritize future project elements for funding, guide future design refinements to the project, and determine the need for any additional analysis of potential environmental impacts. Because this document was originally intended as a NEPA document, the organization of the document follows a format that is consistent with a NEPA analysis.

This section of the document provides project background information, including the general setting of the transportation corridor, traffic conditions, and safety; the purpose and need for the proposed improvements; and the goals and objectives of the project.

1.1 General Setting

Interstate 5 (I-5) is part of the Interstate Highway System and the primary north-south transportation facility on the west coast of the United States, running from the U.S. border with Mexico to the U.S. border with Canada. It is the primary route for freight on the west coast, serving some of the largest west coast cities, including Seattle, Portland, Sacramento, Los Angeles, and San Diego. With its connections to rail and deep-water ports along the west coast, I-5 is the north-south backbone of regional trade, also linking with east-west transcontinental railroads and upriver barging.

The proposed project area is located in western Oregon along an approximately 5-mile stretch of I-5 that begins north of the City of Millersburg at the South Jefferson Interchange (mile point [MP] 238.2) and ends at the U.S. Highway 20 (US 20) Interchange (MP 233.2). There are five existing interchanges in the project area (listed from north to south): South Jefferson; Viewcrest (MP 237.7); Murder Creek (MP 235.8 northbound, MP 235.4 southbound); Knox Butte (MP 234.2); and US 20. Figure 1.1-1 illustrates the project area and locations of the existing interchanges.

1.1.1 Existing Road System

This segment of I-5 in the project area has been experiencing increasing traffic delays and congestion as levels of development and traffic volumes in the region have increased, leading to decreased vehicular mobility on, the transportation system in the urban Albany-Millersburg area of Linn County. The interchanges in the project area were built in the 1950s, when standards were different and there were far fewer vehicles on the roads than there are today. As a result, several interchanges have geometric deficiencies and capacity constraints that hamper efficient connections between the regional and local transportation systems. Traffic congestion is expected to increase in the future due to a projected increase in the region's residential, industrial, and commercial development.

The ODOT Traffic Planning and Analysis Unit (TPAU) completed a study of existing (2008) and future (2035) traffic conditions using current counts of traffic volumes and assumptions about future land use and development in the project area. The analysis completed for existing (2008) traffic conditions shows that traffic operations on the I-5 mainline are beginning to approach Oregon Highway Plan (OHP) mobility targets (which are used to measure levels of congestion), as are traffic operations on the majority of the interchange ramps in this section of I-5. Conditions at

signalized intersections in the project area are close to or already exceeding OHP mobility targets—including the intersections of Oregon Highway 99 East (OR 99E) and Airport Road, and US 20 and Airport Road at the I-5 southbound ramps. These traffic conditions affect connections to businesses and homes in the Albany-Millersburg area and can create travel delays on I-5. With no improvements to the existing transportation system, future (2035) traffic projections show that OHP mobility targets would be exceeded on most of I-5 mainline segments within the project's limits, and that traffic operations on all existing freeway on- and off-ramps in the project area would exceed OHP mobility targets.

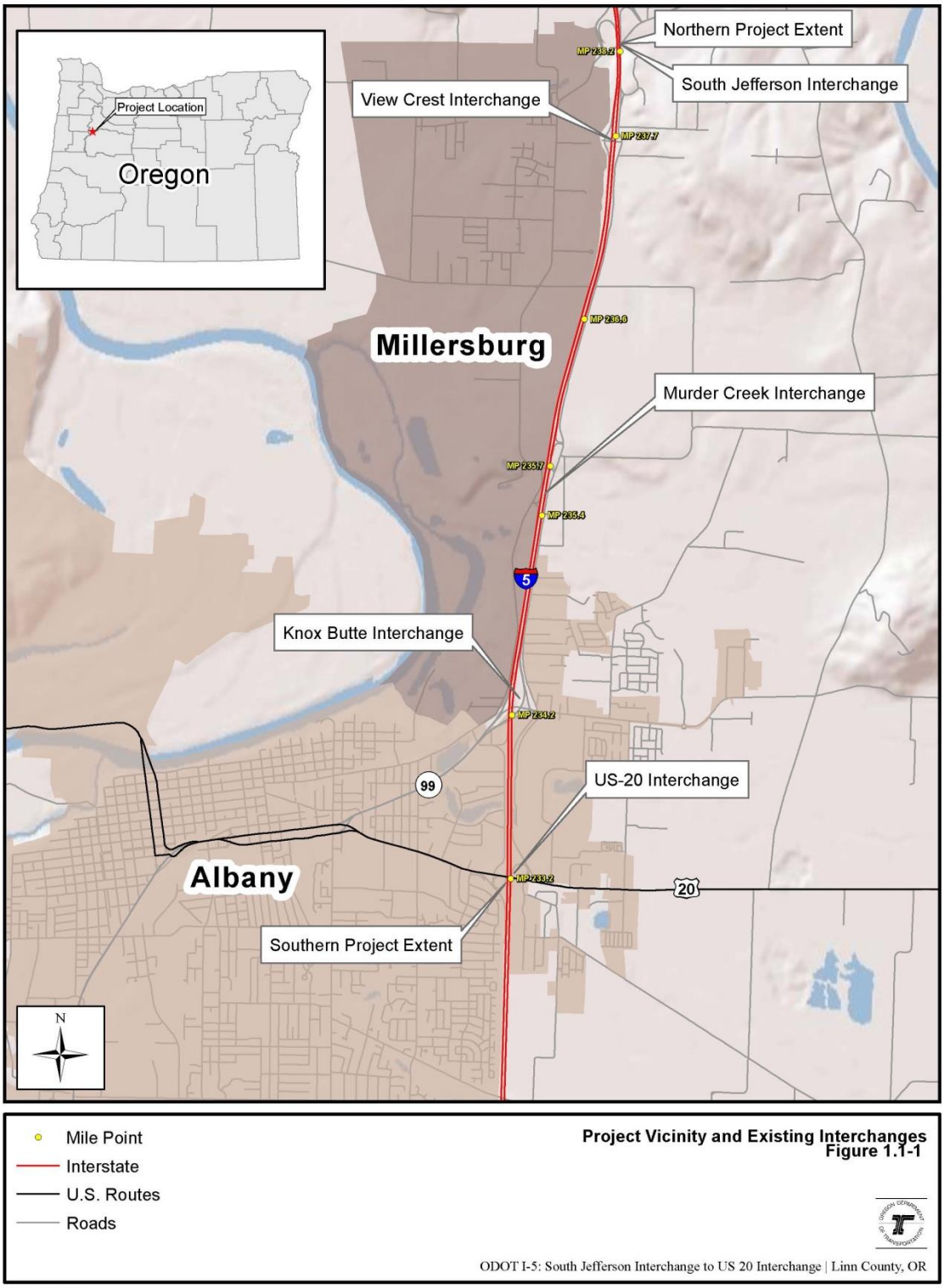


Figure 1.1-1: Project Vicinity and Existing Interchanges

This page intentionally left blank.

1.2 Purpose and Need Statement

The following purpose and need statement was developed by ODOT for the I-5: South Jefferson Interchange to US 20 Interchange Project. All elements included in the Build Alternative developed for this Design Baseline Evaluation were selected to meet the project's purpose and need.

1.2.1 Purpose of the Proposed Action

The purpose of the proposed project is to improve operations, reduce congestion, and increase safety for mainline I-5, its interchanges, and associated local roadway connections in the Albany-Millersburg area of Linn County, Oregon.

1.2.2 Need for the Proposed Action

The need for the proposed project is based on the following issues in the project area:

- **Roadway Geometric Deficiencies** – The existing interchanges in the project area experience operational issues, such as weaving and traffic slow-down, resulting from deficiencies that include closely-spaced interchanges, interchanges lacking full movements, inadequate acceleration and deceleration ramp lengths, and substandard ramp curvature that create challenging conditions for freight trucks.
- **Mobility** – Traffic projections indicate that without improvements, most roadway segments and signalized intersections in the project area will operate below State mobility targets by 2035.
- **Safety** – The 2012 Safety Priority Index Report System (SPIS) identifies two locations in the project area as having a crash rating in the top 5 percent of similar roadway segments in Oregon. The SPIS site on US 20 is at the Waverly Drive intersection west of the US 20 interchange, and the SPIS site on Oregon Highway 99 East is at the Killdeer Avenue intersection east of the Knox Butte interchange. There are no SPIS locations with accident rates in the top 5 percent of similar roadway segments identified on the I-5 mainline in the project area.

The following sections describe these issues in more detail.

1.3 Roadway Geometric Deficiencies

Construction of I-5 in the project area was completed in the 1960s. Thus the current configuration of interchanges in the project area is based on design standards that are more than 50 years old. In addition, structures at these interchanges do not meet the current seismic design code. The Viewcrest, Murder Creek, Knox Butte, and US 20 interchanges have operational issues created by geometric deficiencies. Currently, all of the interchanges have ramps that are too short, making the distances provided for acceleration, deceleration, and proper sight distance insufficient. The inadequate ramp length at these interchanges presents conditions that encourage vehicles on the freeway to change lanes as other vehicles enter and exit the freeway. Spacing between interchanges in the project area does not meet ODOT standards of 3 miles for urban interchanges and 6 miles for rural interchanges, which worsens problems created by traffic entering and exiting the freeway. Specifically, the following geometric deficiencies occur at the existing interchanges:

- The Viewcrest Interchange is only 0.57 mile from the South Jefferson Interchange to the north and 2.23 miles from the southbound Murder Creek Interchange to the south.
- The Murder Creek Interchanges, southbound and northbound, are only 1.27 to 1.69 mile (respectively) from the Knox Butte Interchange to the south.
- The Viewcrest Interchange lacks an exit for northbound traffic on I-5.
- Short acceleration/deceleration lanes and tight turns at Murder Creek make this interchange problematic for freight trucks serving industrial uses in Millersburg.

- The Knox Butte Interchange lacks a southbound on-ramp to I-5, forcing traffic to travel south to the US 20 Interchange to connect to southbound I-5.

1.4 Mobility

The OHP identifies the mobility targets used to measure highway performance for vehicles. The targets for mobility are based on the ratio of traffic volume (v) to capacity (c) of the transportation facility, or v/c. The targets for v/c ratios vary according to highway classification. ODOT is responsible for implementation of the OHP and oversight of projects to meet OHP mobility targets.

Mobility targets for city and county roads are established by the governing roadway authority in their local plans and development codes. In the project area, cities and counties use a Level of Service (LOS) standard for mobility, which grades mobility on a scale from A to F (with A being free-flow conditions, and F being heavily congested).

Table 1-1 and Table 1-2 show current conditions at intersections and segments of I-5 in the project area in the year 2008 as well as conditions expected in 2035 (design year) without improvements to the transportation system (the "No Build Alternative"). More detailed information is provided in Section 3.1.

Table 1-1: No Build Conditions at Signalized Intersections (2008 and 2035, p.m. Peak Hour)

Signalized Intersection	OHP Target/City LOS	2008 v/c/LOS	2035 v/c/LOS
OR 99E and Waverly Drive	0.95	0.74	**1.18**
OR 99E and Killdeer Avenue	0.95	0.60	0.83
OR 99E and Airport Road/Albany Avenue	0.95	0.73	**1.12**
Albany Ave and Salem Avenue	0.95	0.30	0.48
Knox Butte Road and Timber Street	D	A	A
US 20 and Waverly Drive	0.95	0.87	**1.26**
US 20 and Airport Road (SB Ramps)	0.85	**0.93**	**0.91**
US 20 and Spicer Drive (NB ramps)	0.85	0.63	**0.98**
US 20 and Timber Street[a]	0.95	N/A	0.73
US 20 and Goldfish Farm Road	0.95	0.42	0.66

SB: southbound; NB: northbound
Source: ODOT TPAU, August 18, 2014
N/A: Data are not available.
Note: Numbers and letters in table represent v/c ratios and LOS, respectively. Bold, shaded cells indicate conditions that exceed adopted standards for that facility.
[a]Intersection is currently unsignalized.

Table 1-2: No Build Conditions on I-5 Mainline Segments (2008 and 2035, p.m. Peak Hour)

Section	OHP Target	2008		2035	
		NB	SB	NB	SB
South of US 20 Interchange	0.85	0.56	0.52	**0.86**	0.81
US 20 Interchange Off-ramp Diverge	0.85	0.46	0.45	**0.95**	0.81
Between US 20 Interchange ramps	0.85	0.42	0.42	0.68	0.64
US 20 Interchange On-ramp Merge	0.85	0.51	0.53	**0.87**	0.82
Between US 20 and Knox Butte Interchange	0.85	0.49	0.50	0.81	0.75

Section	OHP Target	2008		2035	
		NB	SB	NB	SB
Airport Road (exit 234-A) off-ramp diverge	0.85	N/A	0.56	N/A	0.84
Knox Butte Interchange Off-ramp Diverge	0.85	0.52	0.69	**0.89**	**1.04**
Between Knox Butte Interchange ramps	0.85	0.46	0.50	0.76	0.75
Knox Butte Interchange On-ramp Merge	0.85	0.59	N/A	**0.93**	N/A
Between Knox Butte and Murder Creek Interchanges	0.85	0.59	0.64	**0.90**	**0.96**
Murder Creek Interchange Off-ramp Diverge	0.85	0.63	0.67	**0.98**	**1.00**
Between Murder Creek Interchange Ramps	0.85	0.57	0.62	**0.87**	**0.93**
Murder Creek Interchange On-ramp Merge	0.85	0.60	0.66	**0.93**	**0.99**
Between Murder Creek and Viewcrest Interchanges	0.85	0.58	0.63	**0.88**	**0.94**
Viewcrest Interchange Off-ramp Diverge	0.85	N/A	0.68	N/A	**1.01**
Between Viewcrest Interchange Ramps	0.85	N/A	0.63	N/A	**0.94**
Viewcrest Interchange On-ramp Merge	0.85	N/A	0.64	N/A	**0.96**
Between Viewcrest and South Jefferson Interchanges	0.85	0.59	0.63	**0.89**	0.81
South Jefferson Interchange Off-ramp Diverge	0.85	0.62	0.67	**0.95**	**0.98**
Between South Jefferson Interchange Ramps	0.85	0.53	0.60	0.83	**0.88**
South Jefferson Interchange On-ramp Merge	0.85	0.56	0.65	**0.90**	**0.97**
North of South Jefferson Interchange	0.85	0.55	0.63	**0.86**	**0.92**

SB = southbound; NB = northbound
Source: ODOT TPAU, August 18, 2014.
N/A: Data are not available.
Note: Numbers in table represent v/c ratios. Bold, shaded cells indicate conditions that exceed adopted standards for that facility.

1.5 Safety

The two areas of focus for determining safety are collision frequency (number of accidents) and severity (the severity of injury). ODOT monitors safety on State highways by collecting information on vehicle collisions to identify areas of concern. Based on ODOT safety data, several roadway segments in the study area have significant safety concerns.

1.5.1 Safety Priority Index System (SPIS)

ODOT's SPIS is used to categorize locations throughout the state that have safety concerns. The SPIS takes into account not only the number of crashes, but the severity of the crashes and the type of roadway. ODOT produces a list highlighting the top 5 percent and top 10 percent locations with the highest number of safety issues. The SPIS is calculated based on 3 years of data. The 2012 SPIS identifies two locations in the project area as having a crash rating in the top 5 percent for similar roadway segments in Oregon (Table 1-3). The SPIS site on US 20 is at the Waverly Drive intersection west of I-5, and the SPIS site on OR 99E is at the Killdeer Avenue intersection west of I-5. However, there are no SPIS locations identified on the I-5 mainline in the project area.

Table 1-3: Safety Priority Index System Ranking (2012) for I-5 South Jefferson to US 20 Project Locations

Roadway Segment	SPIS Ranking
US 20 (MP 0.40 to 0.58)	Top 5%
OR 99E (MP 0.58 to 0.73)	Top 5%

Source: ODOT 2012 SPIS Report

1.5.2 Project Segment Crash Rates

TPAU prepared the crash analysis in Table 1-4 for I-5, US 20, and OR 99E based on official reported crashes submitted to ODOT's Crash Analysis and Reporting Unit for roadways in the project area from 2007 to 2012.

Table 1-4: Segment Crash Rate Analysis (2007 – 2012)

Segment	Length (miles)	Total Crashes (2007-2012)	Fatal Crashes	Severe & Moderate Injury Crashes
I-5 MP 232.95 to 238.70	5.75	190	4	34
US 20: Waverly Drive to Goldfish Farm Road	1.54	183	**2**	29
OR 99E: I-5 to Waverly Drive	0.92	102	0	15

Source: TPAU November 22, 2014
Note: Bold, shaded cells indicate conditions that exceed the statewide average for comparable segments.

1.6 Project Goals and Objectives

The purpose of the proposed project is to increase safety, reduce congestion, and improve operations for I-5, its interchanges, and associated local roadway connections in the Albany-Millersburg area of Linn County, Oregon. In addition to addressing these key transportation deficiencies, ODOT, in coordination with interested stakeholders, developed project goals and objectives to capture the issues and concerns important to the community. While meeting the purpose and need is an essential component of the project, goals and objectives help ODOT and its project partners determine how effectively the project may address key transportation and community issues.

The following goals and objectives were developed by the Project Development Team (PDT) to help ensure that the proposed improvements meet community interests for the project:

Goal 1. Maintain and enhance connectivity and mobility for the regional transportation system.

Objectives:

- Enhance regional connectivity to and from I-5
- Improve connectivity to southbound I-5
- Maintain and, where possible, enhance existing local connectivity (e.g., east-west connections across I-5)
- Improve connectivity to southbound I-5 from the Knox Butte Interchange
- Support freight mobility in the region
- Maintain and, where possible, enhance bike and pedestrian facilities on roads affected by the project
- Avoid/minimize impacts to the railroad
- Consider opportunities for future mass transit and/or park-and-ride facilities

Goal 2. Minimize impacts to neighborhoods and support community economic vitality.

Objectives:

- Provide safe and reasonable travel routes to area development
- Avoid/minimize impacts to local streets
- Avoid/minimize airport impacts

- Support the continued vitality of parks and event venues
- Avoid/minimize impacts to Exclusive Farm Use (EFU) resources outside of those already approved under the existing goal exception
- Avoid/minimize the impact of cut-through traffic on neighborhoods

Goal 3. Protect and enhance resources, residences, and commerce.

Objectives:

- Avoid/minimize impacts to residential areas and businesses
- Avoid/minimize impacts to parks
- Enhance project area aesthetics, including views from I-5 to the surrounding areas, where possible
- Avoid/minimize impacts to historic sites (i.e., properties listed on or eligible for listing in the National Register of Historic Places [NRHP])
- Minimize noise impacts to neighborhoods and other noise-sensitive receptors
- Use native vegetation in landscaping where possible
- Minimize impacts to wetlands and waterbodies

Goal 4. Provide a sustainable, cost-effective project.

Objectives:

- Maintain mobility and connectivity and minimize congestion during construction
- Provide facilities that minimize maintenance requirements, such as low-maintenance landscaping and natural stormwater treatments, wherever practicable
- Maximize likelihood of project implementation
- Optimize the project's cost effectiveness

1.7 Criteria for Determining Design Options in the Build Alternative

ODOT conducted evaluations of alternative design options for improvements to the I-5 mainline and its interchanges to determine whether and how well they met the purpose and need as well as the goals and objectives established for the project. ODOT reviewed these evaluations with the Stakeholder Advisory Team (SAT)[1] to determine which design options would be advanced for additional detailed analysis in this Design Baseline Analysis. ODOT reviewed the SAT recommendations with the PDT[2] and project Steering Committee, which confirmed those recommendations to define the Build Alternative for this document. Further information regarding the process used to develop the Build Alternative and design options considered but not advanced to the Build Alternative is provided in Chapter 1.0.

[1] A description of this team and its role in the project is provided in Chapter 5.0.

This page intentionally left blank.

1

2.0 PROJECT ALTERNATIVES

This chapter includes a description of the No Build and Build Alternatives advanced for analysis in this Design Baseline Evaluation, and a summary of Build Alternative design options considered but not advanced for further analysis in this document.

Build Alternative options developed for this analysis were designed in accordance with State and Federal regulations, directives, safety standards, design standards, and construction standards. ODOT must meet applicable standards for facility design (e.g., lane width, distance between intersections, signal locations, and traffic capacity). Exceptions to design standards are allowed as long as safety and the function of the facility are not compromised. These design exceptions help provide flexibility in designing transportation facilities, are evaluated by design and traffic engineers, and must be approved during final design.

Two alternatives are evaluated in this analysis: a No Build Alternative and a Build Alternative. The No Build Alternative would not require any construction activity and assumes continued maintenance and operation of the existing facilities in the project area. The Build Alternative includes improvements to existing facilities through construction of new infrastructure and, in some locations, demolition and removal of old infrastructure. The proposed Build Alternative is based on preliminary design concepts only. Design of proposed improvements would continue to be refined in the future as funding becomes available. As the design of proposed improvements progresses, the impacts of those improvements will need to be re-evaluated to ensure the validity of this analysis.

2.1 No Build Alternative

Under the No Build Alternative, I-5 and the current interchanges would remain in place, in their current configurations into the reasonably foreseeable future, with only routine maintenance to prevent deterioration. Improvements assumed to occur in the No Build Alternative are local system improvements that are already planned and programmed for construction. The No Build Alternative provides the baseline condition for evaluating the environmental effects of the proposed project. For the I-5: South Jefferson to US 20 EA, the No Build Alternative would:

- Maintain the existing number of through lanes on I-5
- Keep the Murder Creek and Viewcrest interchanges open
- Maintain the current configuration of the Knox Butte and US 20 interchanges
- Maintain the existing connections between I-5 and the road network that serves the Millersburg-Albany area
- Maintain the existing local street network connections

2.2 Build Alternative

The Build Alternative would:

- Add one 12-foot travel lane in each direction to the I-5 mainline within the project area
- Add a new, fully directional interchange at Millersburg and close the existing Viewcrest and Murder Creek interchanges
- Reconfigure the existing Knox Butte and US 20 interchanges to improve their operation and add a southbound I-5 access ramp at Knox Butte
- Improve connectivity between the Knox Butte and US 20 interchanges. These closely spaced interchanges function as a connected system. Two options for improved connectivity between the interchanges are being considered:

- Auxiliary Lanes on I-5
- Collector Distributor System roads adjacent to I-5

- Improve local roadway system connections to the proposed new and improved interchanges. Associated proposed local system improvements would be needed to ensure transportation system operation meets adopted performance targets, accommodates proposed interchange improvements, meets current design standards, and addresses neighborhood concerns about local traffic conditions.

Figure 2.2-1, Figure 2.2-2, and Figure 2.2-3 provide information about the Build Alternative. Figure 2.2-2 and Figure 2.2-3 show the two options for connecting the Knox Butte and US 20 interchanges on I-5. Figure 2.2-4 illustrates a typical cross section for both of the proposed connection options. A description of the components of the Build Alternative, including the two design options for connecting the Knox Butte and US 20 interchanges, is presented in the following sections.

2.2.1 Additional Travel Lanes on I-5 Mainline

The Build Alternative includes the addition of one 12-foot travel lane in each direction to I-5 from approximately MP 238 (South Jefferson Interchange) to MP 233, just south of the US 20 Interchange. With the addition of the travel lanes, I-5 would have three lanes in each direction through the project area. In general, these travel lanes would be added to the outside of the existing lanes (except where constraints, such as existing railroad tracks, make it preferable to widen to the center). Figure 2.2-5 provides a typical cross section that illustrates the proposed addition of lanes to the I-5 mainline. Adding these lanes to I-5 would also require modernizing, widening, or replacing bridges and structures in the project area.

2.2.2 New Millersburg Interchange

A new interchange accommodating connectivity and movement in all directions would be constructed at approximately MP 236.6. The new interchange would serve Millersburg and replace two existing partial interchanges (Viewcrest and Murder Creek), as described in the following sections.

2.2.2.1 Close Viewcrest and Murder Creek Interchanges

The existing Viewcrest (MP 237.7) and Murder Creek (MP 235.7) interchanges (see Figure 2.2-1) would be closed and removed upon completion and opening of the new Millersburg Interchange. Closure of the Viewcrest Interchange would involve demolition of the existing ramps and bridge over I-5. The Murder Creek Interchange ramps would be removed. The existing connection between Old Salem Road and Century Drive that passes below I-5 at Murder Creek would be retained, and portions of these roads would be improved to meet current design standards.

2.2.2.2 New Millersburg Interchange

The new Millersburg Interchange (MP 236.6; see Figure 2.2-1) would be a folded diamond with a looped crossroad that serves as a fully directional interchange connecting I-5 to Century Drive on the east and Old Salem Road on the west. The new interchange would improve connectivity between I-5, the City of Millersburg, and surrounding Linn County west of I-5. To meet ODOT's interchange design operations and safety standards, a looped crossroad would be constructed to connect the interchange bridge with Century Drive. Due to the constraint of the existing railroad tracks on the west side, I-5 would be realigned to the east through the interchange area to accommodate the southbound ramps and widened I-5.

New bridges and roads would be built to connect Century Drive and Old Salem Road. The roadway bridge would cross over I-5 and the Union Pacific Railroad, which is located immediately west of and parallel to I-5 (see Figure 2.2-1). On the west side of the interchange, retaining walls adjacent to I-5 would be necessary to allow the southbound ramps to reach the overcrossing. The overcrossing of I-5 and the Union Pacific Railroad would be via an approximately 500-foot-long bridge, which would provide clearances over I-5 and the railroad in accordance with

required design standards. The new Millersburg Interchange roadway would connect to Old Salem Road approximately 1,000 feet south of the current Conser Drive intersection. East of I-5, the interchange bridge would extend over a realigned Century Drive and loop back to reconnect to the roadway at-grade.

Century Drive and Old Salem Road would be improved in the interchange area to meet current design standards. Reconstruction of Century Drive to current standards would include a 12-foot travel lane in each direction, with 8-foot shoulders. Some retaining walls would also be required. Old Salem Road would be reconstructed to current Linn County standards north and south of the proposed interchange connection. Improvements to Century Drive and Old Salem Road in this area also would include upgrades to bicycle and pedestrian features per Oregon Revised Statute 366.514.

This page intentionally left blank.

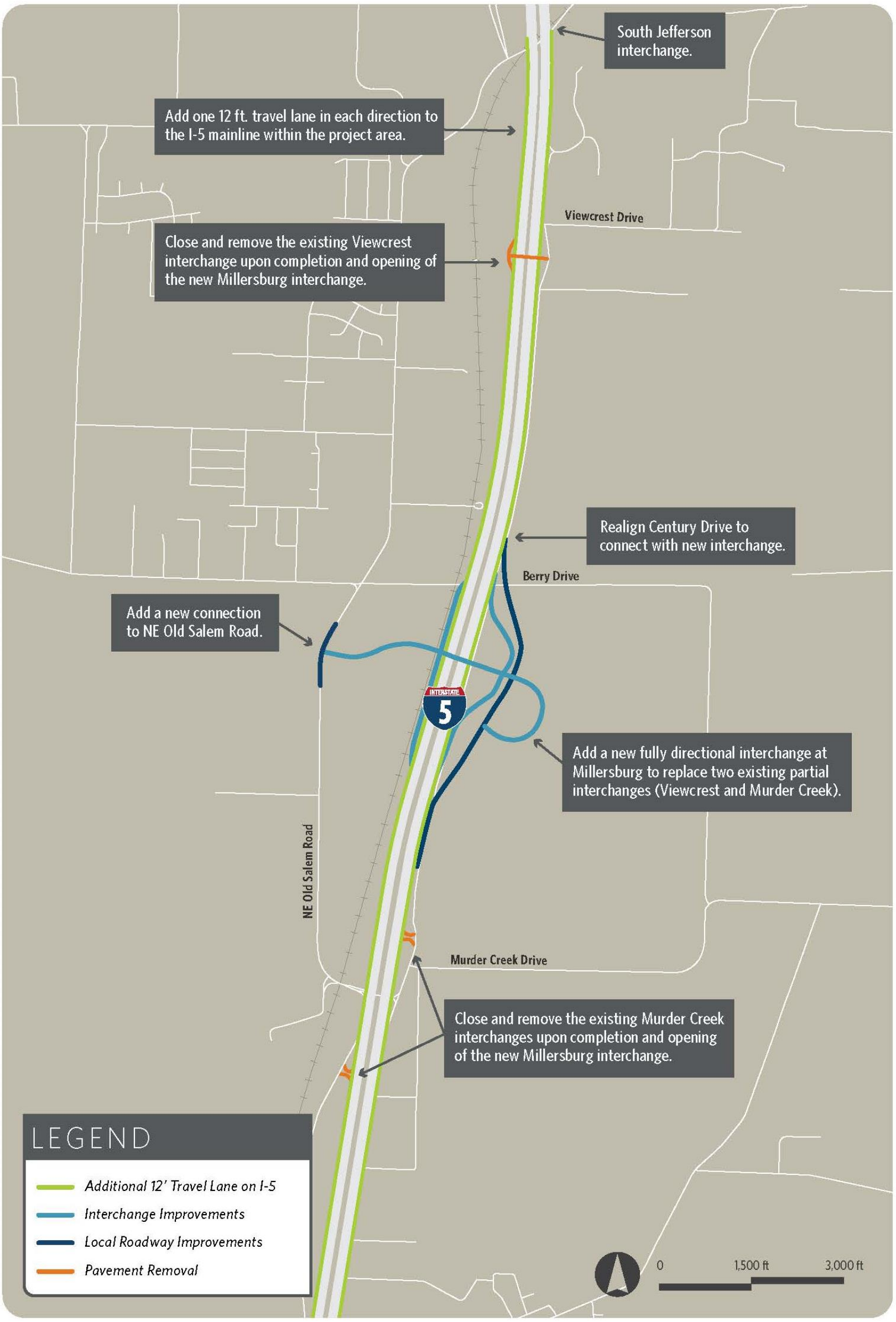


FIGURE 2.2-1
BUILD ALTERNATIVE MILLERSBURG INTERCHANGE

Figure 2.2-1: Build Alternative Millersburg Interchange

This page intentionally left blank.

2.2.3 Knox Butte Interchange Improvements

The Knox Butte Interchange would be reconstructed as a split diamond/partial cloverleaf hybrid in the same location as the existing interchange (see Figure 2.2-2). The layout of the new interchange would be different from the layout of the existing interchange. The new interchange would accommodate movement in all directions, whereas the existing interchange does not provide access to southbound I-5. The Build Alternative would add a new southbound on-ramp and close the existing southernmost southbound off-ramp (Exit 234A). The proposed improvements would add new signalized intersections—one at the northbound ramp intersection with Knox Butte Road, and one at each of the southbound ramp intersections where Knox Butte Road splits. A northbound loop on-ramp for eastbound Knox Butte Road traffic would be a new feature of this interchange, replacing the existing flyover ramp. Similar to the existing configuration, eastbound and westbound lanes of Knox Butte Road would be split as they pass through the interchange area.

East of I-5, Century Drive would terminate in a new cul-de-sac at its present intersection with Knox Butte Road. Traffic between Century Drive and Knox Butte Road would be rerouted via a new local road extension connecting Dunlap Avenue and Expo Parkway (see Figure 2.2-2). Dunlap Avenue would be extended to the east and Expo Parkway to the north to accommodate the new route. Dunlap Avenue and Expo Parkway would be improved to current City of Albany standards. Other local street improvements in the vicinity of the Knox Butte interchange include the widening of Albany Avenue SE between Salem Avenue SE and Pacific Boulevard SE/Highway OR 99E (i.e., where Albany Avenue SE crosses Waverly Park; see Figure 2.2-2).

2.2.4 US 20 Interchange Improvements

The improved US 20 Interchange would be a modified configuration and partial rebuild of the existing partial cloverleaf interchange. The northbound on- and off-ramps on the east side of the interchange would be modified slightly. The existing westbound US 20 ramp to northbound I-5 would be consolidated with the existing eastbound US 20 ramp to northbound I-5. The southbound off-ramp on the west side of the interchange would be changed from a loop ramp to a folded diamond ramp; the loop ramp, located in the southwest quadrant, would be removed (see Figure 2.2-2).

West of I-5, construction of the new southbound off-ramp west of I-5 will require closure of the Airport Road connection to US 20. Airport Road would end in a cul-de-sac at the existing entrance to the Heatherdale Mobile Village, with additional travel restrictions on Airport Road to address concerns by area residents about potential traffic cutting through the neighborhood. Access to southbound I-5 currently provided by Airport Road will be replaced with a new southbound on-ramp at the Knox Butte interchange. For this reason, closure of Airport Road at US 20 cannot occur until access to southbound I-5 is provided at the Knox Butte interchange Figure 2.2-3illustrates how the proposed traffic restrictions west of I-5 on Airport Road could affect local system access to southbound I-5.

East of I-5, the traffic model developed for this project assumes that the Fescue Drive SE intersection with US 20 would be modified (see Figure 2.2-2) to allow southbound traffic only on Fescue Drive SE at this intersection. This assumption is needed to ensure that the intersection continues to operate within adopted mobility targets. Before the assumed restriction of northbound movements on Fescue Street SE can be put in place, Spicer Street SE must be extended eastward to connect to an improved Timber Street to allow traffic to reach US 20 via Timber Street. In addition, Timber Street would be improved to arterial standards and extended south on a new alignment to connect with Spicer Drive at Three Lakes Road to provide better connectivity to Timber Street for access to US 20 (see Figure 2.2-2 and Figure 2.2-3).

2.2.5 Knox Butte Interchange to US 20 Interchange Connection Options

The Knox Butte and US 20 interchanges function as an interconnected system due to their proximity to each other and their connections to the local road network. ODOT is proposing two design options for improved connectivity between these two interchanges on I-5. These options are described below.

2.2.5.1 Design Option 1 - Auxiliary Lanes

The Auxiliary Lanes option would provide an additional lane immediately adjacent to the I-5 mainline travel lanes that would run between the Knox Butte and US 20 interchanges (see Figure 2.2-3). An auxiliary lane is an extra lane that would provide space for vehicles to accelerate. It would improve safety conditions by reducing conflicts between merging and diverging vehicles between the interchanges. A 12-foot auxiliary lane in each direction would be in addition to the third travel lane in each direction on I-5 that is part of the Build Alternative (see Figure 2.2-4).

2.2.5.2 Design Option 2 – Collector Distributor System

A Collector Distributor System provides additional travel lanes in each direction adjacent to the mainline I-5 travel lanes. Unlike the Auxiliary Lanes option, in the Collector-Distributor System the additional lanes would be physically separated from mainline I-5 travel lanes by barriers that would run between the Knox Butte and US 20 interchanges (see Figure 2.2-3). A Collector Distributor road system separates local traffic from the I-5 mainline, reducing potential conflicts with merging and diverging traffic. A 16-foot Collector Distributor System travel lane in each direction, with and 4-foot to 8-foot shoulders, would be in addition to the third travel lane in each direction on I-5 (see Figure 2.2-4).

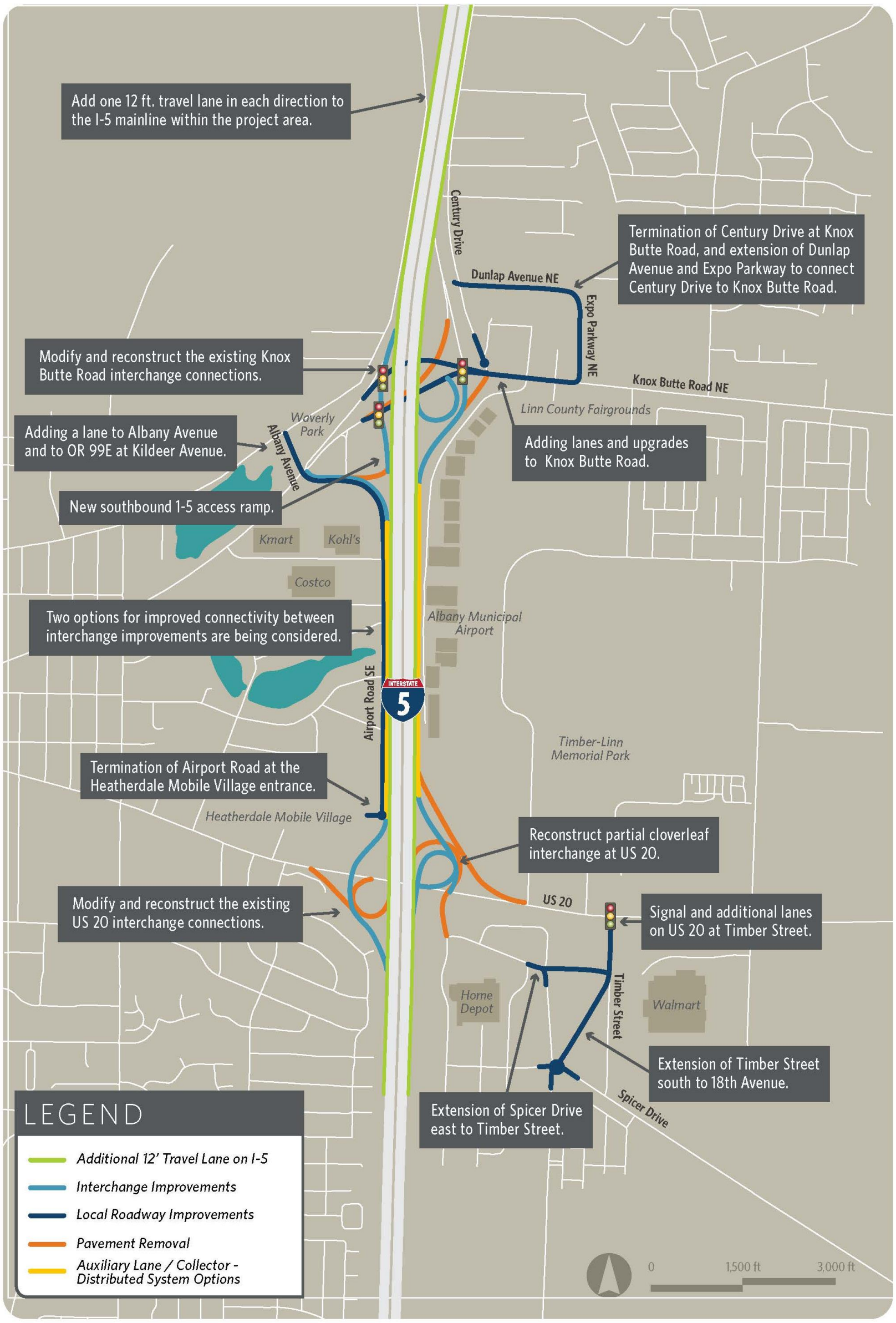


FIGURE 2.2-2

BUILD ALTERNATIVE KNOX BUTTE & US 20 INTERCHANGES

Auxiliary Lane / Collector-Distributor System

Figure 2.2-2: Knox Butte and US 20 Interchanges Build Alternative

This page intentionally left blank.

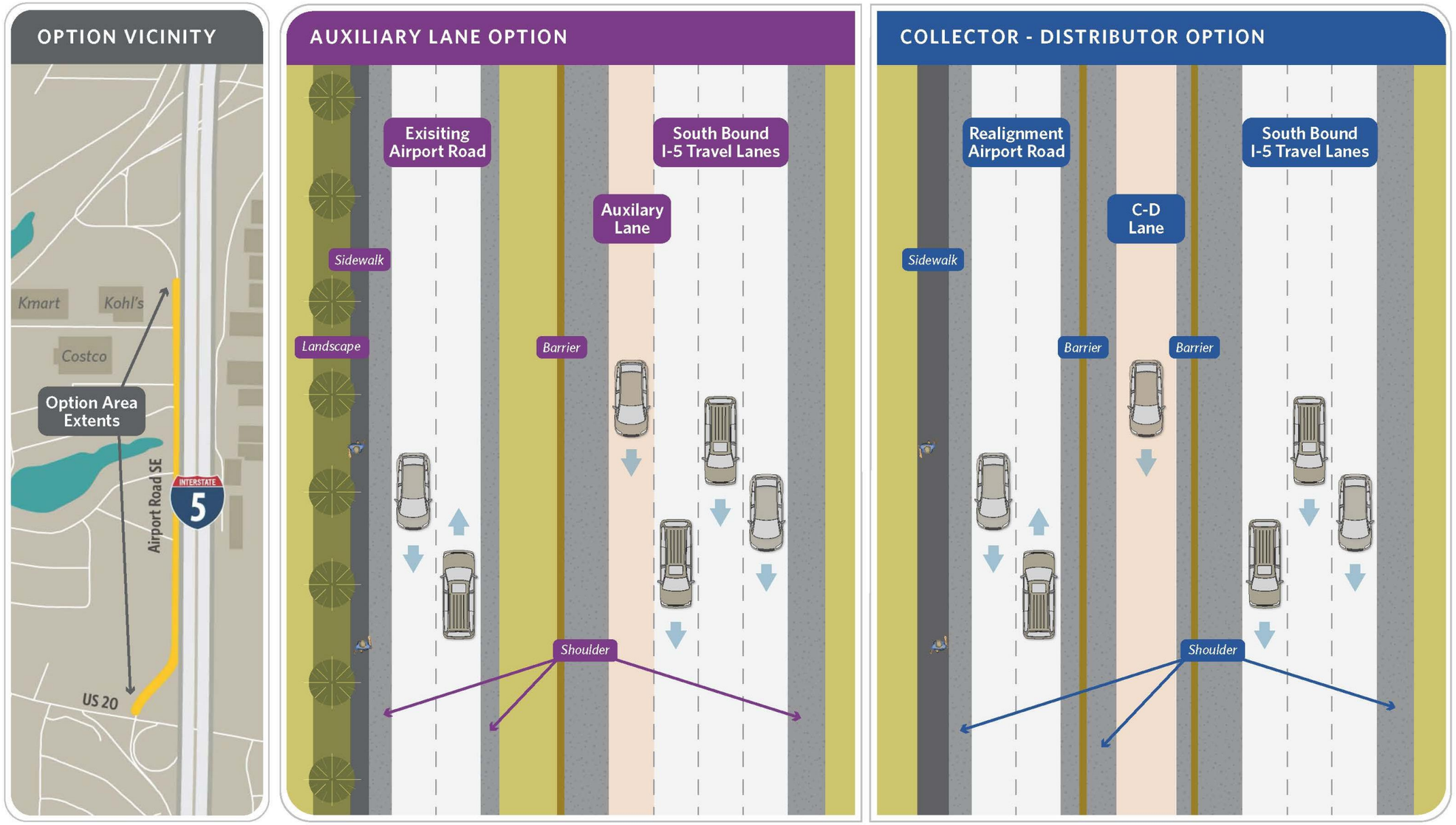
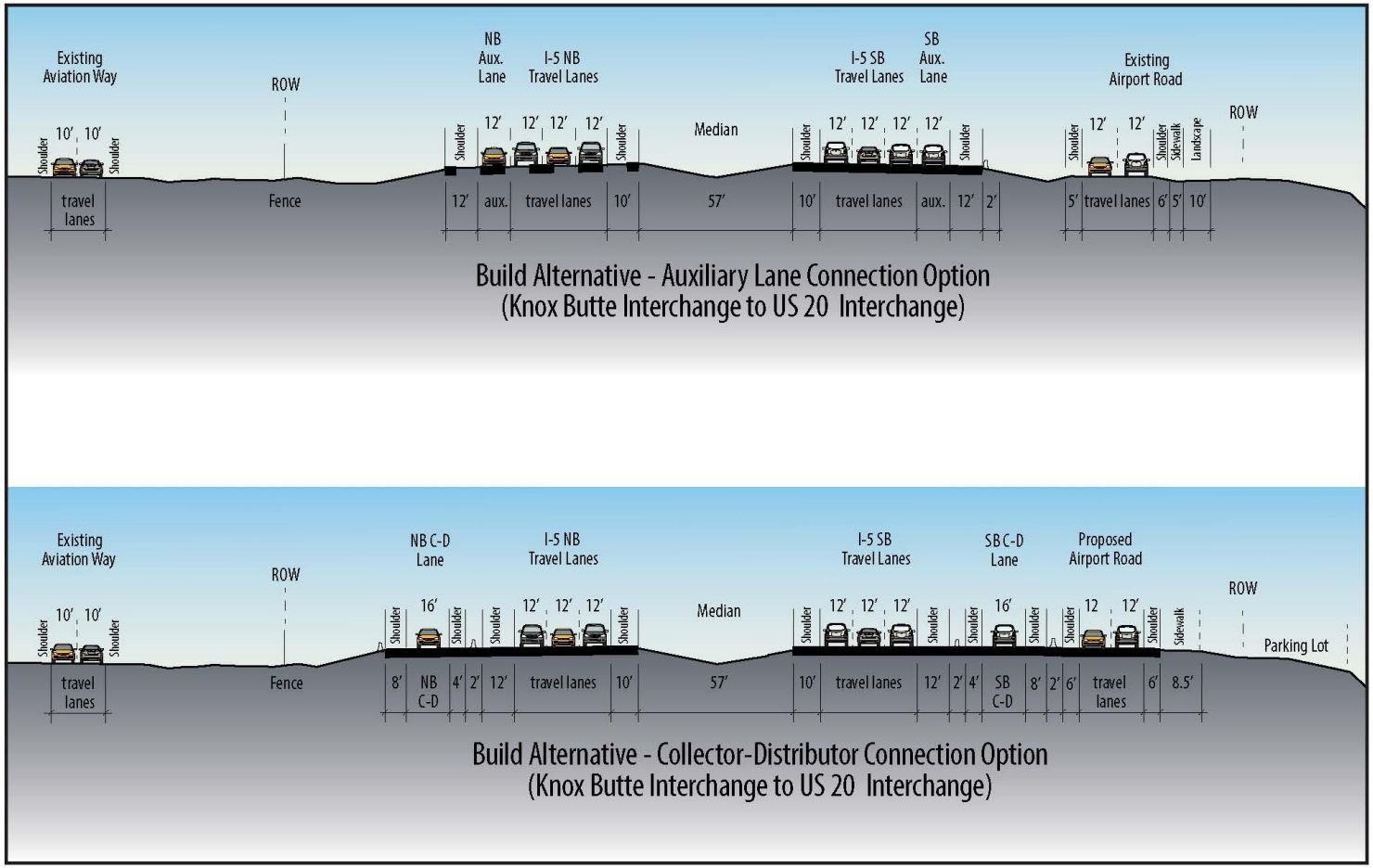


FIGURE 2.2-3

KNOX BUTTE INTERCHANGE TO US 20 INTERCHANGE: SOUTHBOUND CONNECTION OPTIONS

Figure 2.2-3: Build Alternative Southbound Sections

This page intentionally left blank.



Build Alternative Typical Cross-Section (Auxiliary Lane and Collector-Distributor Options)
Figure 2.2-4

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County, USFW, Bing, HDR, StreamNet

Figure 2.2-4: Typical Cross Section (Auxiliary Lane and Collector Distributor Options)

This page intentionally left blank.

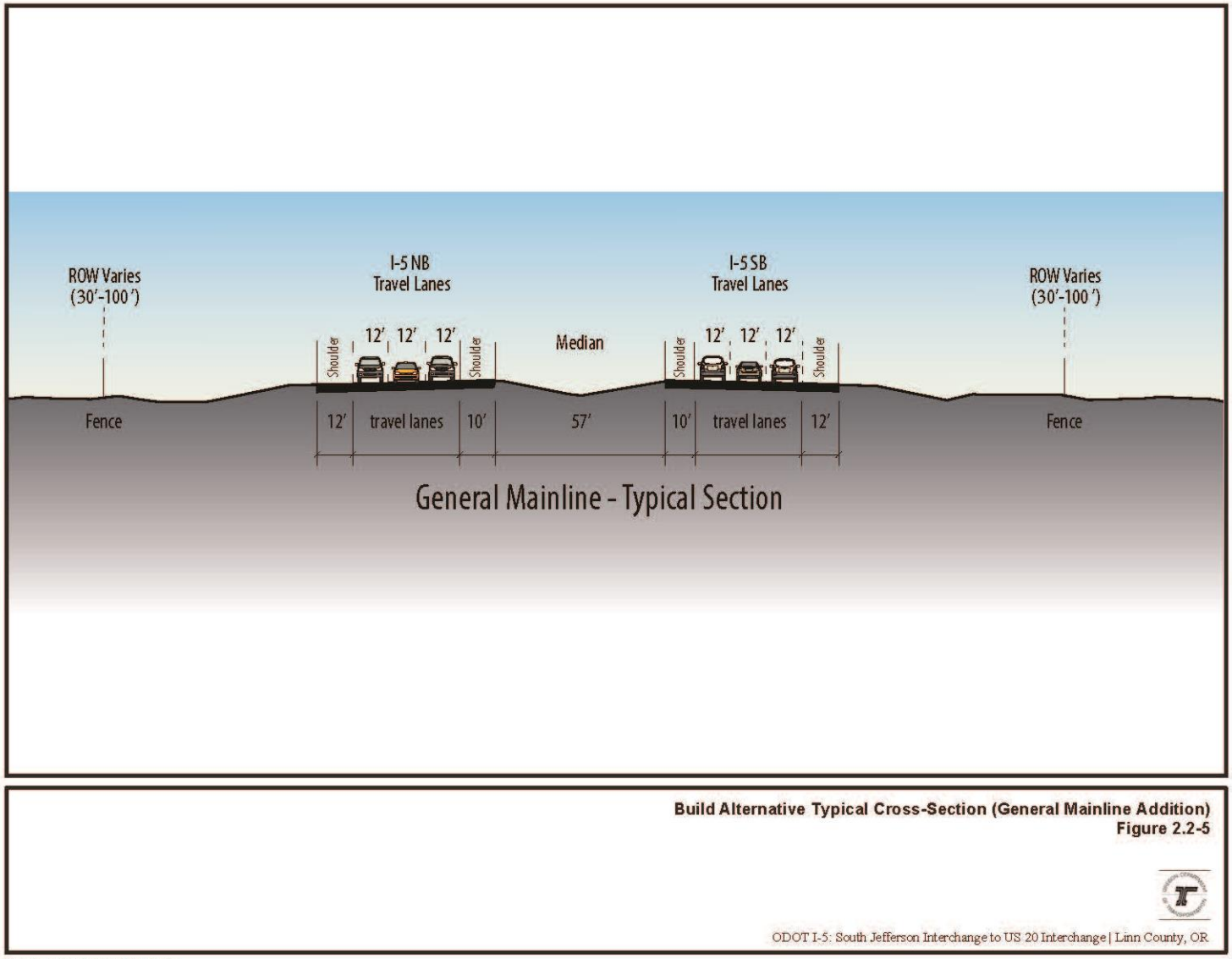


Figure 2.2-5: Typical Cross Section (General Mainline Addition)

This page intentionally left blank.

2.2.6 Local System Improvements

The Build Alternative includes improvements to the local system that are needed to ensure that transportation system operation meets adopted performance targets, accommodates proposed interchange improvements, meets current design standards, and addresses neighborhood concerns. Local system improvements in the Build Alternative complement improvements to the interstate system. These local system improvements are included in the Build Alternative due to their connection to improvements proposed to the interstate system and their geographic proximity.

Local system improvements in the Build Alternative include the following (see Figure 2.2-2):

- Termination of Century Drive at Knox Butte Road and extension of Dunlap Avenue and Expo Parkway to connect Century Drive to Knox Butte Road
- Addition of lanes and upgrade of Knox Butte Road
- Addition of a lane to Albany Avenue and to OR 99E at Killdeer Avenue
- Termination of Airport Road at the Heatherdale Mobile Village entrance and travel restrictions or modifications at other locations on Airport Road to address neighborhood concerns
- Extension of Spicer Drive east to Timber Street
- Installation of signal and addition of lanes on US 20 at Timber Street
- Improvement and extension of Timber Street south to 18th Avenue

2.2.7 Phasing

Assessment of potential impacts for this analysis has revealed several elements of the Build Alternative that would have to be built in sequence in order to avoid and minimize potential impacts; examples of this phasing of construction sequencing include the following:

- Construction of a southbound on-ramp at the Knox Butte Interchange must occur before construction of a new southbound off-ramp at US 20 and the subsequent termination of Airport Road to avoid sending traffic through the North Shore/South Shore neighborhood.
- Improvement and extension of Timber Street, along with extension of Spicer Drive, is necessary before limiting traffic on Fescue Street at US 20 to southbound movements only, to allow traffic in the southeast quadrant of the US 20 Interchange to reach US 20.
- Construction of a new Millersburg Interchange must occur prior to the removal of the Viewcrest and Murder Creek interchanges in order to maintain access to I-5 in Millersburg.

2.3 Development of the Build Alternative

ODOT began the EA process by initiating the Scoping phase, which included early agency coordination, public involvement, collecting and verifying data, and identifying issues and concerns related to the operation of I-5 in the project area. ODOT then developed a range of conceptual alternatives to consider and screening criteria based on the project's draft Purpose and Need statement. After screening the range of conceptual alternatives, ODOT developed design options for remaining conceptual alternatives and conducted a Value Engineering study to identify the most cost-effective design options. Design options were screened by the SAT Project Development Team and SAT committee using Goals and Objectives developed for the project. ODOT finished the process by reviewing the

recommendations with the PDT and Steering Committee to further refine and narrow design options that were advanced as components of the proposed Build Alternative. The following sections describe the process of developing and evaluating conceptual alternatives and design options for the Build Alternative in more detail.

2.3.1 Scoping

ODOT considered a wide variety of alternative system improvements that could potentially fulfill the project's Purpose and Need. Conceptual alternatives considered included:

- Rebuild I-5 and interchanges in new location/on new alignment
- Transit improvements
- Intelligent transportation system improvements
- Multiple combinations of adding lanes to I-5 with and without interchange and local system improvements
- Local system and interchange improvements without adding I-5 lanes

These conceptual alternatives were evaluated and found to not meet the Purpose and Need for the proposed action to improve safety, reduce congestion, and address the operational efficiency of I-5 and its interchanges caused by increased travel demand and obsolete roadway conditions. In addition, several of the conceptual alternatives were not feasible due to their high cost and potential environmental effects. Therefore, those conceptual alternatives were eliminated from further consideration in this analysis.

2.3.2 Initial Screening of Conceptual Alternatives

ODOT conducted a technical review and screening of 11 conceptual alternatives based on their ability to meet the project's Purpose and Need. This initial screening used the project's draft Purpose and Need statement, discussed in Chapter 1.0, to determine whether the conceptual alternative would address all of the primary problems identified for the project. As part of the screening of the full range of conceptual alternatives, ODOT also considered multiple design options for specific improvements contained within the conceptual alternatives. The results of the screening indicated that one of the preliminary conceptual alternatives (Alternative #9) had the potential to meet the Purpose and Need for the proposed project. The other preliminary conceptual alternatives considered would not meet the draft Purpose and Need statement. Alternative #9 would address the deficiencies of the facility and meet the Purpose and Need for the project, and was therefore retained for further refinement and analysis.

To further refine the proposed Build Alternative, design options for each affected interchange were developed and evaluated.

2.3.3 Value Engineering Study

In addition to screening conceptual alternatives and evaluation of design options, ODOT also conducted a Value Engineering Study (VE Study) of design options identified for the conceptual alternatives for interchange improvements (ODOT, 2011a). The VE Study employed a systematic process using a multi-discipline team to explore the potential of the design options to improve the value of the project.

The findings of the VE Study were reported to the PDT and SAT in May 2011. ODOT staff on the PDT reviewed the outcome and 14 recommendations of the VE Study and recommended accepting 10 of the 14 recommendations. Subsequently, at the October 20, 2011, PDT meeting, results of the VE Study were described in conjunction with a technical memorandum prepared by ODOT's Preliminary Design Engineer on specific technical challenges presented by the Single Point Urban Interchange (SPUI) and Diverging Diamond Interchange options proposed for the Knox

Butte Interchange (ODOT, 2011b). This technical memorandum added technical roadway and traffic considerations to the VE Study's more generalized recommendations to dismiss these options from further consideration.

2.3.4 Evaluation of Design Options

In addition to the Purpose and Need, ODOT, in coordination with project advisory committees, developed project Goals and Objectives described in Chapter 1.0. The Goals and Objectives seek to capture the issues and concerns important to the community that may be addressed by the project and go beyond the key transportation deficiencies identified in the Purpose and Need statement. While meeting the Purpose and Need is essential for an alternative to be considered NEPA process, Goals and Objectives help ODOT and its project partners determine how effectively an alternative and its design options may address issues and concerns identified by the affected communities.

The Project Team and technical staff developed numerous design options for major components of conceptual Alternative #9. Design options were evaluated using criteria based on the project Goals and Objectives as well as their potential impacts to the built and natural environment. Initial results were presented and discussed at the PDT meeting held in June 2013. Additional analysis and refinements were made based on PDT input, and a proposed Build Alternative was developed. The final Build Alternative analyzed in this document was presented and discussed with the PDT in September 2013, and with the SAT in December 2013.

ODOT completed an evaluation measures matrix that included the relative ranking given to each design option. The matrix showed that in many cases, there were no substantive differences between different design options in any one location. In a few cases, insufficient design information was available to complete the evaluation. Five of the criteria (Criteria 3-5, 3-6, 5-3, 5-4, and 6-1) showed differences among the options for interchange form that allowed a comparative ranking to be made between different design options.

2.3.5 Airport Road

Between May 2011 and September 2013, the project team worked to further refine the Build Alternative for more detailed analysis. ODOT developed and examined numerous design options (and configurations for certain options) for each of the major components of the proposed Build Alternative. These design options were evaluated using the criteria process previously described as well as on their potential impacts to the built and natural environment. Initial results were presented and discussed at the PDT meeting held in June 2013. Additional analysis and refinements were made based on PDT input, and a proposed Build Alternative to be evaluated in this analysis was developed. The proposed Build Alternative was presented and discussed with the PDT in September 2013, and with the SAT in December 2013.

Construction of the southbound off-ramp at the US 20 Interchange will require closure of the Airport Road SE connection to US 20. The Build Alternative originally considered two separate options for Airport Road SE west of I-5: (1) a cul-de-sac at its terminus north of US 20 or (2) an extension of Airport Road to Bain Street. In the first option, Airport Road would end in a cul-de-sac at the existing entrance to the Heatherdale Mobile Village north of US 20. In the second option, Airport Road would be extended to the west in order to connect to Bain Street SE. The proposed Airport Road SE extension was located between the Heatherdale Mobile Village and businesses on the north side of US 20. This proposed alignment for the Airport Road SE extension was selected to minimize impacts to nearby residential and commercial structures.

Additional study determined that the extension of Airport Road SE to Bain Street would likely result in disproportionate adverse impacts on low-income and minority populations due to residential displacements in Heatherdale Mobile Village. Therefore, this option was eliminated from further consideration.

With the elimination of the Airport Road SE extension to Bain Street SE, concern about the potential for traffic cutting through the North Shore/South Shore neighborhood was expressed by citizens, partner agency staff, and elected officials on the PDT and SAT. These representatives were concerned that termination of Airport Road SE would

cause traffic to use North Shore Drive or South Shore Drive to travel between the commercial district adjacent to the Knox Butte interchange and US 20, impacting residents of this neighborhood. In response to these concerns, ODOT proposed potential restrictions to traffic movements on the remaining portions of Airport Road and connecting streets to prevent cut-through traffic.

2.4 Final Design and Construction

The Build Alternative represents what could be implemented as a single construction project if adequate funds were available; however, smaller stand-alone projects are expected to be programed as a series of improvements to existing I-5 and local transportation systems as funding becomes available. ODOT will re-evaluate congestion, mobility, and safety needs and identify specific, stand-alone projects, or phases, of the Build Alternative feasible for construction. Each proposed stand-alone project will be evaluated to determine whether it would have operational independence (that is, it can be constructed and yield an improvement to the transportation system without requiring other elements of the Build Alternatives to function as intended). ODOT will work with local jurisdictions represented on the Oregon Cascades West Area Commission on Transportation to establish priorities for stand-alone projects that are elements of the Build Alternative. For example, a new southbound on-ramp from the Knox Butte Interchange to I-5 could be identified as a desired initial component of the Build Alternative, and constructed as a stand-alone project having operational independence.

In addition, ODOT will develop an Interchange Area Management Plan (IAMP) for each interchange area before construction of any improvement to those interchanges. An IAMP will seek to protect the function and operation of the interchanges by ensuring the local land use plans are compatible with the capacity and function of the transportation system. An IAMP will define State and local authorities and responsibilities, and guide subsequent decisions by the affected agencies about land uses, the transportation system, and travel routes in the interchange area.

3.0 ENVIRONMENTAL RESOURCES, IMPACTS, AND MITIGATION

This chapter presents an analysis of the potential impacts of the No Build and the Build Alternatives on the human and natural environments. The project area where potential impacts may occur is shown in Figure 3.1-1. This chapter is organized into sections for each environmental resource considered in this document. Each section of this chapter includes a description of existing conditions for the resource, an analysis of potential impacts on that resource, and proposed measures that would mitigate potential negative impacts resulting from the Build Alternative. The following types of impacts are considered:

- **Direct Impacts** are those that are caused by the action and occur at the same time and place, such as vegetation removal, permanent and short-term construction impacts, and temporary right-of-way acquisition needs.
- **Indirect Impacts** are caused by the action, but occur later in time or are farther removed in distance than Direct Impacts.
- **Cumulative Impacts** are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future projects regardless of what agency or person undertakes the action. Cumulative impacts can result from individually minor impacts that collectively result in more substantial impacts taking place over the 20-year planning horizon in this analysis. Projects included in the assessment of cumulative impacts are considered sufficiently likely to occur, and thus warrant consideration. The cumulative impact analysis in this document evaluates the combined impact of the Build Alternative with other actions described in Table 3-1 and illustrated in Figure 3.1-2 that are likely to occur within the 20-year planning horizon. New development and redevelopment in the project area are also expected to occur in accordance with zoning in place at the time of this analysis, and this development is not included in the assessment of cumulative impacts unless noted in Table 3-1. Information summarized in Table 3-1 was collected through a review of local plans and interviews with local planning officials.

Table 3-1: Past, Present, and Reasonably Foreseeable Future Projects

Description	Figure ID
Spicer Drive Extension: Roadway will be extended east from Timber Street to Goldfish Farm Road. Final roadway design will include bike lanes and sidewalks on both sides of the street within the planning horizon (by 2035).	1
Knox Butte Road Widening: Widens Knox Butte Road to four lanes from Clover Ridge Road to Goldfish Farm Road, and to three lanes from Goldfish Farm Road to a new North/South Collector, including the Burkhart Creek Bridge. These improvements are likely within the planning horizon and would include bike lanes, sidewalks, curbs, and gutters on both sides of the roadway.	2
Old Salem Road/Century Drive: Old Salem Road will be widened at the I-5 undercrossing to Century Drive, and Century Drive will be widened from Old Salem Road to Murder Creek Drive to increase capacity. Improvements would likely occur within the planning horizon.	3
Church Development: Development approval has been issued for a new church northeast of the Knox Butte Interchange on Clover Ridge Road.	4
Commercial Development or mixed-use development is likely to occur within the planning horizon at the north end of Millersburg near the South Jefferson Interchange.	5
The northeast quadrant of the Knox Butte Interchange has been zoned for medium-density residential and Regional Commercial development. This development is likely to occur within the planning horizon.	6
Samaritan Health Services plans to expand into a vacant site on the east side of I-5, north of US 20, and east of Goldfish Farm Road. The city is likely to extend sewer mains to the area and rezone the site from Residential Single Family to Office Professional within the planning horizon.	7
Millersburg: A large industrial site owned by the City of Millersburg just south of Conser Road and west of Old Salem Road is likely to be developed by industrial uses within the planning horizon.	8

ODOT adheres to the "Oregon Standard Specifications for Construction," which include standard measures that minimize and/or mitigate environmental impacts. In addition, efforts to minimize social and economic impacts were considered throughout the alternative development process. Mitigation measures to offset or reduce impacts are included with each resource if they differ from standard requirements or if they are of particular interest to the public. Specific mitigation measures proposed in this analysis are subject to change based on regulatory requirements and changing project needs.

The information in this analysis is a summary of more detailed information and analysis provided in technical reports (see Chapter 6.0, References). These technical reports are available upon request from ODOT Region 2 using the following contact information:

Region 2 Headquarters
455 Airport Road, Building B
Salem, Oregon 97301-5395
Phone: (503) 986-2600

3.1 Transportation Resources

I-5 is the main Interstate Highway on the west coast of the United States. I-5 plays a major role in supporting regional livability and economic activity by facilitating efficient travel. The operation of I-5 and its interchanges is also vital for supporting livability and economic activity in the Albany-Millersburg area. The Build Alternative includes proposed projects designed to reduce congestion and improve operational efficiency of I-5, its interchanges, and local streets in the vicinity of interchanges in the Albany-Millersburg area. This section assesses the impact of the Build Alternative on operation of I-5 and its interchanges and local streets in the Albany-Millersburg area.

To assess potential impacts on operation of the transportation system, counts were taken of existing (2008) traffic volumes at intersections by direction of travel. Computer-based models were used to project future year (2035) vehicular traffic volumes and turning movements. Existing and future vehicle volumes were compared to the capacity of roadways and intersections to assess the level of congestion and delay experienced by vehicles in the project area. Data on crash type and location over time were analyzed to identify locations where safety is a concern. This information is summarized below.

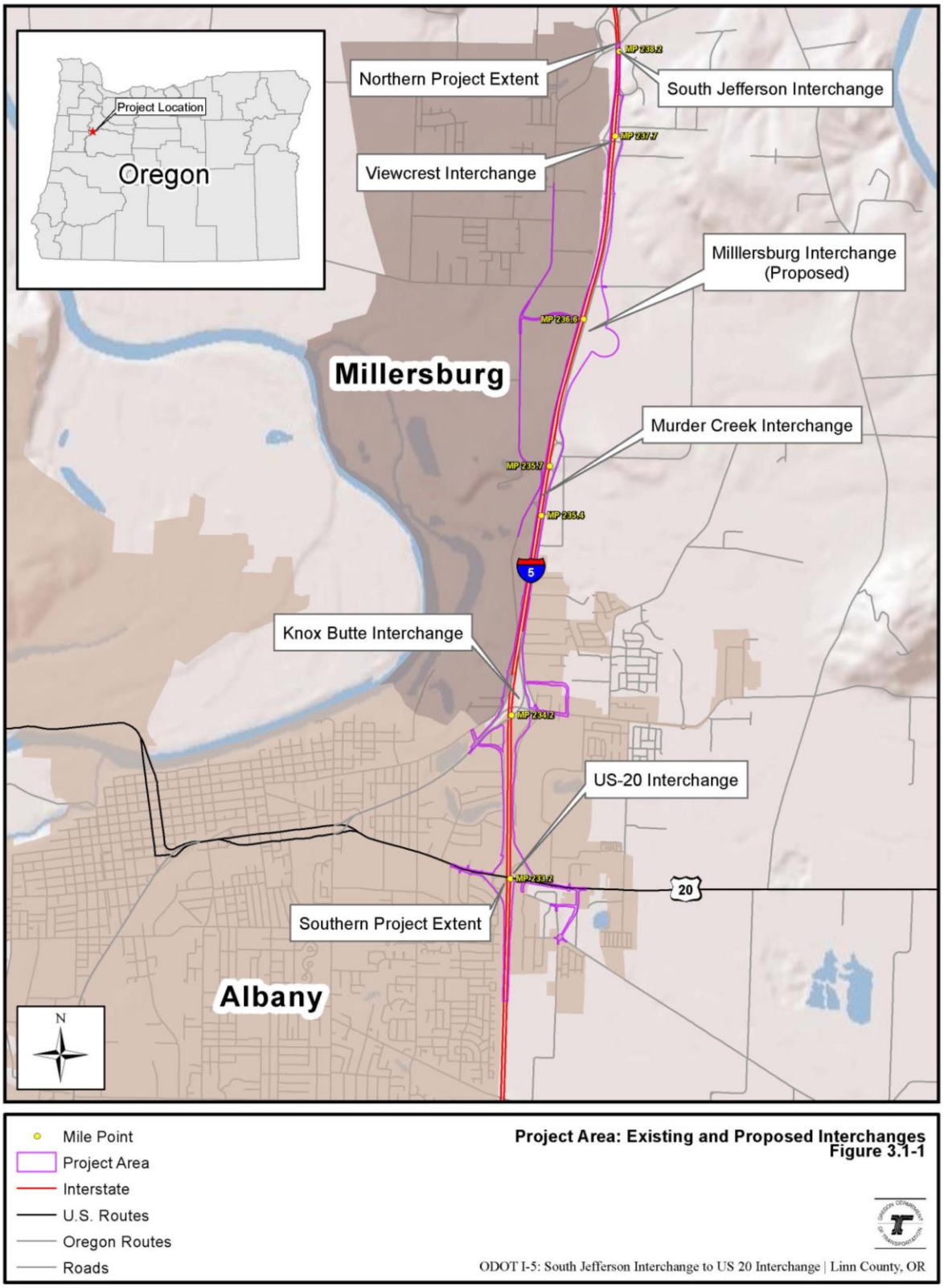


Figure 3.1-1: Project Area

This page intentionally left blank.

Data Source: Linn County, ESRI, City of Albany, City of Millersburg

Figure 3.1-2: Reasonably Foreseeable Future Projects

This page intentionally left blank.

3.1.1 Transportation System Impacts

The sections that follow describe the potential impacts on the transportation system resulting from the No Build and Build Alternatives considered in this analysis.

3.1.2 Methodology for Assessment of Mobility

To determine existing traffic volumes, traffic counts were taken at 37 locations in the project area between 2008 and 2011. The majority of the counts were taken in July 2008. Four additional counts were taken after 2008, two in 2009, and two in 2011. Updated counts were taken in 2014 at the intersection of Price Road with US 20 to correct previous counts that were mistakenly taken on a Friday before the Linn County Fair, which does not represent a typical day. The project area's peak hour, or the hour during which the highest percentage of daily traffic volume occurs, was found to be 4:45 to 5:45 p.m. The raw count data were adjusted to represent traffic volumes during the peak season, using adjustment factors based on Automatic Traffic Recorder trends and the 2008 Seasonal Trend Table.

For this project, queue lengths at signalized and unsignalized intersections were calculated using SimTraffic. SimTraffic performs microsimulation and animation of vehicle traffic, modeling travel through signalized and unsignalized intersections and arterial networks, as well as freeway sections. SimTraffic settings, parameters, and simulation execution were set using guidelines in Section 8.3 of the ODOT Transportation Analysis Procedure Manual.

The traffic model developed for this project contains several assumptions about future changes to the transportation system, such as installation of traffic signals or the elimination of connection points on the highways. These assumptions are necessary to ensure that the transportation system continues to operate within adopted targets for vehicular mobility, or to address safety concerns. The analysis of potential impacts in this analysis is based on the assumption that changes assumed in the traffic model will be implemented. Actual determination about future changes to the transportation system in the project area will be made during development of an Interchange Area Management Plan (IAMP) after completion of this analysis. For this reason, these assumptions are not included as part of the Build Alternative. Any IAMPs developed for this project will need to be adopted by the local jurisdiction in which the interchange is located and ODOT before they can be implemented. An IAMP would reflect any changes in existing conditions or expected future conditions known at the time the IAMP is developed, and would be based on regulations in place at that time. Traffic model assumptions in this analysis affecting the transportation system include the following changes to the existing transportation system:

- Knox Butte Road at Expo Parkway: installation of a traffic signal
- OR 99E: elimination of right turns out of the driveway between La Quinta Inn and McDonald's
- US 20 at Fescue Street: restricting traffic on Fescue Street to one-way only (southbound) to Spicer
- US 20 at Timber Street: installation of a traffic signal

3.1.3 Mobility Impacts

I-5, its interchanges, and the local connecting roadways (US 20, OR 99 E, and frontage roads) serves and supports a variety of travel modes that allows people, goods and services to be distributed and accessed locally, statewide and nationally as desired and needed. The system allows various types of transportation modes to move people and goods, including motor vehicles, bicycles, and walking. Mobility measures indicate how well a road functions—both in terms of how many vehicles are able to use the road and how efficient the road use is. The OHP uses a v/c ratio to establish targets for highway mobility for motor vehicles. A v/c ratio measures the volume of traffic on a road segment, or at an intersection, compared to the available capacity of that road segment or intersection. A v/c of 1.0 represents an intersection that is at capacity—it cannot efficiently handle additional traffic. A v/c greater than 1.0 represents an intersection that is over capacity and indicates severe congestion. In order to improve a v/c ratio, either the volume of traffic needs to be reduced or the capacity of the roadway needs to be increased. The OHP mobility targets for v/c ratios vary according to highway classification.

Mobility targets for city and county roads are established by the governing roadway authority in its local plans and development codes. In the project area, cities and counties use an LOS standard for mobility, which grades mobility on a scale from A to F (with A being free-flow conditions, and F being heavily congested).

For existing conditions and the No Build Alternatives, the OHP mobility target for State facilities within the project area is 0.85 for the interstate and interstate ramp terminals inside an Urban Growth Boundary (UGB), 0.70 for segments of the interstate outside of a UGB, and 0.95 on OR 99E and US 20. For city and county streets within the project area, the adopted mobility standard is LOS D.

For the Build Alternative, the mobility target for new or improved state facilities is established by the Highway Design Manual as 0.75 for the interstate and interstate ramp terminals inside an UGB, 0.60 for segments of the interstate outside of a UGB, and 0.85 for OR 99E and US 20. For city and county streets, the adopted standard for new or improved facilities is LOS D.

For ease of reference, existing traffic conditions (2008) and forecast conditions (2035) under the No Build and Build Alternatives are summarized in Table 3-4.

Table 3-2: Interstate Mobility under 2008 No Build, 2035 No Build, and 2035 Build Alternatives (Auxiliary Lanes and Collector Distributor System Options)

I-5 Segment	OHP Mobility Target	2008 No Build		2035 No Build		2015 Build			
						Auxiliary Lanes		Collector Distributor System	
		NB	SB	NB	SB	NB	SB	NB	SB
South of US 20	0.85	0.56	0.52	0.75	0.76	0.52	0.53	0.52	0.53
US 20 Interchange off-ramp diverge	0.85	0.46	0.45	**0.95**	0.81	0.52	0.26	0.51	0.50
US 20 Interchange on-ramp merge	0.85	0.51	0.53	**0.87**	0.82	0.39	0.51	0.52	0.51
Between US 20 and Knox Butte Interchange merge and diverge	0.85	0.49	0.50	0.81	0.75	0.55	0.54	0.50	0.42
Airport Road (Exit 234-A) off-ramp diverge	0.85	-	0.56	-	0.84	-	-	-	-
Knox Butte Interchange off-ramp diverge	0.85	0.52	0.69	**0.89**	**1.04**	0.17	0.60	-	0.60
Between Knox Butte Interchange ramps	0.85	0.46	0.50	0.76	0.75	0.62	0.50	0.62	0.42
Knox Butte Interchange on-ramp merge	0.85	0.59	-	**0.93**	-	0.59	0.15	0.59	0.46
Between Knox Butte and Murder Creek Interchanges	0.85	0.59	0.64	**0.90**	**0.96**	-	-	-	-
Between Knox Butte and Millersburg Interchanges	-	-	-	-	-	0.60	0.63	0.60	0.63
Murder Creek Interchange off-ramp diverge	0.85	0.63	0.67	**0.98**	**1.00**	-	-	-	-
Murder Creek Interchange on-ramp merge	0.85	0.60	0.66	**0.93**	**0.99**	-	-	-	-
Millersburg Interchange off-ramp diverge	-	-	-	-	-	0.63	0.64	0.63	0.64
Millersburg Interchange on-ramp merge	-	-	-	-	-	0.52	0.55	0.52	0.55
Between Murder Creek and Viewcrest Interchanges	0.85	0.58	0.63	**0.88**	**0.94**	-	-	-	-
Viewcrest Interchange off-ramp diverge	0.85	-	0.68	-	**1.01**	-	-	-	-
Viewcrest Interchange on-ramp merge	0.85	-	0.64	-	**0.96**	-	-	-	-
Between Millersburg and South Jefferson Interchanges	-	-	-	-	-	0.54	0.60	0.54	0.60
Between Viewcrest and South Jefferson Interchanges	0.85	0.59	0.63	**0.89**	0.81	-	-	-	-

I-5 Segment	OHP Mobility Target	2008 No Build		2035 No Build		2015 Build			
						Auxiliary Lanes		Collector Distributor System	
		NB	SB	NB	SB	NB	SB	NB	SB
Jefferson Interchange off-ramp diverge	0.85	0.62	0.67	**0.95**	**0.98**	0.60	**0.98**	0.60	**0.98**
Jefferson Interchange on-ramp merge	0.85	0.56	0.65	**0.90**	**0.97**	**0.90**	0.55	**0.90**	0.55

Source: ODOT, Transportation Planning Analysis Unit, August 18, 2014
Note: Numbers in table represent v/c ratios. Bold, shaded cells indicate conditions that exceed adopted standards for that facility. Empty cells indicate that traffic data were not available.

Table 3-3: Signalized Intersection Mobility under 2008 No Build, 2035 No Build, and 2035 Build Alternatives (Auxiliary Lanes and Collector Distributor System Options)

Signalized Intersections	OHP Mobility Target	2008 No Build	2035 No Build	2035 Build	
				Auxiliary Lanes	Collector Distributor System
Albany Avenue and Salem Avenue	0.95	LOS B	LOS B	0.52	0.52
Knox Butte Road and Timber Street	LOS D	LOS A	LOS A	LOS A	LOS A
Knox Butte Road and NB ramps	0.85	-	-	0.56	0.56
Knox Butte Road and Century Drive	-	-	-	LOS B	LOS B
Knox Butte Road and SB off-ramp	0.85	-	-	0.41	0.41
Knox Butte Road and SB on-ramp	-	-	-	0.59	0.59
OR 99E and Waverly Drive	0.95	0.74	**1.04**	**0.92**	**0.92**
OR 99E and Killdeer Avenue	0.95	0.60	0.83	0.77	0.77
OR 99E and Airport Road/Albany Avenue	0.95	0.73	**1.12**	**0.89**	**0.89**
US 20 and Waverly Drive	0.95	0.87	**1.26**	**1.00**	**1.00**
US 20 and I-5 (SB ramps)	0.85	**0.93**	**0.91**	0.75	0.75
US 20 and Fescue Street (NB ramps)	0.85	0.63	**0.98**	0.74	0.74
US 20 and Goldfish Farm Road	0.95	0.35	0.86	0.81	0.81
US 20 and Timber Road	0.95	-	0.73	0.75	0.75

NB = northbound; SB = southbound
Source: ODOT, Transportation Planning Analysis Unit, August 18, 2014
Note: Numbers and letters in table represent v/c ratios and LOS, respectively. Bold, shaded cells indicate conditions that exceed adopted standards for that facility. Empty cells indicate that traffic data was not available.

Table 3-4: Unsignalized Intersection Mobility under 2008 No Build, 2035 No Build, and 2035 Build Alternatives (Auxiliary Lanes and Collector Distributor System Options)

Unsignalized Intersections	OHP Mobility Target	2008 No Build	2035 No Build	2035 Build	
				Auxiliary Lanes	Collector Distributor System
Jefferson Highway at SB ramps	0.85	0.18	0.51	0.32	0.32
Jefferson Highway at NB ramps	0.85	0.56	0.77	0.71	0.71
Viewcrest Drive and Century Drive	0.95	0.05	0.06	LOS A	LOS A
Conser Road and Old Salem Road	LOS D	LOS B	LOS B	LOS A	LOS A
Old Salem Road and Millersburg Road	-	-	-	LOS D	LOS D
Millersburg Road and SB ramps	-	-	-	0.37	0.37
Millersburg Road and NB ramps	-	-	-	0.29	0.29

Unsignalized Intersections	OHP Mobility Target	2008 No Build	2035 No Build	2035 Build	
				Auxiliary Lanes	Collector Distributor System
Old Salem Road and Nygren Road	LOS D	LOS B	LOS B	LOS A	LOS A
Old Salem Road and Salem Avenue	LOS D	LOS B	**LOS F**	LOS C	LOS C
Old Salem Road and I-5 SB ramps	0.85	0.21	0.55	-	-
Old Salem Road and I-5 NB ramps	0.85	0.12	0.20	-	-
Old Salem Road and Century Drive	LOS D	LOS A	LOS B	LOS A	LOS A
Salem Avenue and Waverly Drive	LOS D	LOS B	LOS C	LOS B	LOS B
Knox Butte Road at Century Drive (NB ramps)	0.85	0.46	**>2.0**	-	-
Knox Butte Road and Goldfish Farm Road	LOS D	LOS B	LOS C	**LOS F**	**LOS F**
Airport Road and Killdeer Avenue	0.95	0.26	0.39	LOS B	LOS B
US 20 and Bain Street	0.95	0.48	0.89	0.89	0.89
US 20 and Center Street	0.95	0.37	0.76	0.83	0.83
US 20 and Price Road	0.95	0.41	0.72	0.68	0.68
US 20 and Timber Street	0.95	0.36	-	-	-

SB = southbound; NB = northbound
Source: ODOT, Transportation Planning Analysis Unit, August 18, 2014
Note: Numbers and letters in table represent v/c ratios and LOS, respectively. Bold, shaded cells indicate conditions that exceed adopted standards for that facility. Empty cells indicate that traffic data was not available.

As shown in Table 3-2 through Table 3-4, under the No Build Alternative, mobility conditions would worsen by 2035. Many areas in the project area would be over capacity and severely congested. Also, congestion may lead to an increase in the number (frequency) of collisions.

Table 3-2 shows that current (2008) operation conditions on all segments of I-5 in the project area are within the OHP mobility target. With the No Build Alternative, Table 3-2 shows that conditions on portions of I-5 in the project area are expected to exceed OHP mobility targets in 2035, particularly at ramp diverge/merge points and between the South Jefferson and Knox Butte interchanges. The Build Alternative would allow I-5 in the project area to operate at levels within the HDM motility targets, except at the northbound off- and on-ramps at the Jefferson Interchange (which is not modified by the Build Alternative).

Table 3-3 shows that conditions at the intersection of US 20 at Airport Road/southbound ramp currently exceeds the OHP mobility target, indicating high levels of congestion at this location. Other signalized intersections in the project area currently operate within adopted mobility targets. With the No Build Alternative, conditions are expected to exceed OHP mobility targets at four additional intersections:

- OR 99E at Waverly Drive
- OR 99E at Airport Road / Albany Avenue
- US 20 at Waverly Drive
- US 20 at Fescue Street / I-5 Northbound On-Ramp

With the Build Alternative, all signalized intersections in the project area would operate within adopted mobility targets except for the following three intersections:

- OR 99E at Waverly Drive
- OR 99E at Airport Road / Albany Avenue
- US 20 at Waverly Drive

Table 3-4 shows that all unsignalized intersections in the project area are currently operating at conditions within or at adopted mobility targets for those facilities. With the No Build Alternative, 2035 conditions are expected to exceed adopted mobility targets at two unsignalized intersections: Old Salem Road at Salem Avenue, and Knox Butte Road at Century Drive / I-5 Northbound Ramps. The intersection of Knox Butte Road with Century Drive / I-5 Northbound Ramps is expected to experience extremely congested conditions in 2035 with the No Build Alternative, with a v/c greater than 2.0. The Build Alternative will allow these intersections to operate within adopted mobility targets; however conditions at the intersection of Knox Butte Road and Goldfish Farm Road are expected to worsen under the Build Alternative, operating at LOS F.

3.1.4 Safety Conditions

3.1.4.1 Safety Priority Index System (SPIS)

ODOT's SPIS is used to categorize locations throughout the state that have safety concerns. ODOT produces a list highlighting the top 5 percent and top 10 percent locations with the highest number of safety issues relative to similar roadways in Oregon. The SPIS is calculated based on 3 years of data. The 2012 SPIS identifies two locations in the project area as having a crash rating in the top 5 percent of similar roadway segments in Oregon (Table 1-3). The SPIS site on US 20 is at the Waverly Drive intersection, and the SPIS site on OR 99E is at the Killdeer Avenue intersection. However, there are no top-5 or top-10 percent SPIS locations identified on the I-5 mainline. Additional information about the number of crashes in the project area is provided in Table 1-4.

3.1.4.2 Project Segment Crash Rates

TPAU prepared the following crash analysis for I-5, US20 and OR 99E based on official reported crashes submitted to ODOT's Crash Analysis and Reporting Unit for roadways in the project area from 2007 to 2012.

I-5 MP 232.95 to 238.70

Mainline crashes are split almost equally by direction with 111 (58 percent) being northbound and 79 (42 percent) southbound. The majority of the crashes appear to be at portions of the freeway where ramps merge and diverge. This crash pattern is typical on freeway segments. Many of the northbound crashes (28 percent) appear to be attributed to the on- and off-ramps associated with Knox Butte Road. More than 40 percent of the southbound crashes appear to be attributed to the Viewcrest on- and off-ramps, with 37 of the 79 crashes occurring within the vicinity.

Crash types on I-5 within the project area are typical of a two-lane freeway. The majority of crashes are rear-end type, followed by fixed-object and sideswipe-overtaking type crashes. Rear-end and sideswipe-overtaking collisions are often caused by motorists following too close, traveling too fast for conditions, failure to maintain and improper lane change maneuvers, or being inattentive and colliding with a vehicle. Both rear-end and sideswipe-overtaking type crashes typically occur in areas of frequent lane change maneuvers such as merge-and-diverge influence areas. Fixed-object type crashes can also result from failure to maintain the lane, caused by lane-changing or avoidance maneuvers. They often have the highest injury severity and typically occur where bridge pillars, median barriers, or guard rails exist.

On four-lane freeways with high speeds, closely spaced interchanges and high percent heavy truck traffic, the speed differential between auto and truck can be substantial and contribute to a higher number of collisions in the through

lanes. This is especially true through the merge and diverge influence areas of the interchanges where heavy entrance and exit flows create localized congestion points. By increasing mainline capacity and lengthening ramps through the project area, the Build Alternative would be expected to reduce crash rates on I-5 in the project area. Increased capacity will provide more separation between vehicles facilitating smoother transitions, driver positioning and an overall reduction in the potential for conflict. Lengthening the ramps will result in decreased speed differentials by providing adequate distance for vehicles to accelerate/decelerate to appropriate speeds independent of the mainline traffic. In addition, the Knox Butte and Santiam Interchange are both urban type interchanges with a high degree of interaction (short-hop trips) and spacing of less than one mile apart. By adding auxiliary lanes or collector/distributor lanes to this portion of I-5, the Build Alternative will facilitate driver positioning and reduce conflict points within the weaving sections, resulting in a reduced number of crashes.

US 20 and OR 99E

Within the project area, US 20 and OR 99E are located in urban areas with multiple signalized and unsignalized intersections. Crash types on these facilities are typical of state highways through an urban environment with the majority being rear end type crashes followed by turning type crashes occurring at intersections.

US 20: Waverly Drive to Goldfish Farm

Segments of US 20 in the project area have crash rates higher than rates on comparable urban principle arterial state highway segments, particularly west of I-5, where the rate is twice the comparable rate. This likely is a result of the high density of driveways and access on this portion of the road.

There were 183 crashes reported along this section of US 20 with two (2) fatalities reported on this section between 2007 and 2012. Of the 183 crashes, a large portion of crashes were rear-end (52%) and turning movement (19%) collisions.

OR 99E: Waverly Drive to I-5

There were 102 crashes reported on this segment of highway between I5 and Waverly Drive. A large portion of crashes are turning movement (25%) related or rear-end (54%) collisions. Turning crashes were caused by drivers taking improper gaps or disregarding signals. Rear-end collisions occurred throughout the section, especially near the Albany Avenue and Waverly Drive.

3.1.5 Transportation Impacts

The sections that follow describe the potential impacts on the transportation system resulting from the No Build and Build Alternatives considered in this evaluation.

3.1.5.1 No Build Conditions

As shown in Table 3-2 through Table 3-4, under the No Build Alternative, conditions would worsen by 2035. Many areas in the project area would be over capacity and severely congested. Congestion would likely lead to an increase the number (frequency) of collisions (see Chapter 1.0 for crash history information).

Table 3-2 shows existing (2008) and future (2035) mobility conditions on segments of I-5 under the No Build Alternative. As shown in Table 3-2, the majority of the freeway currently operates at a v/c ratio below the OHP target, indicating relatively uncongested conditions on these segments of I-5. By 2035, the majority of I-5 segments within the project area are expected to fail to meet OHP mobility targets, and those segments that are not failing are expected to operate with a v/c ratio close to the OHP target.

Table 3-3 shows current (2008) and future (2035) mobility conditions at signalized intersections in the project area under the No Build Alternative. Table 3-3 shows that the intersection of US 20 with Airport Road/southbound ramps currently fails to meet OHP mobility targets. By 2035, the intersections of OR 99E with Waverly Drive and Airport Road and the intersections of US 20 with Spicer Drive (northbound ramps), Waverly Drive and I-5 (southbound ramps) are also expected to fail.

Table 3-4 shows current (2008) and future (2035) mobility conditions at unsignalized intersections in the project area under the No Build Alternative. Table 3-4 shows that no unsignalized intersections in the project area currently fail to meet mobility targets or standards. By 2035, the intersection of Knox Butte Road with Century Drive/I-5 northbound ramps is expected to experience extremely congested conditions, with a v/c greater than 2.0. On local streets, the intersection of Old Salem Road with Salem Avenue is expected to experience conditions that exceed LOS D.

3.1.5.2 Build Alternative

The following sections describe the potential impacts on the transportation system resulting from the Build Alternative as well as each option for connectivity between the Knox Butte and US 20 interchanges.

3.1.6 Temporary Impacts from Construction

Temporary impacts expected from construction activities may include lane shifts, detours, closures, and realignments on the local and mainline systems. These changes would be scheduled and coordinated to minimize effects on interstate operations and connectivity and local traffic conditions. Before construction of any project occurs, ODOT is required to prepare a Traffic Management Plan (TMP) prior to making any changes that will affect traffic flow, and the public and service providers would be notified before any changes were made. ODOT is also required to coordinate with public transportation providers prior to construction. In terms of impacts of the Auxiliary Lanes versus the Collector Distributor System option, temporary impacts to local roadways would likely be reduced with the Auxiliary Lanes option because more of the construction would occur within ODOT right-of-way (additional right-of-way would need to be acquired with either option; see Section 3.3 for more information). However, both options would have temporary impacts as construction equipment and workers utilize the areas and reroute traffic as needed.

Permanent Impacts

The Build Alternative includes the addition of one 12-foot travel lane in each direction to I-5 from approximately MP 238 (South Jefferson Interchange) to MP 233, just south of the US 20 Interchange. With the addition of the travel lanes, I-5 would have three lanes in each direction through the project area. Adding these lanes to I-5 would also require modernizing, widening, or replacing bridges and structures in the project area.

Compared to conditions under the No Build Alternative, the Build Alternative would improve traffic conditions in the project area. As shown in Table 3-2 Interstate Mobility, with the exception of the area north of the South Jefferson Interchange, which is outside the project area, both the Auxiliary Lanes and the Collector Distributor System options would improve conditions on I-5. Both options would meet v/c targets and could handle the traffic projected for the year 2035. Table 3-3 shows that the Build Alternative would meet or improve conditions for mobility relative to the No Build Alternative for all signalized intersections in the project area except the intersection of US 20 at Timber Road, where conditions worsen due to northbound traffic that would be restricted from using the Fescue Street intersection on US 20. As shown in Table 3-4, the Build Alternative would also meet or improve conditions for mobility relative to the No Build Alternative for all unsignalized intersections examined in the project area except US 20 at Center Street and Knox Butte Road at Goldfish Farm Road, where the v/c or LOS would be slightly higher.

3.1.7 Interchange Spacing

Standards for the spacing on interchanges on limited-connection facilities are established in Appendix C of the OHP. The standard for spacing on interchanges on interstate freeways in urban areas is 3 miles. All interchanges in the

project area are considered urban interchanges because they are within the boundary of the Albany Area Metropolitan Planning Organization. Spacing standards help to maintain and/or improve the safety and mobility of the roadway system by reducing the potential for vehicular conflicts. The existing interchanges in the project area do not meet ODOT's interchange spacing standard of 3 miles for urban interchanges. The Viewcrest Interchange is only 0.6 mile from the South Jefferson Interchange to the north and 2.2 miles from the southbound Murder Creek Interchange to the south. The Murder Creek Interchanges, northbound and southbound, are only 1.3 to 1.7 mile from the Knox Butte Interchange to the south. The Knox Butte Interchange is slightly less than one mile from the US 20 Interchange.

Construction of the Millersburg Interchange and elimination of the existing interchanges at Viewcrest and Murder Creek will move conditions in the direction of interchange spacing standards. The new Millersburg Interchange would be 1.6 mile from the South Jefferson Interchange to the north, and 2.5 miles to the Knox Butte Interchange to the south. A deviation from the OHP would be required for this substandard distance between interchanges.

3.1.8 Bicycle and Pedestrian Facilities

Providing adequate bicycle and pedestrian facilities throughout the project area is an important issue considered in development of the Build Alternative. Dedicated bike lanes are present across I-5 at the US 20 crossing and on segments of Pacific Boulevard at the Knox Butte Road crossing, but otherwise bikes use existing shoulders or share travel lanes on roadways in the project area. Discontinuous and narrow sidewalks in the project area currently create safety concerns for pedestrians.

With the No Build Alternative, minimal changes to existing bike and pedestrian facilities are anticipated. The Build Alternative will provide continuous Americans with Disabilities Act (ADA)-compliant pedestrian and bicycle facilities on new and reconstructed roadways in the project area. The Build Alternative will help implement the Albany Transportation System Plan (2010) in the project area, which calls for provision of pedestrian and bicycle facilities on new and reconstructed roadways within the City's Urban Growth Boundary. The proposed Knox Butte Interchange will create a high-volume unimpeded right turn (northbound loop) that is a hazard for eastbound through bicycles that does not exist today.

3.1.9 Minimization, Avoidance, and Mitigation Measures

Lane shifts, closures, realignments, and detours resulting from construction of the Build Alternative would be scheduled and coordinated to minimize adverse effects on interstate connections and local traffic conditions. ODOT is required to prepare a TMP prior to making any changes that will affect traffic flow, and the public and service providers would be notified before any changes were made. An ADA-compliant pedestrian and bicycle facility plan would be developed during final design. During construction, ODOT would attempt to minimize disruption to transit service. Effects on circulation for vehicles, pedestrians, and public transportation would be minimized through coordination and planning during the design phase. Construction phasing would minimize impacts to travel patterns were possible.

3.1.10 Conclusion

The Build Alternative would, overall, result in improved conditions for all roadway modes of transportation, including motor vehicles, bicyclists, and pedestrians. Although the volume of traffic may increase over time and some congestion would remain, most intersections would meet adopted targets for mobility and could still handle traffic projected for 2035. Six locations would fail to meet adopted mobility targets with the Build Alternative:

- Jefferson Interchange off-ramp diverge
- Jefferson Interchange on-ramp merge
- OR 99E at Waverly Drive
- OR 99E at Airport Road/Albany Avenue
- US 20 at Waverly Drive
- Knox Butte Road at Goldfish Farm Road

The Build Alternative would maintain or improve mobility conditions at all intersections in the project area compared to conditions with the No Build Alternative, except at the intersection of Knox Butte Road and Goldfish Farm Road. The provision of ADA-compliant sidewalks and designated bike lanes would be provided on new and reconstructed roadways, improving conditions for pedestrians and cyclists in the project area relative to the No Build Alternative.

While interchange spacing in the Build Alternative does not meet current OHP targets for urban facilities, construction of the Millersburg Interchange and removal of the Viewcrest and Murder Creek interchanges does move the interstate system in the direction of the adopted targets.

3.2 Land Use Resources

Land use is the type of activity (e.g., residential, commercial, industrial) that occurs on a property. This section describes land uses that are located within the project area and how those uses may potentially be affected by construction and/or operation of the Build Alternative.

In Oregon, land use and development is guided by Statewide Land Use Goals, local comprehensive land use plans, and zoning designations. Urban-level development is focused within established UGBs and is limited in areas outside of UGBs. Transportation facilities can influence the type of adjacent land uses and create pressure to change a land use designation or zoning. Land use impacts occur when a change to the existing land use or a change in plan or zoning designation is made that would not have occurred without the Build Alternative.

The existing land use conditions and impacts discussed below focus on the project area, which includes portions of Linn County, the City of Millersburg, and the City of Albany. Additionally, State, regional, and local plans and policies related to land use and transportation in the project area were reviewed to determine the consistency of the Build Alternative with these plans.

3.2.1 Existing Conditions

This section describes existing conditions for land use and State, regional, and local plans and policies related to land use and transportation in the project area. Geographic Information Systems (GIS) data, aerial photographs, site visits, and communications with City and County planning staff were used to obtain existing land use information.

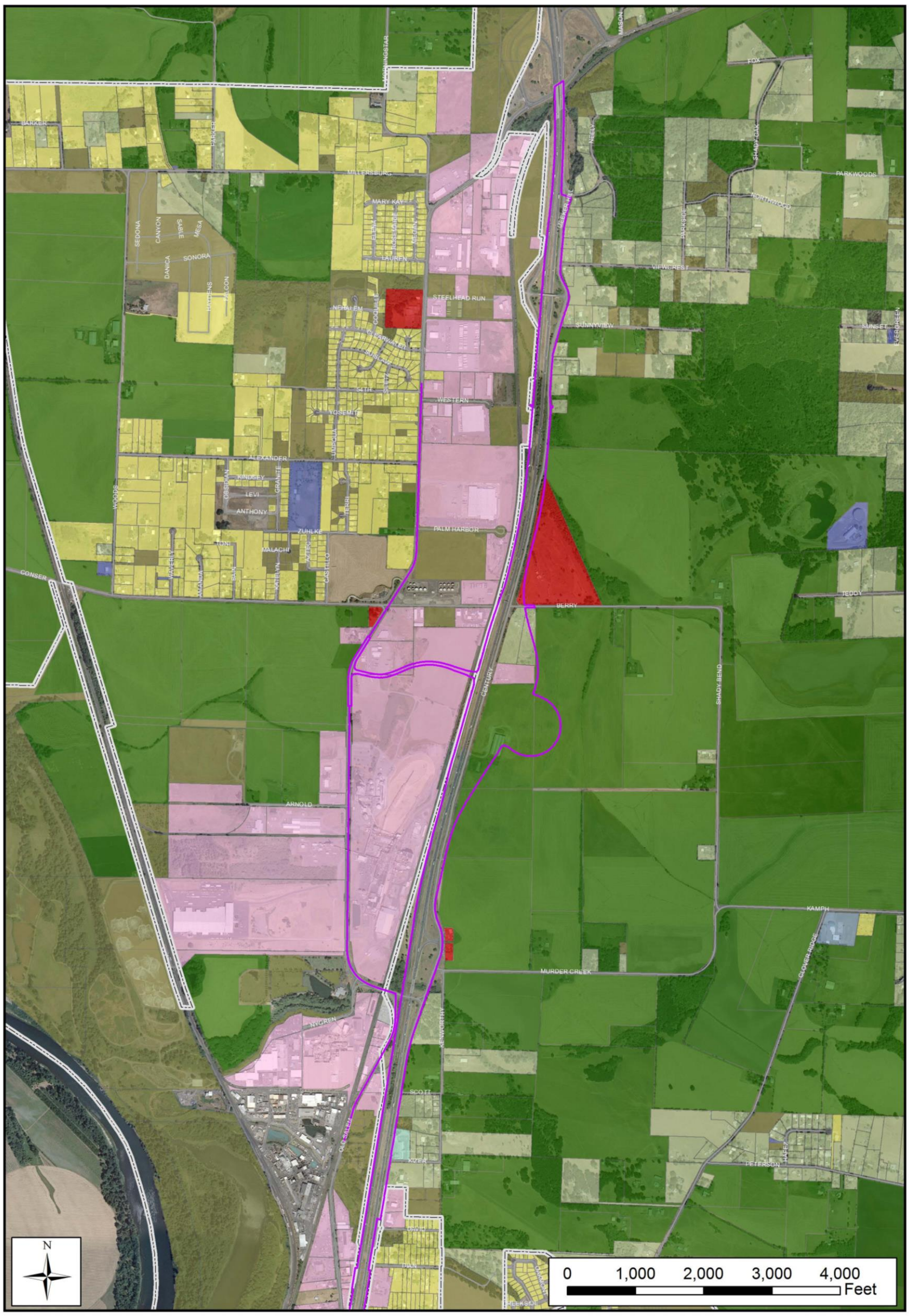
3.2.1.1 Existing Land Use

As shown in Figure 3.2-1 and Figure 3.2-2, existing land use in the project area is a mixture of residential, commercial, industrial, agricultural, public facility, and vacant lands. At the southern limits of the project, land use consists of single-family residential homes and commercial/industrial properties. Between the US 20 and Knox Butte interchanges, land use includes the Albany Municipal Airport, the Linn County Fair and Expo Center, commercial properties, and single-family residential areas. Between the Knox Butte and Murder Creek interchanges, land use includes residential areas, a church, commercial/industrial properties, and agricultural lands. Between the Murder

Creek and Viewcrest interchanges, land use includes mostly agricultural lands, rural residential properties, a commercial property, and industrial properties. Between the Viewcrest and South Jefferson interchanges, land use includes single-family residential areas, some agricultural lands, and industrial properties. At the northern limits of the project, land use includes commercial, residential, and open space.

3.2.1.2 Zoning

Local jurisdictions use zoning as a means for planning for future growth. As shown in Figure 3.2-3 and Figure 3.2-4, zoning in the project area is a mixture of Residential, Commercial, Industrial, Farm/Forest, Public, and Open Space. In some areas, existing zoning designations differ from existing land uses, which serve as an indication of future land use development or conversion; these areas are described in further detail below.



Existing Land Use
- Public
- School
- Fraternal/Religious
- Industrial
- Commercial
- Residential
- Tract
- Farm & Forest
- Vacant
- Miscellaneous
- Area of Land Use Impacts
- City Limits
- Roads

Project Area Existing Land Use: North
Figure 3.2-1

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County, Bing

Figure 3.2-1: Project Area Existing Land Use: North

This page intentionally left blank.

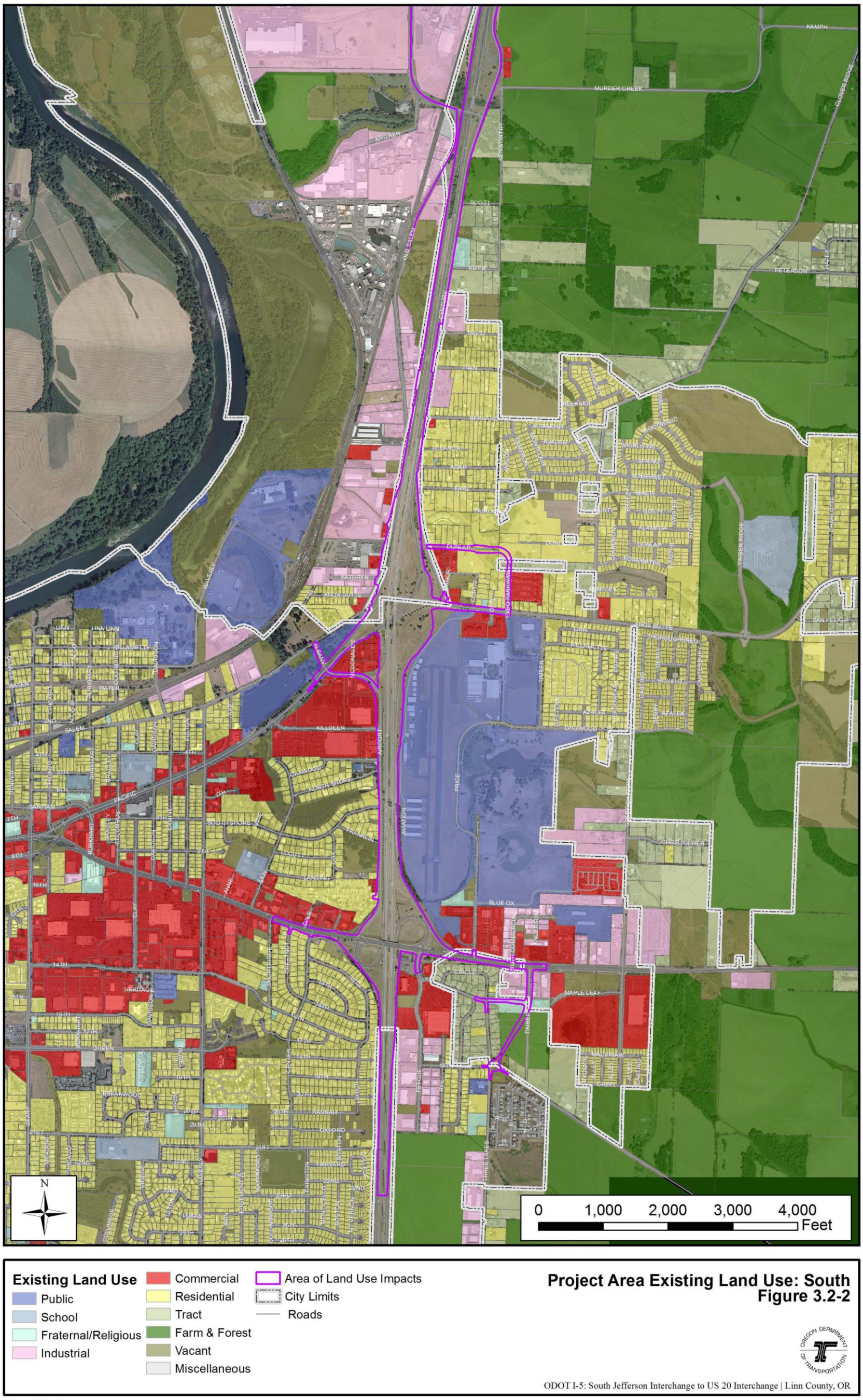


Figure 3.2-2: Project Area Existing Land Use: South

This page intentionally left blank.

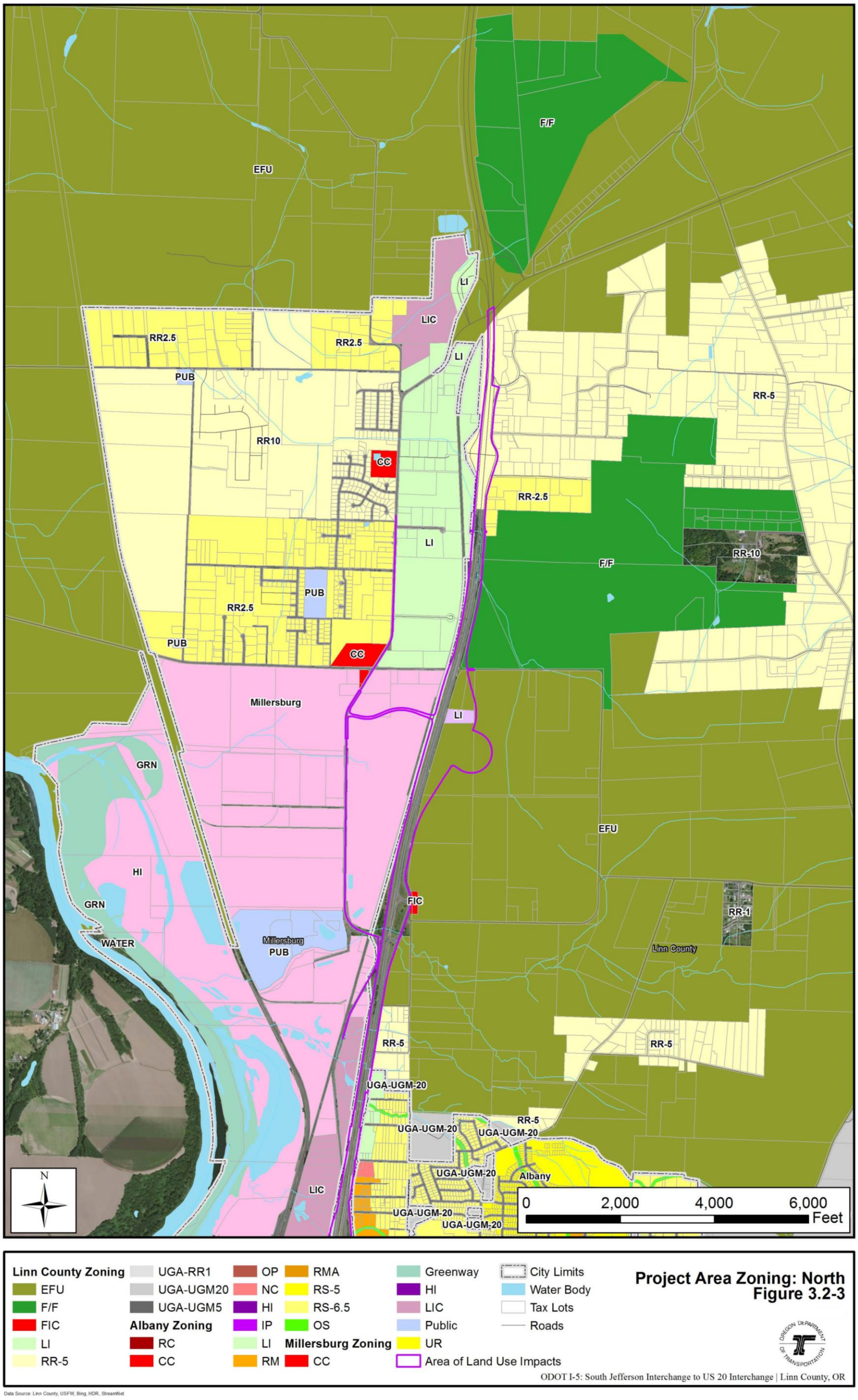


Figure 3.2-3: Project Area Zoning: North

This page intentionally left blank.

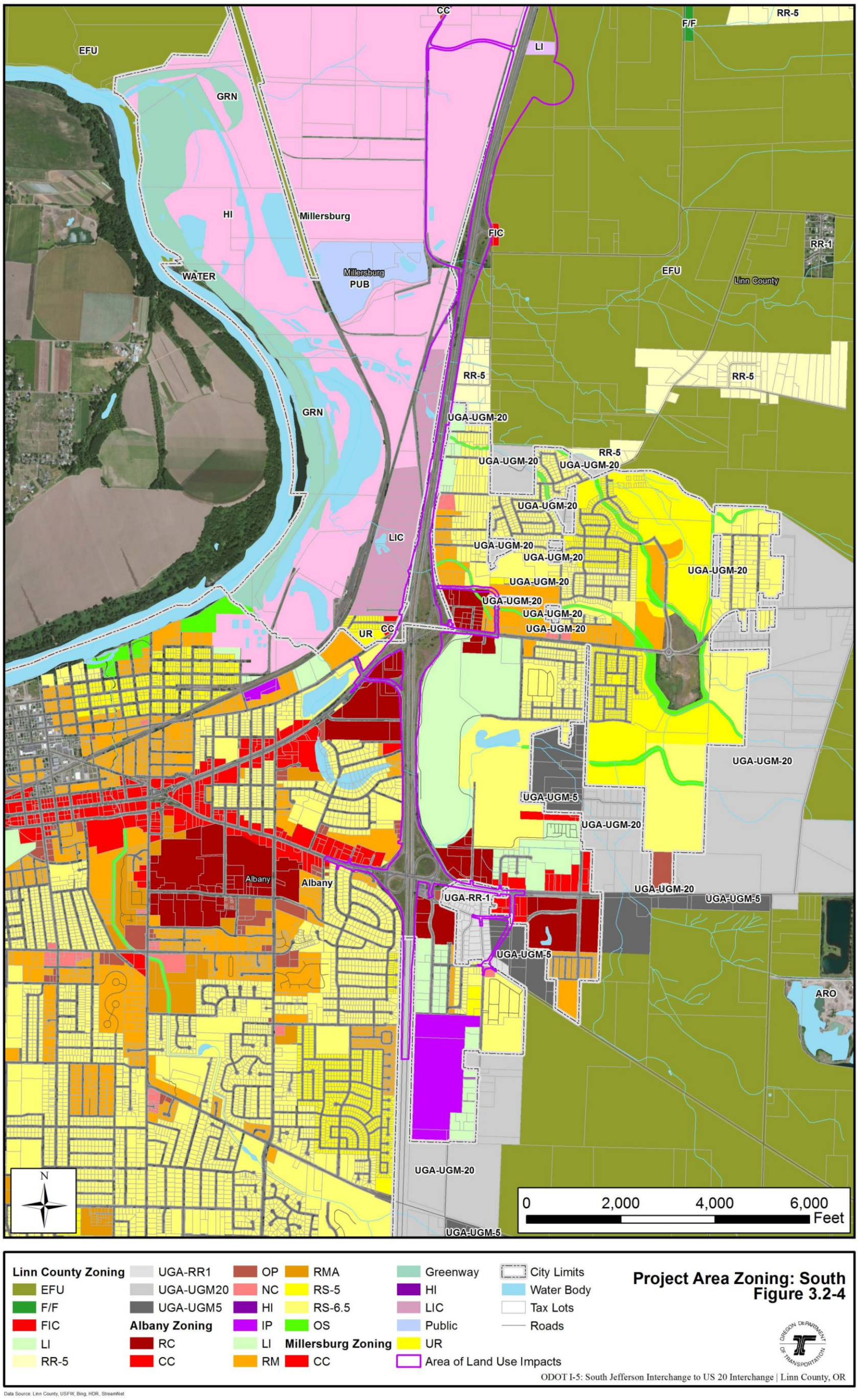


Figure 3.2-4: Project Area Zoning: South

This page intentionally left blank.

North of Albany, much of the area east of I-5 and a small portion of the area west of I-5 are outside the UGBs of both Albany and Millersburg in unincorporated Linn County. These areas are subject to County zoning. The majority of the land in the project area within unincorporated Linn County is zoned as EFU, Farm/Forest, and Rural Residential, with some small areas directly adjacent to I-5 zoned as Freeway Interchange Commercial and Limited Industrial. In total, Linn County has more than 30,000 acres of EFU land and more than 100,000 acres zoned for Farm/Forest use. The County also has more than 14,000 acres of land zoned for Rural Residential use. The County has little land zoned for Freeway Interchange Commercial, but more than 525 acres zoned for Limited Industrial use.

The portion of the project area within the City of Millersburg is zoned predominantly as Heavy Industrial, Light Industrial, and Limited Industrial/Commercial, with residential zones limited to the area north of Conser Road and west of Old Salem Road. City-wide, Millersburg has a substantial supply of land zoned for industrial use, including more than 1,050 acres zoned for Heavy Industrial use, more than 230 acres of Light Industrial, and more than 135 acres of Limited Industrial/Commercial. Much of the land zoned for Light Industrial or Limited Industrial/Commercial is currently vacant. There is also a large amount of land zoned as Heavy Industrial that is currently used for Farm/Forest (Figure 3.2-3).

The portion of the project area within the City of Albany is zoned predominantly as Light Industrial, Residential Single Family, Residential Medium Density, Regional Commercial, and Community Commercial. Current land uses in Albany are largely consistent with their respective zoning designations, except in the area northeast of the Knox Butte Interchange were land zoned for Regional Commercial development is currently occupied by single-family residential homes. City-wide, Albany has about 735 acres zoned for Light Industrial use, the majority of which is currently occupied by the Albany Municipal Airport or other industrial uses. Albany has more than 3,300 acres zoned for Residential Single Family and more than 660 acres zoned for Residential Medium Density. Commercial land includes about 270 acres zoned Regional Commercial, 43 acres zoned Neighborhood Commercial, more than 200 acres zoned Community Commercial, and about 75 acres zoned Office Professional. The project area within the City of Albany also includes Natural Resource Overlay Districts and the Historic Overlay District, where the Albany Municipal Airport Historic District is located.

Local jurisdictions in the project area generally have an adequate supply of vacant land with a range of zoning designations to accommodate future development. However, to accommodate expected employment growth through 2027, the Update of Economic Opportunity Analysis for the City of Albany (2007) identifies a need for one Commercial and one to two Industrial building sites in the 5- to 20-acre range, one to two Industrial or Business Park sites and one to two Commercial sites in the 20- to 50-acre range, and one Industrial site of 120-150 acres. A Housing Needs Analysis conducted by the City of Albany in 2006 identified a need for Medium Density Residential and Multi-Family Residential building sites, but found that this need could be met by re-zoning land currently zoned Urban Residential Reserve within Albany's current Urban Growth Boundary.

3.2.2 Land Use Impacts

The potential land use impacts described in the following sections were determined based on an estimate of the total acreage by land use type to be acquired for the project and changes to connections to I-5 as a result of the proposed improvements. Land use impacts focus on changes to existing use, changes to the ability to use land as planned and zoned, and project compatibility with adopted land use plans. Impacts to residents and businesses resulting from displacement or changes in connectivity are addressed in Section 3.4, Socioeconomics. Plan compatibility was evaluated based on a review of the relevant laws and regulations summarized in Section 3.2.3.

3.2.2.1 Direct Impacts

No Build Alternative

The No Build Alternative assumes that only routine maintenance would be completed on the interstate system and only planned and programmed local system improvements would occur (see Table 3-1 for a list of reasonably foreseeable future projects). Therefore, no land use impacts are anticipated due to right-of-way acquisitions or displacements under the No Build Alternative.

The No Build Alternative would result in congestion beyond adopted state and local mobility targets (see Chapter 3.1.3).

Purpose and Need for Action in much of the project area, including most of the I-5 mainline in the project area, project area interchange ramps, and a number of the signalized and unsignalized intersections in the project area. Lack of improvements to the transportation system would likely inhibit major development projects near the interchanges from moving forward due to congestion caused by the lack of transportation capacity. Thus the No Build Alternative results in land use impacts by inhibiting the use of urban land in the project area for its planned land use.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to land uses in the project area.

Temporary Impacts

Temporary land use impacts related to construction are considered to occur if disruptions to businesses and neighborhoods are severe enough or persistent enough to cause vacancies or a change in the type of user willing to locate in a given area for the duration of the construction. The Build Alternative would result in temporary modifications to connections, traffic delays and detours, noise disturbances, and decreased visual and air quality, which would temporarily interfere with land uses on adjacent properties. These impacts would be minor and short-term in nature and would occur under both the Auxiliary Lanes and Collector Distributor System options. At this level of analysis, the anticipated impacts under these options are similar. ODOT uses methods to reduce impacts to businesses and residents during construction, including signage, construction of temporary connection points, and scheduling elements of construction at times that are less impactful if possible. With these methods, no temporary land use impacts are expected to occur from the Build Alternative.

Permanent Impacts

Permanent land use impacts are considered to occur if the Build Alternative results in changes in the types of land uses willing to locate in an area, the overall pattern of land uses and growth, or changes in planned land uses. Permanent land use impacts could result from right-of-way acquisitions and changes in connectivity, traffic volumes, and congestion levels in the project area.

Right-of-Way Acquisitions

The Build Alternative would require acquisition of about 74-75 acres of land, depending on the design option. This land would be converted to a transportation-related use, including approximately 8 acres of Residential, 5-6 acres of Commercial, 10 acres of Industrial, 2 acres of Commercial/Industrial, 41 acres of EFU, 4 acres of Farm /Forest, and 4 acres of Urban Growth Area land (Table 3-5; Figure 3.2-3 and Figure 3.2-4). The project would not require a zoning change to construct the Build Alternative, but acquisition of the properties would result in a change from their existing land use to transportation-related use.

Table 3-5: Potential Impacts by Zoning Designation

Jurisdiction	Zone	Right-of-Way Impacts (Acres) by Interchange Design Option [a]	
		Auxiliary Lanes	Collector Distributor System
Albany	**Commercial**	**5.2**	**5.6**
	Community Commercial	1.6	1.6
	Neighborhood Commercial	0.1	0.1
	Office Professional	0.5	0.5
	Regional Commercial	3.0	3.4
	Industrial	**1.1**	**1.6**
	Light Industrial	1.1	1.6
	Residential	**4.9**	**4.9**
	Residential Medium Density	2.2	2.2
	Residential Single Family 6.5	2.7	2.7
Linn County	**Exclusive Farm Use**	**40.6**	**40.6**
	Exclusive Farm Use	40.6	40.6
	Farm/Forest	**4.4**	**4.4**
	Farm/Forest	4.4	4.4
	Industrial	**0.7**	**0.7**
	Limited Industrial	0.7	0.7
	Rural Residential	**3.5**	**3.5**
	Rural Residential 2.5	0.5	0.5
	Rural Residential 5	2.3	2.3
	Urban Growth Area/Rural Residential	0.7	0.7
	Urban Growth Area	**3.8**	**3.8**
	Urban Growth Area-Rural Residential	0.3	0.3
	Urban Growth Area-Urban Growth Management	3.5	3.5
Millersburg	**Industrial**	**8.0**	**8.0**
	Heavy Industrial	7.2	7.2
	Limited Industrial	0.8	0.8
	Industrial/Commercial	**1.7**	**1.7**
	Limited Industrial/Commercial	1.7	1.7
Total		**73.9**	**74.8**

[a] Impacts of under 0.01 acre have not been included in this table.
Source: Right-of-way Technical Report (HDR, 2014a)

The largest conversion of land from one use to another would impact approximately 41 acres of EFU land in Linn County located east of I-5 near the new Millersburg Interchange. In anticipation of the Millersburg Interchange project, Linn County created an exception to Oregon's Statewide Planning Goals 3, 11, and 14 in 2005 for approximately 23 acres of EFU land that would be occupied by the interchange. However, based on interchange design refinements since 2005, an additional 20 acres of EFU land would be required for the Millersburg Interchange. For this reason, an amendment to the previously approved exception to Oregon's Statewide Planning Goals 3, 11, and 14 would be needed to authorize the Build Alternative.

In Millersburg, right-of-way acquisition would result in the loss of approximately 8 acres of Industrial zoned land, most of which is located west of I-5 near the new Millersburg Interchange. There are close to 40 acres of vacant Industrial land that would remain within city limits; thus, the impact to the Industrial land supply in Millersburg would be minor and would not substantially change the potential for Industrial development in the city.

In Albany, most of the land use impacts would affect commercial and residential lands located on both sides of I-5, between the Knox Butte and US 20 interchanges. The loss of about 5-6 acres of commercial land in Albany is not

substantial relative to the area zoned for Commercial use in the City. However, there are relatively few vacant commercial sites within the City of Albany; this shortage may be exacerbated slightly by the loss of several sites that would no longer be usable for commercial development and by creating a need for affected existing businesses to relocate.

Right-of-way acquisition would also require the loss of about 5 acres of residential land in Albany. Impacts within these lands are mostly frontage impacts that would not displace the residents nor substantially change the City's ability to provide adequate land for needed housing.

Connectivity to I-5

The closure of the Viewcrest and Murder Creek interchanges would change the connections to land in Linn County and Millersburg from I-5. Agricultural, rural residential, and industrial lands currently served by these interchanges would be served by the new Millersburg Interchange under the Build Alternative. Less direct connectivity to I-5 could potentially decrease the desirability of land near the Murder Creek and Viewcrest interchanges. Closure of the Viewcrest Interchange would also eliminate public road connections to land west of I-5 at this location, requiring purchase of these lands when the Viewcrest Interchange is removed.

Completion of the new Millersburg Interchange would provide a new connection to I-5 for certain properties close to the new interchange, including rural land in unincorporated Linn County and residential and industrial land in Millersburg. An IAMP will be developed for this interchange in order to define appropriate connectivity in the vicinity of the interchange and minimize the pressure for urbanization of surrounding farmland.

Modifications to the local road system would change connections to Knox Butte Road for some commercial and multi-family residential properties in the northeast corner of the interchange. Connections to the residential area zoned Regional Commercial located northeast of the Knox Butte Interchange would change, but with this change the transportation system would still support development of this area for Regional Commercial uses.

In the southwest quadrant of the Knox Butte Interchange, the loss of a direct southbound off-ramp and turning movements out of the driveway on OR 99E could make this highway-oriented commercial area slightly less attractive; however, related improvements to Airport Road, upgrade of the Airport Road-OR 99E intersection, and addition of a southbound on-ramp will likely have the effect of rationalizing traffic patterns through the area and improving its desirability for existing and future development.

Construction of the new southbound off-ramp at the US 20 Interchange will require closure of the Airport Road connection to US 20, with additional travel restrictions on Airport Road to reduce cut-through traffic in the North Shore/South Shore residential neighborhood. With these restrictions in place, local system access to southbound I-5 would be modified. Rather than relying on Airport Road, travelers would be redirected to the southbound on-ramp at the Knox Butte interchange. Proposed traffic restrictions on Airport Road and adjoining roadways would protect the North Shore/South Shore neighborhood from increasing levels of cut-through traffic and would result in only minor increases in out-of-direction travel for residents of these neighborhoods.

East of I-5, the elimination of northbound movements on Fescue Street at the US 20 intersection would require traffic in the southeast quadrant of the interchange to reach US 20 via new local street connections to an improved Timber Street. To provide access to US 20 and I-5, the elimination of northbound movements on Fescue Street at the US 20 intersection cannot occur until the local street connections and improvements to Timber Street are completed. While these changes would impact the pattern of traffic circulation in the southeast quadrant of the interchange, improved performance of intersections at interchange ramps and the continued provision of access to US 20 and I-5 will allow this area to continue to be viable for existing and planned residential, commercial, and light industrial uses.

3.2.3 Compatibility with Applicable Plans and Policies

3.2.3.1 No Build Alternative

The No Build Alternative is not compatible with many State and local plans and policies that support improvement of I-5, its interchanges, and the associated local street system in order to maintain mobility, improve safety, support economic development, and provide transportation choices for the movement of goods and people. These State and local plans include the *Oregon Transportation Plan* (2006), OHP (2006), *Oregon Freight Plan* (2011), Comprehensive Plans for Linn County (2011) and the City of Albany (2013) as well as I-5 Corridor Refinement Plans for Albany (2008) and Millersburg (2006).

3.2.3.2 Build Alternative

Local Plans

Linn County's Transportation Plan (2005) supports adding lanes to I-5, closure of the existing Viewcrest and Murder Creek interchanges and their replacement with a new Millersburg Interchange, and the freeway improvement recommendations contained in both the Albany I-5 Corridor and the Millersburg I-5 Corridor Refinement Plans. In 2005, Linn County adopted a land use goal exception for construction of the new Millersburg Interchange and the realignment of Century Drive in anticipation of the project. Based on current designs, construction of a new interchange and realignment of an existing road (Century Drive) would require an amendment to the exception granted in 2005 to allow for additional EFU-zoned land required to build the new interchange.

The City of Albany's Transportation System Plan TSP (2010) includes all local road improvements included as part of the Build Alternative, except for the proposed traffic restrictions on Airport Road and adjoining intersections. The Albany TSP (2010) recognizes that improvements to the Knox Butte and US 20 interchanges are being studied by ODOT. The TSP adopted the recommendations of the 2008 *Albany I-5 Corridor Refinement Plan and Existing Environmental/Cultural Features* report until the "Albany I-5 Corridor Refinement Plan" is completed and adopted by the City of Albany. It is not clear what the "Albany I-5 Corridor Refinement Plan" is, but the context of the Albany TSP suggests it is an IAMP to be developed before any interchange improvements are constructed. The Albany TSP states that any IAMPs will be developed between draft and final environmental documents prepared for the interchange projects. ODOT intends to complete an IAMP before construction of any phase of improvements at the Knox Butte or US 20 interchange, rather than between draft and final environmental documents, to allow those IAMPs to reflect any changes in existing or forecast future conditions known at the time those IAMPs are developed~~.~~. The IAMPs will include final determinations of changes to the local transportation system that are needed to protect function of the interchanges. To have effect, an IAMP would need to be adopted by the City of Albany and the Oregon Transportation Commission.

Millersburg's transportation policies in the City's Comprehensive Plan (1980) support efficient circulation, convenient movement of traffic, and maintenance of safe roadway conditions. The closure of the existing interchanges at Viewcrest and Murder Creek and construction of the new Millersburg Interchange are consistent with these objectives.

Oregon Transportation Plan

The Build Alternative is compatible with *Oregon Transportation Plan* (2006) policies for providing efficient intercity mobility in a manner that minimizes adverse impacts on urban land use and travel patterns; improving the capacity and operational efficiency of the transportation system; providing an efficient and reliable freight system; and supporting economic development. The Oregon Transportation Plan also includes goals and policies for minimizing adverse impacts to land use and other resources, and ensuring a fair distribution of benefits and burdens. These goals and policies were utilized in the development of the Build Alternative for this document.

Oregon Highway Plan

The Build Alternative is consistent with OHP (1999) Policy 1B, which recognizes that State and local governments must work collaboratively to maintain the mobility and safety of the highway system, foster compact development patterns, encourage use of transportation alternatives, enhance livability and economic competitiveness, and support acknowledged transportation system plans. The Build Alternative is also consistent with OHP Policy 1G, which calls for protecting the existing system and improving the efficiency and capacity of existing facilities before adding capacity to the existing system. The I-5 corridor refinement plans completed for Millersburg (2006) and Albany (2008) determined that measures to protect the existing system and to improve its efficiency and capacity would not be sufficient to provide an acceptable level of mobility, and that adding capacity to the system (a third lane on I-5) is necessary. The OHP establishes standards for the spacing of freeway interchanges, which is 3 miles for freeways in urban areas (which applies to all of I-5 in the project area). The existing spacing between interchanges in the project area is less than the OHP standard. By replacing the existing interchanges at Viewcrest and Murder Creek with the new Millersburg interchange, the Build Alternative will improve interchange spacing conditions in the project area.

Oregon Freight Plan

The Build Alternative supports the *Oregon Freight Plan* (2011) by improving capacity on I-5, an important freight route. The design of the new Millersburg Interchange has been developed to ensure safe travel routes for trucks to the industrial areas in Millersburg, as well as adequate clearance for the existing freight rail line adjacent to the highway.

I-5 Corridor Plans

The I-5 mainline addition is compatible with the *State of the Interstate Report* (2000), the *Albany I-5 Corridor Refinement Plan* (2008), and the *Millersburg I-5 Corridor Refinement Plan* (2006), all of which include a recommendation to add lanes to the mainline in this segment of I-5. In addition, closure of the Viewcrest and Murder Creek interchanges and construction of the new Millersburg Interchange are all consistent with the *Millersburg I-5 Corridor Refinement Plan* (2006).

Oregon Administrative Rule 734-51: Access Management

While the analysis of future traffic conditions includes some assumptions that would affect private driveways, these are assumptions for analysis only and not final decisions by ODOT or local agencies to modify or restrict access. Any actions affecting access to properties on state facilities in the project area must follow regulations in OAR 734-51, which defines the circumstances where accesses can be modified or removed, requires notice to affected parties, and provides a process for appeal. IAMPs developed prior to the construction of the new Millersburg Interchange or improvements to the Knox Butte or US 20 interchanges may contain policies or specific actions affecting access to state facilities. Development of these IAMPs will follow regulations in place at that time; current regulations in OAR 734-51-7010 require extensive public involvement and collaboration with property owners for the development of access management plans. Adoption of an IAMP by the affected local jurisdiction(s) and the Oregon Transportation Commission is required before the IAMP can be implemented.

Statewide Planning Goal 3 and the Transportation Planning Rule

Under the provisions of the *Transportation Planning Rule* (OAR 660-012-0070(10)(a)), a new or modified goal exception is required for additional impact to EFU lands for the proposed Millersburg Interchange. Linn County adopted an exception to Oregon's Statewide Planning Goals 3, 11, and 14 in 2005 to allow a portion of the new Millersburg Interchange to occupy approximately 23 acres designated for EFU. Based on current designs, an exception will be needed for an additional 20 acres of EFU land. The need for the additional land stems from the topographic constraints, the need for vertical clearance over the railroad and the highway, the need to provide

adequate distance from the end of the ramp terminals to the first intersection, and the need to provide an adequate radius on the loop road to ensure safe truck operations.

3.2.4 Minimization, Avoidance, and Mitigation Measures

It is not possible to entirely avoid land use impacts while still meeting the project's purpose and need; however, during the design phase of the project, the Build Alternative was developed to avoid direct right-of-way impacts to key facilities such as the Albany Airport. In addition, the design selected for the Build Alternative was developed to minimize impacts to farmland and other uses with potential relocation challenges (such as the Motocross facility) near the new Millersburg Interchange (see Appendix, Biological Summary and Commitments). An IAMP would be prepared to maintain operational use, safety, and public investment. Should any substantial changes to traffic volumes on local streets that serve residential neighborhoods or schools be identified, traffic calming measures would be considered to reduce speeds, discourage cut-through traffic, and ensure safe neighborhood streets.

To minimize the potential temporary impacts from construction, ODOT would prepare and implement a TMP. Where local streets must be closed during construction, detour routes would be clearly marked with signs. Connections to local businesses would be maintained throughout the construction period through careful planning of construction activities and with an awareness of the need to provide adjacent properties with reasonable connectivity during business hours.

3.2.5 Indirect Impacts

The Build Alternative is not expected to induce growth in the project area beyond that forecasted in adopted comprehensive plans. However, Build Alternative improvements would support planned economic development in the area. With the Build Alternative, land development likely would continue as planned, in accordance with zoning regulations and land use plans. While the Build Alternative does result in some displacement of residents and businesses, these displacements are not expected to result in indirect impacts on planned land uses or economic development plans in Albany, Millersburg, or Linn County.

3.2.6 Cumulative Impacts

The effects of the Build Alternative in combination with the past, present, and reasonably foreseeable future actions would result in a reduction in land as currently zoned. Generally, there is adequate land in the project area available for future development. However, the Build Alternative would slightly increase the forecasted shortage of commercial and multi-family residential land in the City of Albany. In addition, the combined impact of the Build Alternative with future foreseeable actions would reinforce the importance of I-5 as the central route for through-travel in the region and encourage commercial and industrial growth near the highway. Given the amount of vacant land available in Millersburg adjacent to the new interchange, the restrictions on development in the EFU zone outside of the UGB, and restrictions on access to EFU lands that will be developed as part of an IAMP, the pressure to convert additional farm land for urban development near the Millersburg Interchange is likely to be limited.

3.2.7 Conclusion

While there would be approximately 75 acres of land converted to a transportation-related use as a result of the Build Alternative, the amount of land impacted in any given zoning category is generally small relative to the total available land in the affected zoning category, and would not change the project area's potential to provide adequate housing or accommodate commercial or industrial development. The Build Alternative is also anticipated to change the local connections to some property. While some of these changes may impact individual businesses, on the whole, they are not anticipated to make the areas undesirable for their planned land uses.

Proposed improvements would reduce congestion and improve the operation of interchanges and intersections, supporting planned development. Further, implementation of mitigation measures would reduce impacts to land use. The Build Alternative is compatible with applicable land use and transportation plans and policies; however, it is not

compatible with Linn County's land use goal exception for development within an EFU-zoned parcel. An amendment to Linn County's Comprehensive Plan for development within an EFU-zoned parcel would be needed in order for the proposed Millersburg Interchange to be compatible with local and State plans, which are required to be in compliance with Oregon's Statewide Planning Goals. In addition to the amended goal exception, local and State land use and transportation approvals will need to be obtained, local plans will need to be updated, and IAMPs will need to be developed and adopted prior to construction of the Build Alternative. These requirements will help ensure that the Build Alternative is compatible with adopted plans and policies in place at the time of construction.

3.3 Right-of-Way Resources

Right-of-way refers to land, property, or interests that are needed to build a project. Right-of-way acquisition involves purchasing parcels (or portions thereof) that are then dedicated to transportation purposes for the foreseeable future. Parcel data and preliminary design-level mapping prepared for this document were used to identify the properties with potential right-of-way impacts resulting from the Build Alternative. The value of real estate to be acquired was estimated using the reported Real Market Value from the Linn County Assessor's records historical ODOT experience in right-of-way project costs.

3.3.1 Existing Conditions

The freeway corridor, including both the mainline of I-5 and adjoining service or frontage roads, is generally 200 to 300 feet wide. The existing real estate and social environments along the freeway are heavily influenced by the presence of the freeway itself. Private and public planning decisions have been made with the knowledge that I-5 serves as the major conduit for people traveling in the area, whether living their daily lives in Linn County, or transporting cargo to distant destinations. These planning decisions have been implemented with the construction of networks of utilities, roadways, residential developments, and social and commercial services.

3.3.2 Right-of-Way Impacts

3.3.2.1 Direct Impacts

No Build Alternative

The No Build Alternative would not directly result in the acquisition of right-of-way.

Build Alternative

Both temporary and permanent right-of-way impacts would occur as a result of the Build Alternative. The evaluation of impacts in this analysis is based on preliminary right-of-way requirements that provide a general idea of the Build Alternative's impacts. If the Build Alternative is selected specific right-of-way acquisitions would be identified and individual landowners notified during the process of final design.

Temporary Impacts

In addition to right-of-way required for the Build Alternative, additional temporary right-of-way would be required under the Build Alternative for construction staging or connections to construction sites. Once construction is complete, these areas would return to their previous uses. Temporary construction permits may be needed for necessary construction actions on adjacent properties. Most temporary impacts are general community inconveniences and will be addressed with appropriate property owners and occupants at the time of the project activity.

Permanent Impacts

In total, the Build Alternative would require the acquisition of up to 75 acres of land that would be dedicated to transportation purposes for the foreseeable future. Both partial acquisition and displacements would occur as a result of the Build Alternative. Total right-of-way acreage associated with partial acquisition and displacements of the Build Alternative is provided in Table 3-6. Maps of the Build Alternative anticipated right-of-way impacts are provided in Figure 3.3-1 and Figure 3.3-2. Table 3-7, Table 3-8, and Table 3-9 provide more specific information relating to displacements anticipated at each interchange. Displacements shown in Table 3-7, Table 3-8, and Table 3-9 reflect an assessment that acquisition of right-of-way for the project would result in full displacement of existing uses on affected properties. In many cases, however, only a portion of the affected property would be needed and existing uses may be able to remain. More refined determination of potential displacements will be made as more detailed designs for proposed improvements are developed prior to construction.

Overall, right-of-way impacts associated with the two Build Alternative design options are similar. It is estimated that the Collector Distributor System option would require approximately one additional acre of land, and displace six more businesses and one additional residence compared to the Auxiliary Lanes option.

Table 3-6: Project Right-of-Way Estimate Summary

Option	Total Acres Needed	Total Number of Property Impacts (partial and total acquisitions)	Business Displacements	Residential Displacements Owner-Occupied	Residential Displacements Tenant-Occupied	Approximate Total Costs
Auxiliary Lanes	74	202	46	8	6	$25,007,717
Collector Distributor System	75	208	46	9	6	$26,191,252

Source: Right-of-way Technical Report (HDR, 2014a)

This page intentionally left blank.

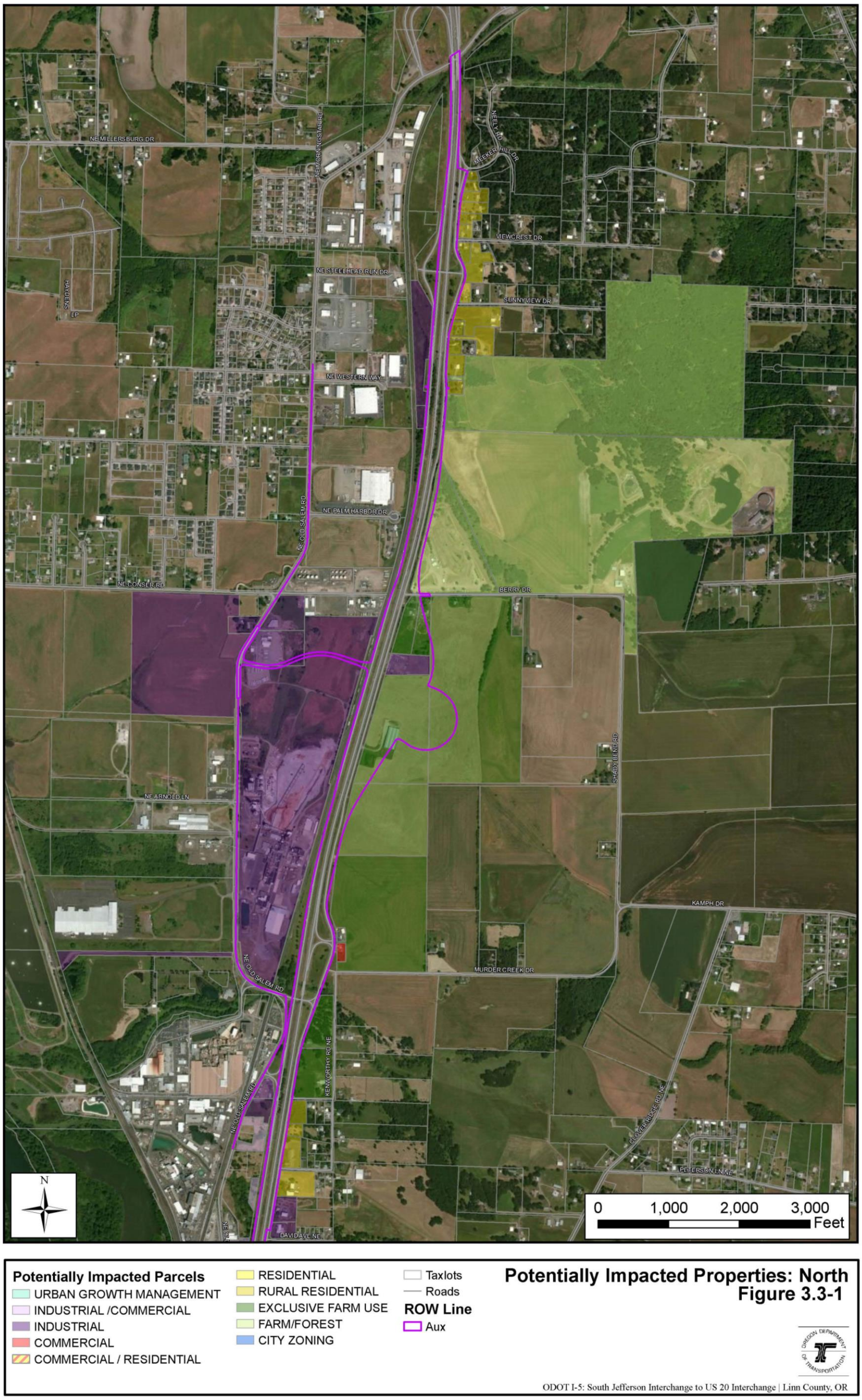


Figure 3.3-1: Right-of-Way Impacts: North

This page intentionally left blank.

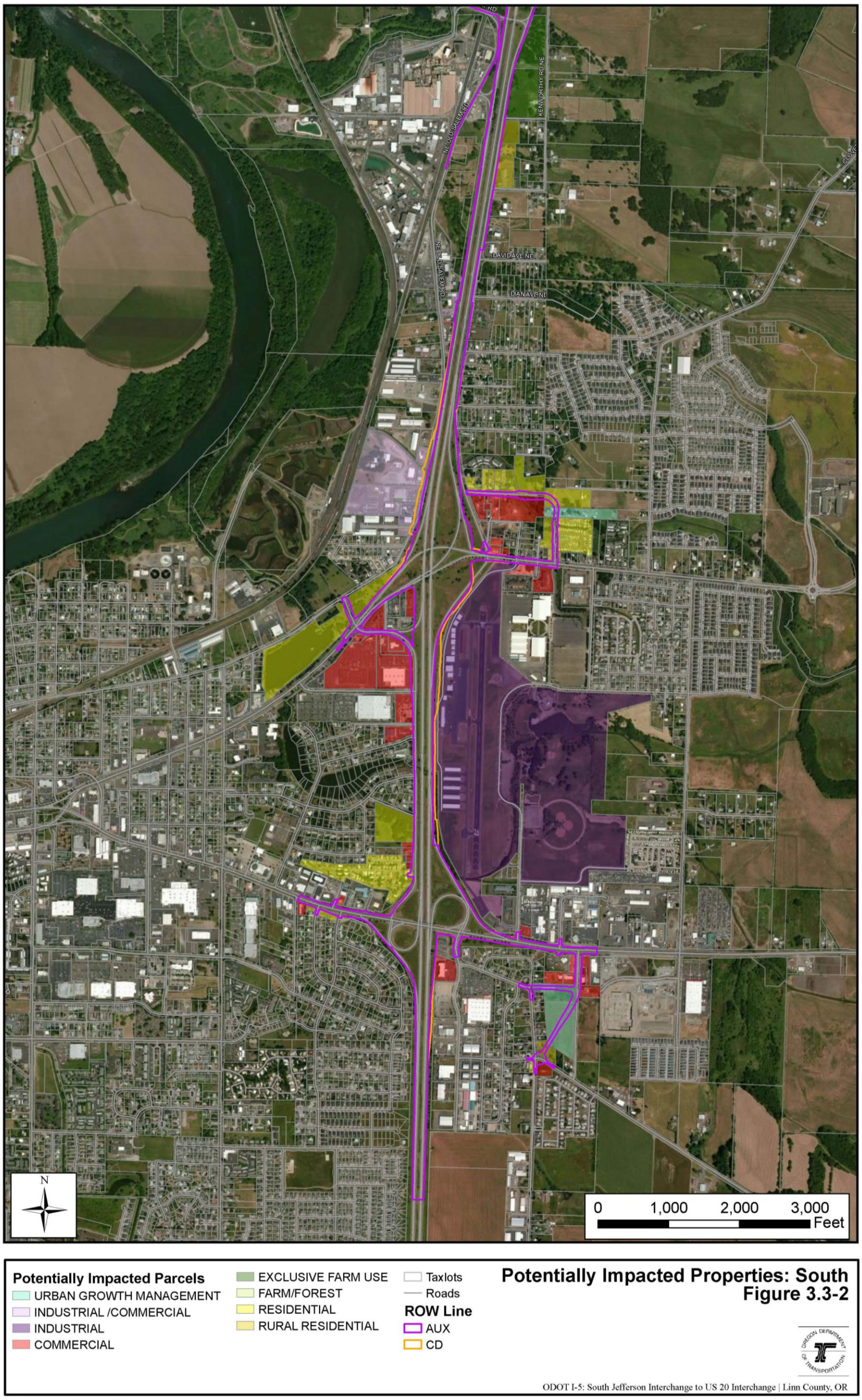


Figure 3.3-2: Right-of-Way Impacts: South

This page intentionally left blank.

Millersburg Interchange

The new Millersburg Interchange would require relocation of four businesses and four residences. Table 3-7 presents these potential displacements. Existing lands devoted to trucking activities on either side of I-5 would lose part or most of their lands. These lands generally have a compacted gravel surface, and limited building space within the proposed right-of-way acquisition area. The interchange would also result in changes in connections to some of the properties. The existing Motocross recreational facility on Berry Drive NE would lose the southwest corner of the facility and a portion of the lands on the west side of the track. Right-of-way acquisition on the north side of Berry Drive NE would displace both the residential occupant next to I-5, and sufficient amounts of the track's infrastructure to consider it to be displaced by the project. This classification does not prohibit their relocating their operation on the remaining lands. The nearby retail and service facility on the south side of the road would also be displaced.

Table 3-7: Millersburg Interchange Area Displacements

T	R	Sec	Tax Lot	Total Tax Lot Area Acres	Design Option Requiring Displacement	Current Use
10S	3W	21D	900	27.71	Aux and CD	Business (Albany Motocross) and Residence
10S	3W	21D	1600	4.4	Aux and CD	Residence
10S	3W	21D	1700	3.97	Aux and CD	Business (Grand Prix Cycle)
10S	3W	28	1800	29.92	Aux and CD	Business (Agricultural)
10S	3W	28	1900	3.96	Aux and CD	Business (Industrial)
10S	3W	33D	901	2.63	Aux and CD	Residence
10S	3W	33DB	2700	0.85	Aux and CD	Residence

Aux = Auxiliary Lanes option; CD = Collector Distributor System option
Source: Right-of-way Technical Report (HDR, 2014a)
Note: In addition to the displacements in this table, there would be partial impacts to other properties.

Knox Butte Interchange

Construction of the Build Alternative in the Knox Butte Interchange area would require the relocation of up to four businesses and two residences. Under the Auxiliary Lanes option, one business would be displaced. The Collector Distributor option would require additional land acquisition along the west side of I-5 in the vicinity of NE Old Salem Road. The Collector Distributor option would displace four businesses.

Table 3-8: Knox Butte Interchange Area Displacements

T	R	Sec	Tax Lot	Total Tax Lot Area Acres	Design Option Requiring Displacement	Current Use
10S	3W	33CD	301	0.23	CD only	Business (Victory Gym)
11S	3W	04BB	101	0.57	CD only	Business (Tire Factory)
11S	3W	04BB	300	1.03	CD only	Business (Renew Consulting)
11S	3W	04CB	105	2.47	Aux and CD	Business (Hertz Car Sales)
11S	3W	04AC	1100	0.16	Aux and CD	Residence
11S	3W	04BA	1400	1.17	Aux and CD	Residence

Aux = Auxiliary Lanes option; CD = Collector Distributor System option
Source: HDR (2014f).
Note: In addition to the displacements in this table, there would be partial impacts to other properties..

US 20 Interchange Area Acquisitions

Construction of the Build Alternative in the US 20 Interchange area would require property acquisition that would result in displacement of six businesses and up to three residences. Table 3-9 presents these potential displacements. In the SE quadrant of the US 20 Interchange, acquisitions would displace two businesses. In the NW quadrant of the interchange, the reconstruction of Airport Road south from the Knox Butte Interchange toward US 20 along the west side of I-5 would displace four businesses and two residences under the Auxiliary Lanes option. The Collector Distributor System results in the displacement of one additional residence in the US 20 Interchange area compared to the Auxiliary Lanes option.

Table 3-9: US 20 Interchange Area Displacements

T	R	Sec	Tax Lot	Total Tax Lot Area Acres	Design Option Requiring Displacement	Current Use
11S	3W	04CC	1900	1.01	CD only	Residence
11S	3W	09BB	2401	0.23	Aux and CD	(2) Businesses (Conser Realty and Conser Design & Construction)
11S	3W	09BB	1104	11.69	Aux and CD	(2) Residences (Manufactured Homes)
11S	3W	09C	603	0.19	Aux and CD	Business (Adult Shop)
11S	3W	09D	1701	2.89	Aux and CD	Business (Mighty Oaks Children's Therapy Center)

Aux = Auxiliary Lanes option; CD = Collector Distributor System option
Source: Right-of-way Technical Report (HDR, 2014a).
Note: In addition to the displacements in this table, there would be partial impacts to other properties..

3.3.3 Minimization, Avoidance, and Mitigation Measures

ODOT procedures, guided by Federal Regulations and Oregon State Law, have been designed to protect both owners of properties needed for the project and other taxpayers. By following standards that ensure proper treatment of all persons affected by the right-of-way acquisition process, ODOT would minimize the impact of right-of-way activities upon those whose lives are affected by the right-of-way process.

The primary minimization measure governing right-of-way acquisition is set forth in the U.S. Constitution Bill of Rights, where the Fifth Amendment says, in part: "…nor shall private property be taken for public use, without just compensation." The actions that would be followed on this project are set forth in Oregon Revised Statutes and Federal Law.

The Uniform Relocation Assistance and Real Property Acquisition Polices Act of 1970 (URA) and the various amendments to that law, including those contained in the 2012 legislation titled the Moving Ahead for Progress in the 21st Century Act, ensure the fair and equitable relocation and reestablishment of persons, businesses, farms, and nonprofit organizations displaced as a result of the Build Alternative. This is done so that persons would not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. No eligible residents who are displaced would be required to move until they can be moved into decent, safe, and sanitary comparable replacement housing or have been offered such comparable replacement housing that is within their financial means and available for immediate occupancy. Replacement housing must be open to all persons regardless of race, color, religion, sex, or national origin, in conformance with Title VIII of the U.S. Civil Rights Act of 1968.

ODOT would carry out acquisition and relocation services for this project following the ODOT Right-of-Way Manual. This manual has been prepared to comply both with Oregon law and with the performance standards set forth to ensure compliance with URA. The manual has been approved for this compliance by the FHWA.

Highlights of the relocation assistance process include direct personal contact with all persons anticipated to be relocated, in order to explain the types of services and payments to which they may be entitled. In order to better provide personal service, the ODOT Relocation Agent assigned to provide services would meet with each person to develop a profile of the needs, desires, and limitations relative to the required move.

Secondary methods employed on the project to minimize the impact upon the natural and human environment are compliance and mitigation with the many Oregon and Federal laws and standards that govern the acquisition of right-of-way; the relocation of people, property, and businesses; and the equitable treatment of persons who own property or who are displaced by the project. All persons who are affected by the right-of-way process, whether as owners or persons being displaced, would be afforded all of the protections of the Civil Rights Act of 1964. The primary portion of this act that affects the right-of-way process is Title VI, which prohibits agencies receiving Federal funds from discrimination on the basis of race, color, or national origin in any of their activities. The policies and process used on this project meet the performance standards of this law, and are periodically reviewed by both ODOT and its Federal funding agency, the FHWA, to ensure continued compliance with this standard.

3.3.4 Indirect Impacts

There are no indirect impacts anticipated from right-of-way acquisition for the Build Alternative.

3.3.5 Cumulative Impacts

Land uses in the project area have changed from open space and farmland to more high-intensity uses in recent decades. The project is not anticipated to contribute substantially to cumulative effects of growth and land development. Existing local and regional plans and policies help to control growth and ensure that planned development occurs with appropriate improvements to transportation facilities and other public infrastructure.

3.3.6 Conclusion

Right-of-way acquisition brings change to the lives and investments of persons who own, live on, or work on the required property. Where property is to be acquired as a part of the project right-of-way, ODOT would progress through a process of appraising the real estate; reviewing the real estate appraisal; estimating the amount of Just Compensation to be offered the owner; offering the full amount of that estimate in writing to the owner; providing the

owner the appraisal upon which the offer is based; negotiating with the owner on the sale of the property; and coming to agreement or advancing the acquisition to the eminent domain process.

No family or individual would be required to vacate any dwelling until comparable replacement housing—housing that is within their financial means and available for immediate occupancy—has been found and offered. All displaced residents would be given advisory assistance to enable them to occupy decent, safe, and sanitary replacement housing. Relocation advisory services and assistance would be provided regardless of race, color, religion, sex, or national origin, and would be done in accordance with the ODOT's Relocation Assistance Program (see Appendix, Farmland Conversion Rating Form).

In terms of the two design options beings considered, the Collector Distributor System option requires more right-of-way and may result in one additional residential relocation and three additional business relocations.

3.4 Socioeconomics Resources

Socioeconomics refers to the social and economic characteristics and factors of individuals and groups within the community. This section presents comparative information about the effects on population, housing, employment, income, business, and environmental justice in Linn County and the cities of Albany and Millersburg. This information is used to evaluate likely future socioeconomic conditions with the No Build and Build Alternatives to determine if there are any potential socioeconomic impacts associated with the Build Alternative.

3.4.1 Existing Conditions

Data concerning socioeconomic conditions within the project area were acquired from a variety of sources including public agencies, project specialists, online mapping imagery, and windshield surveys. Census data from 2010 and 2012 were used to generate the majority of demographic statistics concerning population, housing, income, and poverty.

3.4.1.1 Population

The project area is located in Linn County, Oregon. In 2012, Linn County had an estimated population of just over 118,000, and was the eighth most-populated of Oregon's 36 counties. Albany is the county seat and largest city in Linn County and had an estimated population of 50,710 in 2012. Millersburg, adjacent to Albany to the north, had an estimated population of 1,375 in 2012. Data from the U.S. Census indicate that between 2000 and 2010, Linn County grew slightly faster than the state average; Albany grew about 11 percentage points more than the state average; and Millersburg more than doubled its population. Table 3-10 provides an overview of population, housing, and employment characteristics for the project area, Albany, Millersburg, Linn County, and Oregon.

The U.S. Census Bureau provides population information for geographic subdivisions of jurisdictions such as cities and counties called Census Tracts[3]. Population information at the Census Tract level can indicate the general demographic characteristics of the people and communities potentially affected by the Build Alternative. The project area is located mostly within two Census Tracts: 201 and 205 (Figure 3.4-1). Census Tract 201 includes Millersburg west of I-5 at the north end of the project, and areas east of I-5 in Albany and rural Linn County. Census Tract 205 includes areas west of I-5 and south of Millersburg. A very small part of Census Tract 204 includes area near the proposed project at the Knox Butte (North Albany) Interchange. Because such a small portion of Census Tract 204 intersects the project area, Census Tracts 201 and 205 provide a more appropriate representation of social and economic characteristics of the project area. Data from Census Blocks in Tracts 201, 204, and 205 is used to best

[3] Within a county, Census Tracts are divisions that generally contain populations of 1,500 to 8,000 people, with an optimum size of approximately 4,000.

represent conditions in the project area. Table 3-11 presents a summary of the race and ethnicity for the project area Census Tracts, along with Albany, Millersburg, Linn County, and the State of Oregon.

Table 3-10: Population, Housing, and Employment

Measure (year)	State of Oregon	Linn County	City of Albany	City of Millersburg	Project Area
Population					
Total (2012)	3,883,735	118,000	50,710	1,375	3,560[a]
Growth rate (2000–2010)	12%	13%	23%	104%	N/A
Projected (2040)	5,476,066	146,260	70,901-81,349[b]	N/A	N/A
Housing					
No. of housing units (2010)	1,675,562	48,821	20,979	538	1,486
Value of owner occupied units (2010)	$156,624	$3,617	$1,274	$34	$86
Vacant housing (2010)	9.3%	7.4%	6.1%	6.3%	5.8%
Employment					
Employment (2012)	1,605,500	37,860	N/A	N/A	N/A
Average unemployment rate (2012)	N/A	10.9%	N/A	N/A	N/A
Growth rate (2001–2012)	1.6%	-5.5%	N/A	N/A	N/A

Source: U.S. Census Bureau (2010, 2012)
[a]Population estimate for project area is based on U.S Census data from 2010. Includes selected Census Blocks in Tracts 201, 204, and 205. Census Blocks are smaller geographic areas than Census Tracts, and allow analysis for selected Census data at a more detailed level geographically.
[b]City of Albany has prepared several alternative forecasts of growth for the year 2035.
N/A: data are not available.

This page intentionally left blank.

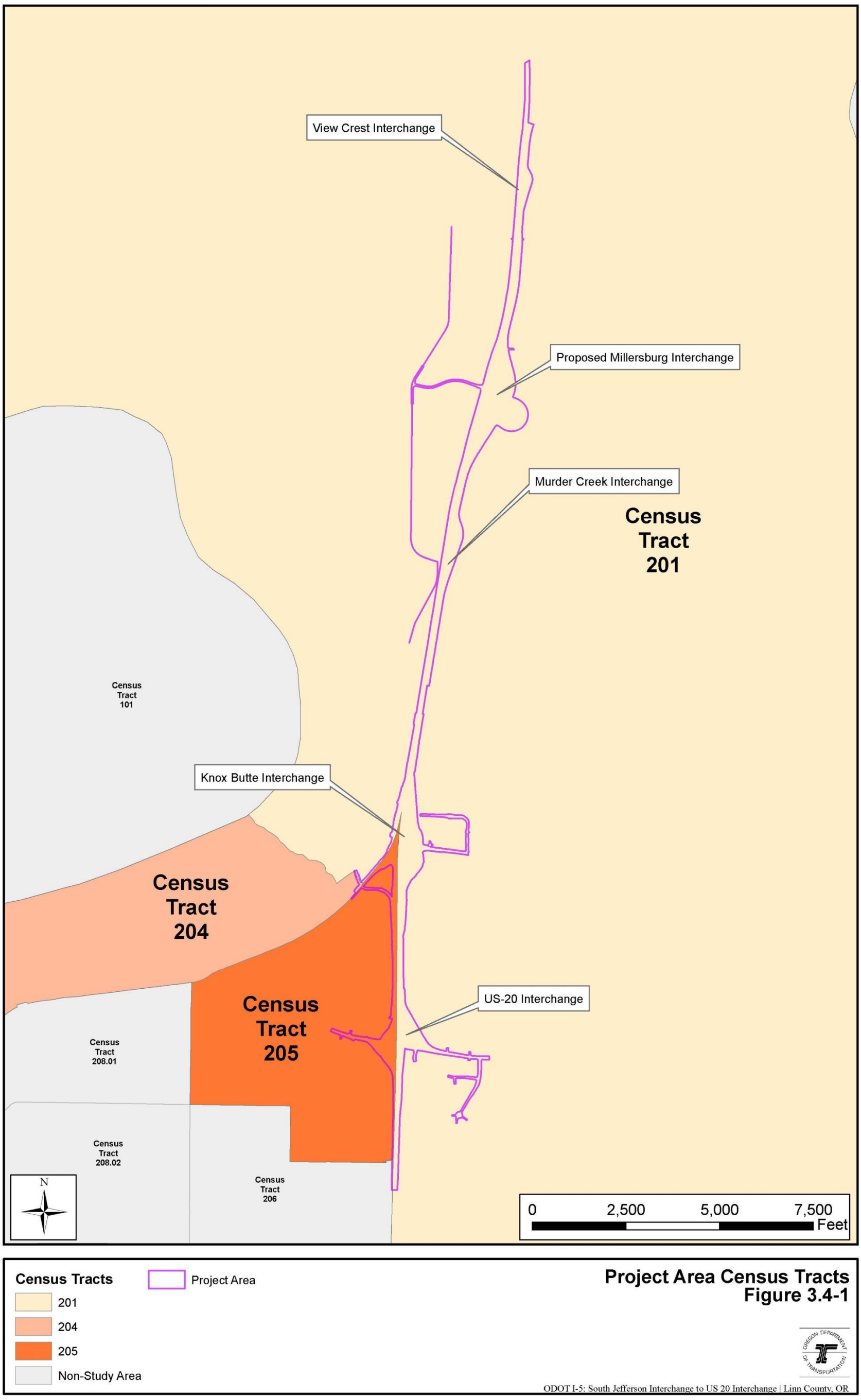


Figure 3.4-1: Project Area Census Tracts

This page intentionally left blank.

Table 3-11: Race and Ethnicity

	Percentage of Total Population						
	Oregon	Linn County	Albany	Millersburg	Census Tract 201	Census Tract 205	Project Area[a]
Hispanic or Latino	11.7	7.8	11.4	6.6	7.6	14.2	10.3
Not Hispanic or Latino	88.3	92.2	88.6	93.4	92.4	85.8	89.7
White Alone	78.5	87.1	82.9	89.8	87.4	79.8	84.4
Black or African American Alone	1.7	0.4	0.5	0.1	0.4	0.4	0.5
American Indian and Alaska Native Alone	1.1	1.1	0.9	0.9	1.1	1.0	1.4
Asian Alone	3.6	0.9	1.3	1.4	1.2	1.5	1.2
Native Hawaiian and Other Pacific Islander Alone	0.3	0.1	0.2	0.0	0.0	0.1	0.1
Some Other Race Alone	0.1	0.1	0.1	0.0	0.1	0.1	0.1
Two or More Races	2.9	2.5	2.6	1.3	2.2	2.7	2.0

[a]Population estimate is based on selected Census Blocks in Tracts 201, 204, and 205.
Source: Portland State University (2013)

Table 3-11 shows that Hispanics or Latinos were estimated at about 10 percent of the total population in the immediate project area, slightly less than the percentage for Oregon or Albany, but greater than the percentage for Linn County and Millersburg. For the non-Hispanic, non-white population in the immediate project area, percentages by minority group were consistent with, or lower than, percentages for minority groups in Albany, Millersburg, and Linn County.

3.4.1.2 Housing

Housing in the project area includes detached single-family houses, multi-family housing, and mobile and manufactured homes. Housing vacancy rates (2010), as shown in Table 3-12, suggest a relatively tighter housing supply in Linn County, Albany, and the project area than in the state as a whole. Vacancy rates in Census Tract 201 and 205, respectively, were 5.3 percent and 6.1 percent in 2010, more than 3 percentage points lower than the statewide average, and equal to or lower than vacancy rates for Linn County (7.4 percent), Albany (6.1 percent), and Millersburg (6.3 percent). The vacancy rate in the project area was estimated at 5.8 percent. Housing characteristics of the project area Census Tracts, Albany, Millersburg, Linn County, and Oregon are presented in Table 3-12.

Table 3-12: Number of Housing Units and Vacancy Rates in Oregon, Linn County, Albany, Millersburg, and Selected Census Tracts and Blocks, April 1, 2010

	Oregon	Linn County	Albany	Millersburg	Census Tract 201	Census Tract 205	Project Area[1]
Number of Housing Units	1,675,562	48,821	20,979	538	3,710	1,762	1,486
Number of Vacant Units	156,624	3,617	1,274	34	197	108	86
Vacancy Rate (in %)	9.3	7.4	6.1	6.3	5.3	6.1	5.8
Average Household Size	2.47	2.55	2.50	2.63	2.59	2.24	N/A
Average Family Size	3.00	3.01	3.01	2.92	2.95	2.92	N/A

[1]Population estimate is based on selected Census Blocks in Tracts 201, 204, and 205.
Source: Portland State University (2013)
N/A: data are not available.

Albany's 2006 Housing Needs Analysis (City of Albany, 2007) estimated that there were 1,060 mobile and manufactured housing units in 13 mobile home parks within the city. The study showed that the total number of units within mobile home parks declined in recent years. Many of these units provide low-income housing. Of the 13 manufactured home parks listed in the Albany Housing Needs Analysis, the following five (5) manufactured home parks are located in the project area with a total of 415 housing units:

- Albany RV & Trailer Park, 1197 Century Drive NE (45 units)
- Shorewood Estates, 1905 Waverly Drive NE (102 units)
- Three Lakes Estates, 2151 Three Lakes Road SE (96 units)
- Rosewood Estates, 300 Western Avenue SE (77 units)
- Heatherdale Mobile Village, 950 Airport Road SE (95 units)

The Albany Housing Needs Analysis reports that space rents in Albany manufactured home parks range from $242 to $325 per month, with parks in the project area at the middle to high end of this range. In addition to the manufactured home parks listed in the Albany Housing Needs Analysis, the Village Estates Mobile Park at 3246 Salem Avenue SE lies just north of the Albany city limits, with an unknown number of units and space rents. Most of the units in the mobile home parks within the project area are old or do not meet current codes and, therefore, could not be easily relocated to other sites if displaced. Rents for these older units tend to be low, making them affordable for current residents, but also making it difficult to relocate at similar rental rates.

3.4.1.3 Income and Poverty

Income and poverty data for the project area from 2007 to 2011 generally indicate lower incomes and higher poverty rates west of I-5 and south of Millersburg, and higher incomes and lower poverty rates in Millersburg and possibly east of I-5 (Table 3-13). Incomes for Linn County, Albany, and Census Tract 205 were lower than the Oregon average, while poverty rates in these areas were higher than the Oregon average. Conversely, for Millersburg and Census Tract 201, incomes generally were higher and poverty rates lower than the statewide average. Census Tract 205 generally had lower incomes and higher poverty rates than other geographical areas shown in Table 3-13. No comparable data are available for Census Blocks in the immediate project area.

Census Block-level data reveal several concentrations of low-income population in the project area. The highest concentration is in the northwest quadrant of the US 20 Interchange in an area bounded by South Shore Drive to the north, I-5 to the east, US 20 to the south, and Waverly Drive to the west. These Census data showed that 17.4 percent of the population in the area is low-income. The highest proportion of Hispanics occurred in the Census Blocks making up Heatherdale Mobile Village, where 99 percent of the population is low-income. A second relatively high concentration of low-income was in the southeast quadrant of the US 20 Interchange in the vicinity of Rye Street, Spicer Drive, 18th Avenue, and 3 Lakes Road.

Table 3-13: Income and Poverty Rates in Oregon, Linn County, Albany, Millersburg, Census Tract 201, and Census Tract 205, 5-Year Estimates, 2007-2011

	Oregon	Linn County	Albany	Millersburg	Census Tract 201	Census Tract 205
Per Capita Income ($)	26,561	22,255	22,249	26,392	26,042	21,246
Median Household Income ($)	49,850	46,872	45,980	64,219	59,823	33,953
Median Family Income ($)	61,302	55,726	55,648	77,788	71,056	50,543
Families with Incomes below the Poverty Level in the Preceding 12	10.2	11.9	14.3	4.8	9.2	14.7

	Oregon	Linn County	Albany	Millersburg	Census Tract 201	Census Tract 205
Months (%)						
People with Incomes below the Poverty Level in the Preceding 12 Months (%)	14.8	15.9	18.2	12.5	14.5	17.4

Source: U.S. Bureau of the Census (2012)

3.4.1.4 Neighborhoods, Community Facilities, and Community Cohesion

Neighborhoods include residential areas as well as nearby commercial businesses and community facilities such as parks, schools, and churches. Community facilities in the project area that serve regional residents include the Albany Airport, the Linn County Fairgrounds and Expo Center, and Timber-Linn Memorial Park. All of these regional community facilities are located in Albany east of I-5 between the Knox Butte and US 20 interchanges. The project area includes several residential neighborhoods that may be affected by the project, listed here by location:

- East of the Viewcrest Interchange and south of Jefferson Highway, in unincorporated Linn County. Residents of this rural residential neighborhood rely on Century Drive and the Viewcrest and Murder Creek interchanges for their access to I-5 and local roadways.
- Northeast of the Knox Butte Interchange. This residential neighborhood in Albany and unincorporated Linn County is in the process of transitioning from rural residential to urban.
- Northwest of the Knox Butte Interchange. A small residential neighborhood lies west of Old Salem Road in Albany.
- Northwest of the US 20 Interchange. The Swan Lake neighborhood in Albany is centered on Swan Lake. This neighborhood is also referred to as the "North Shore / South Shore" neighborhood, as these are prominent residential streets for homes on Swan Lake. The Heatherdale Mobile Village, a mobile home park, is located in this neighborhood, as is South Shore Elementary. This neighborhood is adjacent to retail developments fronting OR 99E and US 20.
- Southwest of the US 20 Interchange. This neighborhood includes the Lehigh Acres Historic District, a post-World War II subdivision, which is eligible for listing in the NRHP.
- Southeast of the US 20 interchange, a residential neighborhood lies immediately east of retail and industrial developments located adjacent to I-5.

Community cohesion is a term used to describe patterns of social networking within a community (Forkenbrock and Weisbrod, 2001). Within the project area, the highest level of community cohesion is likely in the residential neighborhood northwest of the US 20 Interchange.

The Swan Lake neighborhood has a well-organized neighborhood association, and the Heatherdale Mobile Village has a Community Center that is used frequently by village residents. The adjacent First Assembly of God church and South Shore Elementary also contribute to community cohesion for some of the neighborhood's residents. The neighborhood has relatively few physical barriers that could impede social and community connections within and outside the neighborhood. At the Heatherdale Mobile Village, a single entrance and its separation from surrounding developments lead to a high level of community cohesion within this development. The concentration of homes and its status as a Historic District leads to a high level of community cohesion in the Lehigh neighborhood southwest of the US 20 Interchange. Elsewhere in the project area, lower levels of community cohesion may be present where there are relatively fewer residences that are more geographically dispersed and where few community facilities or neighborhood services are available to residents.

3.4.1.5 Economic Conditions

Linn County's economy has historically been dependent on agriculture, timber, and related manufacturing activities. According to the Oregon Employment Department (2013), Linn County's labor force of just over 54,300 in 2012 ranked eighth among Oregon's counties. Linn County's unemployment rate—10.9 percent in 2012—was the 11th highest among Oregon counties. Growth in Linn County's labor force has lagged behind overall growth in Oregon.

The American Community Survey (U.S. Census Bureau, 2012) provides data on employment by industry for the state of Oregon, Linn County, Albany, Millersburg, and Census Tracts in the project area (see Table 3-14). The "Educational Services, Health Care, and Social Assistance" category provides the greatest percentage of total employment for residents of Albany, Millersburg, Linn County, Census Tracts 201 and 205, and also statewide. Manufacturing was the second largest employment category for residents of Linn County, Albany, and Census Tract 201, while Retail Trade was the second-largest employment category statewide and for residents of Census Tract 205. Public Administration and Other Services was the second-most important employment category for residents of Millersburg. The Albany Area Chamber of Commerce (2013) reports that the leading employers in the Albany-Millersburg area are Samaritan Health Services (1,600 employees), Linn Benton Community College (1,100 employees), Albany Public Schools (1,080 employees), ATI Wah Chang (950 employees), and the Target Distribution Center (630 employees). ATI Wah Chang in Millersburg is the only major private-sector employer located in the project area.

Table 3-14: Employment by Industry, Oregon, Linn County, Albany, Millersburg, Census Tract 201, and Census Tract 205, 5-Year Estimates, 2007-2011

	Percentage of Total Employment					
	Oregon	Linn County	Albany	Millersburg	Census Tract 201	Census Tract 205
Agriculture, Forestry, Fishing, Hunting, and Mining	3.5	5.5	2.7	1.0	7.5	2.9
Construction	6.5	7.3	5.2	6.2	4.4	6.1
Manufacturing	11.5	15.1	13.3	10.4	15.1	8.9
Wholesale Trade	3.1	2.8	3.0	3.8	3.4	3.8
Retail Trade	12.3	13.0	13.2	17.0	13.2	15.6
Transportation, Warehousing, and Utilities	4.3	4.2	3.3	6.6	4.2	3.1
Information, Finance, Insurance, Real Estate, and Rental and Leasing	8.2	5.5	6.1	9.2	5.6	7.5
Professional, Scientific, and Administrative and Waste Management Services	10.0	7.1	8.5	7.5	8.5	11.3
Educational Services, Health Care, and Social Assistance	21.6	22.9	26.4	17.8	20.5	22.5
Arts, Entertainment, Recreation, and Accommodation and Food Services	9.4	7.4	9.1	3.4	6.3	10.0
Public Administration and Other Services	9.6	9.2	9.3	17.2	11.4	8.4

[a]Employed persons by place of residence.
Source: U.S. Census Bureau (2012)

Albany's downtown business area is located about 2.5 miles (4.0 kilometers) west of I-5. Heritage Mall, a regional shopping center with about 50 stores, and Albany Plaza, a small shopping center, are located west of I-5. Businesses are clustered around the Knox Butte and US 20 interchanges, and along the US 20 corridor on both sides of I-5. In Millersburg, numerous businesses are located along Old Salem Road and nearby streets. In and adjacent to the project area, highway-related businesses are located near the Knox Butte and US 20 interchanges. Highway-related businesses include motels, restaurants, a gasoline station and convenience market, and other businesses. A small

number of aviation-related businesses are located at the Albany Municipal Airport, and several small businesses are located along Century Drive NE, east of I-5, north of the Knox Butte Interchange.

3.4.1.6 Property Taxes

For tax year 2012, taxes imposed in Linn County totaled more than $130 million, an increase of 71 percent from 2000. Linn County Assessor records showed that in 2012, City of Albany taxes totaled $19,885,221, while City of Millersburg taxes totaled $632,760. Tax rates per $1,000 of assessed property value in 2012 ranged from $13.43 to $19.09 for properties in the vicinity of the proposed project (Linn County Assessor, 2013).

3.4.1.7 Environmental Justice

Any project or program that receives (as a recipient or a sub-recipient) Federal funding must comply with Title VI of the Civil Rights Act and Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Title VI (USC 1964) prohibits discrimination on the basis of race, color, or national origin. Regarding Federal agencies, EO 12898 directs that "to the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations" (*Federal Register* 1994).

A low-income person, according to the *Federal Register* notice, is someone "whose median household income is at or below the Department of Health and Human Services poverty guidelines."

The U.S. Department of Transportation, in its December 16, 2011, memorandum relative to EO 12898, outlines the process for determining disproportionally high and adverse effects. The following sections describe populations in the project area.

U.S. Census data for 2010 indicate that Hispanics were by far the largest minority group in Linn County, accounting for 11.4 percent of the population in Albany, 6.6 percent of the population in Millersburg, 7.6 of the population in Census Tract 201, 14.2 percent of the population in Census Tract 205, and 10.1 percent of the population in the project area (see Table 3-11). Non-Hispanic minority groups comprised only a small percentage of the population in Albany, Millersburg, Census Tracts, and Census Blocks in the project area. Census Block-level data reveal several concentrations of Hispanic population in the project area. The highest concentration is in the northwest quadrant of the US 20 Interchange in an area bounded by South Shore Drive to the north, I-5 to the east, US 20 to the south, and Waverly Drive to the west. These Census data showed that 23 percent of the population in the area is Hispanic. The highest proportion of Hispanics occurred in the Census Blocks making up Heatherdale Mobile Village, where 27 percent of the population is Hispanic. A second relatively high concentration of Hispanics was in the southeast quadrant of the US 20 Interchange in the vicinity of Rye Street, Spicer Drive, 18th Avenue, and 3 Lakes Road. The 2010 Census showed a Hispanic population comprising 22 percent of the area population.

Field observations and review of estimated property values suggest that households in the project area are mostly low and middle income, with the highest property values in recently developed areas of Millersburg. Income and poverty data for the project area generally indicate lower incomes and higher poverty rates west of I-5 and south of Millersburg, and higher incomes and lower poverty rates in Millersburg and in areas east of I-5. Data on income at the Census Block level are not available. Incomes in Census Tract 201 (Millersburg and Albany east of I-5) were higher than for Linn County and Albany, while the percentages of families and people below the poverty level were lower than for Linn County and Albany. Incomes in Census Tract 205 in Albany west of I-5 were lower than those in Linn County and Albany; the percentage of families with incomes below the poverty level was higher than the percentages for Linn County and Albany, and the percentage of people with incomes below the poverty level was in between the percentages for Linn County and Albany.

Based on these evaluations, the following four areas with environmental justice populations were identified:

- The Northeast quadrant of the Knox Butte Interchange. The 2010 Census shows that this area has a population of roughly 1,099 people in 493 housing units. Minority residents comprise 14.4 percent of the population. The area includes a large number of housing units that indicate the presence of a low-income population, including an older mobile home park, a low-income apartment building, and many small houses.
- The Northwest quadrant of the Knox Butte Interchange, west of Old Salem Road, has a population of 156 people in 89 housing units. Minorities comprise 18 percent of the population and Hispanics comprise 14 percent. Virtually all the housing in the area indicates the presence of low-income populations, including a mobile home park containing numerous older units.
- The northwest quadrant of the US 20 Interchange has a population of 255 people in 117 housing units. The population is 23 percent Hispanic and 7 percent other minority races. The Heatherdale Mobile Village in this area includes numerous older units, indicating the presence of a low-income population. In addition, a motel in the area includes 5 extended-stay units presumably occupied by low-income residents.
- The Southeast quadrant of the US 20 Interchange has 348 residents living in 149 single-family housing units. The area is 22 percent Hispanic with other minority races comprising an additional 6 percent of the population. The housing units in the area are small and appear to include many newer manufactured and mobile units.

The project's public involvement program (see Chapter 5.0) has included opportunities for residents of the four minority and low-income areas to provide input throughout the project. Concerns of residents in these areas that were identified in the outreach meetings included:

- Change in traffic patterns resulting from the Build Alternative
- Property compensation in areas where right-of-way is needed
- Increased noise levels that would result from the Build Alternative

3.4.2 Socioeconomic Impacts

Potential impacts to socioeconomic resources were qualitatively and quantitatively evaluated in terms of effects on neighborhoods and community facilities, economic, and impacts on environmental justice populations. These impacts result primarily from potential displacements of residents and businesses, and changes in travel patterns and connectivity that occur with the Build Alternative. The following sections summarize these impacts.

3.4.2.1 Direct Impacts

No Build Alternative

With the No Build Alternative, traffic would continue on the existing lanes of I-5. Existing interchanges would remain in their current configuration and no new interchanges would be built. Local traffic routing would not change, including at existing interchanges. With increases in traffic volumes over time on I-5 and its interchanges with other highways, and on local roads, congestion for people and for freight transportation would increase, while traveler safety would decline. Increased congestion could inhibit the use of some land in the project area for its planned use, reducing income for property owners and employment opportunities. Declines in traveler safety would affect pedestrians and cyclists who are more vulnerable in crashes than occupants of motor vehicles, and the No Build Alternative makes few improvements to pedestrian and cycling facilities in the project area. With the No Build Alternative, no new right-of-way would be acquired by ODOT, no residences or businesses would be displaced, and property taxes would not change due to the proposed project. While the No Build Alternative has socioeconomic impacts, it does not appear that there would be disproportionate impacts on low-income or high-poverty populations in the project area.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to socioeconomic resources.

Temporary Impacts

Construction would result in temporary detours and nuisances to businesses and residences located near construction areas. These impacts would include noise and dust from construction equipment and machinery, short-term or partial closures of some roads and driveways, lane closures and traffic delays, and temporary changes in traffic circulation to businesses and residences.

Potential temporary decreases in business revenue due to construction detours and nuisances would likely be low and would not affect the ability of established businesses to operate over time. Construction could result in residences experiencing temporary impacts upon their quality of life. Construction would be coordinated to avoid and minimize extended impacts to residential areas.

Temporary increases in employment and some business spending would occur in the project area with each phase of construction as construction workers are hired or work in the area and materials and services are purchased from businesses.

Permanent Impacts

Since permanent right-of-way impacts are similar under both design options for the Build Alternative; permanent impacts to socioeconomic resources would also be similar under both design options, with only minor differences. Therefore, impacts to socioeconomic resources are primarily discussed as they relate to the Build Alternative, regardless of the design option. See Section 3.3, Right-of-Way, for more information.

Population, Housing, and Business/Employment

The Build Alternative would require acquisition of new right-of-way and would also improve the overall performance of the transportation system. The primary impact of the Build Alternative on people and housing would be from right-of-way acquisitions that result in residential and commercial displacements. The majority of estimated displacements would occur in the vicinity of the Knox Butte and US 20 interchanges (see Direct Impacts in Section 3.3). Residents would experience disruption if they were required to be relocated. In addition, relocations could result in increased challenges for business owners as they either relocate or rearrange their properties to adjust. An adequate supply of commercial properties is currently available for businesses that would be displaced. Displaced residences and businesses would be entitled to compensation and relocation benefits consistent with the URA and applicable ODOT policies.

Residences and businesses in the project area would be affected by permanent changes in travel patterns and connectivity resulting from the Build Alternative. These changes would affect the ability of patrons to travel to businesses and the ability of residents to travel to and from their homes. Generally, the proposed project would improve traffic operations, which would be an overall benefit for people and businesses. Closure of the existing Viewcrest and Murder Creek interchanges (and the associated crossing of I-5) would require residents living in the vicinity of those interchanges to travel on different and possibly longer routes to destinations in Millersburg and elsewhere in Linn County. The distance from these interchanges to the location of the proposed new Millersburg Interchange is approximately 1 and 1.4 mile (respectively).

The Build Alternative would change how persons travel to and from highway-related businesses near the Knox Butte and US 20 interchanges. These businesses include auto dealers, aviation-related businesses at the Albany Municipal Airport, several large department and warehouse stores, and miscellaneous other businesses. Changes in travel

patterns are not expected to result in economic impacts to existing or future businesses in the project area. Increased capacity at the interchanges resulting from the Build Alternative would support existing businesses and facilitate development or redevelopment of properties in the project area.

At the Knox Butte Interchange, improved I-5 southbound connectivity would include a new southbound on-ramp; this would result in about 0.5 mile less travel to reach I-5 southbound as compared to using the existing US 20 Interchange. Construction of this on-ramp would require closure of the second I-5 southbound off-ramp at the Knox Butte Interchange. Businesses in the southwest quadrant of the Knox Butte Interchange would continue to be reachable via the existing I-5 southbound off-ramp. Elimination of the second southbound off-ramp could have an initial impact to restaurants located there. However, related improvements to Airport Road, an upgrade of the Airport Road-OR 99E intersection, and the addition of a southbound on-ramp will likely have the effect of rationalizing traffic patterns through the area and improving its desirability for existing businesses and future development.

Removal of the Murder Creek and Viewcrest interchanges could result in additional travel to I-5 for established businesses near those interchanges. Businesses north of the Viewcrest Interchange and south of the Murder Creek Interchange would need to travel about one additional mile to reach I-5 via the new Millersburg Interchange, when compared to connectivity via the current Viewcrest and Murder Creek interchanges. Conversely, businesses nearest the proposed new Millersburg Interchange would experience a reduction in distance to I-5.

In the southeast quadrant of the US 20 Interchange, changes in travel patterns would allow vehicles to reach businesses in the area via Fescue Street directly across from the I-5 southbound ramps, but traffic leaving the area would need to travel east to Timber Street to reach US 20. While this would result in out-of-direction travel for some vehicles, this change in travel patterns is necessary to protect operation of the interchange, which would improve the connectivity of businesses in this area relative to the No Build Alternative.

Neighborhoods, Community Facilities, and Community Cohesion

Effects on neighborhoods would include those from residential and business displacements (described above), changes in travel patterns, increased noise or vibration, and air quality impacts associated with greater traffic volumes. Potential adverse effects from displacement include stress associated with moving; loss of connections with friends, relatives, or neighbors; loss of connections with customers, and/or greater travel distance to and from businesses and community facilities after moving.

Residential and business displacements resulting from the Build Alternative would be disruptive to neighborhoods, but are not anticipated to change the overall character of neighborhoods or the community at large. No improvements that would divide or isolate a neighborhood are proposed as part of the Build Alternative.

By reducing congestion and improving operational efficiency, the Build Alternative would support improved traffic circulation between I-5 and neighborhoods in Albany and Millersburg. Construction of a new Millersburg Interchange, changes to the Viewcrest and Murder Creek interchanges, and closure of several local streets would affect traffic circulation in several neighborhoods, but would not remove connections to or from those neighborhoods. The rural residential neighborhood east of the Viewcrest Interchange will need to travel about 1 mile more to reach I-5 southbound after removal of the Viewcrest Interchange, but construction of the Millersburg Interchange will improve access to this neighborhood from I-5 northbound and improve its connection to Millersburg west of I-5. Traffic patterns in the neighborhood east of the Knox Butte Interchange will be affected by closure of Century Drive at Knox Butte Road and the connection of Dunlap Avenue to Expo Parkway to reroute Century Drive traffic to Knox Butte Road. These changes will increase traffic volumes on Dunlap Avenue and Expo Parkway. The termination of Airport Road north of US 20 and restrictions on traffic movements on Airport Road, Oakwood Avenue, and North Shore Drive will affect travel patterns in the residential neighborhood west of I-5 and north of US 20, and reduce vehicular connectivity between this neighborhood and the commercial district to the north. East of I-5 and south of US 20, restriction of northbound movements on Fescue Street may slightly increase travel distances for nearby residents,

and this traffic restriction plus the extension of Spicer Road eastward to Timber Street will increase traffic volumes for residents on the existing segment of Spicer Road.

Reconstruction of the US 20 Interchange would result in displacement of the Oregon State Police station on Spicer Drive. Given the availability of commercial space in Albany and the regional nature of services provided by the Oregon State Police, response times for the Oregon State Police should not be significantly affected by this displacement. For the project area as a whole, improved operational efficiency and reduced congestion could contribute to better response times for emergency services personnel with local fire and law enforcement departments. Removal of the Viewcrest and Murder Creek interchanges and closure of Century Drive at its intersection with Knox Butte Road would result in additional travel distance for emergency services to reach the project area east of I-5 and north of the Albany city limits. In addition, closure of the Airport Road connection to US 20 with construction of the new southbound off-ramp would result in additional distance for emergency services to reach residents served by Airport Road, including Heatherdale Mobile Village. Impacts to Heatherdale Mobile Village could be mitigated by using Dale Street as an entrance to Heatherdale in case of emergency (this entrance is currently closed by a gated chain-link fence).

Increased traffic volumes on I-5, I-5 interchanges, and new local streets (due to re-routing and/or growth) could result in increased noise and vibration and deterioration of air quality in parts of neighborhoods nearest the roadways where traffic volumes would increase. These changes could compromise the quality of life and aesthetic character in these neighborhoods and help increase pressure for a change to commercial use. Noise impacts are generally the same for each of the Build Alternative design options. Section 3.8 contains more information about potential noise impacts.

Economic Conditions

Several types of economic impacts would be expected to occur from the Build Alternative. These would include impacts from the acquisition and displacement of business property; long- and short-term impacts, including impacts from construction, on the regional economy; impacts on established, highway-related, and other businesses; and impacts on property taxes due to acquisition of business land and displacement of business buildings.

The Build Alternative is estimated to result in approximately 6 to 12 business displacements (see Section 3.36 for more information). However, given the current availability of land and buildings for commercial uses, it is likely that most of the businesses can be relocated within the immediate area. One business that may experience difficulty relocating is the Motocross recreational facility northeast of the Millersburg Interchange if that facility cannot be accommodated on their remaining site after acquisition of right-of-way for the Millersburg Interchange.

Temporary reduction of property taxes would result from the Build Alternative. Tax reductions are estimated to range from $210,031 to $220,503, depending on the design option. Over time, the reduction in property taxes could be offset partially or wholly by increases in property values. By improving operational efficiency, capacity, and connectivity, the Build Alternative would support existing businesses and future development of the local and regional economy. Development of vacant or redevelopment of existing commercially, industrially, or residentially zoned lands in the Albany-Millersburg area would help increase property tax revenues.

Additional jobs from project construction would contribute to positive effects on the local and regional economy over the years during which construction would occur. Construction would support an estimated 4,242 full-time equivalent job years (ODOT, 2012) over the course of the Build Alternative's construction.

Impacts on highway-related businesses in the project area would generally be positive as a result of improved connectivity and preservation of capacity at the Knox Butte and US 20 Interchanges. Highway-related businesses in the project area include convenience markets, gasoline stations, motels, and restaurants. The same factors affecting

these businesses would also affect auto dealers, aviation-related businesses at the Albany Municipal Airport, several large department and warehouse stores, and miscellaneous other businesses near the interchanges.

At the Knox Butte Interchange, elimination of the southbound off ramp could have an initial negative effect on businesses in the southwest quadrant of the Knox Butte Interchange. However, related improvements to Airport Road, upgrade of the Airport Road-OR 99E intersection and the addition of a southbound on-ramp will likely have the effect of rationalizing traffic patterns throughout the area and improving its desirability for existing businesses and future development.

Near the US 20 Interchange, restriction of northbound movement on Fescue Street and the extension of Spicer Drive to an improved Timber Street would reduce congestion and improve circulation throughout the area, resulting in positive impacts on businesses southeast of the interchange. Traffic would enter and leave the area via Timber Street under the Build Alternative, which would result in some out-of-direction travel. This out-of-direction travel, however, is unlikely to impact businesses in the area as these businesses are primarily destinations for their customers and as customers adapt to the changes in travel patterns.

Impacts to Environmental Justice Communities

Title VI of the Civil Rights Act and Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations require that the Build Alternative avoid or minimize disproportionate adverse impacts to minority and low-income populations throughout all phases of the Build Alternative. Concentrations of minority and low-income populations are referred to as environmental justice communities. This section describes potential impacts of the Build Alternative on environmental justice communities in the project area identified in Section 3.4.1.7.

Environmental justice considerations are summarized in this section of the Design Baseline Evaluation document for the purposes of convenience. The beneficial and adverse effects on the overall population, and on minority and low-income populations in particular, are addressed under the applicable topics such as air, noise, water pollution, hazardous waste, aesthetic values, community cohesion, economic vitality, employment effects, displacement of persons or businesses, farms, accessibility, traffic congestion, relocation impacts, safety, and construction/temporary impacts.

<u>Roadway Modification Impacts on Environmental Justice Communities</u>

The Build Alternative would result in changes in connectivity and travel patterns in the vicinity of the following areas where environmental justice populations are present:

In the northeast quadrant of the Knox Butte Interchange, changes in traffic patterns include closure of the Century Drive intersection with Knox Butte Road. Traffic on Century Drive will be routed to Knox Butte Road by connecting existing portions of Dunlap Avenue and Expo Parkway. For residents of this area, construction of the new connection between Century Drive and Knox Butte Road could add up to 0.4 mile in trip length.

Construction of the new connection between Century Drive and Knox Butte Road is expected to route traffic over Dunlap Avenue, which is currently a dead-end street with about nine housing units, an unknown number of which are likely low-income households given the condition of housing and Census data for the area. Traffic on the street would increase substantially with the new connector, which may be an adverse impact for some residents. However, the street would be improved with sidewalks and bicycle lanes, which could be a benefit to residents on the street. Given the small number of housing units currently on Dunlap Avenue, any adverse impacts to environmental justice populations would not be disproportionate to adverse impacts of the project as a whole.

In the northwest quadrant of the Knox Butte Interchange, construction of a new southbound on-ramp in the southwest quadrant of the Knox Butte interchange would provide connectivity to I-5; an on-ramp does not currently exist at this location. The new on-ramp would result in about 0.5 mile less travel to reach I-5 southbound via the Knox Butte Interchange as compared to reaching I-5 via Airport Road at the existing US 20 Interchange. This would be a benefit to environmental justice residents in the northwest quadrant of the Knox Butte Interchange.

In the northwest quadrant of the US 20 Interchange, construction of the southbound off-ramp will require closure of the Airport Road connection to US 20. Airport Road would end in a cul-de-sac at the existing entrance to the Heatherdale Mobile Village. This improvement would result in adverse impacts to minority and low-income populations, including increased out-of-direction travel and potential displacement of several mobile homes.

In the southeast quadrant of the US 20 Interchange, changes in connectivity and traffic patterns with the Build Alternative would improve travel conditions for the most part. However, travelers originating in the area would be required to use Timber Street intersection to reach US 20, resulting in a small amount of out-of-direction travel for some residents of this neighborhood.

Improved operational efficiency and safety of I-5 and associated interchanges would help reduce the potential for crashes for all roadway users in the project area. Other positive effects for minority and/or low-income areas would include the provision of bikeways and sidewalks on improved local streets associated with the proposed project. All travelers would face the same changes in connectivity and travel patterns that would face minority and low-income travelers. The available information suggests that effects on community facilities and services; on highway, traffic, and public safety; and on neighborhoods and community cohesion would be similar between minority/low-income residents and all user groups.

Housing Displacement Impacts to Environmental Justice Communities

Most of the residential displacements impacting environmental justice communities would occur in either the northwest quadrant of the US 20 Interchange or in the northeast quadrant of the Knox Butte Interchange. No residential takings would occur in the other two environmental justice communities identified earlier in this section (the southeast quadrant of the US 20 Interchange and the northwest quadrant of the Knox Butte Interchange).

Displacements in the Northeast quadrant of the Knox Butte Interchange would include six or seven stand-alone residential units.

Displacements in the northwest quadrant of the US 20 Interchange would include four residential units, of which three would be in the Heatherdale Mobile Village.

Design options that had the potential for more residential displacement impacts in Heatherdale Mobile Village were dropped from the Build Alternative during development of this analysis. More information about this can be found in Section 5.4, Public Involvement Integration in Project Development.

Community Facilities and Neighborhood and Community Cohesion Impacts to Environmental Justice Communities

The project is unlikely to be detrimental to community facilities and community cohesion. The project would not divide environmental justice communities or reduce connections between those areas and community facilities.

Economic Impacts to Environmental Justice Communities

Right-of-way information suggests that the project would result in displacement of several businesses. Some of these businesses may employ minority and/or low-income workers. If these businesses do not reopen in the Albany-Millersburg area, or if they open with fewer workers, then the number of minority or low-income workers could be

lower with the project than without the project. Conversely, relocated businesses may employ more minority or low-income workers after the project than they did before the project, depending on a variety of business-related considerations. In addition, the Build Alternative would support existing businesses and future development and redevelopment of employment sites in the project area. Overall there is no evidence that the Build Alternative would result in disproportionate and adverse economic impacts on low-income and minority residents due to business relocations or other economic impacts.

Noise Impacts on Environmental Justice Communities

In all four of the environmental justice communities identified in this chapter, pre-existing noise level exceedances are known to occur at various sites (i.e., outdoor use areas including residential or commercial properties, parks, cemeteries, etc.). The number of existing exceedances in environmental justice communities, however, is not disproportionate to the number of exceedances throughout the entire project area. Increased traffic volumes on I-5, I-5 interchanges, and new local streets could result in increased noise in parts of minority and/or low-income communities nearest the roadways where traffic volumes would increase. Similarly, the number of sites in environmental justice communities that would experience noise impacts under the Build Alternative is comparable to the number of sites that would experience noise impacts in non-minority or low-income areas. Given the relatively small noise impacts of the project itself and the potential ability to mitigate cumulative impacts using ODOT's normal practices, the noise impacts in environmental justice communities would not be disproportionate and adverse.

For the environmental justice communities northeast of the Knox Butte Interchange, the number of sites currently in exceedance of noise abatement approach criteria (NAAC) is slightly higher than the project area average. On the other hand, the number of additional noise impacts under the Build Alternative is lower in this area compared to the project area average. Evaluation of noise barriers in the area found that a barrier would be effective in reducing noise levels and is justified by economic criteria.

For the small environmental justice community to the northwest of Knox Butte, noise levels would not increase. However, the number of sites that already exceed NAAC criteria is much higher than the project area average. Given that the project would not make the situation worse, the project would not represent a disproportionate and adverse impact. However, other ways of mitigating current noise levels resulting from highway traffic should be considered if the project goes forward.

In the northwest quadrant of the US 20 interchange, the number of sites currently in exceedance of NAAC criteria is lower than the project area average. In addition, the number of additional sites that would experience noise impacts under the Build Alternative is lower than the project area average. Analysis of mitigation measures shows that under the Auxiliary Lanes option, a noise wall between I-5 and Airport Road would be effective in reducing noise levels. A wall would likely not be feasible under the Collector Distributor System option. In either case, feasibility would be reviewed and reevaluated during final design. In conclusion, noise impacts in this area would not be disproportionate to the overall project area.

In the southeast quadrant of the US 20 Interchange, the number of sites that currently exceed NAAC criteria is much lower than the project area average. In addition, no sites are projected to experience an increase in noise levels under the Build Alternative. Therefore, noise impacts in this area would not be disproportionate to the overall project area.

Hazardous Waste Exposure Impacts on Environmental Justice Communities

Two of the15 sites of moderate or high concern for hazardous waste that are located within the project area are adjacent to environmental justice communities. One is an abandoned filling station on Knox Butte Road at its intersection with Century Drive. The other is a currently operating filling station on US 20 immediately south of Heatherdale Mobile Village. There may be additional underground tanks encountered in current and former industrial

and commercial areas along US 20 in the vicinity of the US 20 Interchange. However, based on the hazardous materials analysis and associated mitigation measures, the Build Alternative is not expected to result in significant hazardous materials impacts. Therefore, there would not be disproportionate and adverse impacts on the four environmental justice communities identified in this chapter.

Air Quality Impacts on Environmental Justice Communities

With respect to air quality, the project would not cause or contribute to any new violations of any standard, increase the frequency or severity of any existing violation or any standard, or delay timely attainment of any Transportation Control Measure. In addition, project area Mobile Source Air Toxic (MSAT) emissions are expected to decrease in the future, relative to existing conditions. During construction, reasonable precautions would be taken to avoid dust emissions including vehicle and equipment idling limitations or use of water or chemicals to control dust from clearing, grading or stockpiling activities. See Section 3.9.3 for a complete list of dust control Best Management Practices (BMPs).

Summary of Impacts on Environmental Justice Communities

The above discussion suggests that the proposed project could have positive as well as adverse impacts on environmental justice communities. Positive effects would include the overall operational and safety benefits to be achieved by modernizing the facility for all user groups (including minorities and low-income residents). In the vicinity of several areas with minorities and/or low-income residents, new local streets would facilitate traffic flow and in some locations, reduce the amount of out-of-direction travel that would occur in the absence of the new local streets. Pedestrian and bicycle facilities would enhance bicycle and pedestrian travel in areas where these facilities would not exist without the proposed project. Additionally, project construction would result in hundreds of employment opportunities; minorities and/or low-income persons in the project area may qualify for some of these positions.

Adverse impacts to environmental justice populations include displacement of several residential housing units and changes in travel patterns resulting in some out-of-direction travel in areas with concentrations of minority and low-income residents. Given the relatively low number of direct adverse impacts, and that other potential impacts affect both environmental justice and non-environmental justice populations in the project area, the Build Alternative does not have disproportionately high and adverse impacts on environmental justice communities.

3.4.3 Minimization, Avoidance, and Mitigation Measures

Mitigation measures for socioeconomic impacts include those that would also mitigate for other issues, such as right-of-way, traffic, noise, air, and visual impacts. These measures also help decrease potential adverse socioeconomic impacts. Examples include:

- Traffic management to maintain traffic flow during construction as much as possible.
- Incorporating signage and coordinate with businesses to keep connections to businesses open during construction.
- Maintaining or improving emergency vehicle travel at all times.
- Construction practices, such as spraying water to control dust to minimize air quality impacts to adjacent land uses during construction.

3.4.4 Indirect Impacts

Project construction may indirectly result in an increase in local transactions for goods and services by businesses and workers connected to project construction. The proposed project could also contribute to vacant commercial land

development. For example, the new Millersburg Interchange could help facilitate the development of vacant land in Millersburg near the interchange, including property between Conser Road and Old Salem Road.

In addition, re-development might also occur on lands zoned Commercial or Industrial but currently in non-conforming use. The land northeast of the Knox Butte Interchange between Expo Parkway and Century Drive and between Knox Butte Road and Dunlap Avenue is zoned Regional Commercial. Currently it has a mix of residential and commercial uses. Improvement of the Knox Butte Interchange and Knox Butte Road could accelerate the development of this land to planned commercial uses. This could lead to increased revenues through property taxes.

3.4.5 Cumulative Impacts

Cumulative impacts result from the direct and indirect impacts of the Build Alternative in combination with other past, present, and reasonably foreseeable future projects. Table 3-1 lists past, present, and reasonably foreseeable future projects considered for this analysis. All but one project listed in Table 3-1 are consistent with locally adopted plans, and these projects have been included in the assumptions used for assessment of traffic conditions under the No Build and Build alternatives. The one reasonably foreseeable project that is not currently consistent with locally adopted plans is the expansion of Samaritan Health Services on a site in east Albany. This development will require the City of Albany to rezone the site to allow the development. This project, plus other annexations and developments within the Albany Urban Growth Boundary that may occur, would generate traffic in addition to the levels assumed in the assessment of traffic conditions in this analysis. This cumulative impact could result in increased traffic congestion and the need for additional improvements to the transportation system in the project area. This need for additional improvements is likely to occur beyond the planning horizon used for this analysis.

3.4.6 Conclusion

In general, improvements to the interchanges will improve quality of life for residents, business owners, and business patrons in the project area by reducing congestion, improving safety, and improving connections to business and industrial sites. Neighborhood continuity and community facilities would be largely unaffected by the project.

Based on the above discussion and analysis, the Build Alternative would not cause disproportionately high and adverse effects on any minority or low-income populations in the project area in accordance with the provisions of EO 12898 and FHWA Order 6640.23 (2011).

3.5 Archaeological and Historic Resources

Archaeological resources include material remains of past human life or activity that are of archaeological significance including, but not limited to, monuments, symbols, tools, facilities, technological by-products, and dietary by-products (OAR 736-051-0080 [1]). Historic resources refer to buildings, structures, sites, objects, districts, and all manner of properties containing material remains of past human life or activity. Historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the NRHP maintained by the Secretary of the Interior.

Projects requiring Federal funds and permits requires compliance with the National Historic Preservation Act of 1966, as amended (16 USC 470), and its implementing regulations, Protection of Historic Properties (36 United States Code of Federal Regulations [CFR] 800; Section 106). Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties (i.e., those properties deemed eligible for listing or formally listed on the NRHP) and affords the Advisory Council on Historic Preservation, the State Historic Preservation Office (SHPO), and interested Tribal governments an opportunity to comment on the findings, as appropriate.

3.5.1 Existing Conditions

An area of potential effect (APE) was established to define the geographic limits in which archaeological and historic resources were evaluated. The APE was based on the project area and includes those areas within which potential impacts are most likely to occur. The APE was defined on the basis of the extent of anticipated impacts and refined through consultation between ODOT and Oregon's SHPO.

Existing conditions for archaeological and historic resources involved both archival and field review of the APE. Primary data sources included historic site records and archival literature from SHPO, Linn County, and the City of Albany. In addition, windshield surveys of the APE were conducted to identify any properties that were potentially eligible for listing under the NRHP. The eligibility status of historic resources used in this analysis is preliminary for all properties other than those currently listed on the NRHP.

3.5.1.1 Archaeological Resources

A review of the archaeological site records on file at the SHPO in Salem indicates that no archaeological sites have been recorded within the APE. The nearest recorded archaeological site to the current APE is located approximately 0.75 mile west, referred to as "Albany Refuse Disposal." The site is interpreted as refuse from a Chinese railroad construction crew (Chapman et al., 2000).

In view of the modified nature of the ground surface, a field survey was focused in areas where natural landforms appear to be relatively intact, especially in locations that the background research suggests may be areas of archaeological potential, such as creek crossings. Ten high-probability areas within the I-5 corridor were identified as locations where archaeological materials may be likely to be found. Four were located on the east side of I-5, and six were located on the west side of I-5. With the exception of a single a ceramic fragment of unknown origin, no archaeological artifacts, features, or sites were observed during the survey. However, evidence of past activity may still remain buried below the present ground surface in these locations.

3.5.1.2 Historic Resources

Reconnaissance-level surveys revealed that there are 189 potential historic resources located within the APE specified for this project that are 45 years of age or older. Of these resources, only one has been formally listed on the NRHP: the Albany Municipal Airport Historic District (Figure 3.5-1 below and Figure 3.6-1 in Section 3.6). Twenty-three resources within the APE were identified as potentially eligible for listing in the NRHP or listed as meeting the age and integrity requirements for NHRP listing in the Oregon Historic Sites Database. Seventeen of those are contributing elements to the eligible Lehigh Acres Historic District. One hundred fifty-five (155) resources meet the age requirement, but are not eligible for NRHP listing due to alterations. The Oregon SHPO confirmed the eligibility status of historic properties as indicated in Table 3-15 below.

Table 3-15: NRHP and Eligible Historical Resources

Resource	Location	National Register of Historic Places Status
Albany Municipal Airport Historic District[a]	3510 Knox Butte Road E	Listed
Lehigh Acres Historic District[b]	Southeast quadrant of US 20 Interchange	Eligible
1877 Waverly Jewish Cemetery	3165 Salem Avenue SE	Eligible
Houston (East Albany) Cemetery	3160 Old Salem Road	Not Eligible
Pacific Power and Light	830 Old Salem Road NE	Not Eligible
Southern Pacific Railroad Corridor and Bridge	West of I-5 through project corridor	Eligible
ATI Wah Chang	1600 Old Salem Road	Not Eligible

Note: Extent of impact is the same for both Auxiliary and Collector Distributor options.

[a]Albany Municipal Airport Historic District is the only NRHP-listed resource within the APE; the district has four contributing elements.
[b]Lehigh Acres Historic District was identified in the City of Albany Post-War survey. The district has 52 contributing elements, 17 of which are a subset within or adjacent to the project footprint.

When historic resources are found that are eligible for the NRHP, Federal laws and regulations, if applicable, require that project designs should be considered that avoid them. If the project is federally funded or involves Federal permitting, the project's effects to such resources shall be determined using the criteria set forth in Section 106 of the National Historic Preservation Act of 1966, as amended, and Section 4(f) of the Department of Transportation Act of 1966 (see Section 3.6).

This page intentionally left blank.

Figure 3.5-1: Albany Municipal Airport

This page intentionally left blank.

3.5.2 Cultural Resources Impacts

Potential impacts to archaeological and historic resources were qualitatively assessed based on the potential for properties currently listed in the NRHP, or deemed eligible for listing, to be adversely effected by the project. Adverse effects include changes to the quality or character of all or part of a property and/or its surrounding environment.

3.5.2.1 Direct Impacts

No Build Alternative

Since no construction activities or right-of-way acquisition would take place under the No Build Alternative, temporary and permanent impacts to archaeological or historic resources are not anticipated under this alternative.

Build Alternative

The Build Alternative could result in both temporary and permanent impacts to historic resources. Impacts to archaeological resources may occur in areas identified as high-probability areas or in areas that remain to be surveyed. Subsurface probing, both by manual and mechanical means as appropriate, is recommended in high-probability areas to determine whether archaeological artifacts, features, or sites are actually present. Areas outside the existing ODOT right-of-way remain to be surveyed, and would require examination prior to construction of the proposed project.

Temporary Impacts

Temporary impacts could result from construction activities conducted in proximity to historic resources. Construction work could cause temporary noise and visual disturbances, but would not impact the historic integrity of these resources. These impacts would be minimized through the implementation of construction BMPs, as discussed in Section 3.5.3 below.

Permanent Impacts

According to regulations implementing the National Historic Preservation Act, adverse effects to historic properties include, but are not limited to, destruction or alteration of all or part of a property; removal from or alteration of its surrounding environment; introduction of visual, audible, or atmospheric elements that are out of character with the property or setting; transfer, sale, or lease of property out of Federal ownership without adequate conditions or restrictions regarding preservation, maintenance, or use; and neglect of a property resulting in its deterioration or destruction (36 CFR 800.5).

Consultation with the Oregon SHPO in accordance with the 36 CFR 800.5 has yielded a finding that the I-5: South Jefferson to US 20 Interchange project would have no adverse effect on properties listed in or eligible for the NHRP (SHPO Case No. 14-1661, approved on Nov. 18, 2014).

3.5.3 Minimization, Avoidance, and Mitigation Measures

ODOT's *Standard Specifications for Highway Construction* includes measures that are intended to safeguard historic resources and potential archaeological sites discovered during construction, and historic resources. These measures include:

- Where possible, noise walls used to mitigate highway noise impacts would be placed in in a manner sensitive to the historic character of the building(s).
- Where possible, landscaping, noise walls, and/or other features that are capable of reducing noise and visual impacts would be placed in in a manner consistent with the landscape.

- If, during final design, ground disturbance is necessary in areas outside those surveyed, additional surveys would be completed prior to activity.
- If archaeological resources are inadvertently encountered during the course of construction for this project, all earth disturbances in the vicinity of the find would be halted immediately in accordance with State and Federal laws. A qualified archaeologist would be consulted to investigate and evaluate any such discoveries and to recommend subsequent courses of action in consultation with SHPO, ODOT, and the appropriate Tribes.
- Most of the ground surface is covered by vegetation, and much of the ground may have been disturbed or obscured during previous construction of I-5 and existing interchanges. Also, alluvial deposition by the Willamette River and other streams may have buried evidence of earlier occupation so that older sites may occur deep below the present ground surface. These conditions require that the pedestrian archaeological survey be supplemented with a robust program of discovery probing, including mechanical excavations in the 10 high-probability areas where exposure of stratigraphy or deeper excavations are appropriate, to ensure the identification of any significant prehistoric or historical archaeological resources within the project area prior to project construction. Areas outside the existing ODOT right-of-way remain to be surveyed and could potentially contain additional high-probability areas. These areas would require examination prior to construction of the proposed project.

3.5.4 Indirect Impacts

Adverse indirect impacts are not anticipated to result from the proposed project; however, beneficial impacts may include improved connectivity to historic community resources.

3.5.5 Cumulative Impacts

The planned future development and increased land development that could result from economic development may modify the setting, feeling, or association of historic resources or disturb archaeological resources. The proposed project could contribute to a cumulative impact on archaeological resources, depending on findings from pre-construction surveys.

3.5.6 Conclusion

The level of effect findings determined that the Build Alternative would have no adverse effect on properties listed in or eligible for the NHRP. However, if ground disturbance is planned in areas outside of the proposed project area or where survey has not occurred, additional survey will occur prior to construction of the proposed project.

3.6 Section 4(f)

Section 4(f) of the U.S. Department of Transportation Act of 1966 provides protection to public parks, recreation lands, wildlife and waterfowl refuges, and historic sites (see Section 3.5 for historic site information). This section describes the resources in the project area that are protected under the provisions of this act and the potential effects of the proposed action on those properties (see Appendix, Section 106 National Historic Preservation Act of 1966 Documentation and Findings).

3.6.1 Section 4(f) Process and Resources

In order to identify Section 4(f) resources within the project area, information was gathered from a variety of sources including Oregon Parks and Recreation Department (OPRD), the National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), Bureau of Land Management (BLM), Oregon Department of Fish and Wildlife (ODFW), Linn County, and the City of Albany. Field observations and GIS data were also used to gather information.

Section 4(f) prohibits FHWA from using land from a publicly owned park, recreation area, wildlife and waterfowl refuge, or any land from an historic site of national, State, or local significance unless: (1) there is no feasible and prudent alternative to the use of the land, and (2) the action includes all possible planning to minimize harm to the property. For purposes of Section 4(f), a historic site is considered significant only if it is listed or eligible for listing in the NRHP.

If a Section 4(f) resource is found to be potentially impacted by a project, a determination of "use" must occur. This determination must consider the effects before and after mitigation, consider the severity and location of the use, and determine whether the remainder of the property will continue to serve the same functions as before.

For parks, recreation areas, and wildlife and waterfowl refuges, a use is considered *de minimis* when: (1) the use of the property does not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f); (2) the official(s) with jurisdiction over the property agrees in writing that the use is not adverse; and (3) the public has been provided an opportunity to comment on the effects of the project on the protected activities, features, and attributes of the Section 4(f) property.

For historic sites, a use is considered *de minimis* when: (1) a finding is made of "no historic properties affected" or a finding is made of "no adverse effect" in accordance with Section 106 of the National Historic Preservation Act; (2) written concurrence with the Section 106 finding has been made by the applicable State Historic Preservation Officer or Tribal Historic Preservation Officer; and (3) the views of the consulting parties participating in the Section 106 process have been considered.

3.6.1.1 Park and Recreation Facilities

The park and recreation facilities in the project area include Linn County Fairgrounds and Expo Center and Waverly Park, both of which are located in the City of Albany. Linn County Fairgrounds and Expo Center is a multi-purpose complex that provides facilities for a variety of meetings and events. Waverly Park is a 19.5-acre City of Albany park located between Salem Avenue SE (on the west) and Oregon Highway 99 (on the east). Waverly Lake occupies a vast majority of the park. Waverly Park offers barbecue grills, picnic tables, paths, restrooms, fishing, paddleboat rentals, and greenspace.

The park system in Albany consists of a variety of parkland, recreation facilities, and natural areas. The City of Albany is the primary provider of parks within the project area. The City owns and/or manages approximately 603 acres of parkland at 32 sites, providing diverse facilities to support a variety of recreation opportunities and activities. Waverly Park is included in the City's parks and recreation system.

3.6.1.2 Historic Sites

The resources within or adjacent to the project area that are listed or eligible for listing in NRHP are provided above in Section 3.5, Table 3-15. Only one NRHP-listed resource, the Albany Municipal Airport Historic District, exists within the project area (Figure 3.6-1). An additional 23 resources are potentially eligible for listing in the NRHP or listed as meeting the age and integrity requirements for NHRP listing in the Oregon Historic Sites Database (Figure 3.6-1).

This page intentionally left blank.

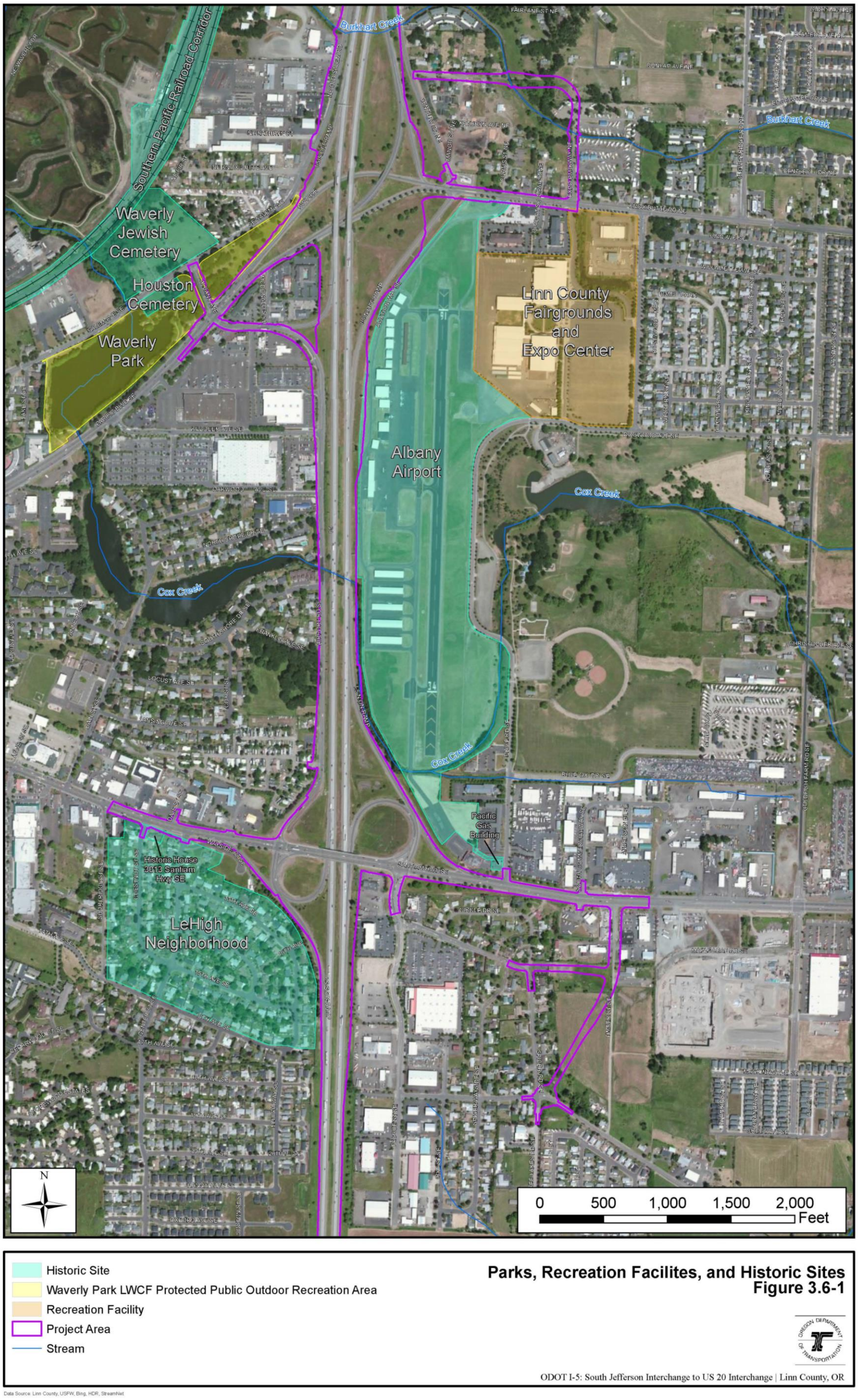


Figure 3.6-1: Parks, Recreational Facilities and Historic Sites

This page intentionally left blank.

3.6.2 Section 4(f) Resource Impacts

As noted in Section 3.6.1 above, Waverly Park is a property that is protected under Section 4(f) of the U.S. Department of Transportation Act of 1966. How the requirements of this law pertain to Waverly Park and the anticipated effects of the No Build and Build Alternatives are discussed below. Potential impacts to Section 4(f) resources were evaluated in terms of features of the resource that might be used or converted by the project or substantially impaired through proximity impacts.

3.6.2.1 Direct Impacts

Potential impacts of the Build Alternative resulting from the Collector Distributor System and Auxiliary Lanes design options would generally be the same. Therefore, no further discussion of differences between impacts is included.

No Build Alternative

Under the No Build Alternative, improvements would not be constructed and would therefore not result in "use," temporary occupancy, or "constructive use" of any 4(f) resources.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to Waverly Park, a Section 4(f) resource.

Temporary Impacts

Construction of roadway improvements at the Knox Butte Interchange would result in temporary noise and visual impacts to Waverly Park. However, these temporary impacts are unlikely to cause a substantial impairment, or "constructive use" as defined by Section 4(f) of Waverly Park. Construction work could also cause temporary noise and visual disturbances to historic resources that are considered Section 4(f) resources, but would not adversely affect those resources; therefore, no use of historic 4(f) resources would result from temporary construction impacts. These impacts would be minimized through the implementation of construction BMPs, as discussed in Section 3.6.3.

Permanent Impacts

Waverly Park is the only Section 4(f) resource that would be permanently impacted by the project. Improvements at the Knox Butte Interchange would impact about 1.1 acre of Waverly Park property; impacts would be limited to areas immediately adjacent to Albany Avenue SE and Pacific Boulevard SE/OR 99E, which are currently providing a path to other areas of the park, parking, and greenspace.

Impacts to Waverly Park would constitute a "use" of park land as defined under Section 4(f) as it would permanently convert portions of the park to a transportation use (i.e., Albany Avenue SE and Pacific Boulevard SE/OR 99E). The use would occur along the margins of the park, and impacted park facilities, including lighting and a public toilet, could be relocated nearby. Therefore, it would not affect or change the overall use of the park. In addition, ODOT will evaluate methods to minimize disturbance associated with the Build Alternative as part of the final design process.

The Build Alternative would have no adverse effects to historic properties that are protected under Section 4(f); therefore, use of historic Section 4(f) resources would be *de minimis* per the Section 4(f) regulations (23 CFR 774) since the use would not adversely affect the activities, features, and attributes that qualify the property for protection under Section 4(f). The Oregon SHPO concurred with FHWA and ODOT's findings on November 20, 2014 that the project would have no adverse effect on historic Section 4(f) resources (see Appendix).

3.6.3 Minimization, Avoidance, and Mitigation Measures

Although impacts of the proposed action to Waverly Park would be *de minimis*, ODOT would take the following steps to reduce impacts to Waverly Park as much as is practicable:

- During detailed design of specific phases that would potentially affect Waverly Park, ODOT will identify and consider design refinements that would avoid or minimize, to the extent practicable, any impacts on Waverly Park. ODOT will coordinate with the City of Albany Parks & Recreation Department during design and consider their input on refinements to avoid or minimize park impacts.
- As part of ongoing public outreach during design and construction, ODOT will provide information updates on the status of the design and construction processes and provide opportunities for park user input into design and construction plans.

3.6.4 Indirect Impacts

No indirect impacts are anticipated with the Build Alternative.

3.6.5 Cumulative Impacts

No cumulative impacts are anticipated with the Build Alternative.

3.6.6 Conclusion

Temporary construction-related impacts would be short-term and temporary in nature and minimized to the extent practicable through standard construction BMPs and minimization measures. Therefore, temporary impacts would not constitute a substantial impairment or "constructive use" of Waverly Park.

The Build Alternative would result in permanent impacts to Waverly Park, which would be a use of a Section 4(f) resource. The use would not prevent or greatly change any of the current uses or facilities at Waverly Park and is therefore considered to be *de minimis*. Effects on historic sites are also *de minimis* use under Section 4(f).

3.7 Section 6(f)(3) of the Land and Water Conservation Fund Act

Section 6(f)(3) of the Land and Water Conservation Fund (LWCF) Act addresses the protection and conversion requirements of public outdoor recreation property that was acquired or developed with grant money from LWCF. Section 6(f)(3) prohibits converting property acquired or developed with these grants to a non-recreational purpose without the approval of the U.S. Department of the Interior's NPS. This section describes the resources in the project area that are protected under the provisions of Section 6(f)(3), and the potential effects of the proposed action on those properties.

3.7.1 Section 6(f)(3) Process and Resources

In order to identify Section 6(f)(3) resources within the project area, information was gathered from a variety of sources including OPRD, NPS, USFWS, NMFS, BLM, ODFW, Linn County, and the City of Albany. Field observations and GIS data were also used to gather information.

Section 6(f)(3) protects public outdoor recreation sites and facilities that have been purchased or improved with LWCF funds from being converted to other uses. Any conversions or temporary non-conforming uses of LWCF-assisted properties must follow the procedures established by Section 6(f)(3) of the LWCF Act, and must be approved by NPS through OPRD via the local or State jurisdiction proposing the potential conversion.

LWCF grant funds were used by the City of Albany to develop some facilities within Waverly Park. It is the only Section 6(f)(3) resource within the project area and is shown in Figure 3.6-1. Waverly Park is a 19.5-acre City of Albany park located between Salem Avenue SE (on the west) and Oregon Highway 99 (on the east). Waverly Lake occupies a vast majority of the park. Waverly Park offers barbecue grills, picnic tables, paths and trails, restrooms, fishing, paddleboat rentals, and greenspace. The OPRD verified that the City of Albany received LWCF grant assistance for Waverly Park, and the boundary of protection extends to the entire area within the park boundaries.

For the proposed project, the level of design of the Build Alternative and design options is not sufficient to proceed with legal descriptions, mapping, appraisal, and identification of replacement property. Once agreement between the parties is reached, a sufficient level of design would be prepared to identify the size of the conversion. Also, legal descriptions, maps, and appraisals on the converted property and proposed replacement property will be prepared and a conversion request will be prepared for NPS approval (on behalf of the local jurisdiction).

3.7.2 Section 6(f)(3) Resource Impacts

As noted in Section 3.7.1 above, Waverly Park is a property that is protected under Section 6(f)(3) of the LWCF Act. How the requirements of this law pertain to Waverly Park and the anticipated effects of the No Build and Build Alternatives are discussed below. Potential impacts to Waverly Park were evaluated in terms of features of the resource that might be used or converted by the project or substantially impaired through proximity impacts.

3.7.2.1 Direct Impacts

Potential impacts of the Build Alternative resulting from the Collector Distributor System and Auxiliary Lanes design options would generally be the same. Therefore no further discussion of differences between impacts is included.

No Build Alternative

Under the No Build Alternative, improvements would not be constructed and would therefore not result in any Section 6(f)(3)-related conversions of use or temporary non-conforming uses of Waverly Park, a LWCF-protected property.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to Waverly Park.

Temporary Impacts

Construction of roadway improvements at the Knox Butte Interchange would result in temporary noise and visual impacts to Waverly Park associated with vegetation removal and adjacent construction activities. These impacts would be minimized through the implementation of construction BMPs, as discussed in Section 3.6.3. If temporary construction impacts to Waverly Park (outside the area of the park that would be permanently converted to non-recreation use) last more than 180 days, those impacts may be considered conversion, and would increase the overall size of the conversion (see discussion of permanent impacts below).

Permanent Impacts

The Build Alternative would result in a partial conversion of Waverly Park to a use other than public outdoor recreation. The Build Alternative would impact about 1.1 acre of the 19.5-acre Waverly Park, and the park would continue to serve the same functions with the same overall facilities and amenities as before project construction. The converted land would be relatively narrow strips of park greenspace along Oregon Highway 99E, on the east side of the park, and Albany Avenue, where it crosses the park on a berm. The effect of the conversion on the park and park users would be loss of existing greenspace and modification to the under-path connection, underneath Albany Avenue. The tunnel under Albany Avenue would need to be extended, but it would not affect passage from

one side of the park to the other. Overall, uses and users of the park would not be affected once construction is completed and adjacent areas were restored and landscaped. ODOT would explore opportunities to minimize the area affected by the project as part of final design.

Under the Build Alternative, ODOT would continue to coordinate with the City of Albany regarding the anticipated conversion[4], and the City of Albany would identify suitable replacement property, in coordination with OPRD and NPS. After the FHWA NEPA process is complete and when funding is available, and project elements involving conversion of park property are well-defined, ODOT in coordination with the City of Albany would follow the steps required per 36 CFR 59 to convert and replace the acquired park property. These steps include surveys, legal descriptions, and appraisals of the conversion and replacement properties; a general concept plan; NPS NEPA documentation; and a revised Section 6(f) boundary map. These documents would be provided to OPRD for review and approval and then sent to NPS for approval and transmittal of LWCF agreement amendment to OPRD. Then ODOT would be able to acquire and transfer replacement property to the City of Albany.

3.7.3 Minimization, Avoidance, and Mitigation Measures

Measures to reduce impacts to Waverly Park could include:

- Implementing design refinements during project design phases to minimize, to the extent practicable, the impact on Waverly Park. Design elements could include the use of walls or steeper slopes to minimize slope encroachment on parkland.
- Replanting vegetation removed during construction
- Restoring facilities (such as paths) adjacent to affected areas
- Providing public information to explain the design and construction process and incorporating park user input into construction and restoration plans
- Shifting improvements more to one side (i.e., the east)
- Prohibit construction staging in the park

3.7.4 Indirect Impacts

No indirect impacts are anticipated with the Build Alternative.

3.7.5 Cumulative Impacts

No cumulative impacts are anticipated with the Build Alternative.

3.7.6 Conclusion

Temporary construction-related impacts would be short-term and temporary in nature and minimized to the extent practicable through standard construction BMPs and minimization measures. Therefore, temporary impacts are not anticipated to constitute a non-conforming use outside of the areas that would likely be permanently converted.

The Build Alternative would result in permanent impacts to Waverly Park, which would be a conversion of a Section 6(f)(3) resource. The use would not prevent or greatly change any of the current uses or facilities at Waverly Park. The conversion of about 1.1 acre of Waverly Park for non-outdoor recreation purposes would require that replacement property be approved per 36 CFR 59.

[4] The design allows for an estimate of the impact area but is not sufficiently detailed to conclusively determine the exact amount of land that would be converted, which is the basis for appraisal and replacement property identification.

3.8 Noise

Noise is commonly defined as loud, unwanted, or unexpected sound that disrupts normal human activities or diminishes the quality of the human environment. Audible noise is measured in decibels (dB) on the A-weighted scale. The A-weighted dB scale (dBA) describes sound that corresponds to human perception.

3.8.1 Relevant Laws and Regulations

3.8.1.1 Federal Highway Administration and Oregon Department of Transportation

A project noise technical report (*I-5: South Jefferson to US 20 Final Noise Technical Report*, April 2014, HDR) was prepared to meet the requirements of the FHWA CFR, Title 23, Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise,* and follows the guidance contained in the ODOT *Noise Manual* (July 2011). The ODOT *Noise Manual* states that noise studies must be prepared for all Federal-aid highway construction projects that involve constructing new highways or reconstructing existing highways by significantly changing either the horizontal or vertical alignment, or by increasing the number of through travel lanes. Projects that include one or more of these elements are known as Type I projects. The I-5 South Jefferson to US 20 project is a Type I project because it includes all three of these elements. All Federal-aid highway noise analyses must be prepared in conformance with 23 CFR 772.

Pursuant to 23 CFR 772, noise impacts are considered to occur when traffic noise levels approach or exceed the FHWA noise abatement criteria (NAC) for specific land use types (as shown in Table 3-16), or when the predicted traffic noise levels substantially exceed the existing noise levels. ODOT is responsible for implementing the FHWA regulations in Oregon, and considers a traffic noise impact to occur if predicted noise levels are 2 dBA less than the FHWA criteria. This accounts for the 2-dBA difference between the Federal NAC and the State NAAC shown in Table 3-16: Noise Impact Guidelines by Land Use. ODOT considers a 10-dBA increase over existing noise levels to be a substantial noise impact. The NAAC are applied to the peak noise impact hour.

Table 3-16: Noise Impact Guidelines by Land Use (L_{eq} – dBA)

Land Use - Primary Activity Category	Activity Category Leq(h)[a]		Evaluation Location	Land Use Activity Description
	FHWA Noise Abatement Criteria	ODOT Noise Abatement Approach Criteria[b]		
A	57	55	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where preserving those qualities is essential if the area is to continue to serve its intended purpose.
B[c]	67	65	Exterior	Residential.
C[c]	67	65	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	50	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[c]	72	70	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	-	-	-	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities water resources, water treatment, electrical), and warehousing.
G	-	-	-	Undeveloped lands that are not permitted.

[a] *The $L_{eq(h)}$ Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.*
[b] *Oregon Department of Transportation noise abatement "approach" criteria (or Noise Abatement Approach Criteria).*
[c] *Includes undeveloped lands permitted for this activity category.*

3.8.1.2 National Environmental Policy Act and 23 CFR 772

The National Environmental Policy Act of 1969 provides a regulatory framework that promotes the general welfare and fosters a healthy environment for noise considerations. Regulation 23 CFR 772 and ODOT's *Noise Manual* provide the basis for analyzing and abating highway traffic noise impacts in Oregon.

For highway transportation projects with FHWA involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts.

3.8.1.3 Oregon Department of Environmental Quality Noise Policy

The Oregon Department of Environmental Quality (DEQ) Chapter 340 Division 35 sets allowable noise levels for individual vehicles and for industrial and commercial uses. Maximum allowable noise levels for in-use vehicles in Oregon are determined by vehicle type, operating conditions, and model year.

3.8.1.4 Local Noise Policy

Linn County, the City of Albany, and the City of Millersburg do not have noise ordinances for roadway noise or limits on construction noise periods or sound levels.

3.8.1.5 Project Noise Abatement Requirements

Noise mitigation may be recommended for properties predicted to meet or exceed the ODOT NAAC under the future Build condition, or that are predicted to experience substantial increases in noise levels. Noise abatement measures must be considered for those developments that existed, or were permitted, prior to the date of public knowledge of the project, and which are predicted to experience noise impacts.

FHWA and ODOT state that, at a minimum, noise abatement in the form of a noise barrier shall be considered. The ODOT *Noise Manual* contains criteria for both feasibility and reasonableness to be used in analyzing noise abatement. Feasibility (or constructability) of an abatement measure includes acoustical and engineering factors. For abatement to be feasible, ODOT requires that a simple majority of impacted receptors achieve at least a 5-dBA reduction in noise levels.

ODOT also considers engineering factors such as barrier height, safety, topography, drainage, utilities, and access issues when determining feasibility. Abatement must be able to be constructed using the American Association of State Highway Transportation Officials (AASHTO) Green Book (AASHTO, 2004).

In assessing the reasonableness of noise abatement, in order to meet minimum federal requirements, ODOT requires that a simple majority of residents and property owners that benefit from the proposed abatement vote their approval, that the cost-effectiveness criteria of $25,000 per benefited property is met, and that the noise reduction design goal of 7 dBA of for at least one property is achieved. All three criteria must be met to satisfy the reasonableness requirement.

Noise walls are generally unable to achieve effective noise reductions when interrupted by driveways. Walls for single, isolated properties are not usually able to meet the ODOT minimum insertion loss goals while also meeting the cost-effectiveness criteria. In addition, noise mitigation is only provided for areas where frequent human use occurs and where a lowered noise level would be a benefit. Areas where noise mitigation is not normally recommended include areas such as parking lots, storage areas, industrial areas, or areas where people might pass through on a temporary basis but would be unlikely to spend significant amounts of time.

3.8.2 Methods

Traffic noise levels for this project were calculated using FHWA's Traffic Noise Model (TNM® Version 2.5). TNM computes highway traffic noise at nearby receivers and aids in the design of mitigation measures. Inputs to the model include three-dimensional descriptions of road alignments, vehicle volumes in defined vehicle classes, vehicle speeds, traffic control devices, and data on the characteristics and locations of specific ground types, topographical features, and other features likely to influence the propagation of vehicle noise between the roadway and the receiver.

The TNM model's ability to accurately model site conditions was validated by measuring noise levels at 15 locations within the project area, and comparing the measurements to modeled output. The results of the model validation show that modeled and measured noise levels are within the agreement criteria of +/- 3 dBA. The tabulated comparison data are presented in Appendix, Table 1, and the measurement locations are shown along with the model prediction sites in Figures D1 – D40 (Appendix). Additional detailed analysis information is available in the I-5 South Jefferson to US 20: *Final Noise Technical Report*, available upon request from ODOT.

Existing conditions (2008), and 2035 Build and No-Build alternatives were modeled. Noise levels for the future Build condition were modeled for the peak traffic hour and the peak truck hour to establish the future peak noise impact hour. The results of the peak traffic hour and the peak truck hour modeling showed that the peak truck hour traffic data resulted in higher noise levels (peak noise hour).

3.8.3 Existing Conditions

Existing condition (2008) peak noise hour levels were modeled at 247 noise prediction sites (receivers), representing outdoor use areas (i.e., receptors) at 417 residential properties, one commercial properties, one cemetery, one church, one hotel, one motocross track facility, one campground recreational area, and three parks. The figures in Appendix show the locations of receivers used in the noise analysis. Table 3 in Appendix shows the existing noise levels modeled at each receiver. Sound levels were predicted at 5 feet above ground level. Due to the large number of receivers used in the analysis, the receivers were divided into geographic blocks to help break up the project area into smaller areas that are easier to discuss. Receivers were divided into five different segments of the project area:

- Segment A (Receivers A1 to A16). Segment A starts at the northern limits of the project, at the South Jefferson Interchange, and extends south to the Viewcrest Interchange.
- Segment B (Receivers B1 to B32). Segment B starts at the Viewcrest Interchange and extends south to the intersection of Old Salem Road and Century Drive.
- Segment C (Receivers C1 to C77). Segment C starts at the intersection of Old Salem Road and Century Drive and extends south to Knox Butte Road.
- Segment D (Receivers D1 to D46). Segment D starts at Knox Butte Road and extends south to US 20.
- Segment E (Receivers E1 to E70). Segment E starts at US 20 and extends south to the southern project limits, approximately 4,000 feet south of US 20.

The table in Appendix shows the predicted noise level for each receiver under the existing conditions. Existing noise levels (in dBA) in the project area range from:

- 60 dBA to 72 dBA at receivers located in Project Segment A
- 54 dBA to 75 dBA at receivers located in Project Segment B
- 53 dBA to 77 dBA at receivers located in Project Segment C
- 54 dBA to 74 dBA at receivers located in Project Segment D
- 53 dBA to 75 dBA at receivers located in Project Segment E

Overall, the existing noise environment is dominated by traffic noise, especially at first-row properties adjacent to the I-5. Exceedances of the NAAC under existing conditions occur throughout the project corridor. Existing exceedances of the NAAC (i.e., where noise levels exceed ODOT NAAC) are predicted to occur at 226 residential properties, 1 cemetery, 1 commercial property, 1 recreational facility (motocross track), and 2 parks. Freight rail noise in the project area is not considered to have a meaningful effect on average existing noise levels at receivers, with the exception of one receiver (A1), which is located within approximately 100 feet of a rail line.

3.8.4 Noise Impacts

Future 2035 noise levels under the No Build and Build Alternatives were modeled at the same 247 receivers used to estimate existing conditions. Table 3 in Appendix shows the predicted future noise level for each receiver under both the No Build and Build Alternatives (including both the Collector Distributor System and Auxiliary Lanes design options).

3.8.4.1 Direct Impacts

No Build Alternative

Exceedances of the NAAC under the No Build Alternative are predicted throughout the project corridor, particularly at first-row properties adjacent to I-5. Future No Build Alternative noise levels (in dBA) would range from:

- 62 dBA to 74 dBA at receivers located in Project Segment A
- 55 dBA to 77 dBA at receivers located in Project Segment B
- 55 dBA to 79 dBA at receivers located in Project Segment C
- 55 dBA to 76 dBA at receivers located in Project Segment D
- 54 dBA to 77 dBA at receivers located in Project Segment E

Overall, 266 residential properties, one cemetery, one church, one commercial property, one recreational facility (motocross track), and two parks are predicted to have noise levels in exceedance of the ODOT NAAC.

Build Alternative

The Build Alternative would result in both temporary and permanent noise impacts.

Temporary Impacts

Construction noise for the project would result from normal construction activities under the Build Alternative. Noise levels for these activities can be expected to range from approximately 70 to 100 dBA at sites 50 feet from the activities (see Table 3-17). These noise levels, although temporary in nature, can be annoying. High noise levels during construction are short term in nature, and ODOT specifications (2008) would be followed to help minimize high noise levels during construction.

Table 3-17: Typical Construction Noise Levels (dBA)

Types of Activity	Type of Equipment	Range of Noise Levels at 50 Feet (dBA)
Materials Handling	Concrete mixer	75–87
	Concrete pump	81–83
	Crane (movable)	76–87
	Crane (derrick)	86–88
Stationary Equipment	Pump	69–71
	Generator	71–82
	Compressor	74–87
Impact Equipment	Pneumatic wrench	83–88
	Rock drill	81–98
Land Clearing	Bulldozer	77–96
	Dump truck	82–94
Grading	Scraper	80–93
	Bulldozer	77–96
Paving	Paver	86–88
	Dump truck	82–94

Source: U. S. Environmental Protection Agency, 1971

Permanent Impacts

Reductions in noise levels occur where connection changes or roadway alignments move traffic away from receptors. Increases in traffic noise occur where local system improvements increase traffic volumes adjacent to receptors; where roadway alignments are moved closer to receptors; or where new roadways are constructed.

Future Build Alternative noise levels (in dBA) would range from:

- 62 dBA to 74 dBA at receivers located in Project Segment A
- 54 dBA to 77 dBA at receivers located in Project Segment B
- 54 dBA to 78 dBA at receivers located in Project Segment C
- 56 dBA to 75 dBA at receivers located in Project Segment D
- 55 dBA to 77 dBA at receivers located in Project Segment E

The Build Alternative would result in approximately 262 to 263 noise impacts (i.e., where noise levels exceed ODOT NAAC), depending on the design option. Noise level changes over existing peak noise hour levels under the future Build Alternative range from a reduction of 3 dBA to an increase of 9 dBA. No substantial noise impacts (a 10-dBA increase over existing noise levels) have been identified for the project.

Predicted noise levels under each of the Build Alternative design options are typically very similar, varying by 0 to 1 dBA in the majority of cases because the overall footprint of each design option does not vary substantially. The maximum difference between Build Alternative design options noise levels predicted is 3 dBA.

Table 3-18 presents a summary of predicted NAAC exceedances by land use Activity Category (as presented in Table 3-16).

Table 3-18: Noise Impact Summary

Condition/Alternative	Activity Category B[a] Exceedances	Activity Category C[a] Exceedances	Activity Category E[b] Exceedances	Total Number of NAAC Exceedances[c]
Existing Condition	225	4	1	231
No Build Alternative	266	5	1	272
Build Alternative/Collector Distributor System Road Design Option	256	5	1	262
Build Alternative/Auxiliary Lanes Design Option	257	5	1	263

[a] Includes active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
[b] Includes hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
[c] Noise levels are predicted only at receivers that have areas where frequent human use occurs and where a lowered noise level would be a benefit.

3.8.5 Minimization, Avoidance, and Mitigation Measures

3.8.5.1 Construction Noise Mitigation

The following construction noise abatement measures, if applicable, may be included in the project specifications:

- No construction shall be performed within 1,000 feet of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 10 p.m. and 6 a.m. on other days, without the approval of the ODOT Construction Project Manager.
- All equipment used shall have sound-control devices no less effective than those provided on the original equipment. No equipment shall have unmuffled exhaust.
- All equipment shall comply with pertinent equipment noise standards of the U.S. Environmental Protection Agency (EPA).
- No pile-driving operations shall be performed within 3,000 feet of an occupied dwelling unit on Sundays, legal holidays, or between the hours of 8 p.m. and 8 a.m. on other days, without the approval of the ODOT Construction Project Manager.
- The noise from rock crushing or screening operations performed within 3,000 feet of any occupied dwelling shall be mitigated by strategic placement of material stockpiles between the operation and the affected dwelling or by other means approved by the ODOT Construction Project Manager.

If a specific noise impact complaint occurs during the construction of the project, one or more of the following noise mitigation measures may be required at the Contractor's expense as directed by the ODOT Construction Project Manager:

- Locate stationary construction equipment as far from nearby noise-sensitive properties as feasible.
- Shut off idling equipment.
- Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.
- Notify nearby residents whenever extremely noisy work will be occurring.
- Install temporary or portable acoustic barriers around stationary construction noise sources.
- Operate electrically powered equipment using line voltage power or solar power.

3.8.5.2 Information for Local Officials

One of the requirements of the ODOT Noise Manual is to supply information to local governments on existing and future noise levels so that the information can be used in guiding local land use decisions. The City of Millersburg, the City of Albany, and Linn County should consider the information in this report regarding traffic noise levels within the project area.

Table 3-17 provides information about noise levels that can be used to determine future land use suitability should redevelopment of existing land uses occur. Some land uses may not be compatible with the projected noise environment in the project area unless noise is considered in the plans and designs for development of the properties. The FHWA and ODOT are not responsible for providing highway traffic noise abatement for development permitted after the project has been approved by the FHWA.

3.8.6 Noise Contours for Activity Category G Land Uses

Some parcels within the project study area are currently undeveloped (Activity Category G). To provide information to local officials on the suitability of these parcels for different types of future land uses, the distance from the centerline

of major project area roadways to the impact threshold for Activity Category B, C, and E land uses (as defined in Table 3-19) under the 2035 Build condition were predicted using a simplified two-dimensional TNM model run. The simplified TNM runs conservatively assume the roadway is a straight line and that there are no topographical effects to traffic noise propagation. Table 3-19 presents the distances to the NAAC thresholds.

It should be noted that the distances of noise impact contours for different land uses are guidelines only. More detailed noise analysis should be performed for specific future proposed developments.

Table 3-19: Predicted Distances to Activity Category B, C, and E Noise Impact Thresholds

Roadway	Distance to Residential and Public Use (Activity Category B and C) NAAC Threshold (feet)	Distance to Commercial (Activity Category E) NAAC Threshold (feet)
I-5: South Jefferson to Millersburg Interchange	550	380
I-5: Millersburg Interchange to Knox Butte Interchange	555	385
I-5: Knox Butte Interchange to US 20 Interchange	505	345
I-5: South of US 20 Interchange	535	365
Knox Butte Road – East of I-5	120	45
Knox Butte Road (OR 99E) – West of I-5	165	65
US 20 – East of I-5	215	90
US 20 – West of I-5	230	95

Note that the Activity Category B and C NAAC is 65 dBA; and the Activity Category E NAAC is 70 dBA.

The distances to the Land Use Category B and C NAAC contours were calculated and range from 505 to 555 feet from the centerline of I-5 through the project area. The distances to the Land Use Category B and C NAAC contours from the centerline of major project area arterial roadways ranged from 120 to 230 feet; this means that new residential or public use developments located within these distances would be traffic noise-impacted.

3.8.6.1 Noise Abatement for Highway Noise

As discussed in Section 3.8.3.5, noise mitigation must be considered and evaluated for feasibility and reasonableness for properties predicted to meet or exceed the ODOT NAAC, or that are predicted to experience substantial increases in noise levels. ODOT does not have an FHWA-approved Type II program (i.e., a non-federally funded Retrofit Program that would construct noise mitigation in the absence of a broader roadway improvement project that meets the Type I project criteria) and so would not provide noise abatement for highway noise under a No Build Alternative.

Noise barriers (walls) can be quite effective in reducing highway traffic noise for receptors within approximately 200 feet of a highway; however, it is worthwhile noting that noise barriers do have limitations. For a noise barrier to work, it must be high enough and long enough to block the view of a road. A noise barrier can achieve a 5-dBA noise level reduction when it is tall enough to break the line-of-sight from the highway to the receiver and it can achieve an approximately 1-dBA additional noise level reduction for each 2 feet of height after it breaks the line of sight (with a maximum theoretical total reduction of 20 dBA). To be conservatively protective, a general rule is that the length of the barrier should extend 4 times as far in each direction as the distance from the receiver to the barrier (FHWA, 2011b).

Areas where noise mitigation is not normally recommended include areas such as parking lots, storage areas, industrial areas, or areas where people might pass through on a temporary basis but where they would be unlikely to spend significant amounts of time. Barriers were considered on alignments with existing ODOT right-of-way only.

Noise mitigation was considered and evaluated for feasibility and reasonableness for properties predicted to meet or exceed the ODOT NAAC, or that are predicted to experience substantial increases in noise levels under the Build Alternative. ODOT does not have an FHWA-approved Type II program and so would not provide noise abatement for highway noise under a No Build Alternative.

Noise barriers to mitigate traffic noise impacts were modeled in detail in nine locations, as shown in Figure 3.8-1 and Figure 3.8-2. Noise barrier modeling results are summarized in Table 2 of Appendix. Three of the barriers evaluated were found to meet ODOT's feasibility and reasonableness criteria. The approximate locations of these barriers and affected receivers are provided below:

- **Wall 5: East Albany Neighborhood - East of I-5 and north of Knox Butte Road**

  - **[Collector Distributor System] Receivers C6 through C9, C11, C13 through C15, C17 through C23, C26, C28 through C33, C35 through C56c, C57b through C59, and C78 (Appendix, Figures D17 through D26)**

  These receivers represent 95 noise-impacted individual single- and multi-family residential units located on the east side of I-5, between Scott Avenue NE and Knox Butte Road. A 6,160-foot-long, 14-foot-high barrier located between I-5 and Century Drive NE would result in noise reductions of between 1 and 10 dBA at receivers in this area. Eighty-nine receptors are predicted to be benefitted by a wall in this location, of which 82 are receptors predicted to be noise-impacted under the Build Alternative. Fifty-one receptors are predicted to receive a noise reduction of 7 dBA or more; and 19 noise-impacted receptors would not be benefitted (i.e., would receive less than a 5-dBA reduction as a result of the wall). Figure 3.8-1 below and Figures H17 through H26 in Appendix D show the barrier location.

  - **[Auxiliary Lanes Option]: Receivers C6 through C9, C11, C13 through C15, C17 through C23, C26, C28 through C32, C35, C36, C38 through C44, C46 through C48, C51 through C56c, C57b through C60, C62, C74 through C76, and C78 (Appendix, Figures D17 through D26**)

  These receivers represent 95 noise-impacted individual single- and multi-family residential units located on the east side of I-5, between Scott Avenue NE and Knox Butte Road. A 6,160-foot-long, 14-foot-high barrier in this location would result in noise reductions of between 0 and 10 dBA at receivers in this area. Eighty-one receptors are predicted to be benefitted by a wall in this location, of which 75 are receptors predicted to be noise-impacted under the Build Alternative. Twenty-three receptors are predicted to receive a noise reduction of 7 dBA or more; and 19 noise-impacted receptors would not be benefitted (i.e., would receive less than a 5-dBA reduction as a result of the wall). Figure 3.8-1 below and Figures D17 through D26 in Appendix show the barrier location.

- **Wall 7: Santiam Neighborhood-West of I-5 between Knox Butte and US 20 Interchanges**

  - **[Auxiliary Lanes Option Only] Receivers D14 through D25, and D27 through D39 (Appendix, Figures D29 through D31)**

  These receivers represent 50 noise-impacted single- and multi-family residences located west side of I-5 and Airport Road SE, between North Shore Drive SE and US 20. A 2,520-foot-long, 14-foot-high barrier located between I-5 and Airport Road SE would result in noise reductions of between 5 and 8 dBA at 17 receivers in this area. Twenty-nine receptors are predicted to be benefitted by a wall in this location; all are predicted to be noise-impacted under the Build Alternative. Seventeen receptors are predicted to receive a noise reduction of 7 dBA or more, and 21 noise-impacted receptors would not be benefitted (i.e., would receive less than a 5-dBA reduction as a result of the wall). Figure 3.8-1 below and Figures D29 through D31 in Appendix D show the barrier location.

A similar barrier to that evaluated under the Auxiliary Lane design option was not feasible under the Collector Distributor System design option of the Build Alternative because the footprint of I-5 is larger in this area and does not include space for a wall to be constructed. Future study and design refinement in later stages may result in a design that could incorporate a noise barrier and therefore the placement of a barrier should be reevaluated in the future if the Collector Distributor System design option is selected.

- **Wall 8: Santiam Neighborhood- West of I-5 and South of the US 20 Interchange**

  - **[Collector Distributor System and Auxiliary Lanes Option] Receivers E5 through E7, and E37 through E62 (D, Figures D34 and D38 through D41)**

  These receivers represent 72 noise-impacted single-family residences located on the west side of I-5, between US 20 and 22nd Avenue, to the south. A 4,080-foot-long, 12-foot-high barrier located between the I-5 southbound on-ramp and the residences to the west, and then farther south between I-5 SB and the residences would result in noise reductions of between 5 and 12 dBA in this area. Seventy-six receptors are predicted to be benefitted by a wall in this location, of which 71 are receptors predicted to be noise-impacted under the Build Alternative. Fifty-nine receptors are predicted to receive a noise reduction of 7 dBA or more; and one noise-impacted receptor would not be benefitted (i.e., would receive less than a 5-dBA reduction as a result of the wall). Figure 3.8-1 below and Figures D34 and D38 through D41 in Appendix show the barrier location.

The barriers locations evaluated are preliminary and final decisions about whether to include mitigation would be made during the final design phases of the project in compliance with the ODOT *Noise Manual* (July 2011).

3.8.6.2 Statement of Likelihood

Based on the noise analysis conducted for this project, ODOT intends to install highway traffic noise abatement measures in the form of barriers at the locations shown in Figure 3.8-1. The possibility of likely abatement measures is based upon preliminary design work. If during ODOT's final design process these conditions have substantially changed, the abatement measures might not be provided. A final decision of the installation of the abatement measure(s) will be made upon completion of the project's final design, a cost estimating process, and the public involvement process.

Noise Receptor
Potential Noise Barrier
Roads
Project Area

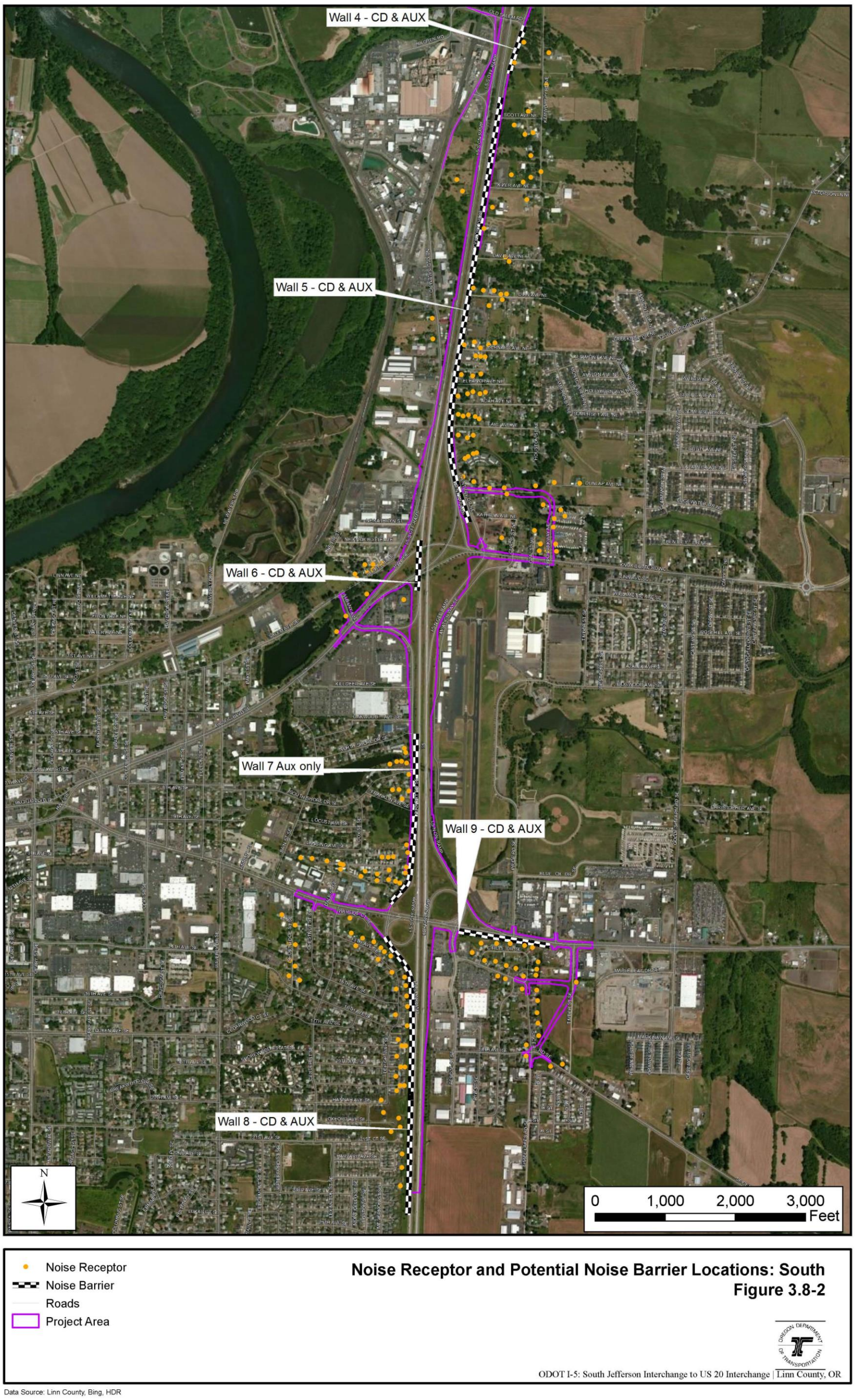
Noise Receptor and Potential Noise Barrier Locations: North
Figure 3.8-1

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County, Bing, HDR

Figure 3.8-1: Noise Receptors and Noise Walls-North

This page intentionally left blank.



Data Source: Linn County, Bing, HDR

Figure 3.8-2: Noise Receptors and Noise Walls-South

This page intentionally left blank.

3.8.7 Indirect Impacts

The traffic data used in the noise analysis were developed by traffic engineers using assumptions about levels of future development in the region and capture the effects of indirect or secondary effects that may result from the project.

3.8.8 Cumulative Impacts

The cumulative impact of the Build Alternative and future foreseeable actions would likely be that noise levels would increase due to increased traffic as a result of growth in the area. Since the traffic data used in the noise analysis included assumptions about levels of future development in the region, estimates of future noise levels already capture the cumulative impacts to noise.

3.8.9 Conclusion

Traffic-related noise would continue to increase with or without the project. The Build Alternative would cause between 32 and 33 additional exceedances of the NAAC over existing conditions. However, the Build Alternative would result in fewer noise level changes over existing peak hour noise levels when compared to the No Build Alternative. Temporary noise impacts during construction would be minimized through implementation of noise abatement measures. Based on a preliminary feasibility analysis, there is potential for noise barriers to mitigate for permanent noise impacts in some areas. Final noise barrier placement would be determined in the final design phases of the project and would be subject to public consent. With the noise abatement measures proposed, the Build Alternative is not anticipated to result in significant noise impacts.

3.9 Air Quality

Under the Clean Air Act (CAA), the EPA has established national ambient air quality standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), ozone, particulate matter (PM), lead, sulfur dioxide, and nitrogen dioxide. For each of the six criteria air pollutants, the NAAQS represent a maximum concentration above which adverse effects on human health may occur. When an area's air quality exceeds these standards, it is designated a non-attainment area.

In addition to the criteria air pollutants for which there are NAAQS, EPA also regulates air toxics. MSATs are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment.

3.9.1 Existing Conditions

The air quality analysis considered the area within the project limits, which lies within the air shed of Linn County. Linn County has no history of violations of the NAAQS and is an attainment area for all criteria pollutants; therefore, conformity regulations (40 CFR 93 and OAR 340-252) do not apply. This means that air quality in the area is generally good, and that exceedances of the NAAQS are very rare.

Data for existing ambient concentrations of NAAQS criteria pollutants in the vicinity of the project were obtained from the DEQ. The Oregon DEQ does not currently measure air pollutants in the vicinity of the project area; however, DEQ has monitored some criteria air pollutants in Albany in the past.

DEQ measured $PM_{2.5}$ in Albany between 2002 and 2004. No exceedances of the $PM_{2.5}$ NAAQS were recorded at these monitoring stations during these periods (DEQ, 2011), although it should be noted that the 24-hour $PM_{2.5}$ mean requires 3 years of data to calculate exceedances.

DEQ also measured PM_{10} (2009), CO (2002–2005), and ozone (2002–2011) in Salem. No exceedances of the PM_{10} or CO NAAQS were recorded during these periods.

Future transportation emissions are expected to be substantially reduced nationwide due to implementation of EPA's vehicle and fuel regulations.

3.9.2 Air Quality Impacts

Air quality impacts were qualitatively evaluated based on intersection operation data (LOS and v/c ratios) and average daily traffic volumes (see Section 3.1 traffic modeling methods and results). Average daily traffic volumes were combined with roadway lengths to develop estimates of vehicle miles of travel (VMT) within the project area to further compare and contrast pollutant emission potential. Estimates of VMT[5] and intersection operation data are provided for the planning horizon year (2035) under the Build and No Build alternatives. The air quality impacts of the project are discussed for criteria air pollutants (those for which there are NAAQS) and for MSATs.

3.9.2.1 Direct Impacts

No Build Alternative

Under the No Build Alternative, improvements to I-5, the Millersburg and Albany interchanges, and associated local system improvements would not be made. Since no construction activities would take place, air pollutant emissions or impacts from construction would not occur.

Under the No Build Alternative, signalized intersection operation is either generally equal to, or worse than, operation under the existing condition. This means that under the No Build Alternative, some intersections could experience higher levels of peak hour congestion, resulting in higher emissions of vehicle-related pollutants such as CO. While some intersection operation could be degraded, air quality in the project area is currently good and exceedances of the NAAQS are not likely under the No Build Alternative.

Build Alternative

The Build Alternative would result in temporary and permanent impacts to air quality.

Temporary Impacts

Construction activities could cause minor short-term increases in air pollutant emissions when specific project elements are being installed. The construction contractor will be required to comply with all local, State, and Federal regulations concerning air pollution abatement related to construction activities, and projects that require earthwork or otherwise have the potential to create fugitive dust are required to use BMPs to control dust. Contractors are required to comply with ODOT Standard Specifications (ODOT, 2008) Section 290.30, which provides measures for environmental protection, including air quality. Air pollution control measures include minimizing vehicle and equipment idling, implementing dust-control measures, and restricting burning.

The construction of the project elements are anticipated to occur over a substantial (20+ year) timeframe. Construction activities associated with discrete project elements will therefore be localized and relatively short term, and are not expected to cause significant air quality impacts.

[5] VMT is the sum of distances traveled by all motor vehicles in a specified system of highways for a given period of time.

Permanent Impacts

Under each Alternative, the amount of criteria air pollutants and MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. Under both of the Build Alternative design options; there would be an overall reduction in VMT and vehicle-related pollutant emissions compared to the No Build Alternative. Future project area VMT under the Build Alternative is predicted to be 3.5 percent to 3.7 percent lower than under the No Build Alternative, depending on the design option. Under the Build Alternative, signalized intersection LOS is either equal to, or better than, operation under the No Build Alternative, which would, in turn, contribute to reduced congestion and vehicle-related pollutant emissions.

Intersection LOS and VMT under each of the Build Alternative design options is nearly the same. Therefore, it is expected that there would be no appreciable difference in overall criteria pollutant and MSAT emissions between the Auxiliary Lanes and Collector Distributor System design options. Given the current attainment status of the project area, the national trend in grams of vehicle-related pollutant emissions per VMT, and the reduction in both VMT and congestion predicted as a result of the project, future concentrations of criteria pollutants associated with the project are expected to continue to be below the NAAQS.

3.9.3 Minimization, Avoidance, and Mitigation Measures

No long-term (operational) air quality impacts are anticipated as a result of the project; therefore, no mitigation is required.

Construction contractors are required to comply with Division 208 of OAR 340, which addresses visible emissions and nuisance requirements. Subsection 210 of OAR 340-208 places limits on fugitive dust that causes a nuisance or violates other regulations. Violations of the regulations can result in enforcement action and fines. The regulation provides a list of reasonable precautions to be taken to avoid dust emissions:

- Use of water or chemicals, where possible, for the control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land;
- Application of asphalt, oil, water, or other suitable chemicals on unpaved roads, materials stockpiles, and other surfaces that can create airborne dusts;
- Full or partial enclosure of materials stockpiles in cases where application of oil, water, or chemicals is not sufficient to prevent PM from becoming airborne;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- Adequate containment during sandblasting or other similar operations;
- When in motion, always covering open-bodied trucks transporting materials likely to become airborne;
- The prompt removal, from paved streets, of earth or other material that does or may become airborne.

Mitigation measures normally used for potential short-term construction impacts include BMPs for dust suppression. In addition, contractors are required to comply with ODOT standard specifications. Section 290 of the specifications has requirements for environmental protection, which include air pollution control measures. These control measures include vehicle and equipment idling limitations and are designed to minimize vehicle track-out and fugitive dust. These measures would be documented in the pollution control plan that the contractor is required to submit prior to the pre-construction conference. To reduce the impact of construction delays on traffic flow and resultant emissions, road or lane closures should be restricted to non-peak traffic periods when possible.

3.9.4 Indirect Impacts

The forecast traffic volumes used to analyze the air quality impacts of the project alternatives in Section 3.9.2 are based on the future expected land use and employment information for the project area. These analysis methodologies include expected traffic from development in the region and project area, and traffic-related air quality impacts shown in this report include expected development. Therefore, the indirect effects of the project alternatives on air quality have already been considered in the discussion of direct effects.

3.9.5 Cumulative Impacts

The forecast traffic volumes used to analyze the direct impacts to air quality include assumptions about future development and traffic conditions. Therefore, the cumulative impacts of the project alternatives on air quality have already been considered in the discussion of direct impacts.

3.9.6 Conclusion

The analysis presented in the sections above support the finding that significant air quality impacts would not result from the project. This finding is based upon the conclusion that the project would not cause or contribute to any new violations of any standard, increase the frequency or severity of any existing violation or any standard, or delay timely attainment of any TCM. In addition, the qualitative MSAT analysis concludes that project area MSAT emissions are expected to decrease in the future relative to existing conditions.

3.10 Visual Resources

Visual resources are physical features that make up the landscape. Factors defining the visual character of the project area include topography, vegetation, and types of development and land use. Potential impacts to visual resources are described by considering the proposed project within the context or setting of the project area.

The visual analysis in this section is based on the project viewshed. The project viewshed is the land surface area that includes all locations visible from the project and from which the project is visible. It is delineated by the surrounding topography, vegetation, and built environment. The following factors were considered when establishing the existing visual conditions of the project area and assessing the potential impacts of the proposed project:

- **Visual character:** Visual character is a qualitative assessment used to objectively describe existing visual resources. It involves identifying visual features within the landscape (landforms, water resources, vegetation, and constructed environment), identifying their pattern elements (forms, lines, textures, and colors), and describing the relationships between the pattern elements (dominance, scale, diversity, and continuity).
- **Visual quality:** Visual quality is a quantitative assessment of the value of the viewer's visual experience of existing conditions and project alternatives. The analysis results in visual quality scores that are used to compare project alternatives. It focuses on the relationships between visual features using evaluative criteria that have been shown to correlate well with public judgments of visual quality.
- **Viewer response:** Viewer response is the exposure and sensitivity of viewer groups to the visual environment. Exposure considers the combined effect of viewer location, the number of people exposed to a view, their frequency of exposure to a view, and duration of their view. This includes both roadway users and people in the surrounding area. Sensitivity is based on the values and opinions of the viewer groups.

3.10.1 Existing Conditions

Persons traveling through the project area have many different views of short duration as they head north or south through Albany or into Albany. Visible landmarks viewed from I-5 include Scravel Hill (north and east of the project area), the Albany Airport, large industrial structures near the interstate, and agriculture areas consisting of grassland

and buildings. North of the Knox Butte Interchange area, Century Drive closely parallels the eastside of I-5 and is visible to northbound travelers.

The surrounding views from I-5 are characterized by low rolling hills, agricultural grassland, industrial and manufacturing businesses, residential areas, and highly developed areas. Topography is relatively flat, with a general westward slope toward the Willamette River. Two distinct topographical features within the project's visual environment, Halle Butte and Scravel Hill, are located in the northeastern portion of the project area. The steepest slope in the project area is approximately 13 percent and is located east of the Viewcrest Interchange, on Scravel Hill.

Views of I-5 from the surrounding areas vary based on the viewer's location and proximity to the freeway system. For example, farmhouses in the northeastern project area may have relatively distant views of the freeway system, whereas some urban residential areas in the southern project area may have relatively close views of the freeway system.

Vegetation within the viewshed consists mainly of residential/industrial/street landscape species in the Albany-Millersburg area, agricultural crops and open fields in the Linn County area, and forest on Scravel Hill in the Linn County area. Existing roadside vegetation along the I-5 corridor is managed and consists primarily of non-native ornamental or invasive species. Six landscape units were identified within the project area to facilitate the visual impact analysis. Because the project area is generally flat and developed, landscape units are defined by predominant land use (Figure 3.10-1).

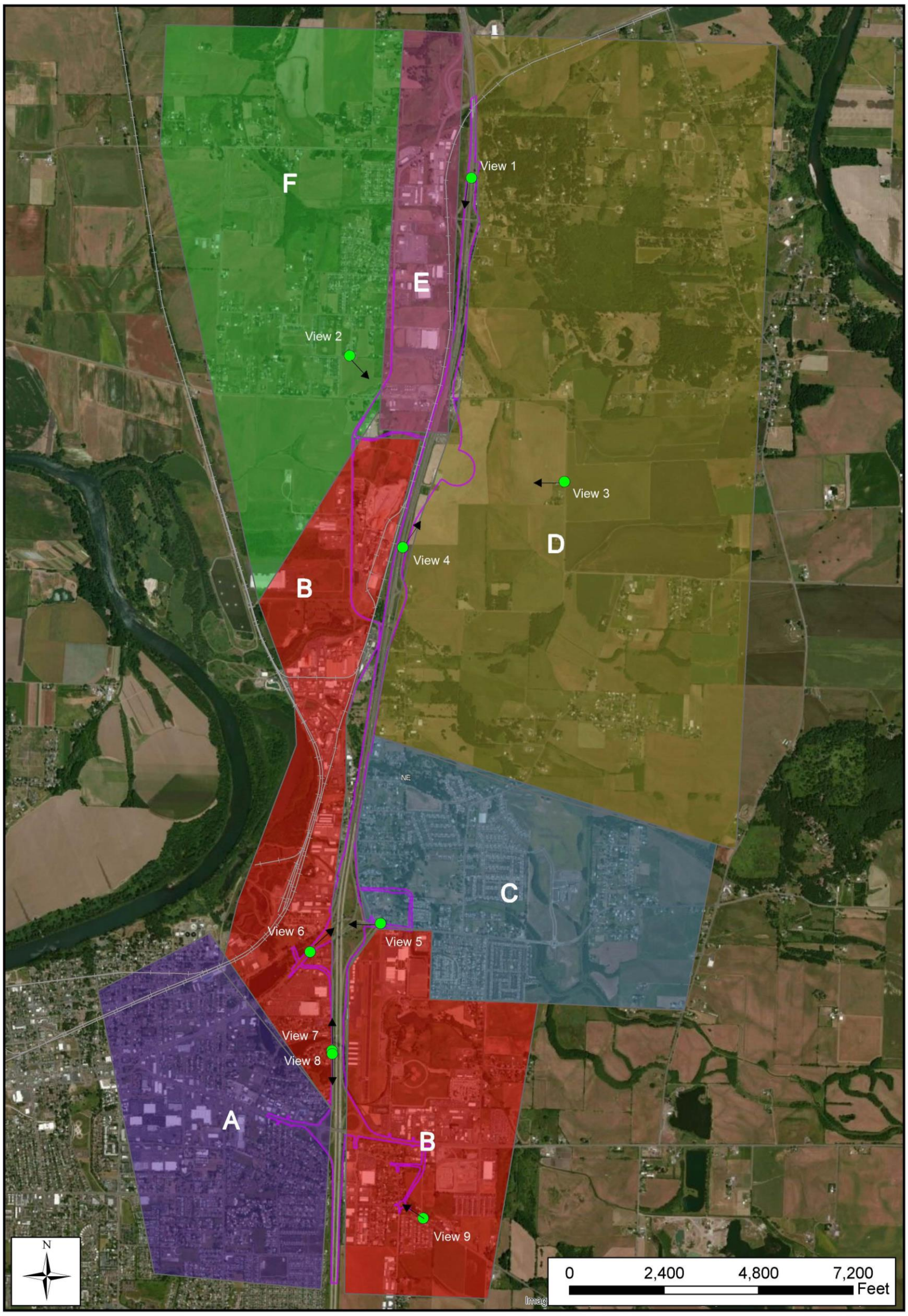
- **Landscape Unit A:** Residential Albany area west of the US 20 Interchange
- **Landscape Unit B:** Commercial/Industrial Albany area surrounding the Knox Butte Interchange
- **Landscape Unit C:** Residential Albany area northeast of the Knox Butte Interchange
- **Landscape Unit D:** Rural/Residential Linn County area east of I-5
- **Landscape Unit E:** Industrial Millersburg area west of I-5
- **Landscape Unit F:** Residential Millersburg area west of I-5

Nine key viewpoints were selected to represent the visual conditions of landscape units within the project area. From these viewpoints, the existing visual conditions and the potential future visual conditions of the project were evaluated and compared. Figure 3.10-1 shows the nine key viewpoint locations. These viewpoints were selected because they represent locations that would likely experience changes in visual characteristics as a result of the project.

Viewpoints 1 through 4 include locations that would be affected by the proposed new Millersburg Interchange improvements, and viewpoints 5 through 9 address Knox Butte and US 20 interchange improvements.

- **View 1:** View south toward the Viewcrest Overpass from the I-5 corridor
- **View 2:** View southeast toward I-5 from residence located at Terri Lane/Zuhlke Lane Intersection
- **View 3:** View west toward I-5 from residence located at 37710 Shady Bend Road
- **View 4:** View northeast toward the proposed Millersburg Overpass toward Scravel Hill
- **View 5:** View west toward I-5 from Knox Butte Interchange
- **View 6:** View east toward I-5 from Knox Butte Interchange
- **View 7:** View northeast toward I-5 from residence located at 710 Airport Road SE
- **View 8:** View southeast toward I-5 from residence located at 710 Airport Road SE

- **View 9:** View northwest toward proposed round-a-bout at intersection of Spicer Road, 3 Lakes Road, and 18th Street



Landscape Units

- A Residential Albany area west of the Santiam Interchange
- B Commercial/Industrial Albany area surrounding the Knox Butte Interchange
- C Residential Albany area northeast of the Knox Butte Interchange
- D Rural/Residential Linn County area east of I-5
- E Industrial Millersburg area west of I-5
- F Residential Millersburg area west of I-5

Key Viewpoints
Railway
Project Area

Landscape Unit and Key Viewpoints
Figure 3.10-1

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County, USFW, Bing, HDR, StreamNet

Figure 3.10-1: Landscape Units and Key Viewpoints

This page intentionally left blank.

3.10.1 Visual Resource Impacts

The following sections assess the potential impacts to visual resources in terms of changes to visual character, visual quality, and viewer response.

3.10.1.1 Direct Impacts

No Build Alternative

The No Build Alternative would not include any improvements to I-5 and the current interchanges, although routine maintenance would occur. The No Build Alternative would not result in any temporary or permanent impacts to visual resources because no construction or operation activities would occur.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to visual resources.

Temporary Impacts

Temporary visual impacts are expected from construction activities and include vegetation clearing, ground disturbance, safety equipment (signs, flaggers, cones, and lights), and construction equipment in areas where such activities normally would not occur. Temporary impacts would be minimized by implementing BMP measures, where possible; for example, vegetation removal and ground disturbance would be restored to pre-construction conditions following the completion of construction.

Permanent Impacts

There would be changes, both beneficial and adverse, to visual resources under the Build Alternative. Impacts would generally be the same under both of the Build Alternative design options. Additional project features would directly affect drivers on I-5 where there was previously no overpass or where there was an overpass before and it has been removed. These changes would alter the viewer's line of site. New project features would change the existing landscape for residents and disrupt views of agriculture areas that were previously undisturbed.

New interchanges and roadway improvements would not be noticeably visible from Views 2 and 3; therefore, the visual quality and character of these views are not expected to be substantially changed by the project. However, the Build Alternative would result in changes to the visual quality and character of Views 1, 4, 5, 6, 7, 8, and 9 as both described in the sections and illustrated in the figures below. Photographs of existing conditions for Views 7 and 8 are provided in the following section; Build Alternative view simulations are not included for these two views. Proposed views at these locations would include roadway features designed according to local jurisdiction standards (as shown in Figure 2.2-4 and Figure 2.2-5 in Chapter 1.0).

View 1: View south toward the Viewcrest Overpass from the I-5 corridor (Figure 3.10-2). The Build Alternative would result in moderate impacts to the visual quality and character of this viewpoint. I-5 would be widened to the west and east, and additional lanes on I-5 would be more prominent from this view. Existing vegetation in the middle ground would likely be removed for the widening and overpass removal. The removal of the overpass would open up the view to the surrounding area from I-5.

View 4: View northeast toward the proposed Millersburg Overpass toward Scravel Hill (Figure 3.10-3). The Build Alternative would have a moderate impact on visual character and quality for View 4 by creating a man-made structure in a traveler's view of Scravel Hill for a short duration. The proposed realignment of Century Drive would

cross the foreground and tie back into the current alignment to the north (right) of the current intersection of Berry Drive and Century Drive. New landscaping would be added between I-5 and Century Drive following construction.

View 5: View west toward I-5 from Knox Butte Interchange (Figure 3.10-4). The Build Alternative would result in minor impacts to the visual character and quality from View 5. The same changes to the visual character and quality of View 5 would occur with both the Collector Distributor System and Auxiliary Lanes options. Both design options would result in changes to the middle ground due to the proposed increase in interchange size and realignment of Knox Butte Road to a location closer to the viewpoint. Urban vegetation, including ornamental plantings and/or invasive plant species associated with managed right-of-way and disturbed undeveloped lots, is proposed to be removed for both design options to add new lanes and an overpass, as well as signal and sidewalk additions. New landscaping would be added to road embankments following construction.

View 6: View east toward I-5 from Knox Butte Interchange (Figure 3.10-5). The Build Alternative would result in moderate impacts to the visual character and quality from View 6. Both the Collector Distributor System and Auxiliary Lanes options would result in changes in the middle ground due to the larger interchange size and the realignment of Knox Butte Road to a location closer to the viewpoint. Removal of vegetation associated with urban habitat, including non-native ornamental trees, shrubs and grasses, and/or invasive species, would occur for both design options due to the addition of new lanes and an overpass. New landscaping would be added to road embankments following construction.

View 7: View northeast toward I-5 from residence located at 710 Airport Road SE (Figure 3.10-6). The Build Alternative would result in impacts to the visual quality and character of this viewpoint due to the close proximity of proposed modifications. Airport Road would be shifted west (i.e., toward the viewpoint) and additional lanes on I-5 would be more prominent from this view. Existing non-native ornamental and/or invasive vegetation in the middle ground would likely be removed. Impacts under both Build Alternative design options would be similar. Sidewalks and landscaping would be added, which may also impact the views in the area.

View 8: View southeast toward I-5 from residence located at 710 Airport Road SE (Figure 3.10-6). The Build Alternative would result in impacts to the visual quality and character of this viewpoint that would be similar to those for View 1. Airport Road would be shifted west (i.e., toward the viewpoint) and additional lanes on I-5 would be considerably more prominent from this view. Existing non-native ornamental and/or invasive vegetation in the middle ground would likely be removed. Impacts under both of the Build Alternative design options would be similar. Sidewalks and landscaping would be added, which may also impact the views in the area.

View 9: View northwest toward proposed round-a-bout at intersection of Spicer Road, 3 Lakes Road, and 18th Street (Figure 3.10-7). The Build Alternative would impact the existing visual character and quality of View 9. The location of the proposed round-a-bout is located where Spicer Drive, 18th Avenue, and 3 Lakes Road intersect. Pavement surface added to the round-a-bout would clear away invasive, unkempt vegetation and add new ornamental vegetation to this area. Sign removal and sidewalk additions may also impact the shoulders of the roadway.

View 1: Existing conditions looking south towards the Viewcrest Overpass from the I-5 corridor

View 1: Conceptual view under the Build Alternative

Existing I-5 Southbound Viewcrest Overpass and Visual Simulation of I-5 Southbound Viewcrest Overpass Removal

Visual Simulation: View 1
Figure 3.10-2

Project Area
Key Viewpoint
Viewpoint Direction

N

0 400 800
Feet

Oregon Department of Transportation

Figure 3.10-2: Visual Simulation: View 1

This page intentionally left blank.

View 4: Existing conditions looking northeast towards the proposed Millersburg overpass from the I-5 corridor

View 4: Conceptual view under the Build Alternative

Existing View I-5 North towards Scravel Hill and Visual Simulation of improvements

Visual Simulation: View 4
Figure 3.10-3

Project Area
Key Viewpoint
Viewpoint Direction

N

0 400 800
Feet

Oregon Department of Transportation

Figure 3.10-3: Visual Simulation: View 4

This page intentionally left blank.

View 5: Existing conditions looking west towards the I-5 from the Knox Butte Interchange

View 5: Conceptual view under the Build Alternative

Knox Butte Interchange West towards I-5 and Visual Simulation of improvements

Visual Simulation: View 5
Figure 3.10-4

Project Area
Key Viewpoint
Viewpoint Direction
N
0 400 800
Feet
Oregon Department of Transportation

Figure 3.10-4: Visual Simulation: View 5

This page intentionally left blank.

View 6: Existing conditions looking east towards the I-5 from the Knox Butte Interchange

View 6: Conceptual view under the Build Alternative

Knox Butte Interchange East towards I-5 and Visual Simulation of Improvements

Visual Simulation: View 6
Figure 3.10-5

Project Area
Key Viewpoint
Viewpoint Direction

N

0 400 800
Feet

Oregon Department of Transportation

Figure 3.10-5: Visual Simulation: View 6

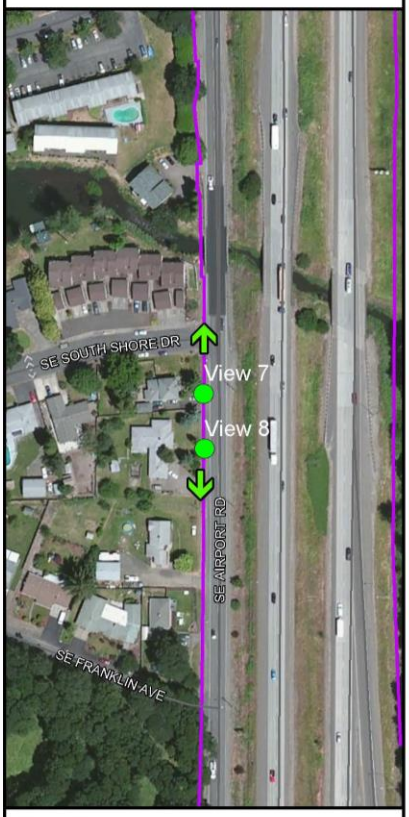
This page intentionally left blank.

View 7: Existing conditions (No Build Alternative) looking northeast towards I-5 from residence on Airport Road SE

View 8: Existing conditions (No Build Alternative) looking southeast towards I-5 from residence on Airport Road SE

Existing View toward I-5 from Airport Road SE

Visual Simulation: View 7 & 8 Figure 3.10-6



Project Area
Key Viewpoint
Viewpoint Direction
N
0 400 800
Feet
Oregon Department of Transportation

Figure 3.10-6: Views 7 and 8 (No Build Alternative)

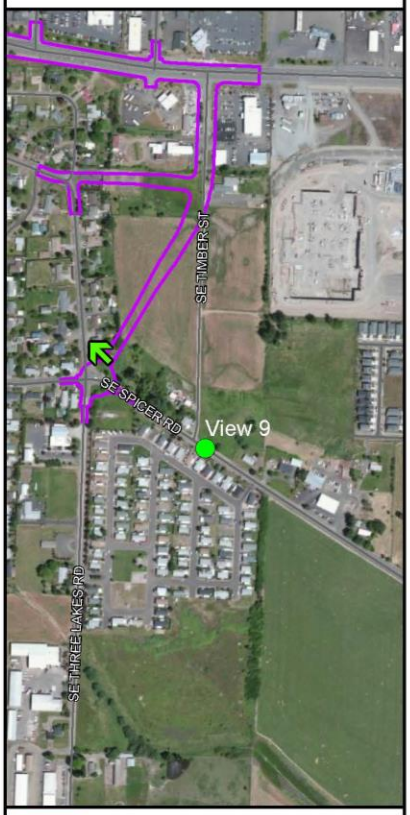
This page intentionally left blank.

View 9: Existing conditions looking northwest towards proposed round-a-bout where Spicer Drive, 18th Avenue, and 3 Lakes Road intersect

View 9: Conceptual view under the Build Alternative

Spicer Road and 3 Lakes Road Intersection and Visual Simulation of Improvements

Visual Simulation: View 9
Figure 3.10-7



Project Area
Key Viewpoint
Viewpoint Direction
N
0 400 800
Feet
Oregon Department of Transportation

Figure 3.10-7: Visual Simulation: View 9

This page intentionally left blank.

3.10.2 Minimization, Avoidance, and Mitigation Measures

The following measures would be implemented for the Build Alternative to minimize potential impacts to visual character and quality:

- Apply consistent design types, textures, materials, and colors to structures and roadway elements (e.g., guardrails, retaining walls, etc.) and surrounding areas throughout the project area.
- Avoid and minimize the removal of vegetation (i.e., large old trees, etc.) to the area necessary for construction and staging activities.
- Replant disturbed areas.
- Plant road embankments to blend and integrate the roadway into the surrounding landscape and create a sense of continuity with the surrounding community.
- Where feasible, plant medians within the freeway corridor to provide a glare screen between opposing lanes of traffic.
- Use directional lighting when feasible to minimize nighttime glare to surrounding areas.
- Explore design options for potential sound attenuation wall treatments to create a gateway to the City of Albany that is aesthetically pleasing in line, color, pattern and/or texture.

3.10.3 Indirect Impacts

Changes to the quality and character of visual resources would generally be noticeable only within close proximity to the project area and would not impact areas farther removed. Therefore, indirect impacts to visual resources are not anticipated from the Build Alternative.

3.10.4 Cumulative Impacts

The visual character of the project area and surroundings has been affected by the historic development, both agricultural and urban, of the Willamette Valley and the Albany-Millersburg area. Cumulative impacts to visual resources may also result from:

- Increasing the demands for urban-level public services and facilities in undeveloped areas
- Long-term degradation of visual quality
- Decreasing the amount of open space and associated vegetation, which would give residents different views
- Increased economic development may involve increased land development; however, land would be developed in accordance with Albany, Millersburg, and Linn County land use regulations
- Growth of planted vegetation would change views

The Build Alternative proposes improvements to the existing transportation system, and when considered in combination with past, present, and reasonably foreseeable future actions, is not expected to result in additional changes to the existing visual environment.

3.10.5 Conclusion

Permanent and temporary impacts are expected to result from construction activities. Temporary impacts are expected to result from vegetation clearing, ground disturbance, safety equipment (signs, flaggers, cones, and lights) and construction equipment. All temporary vegetation removal and ground disturbance would be restored to pre-construction conditions following the completion of construction. Permanent changes, both beneficial and adverse, to the visual environment would primarily impact views within or directly adjacent to the project area. In some areas, the

removal of existing visual obstructions (i.e., Viewcrest overpass), addition of continuous sidewalks, removal of unkempt and/or invasive vegetation, new landscaping, and new updated structures would enhance views in the project area. In other areas, removal of ornamental vegetation, widening of roadways, and removal or addition of new structures (i.e., Millersburg overpass, new stoplights and signage) that obstruct views or modify the line of sight would result in minor adverse impacts to the views in the project area. Given the existing highway presence in the project area, the project would not cause major changes to the overall visual quality and character of the project area. Based on the visual resource analysis and associated mitigation measures, the Build Alternative is not anticipated to result in substantial significant impacts to the visual environment.

3.11 Water Resources

This section describes water resources located within project area and surrounding areas that would be potentially affected by construction and/or operation of the project. Water resources within the project area include groundwater, surface waters, and floodplains. Groundwater is water found underground in cracks and spaces in soil, sand, and rocks. The DEQ and the EPA are the primary agencies responsible for water quality in the project area; however, Oregon Department of State Lands (DSL), U.S. Army Corps of Engineers (USACE), ODOT, and the City of Albany also have regulations that apply to the project. In addition, groundwater is protected by the Safe Drinking Water Act and floodplains are regulated by the Federal Emergency Management Agency (FEMA) and local municipalities.

3.11.1 Existing Conditions

Existing conditions information was gathered from Federal, State, and local data sources including the U.S. Department of Interior's Geologic Survey (USGS), FEMA, the Oregon Water Resources Department (OWRD), and Linn County.

3.11.1.1 Groundwater

Groundwater is found in two aquifers: Willamette Lowland and Quaternary Alluvium (USGS, 2010). The Willamette Lowland aquifer is the principal water-bearing unit in the region. It is composed predominantly of sand and gravel with lesser amounts of silt and clay. It is overlain by a confining unit dominated by silt and clay with substantially less sand and gravel.

The Quaternary Alluvium aquifer includes Holocene floodplain deposits of the Willamette River and its major Cascade tributaries where channel gravels were deposited by river systems. The total thickness of these sediments is generally less than 40 feet, and the average thickness is about 20 feet. The Quaternary Alluvium aquifer is characterized by high permeability, high porosity, and high well yield. It is the most productive aquifer in the Willamette Valley, especially where it is dominated by thick sections of Missoula flood gravels or Holocene floodplain gravels. Groundwater in the unit is generally unconfined (OWRD and USGS, 2005).

Eight USGS groundwater wells were identified within 1 mile of the project area. Groundwater in these wells was reportedly observed between 7 and 97 feet below ground surface.

More than 1,400 well logs in the OWRD database are located within the project area (OWRD, 2013). Of these wells, 86 percent are for domestic uses and 12 percent are used as irrigation and livestock wells. About 1 percent of the wells are for industrial uses. A total of 11 wells have associated water rights within the project area. No public water supply wells are present in the project area.

3.11.1.2 Surface Waters

The Willamette River is located just west of the project area. Five tributaries to the Willamette River cross the project area: Cox Creek, Burkhardt Creek, Truax Creek, Murder Creek, and Crooks Creek. Several lakes are located within or adjacent to the project area; these include Swan, Timber-Linn, Waverly, First, Second, Third, and Fourth Lakes, as

well as many smaller, unnamed lakes, ponds, and wetlands, including industrial waste ponds. Figure 3.11-1 and Figure 3.11-2 show the location of these resources. See Section 3.13 for a discussion of wetlands.

All streams in the project area are urbanized and have been disturbed from natural conditions. Currently, stormwater is conveyed mainly through open ditches; however, culverts and pipes are also used for conveyance. An estimate of existing contributing impervious area for each stream is provided in Table 3-20.

No BMPs are presently used to treat stormwater quality or quantity before discharge to receiving waters. However, it is unlikely that stormwater from low-intensity storm events reaches the streams because it is infiltrated into the ditches. It is likely that high-intensity or prolonged events would produce enough runoff to reach the streams.

Under Section 303(d) of the Clean Water Act (CWA), Oregon is required to develop a list of impaired waters that do not meet the water quality standards. A Total Maximum Daily Load (TMDL) is developed for listed waters. A TMDL is a measure of the maximum amount of a pollutant a water body can receive and still meet State water quality standards (EPA, 2012).

Water quality in the Willamette River Basin is such that DEQ has developed TMDLs for select pollutants. Temperature, mercury, and bacteria are the three main pollutants present in the Willamette Basin. Additional pollutants are addressed for specific water bodies and include dissolved oxygen, turbidity, and toxics. None of the streams or lakes within the project area are listed on the DEQ 303(d) list.

This page intentionally left blank.

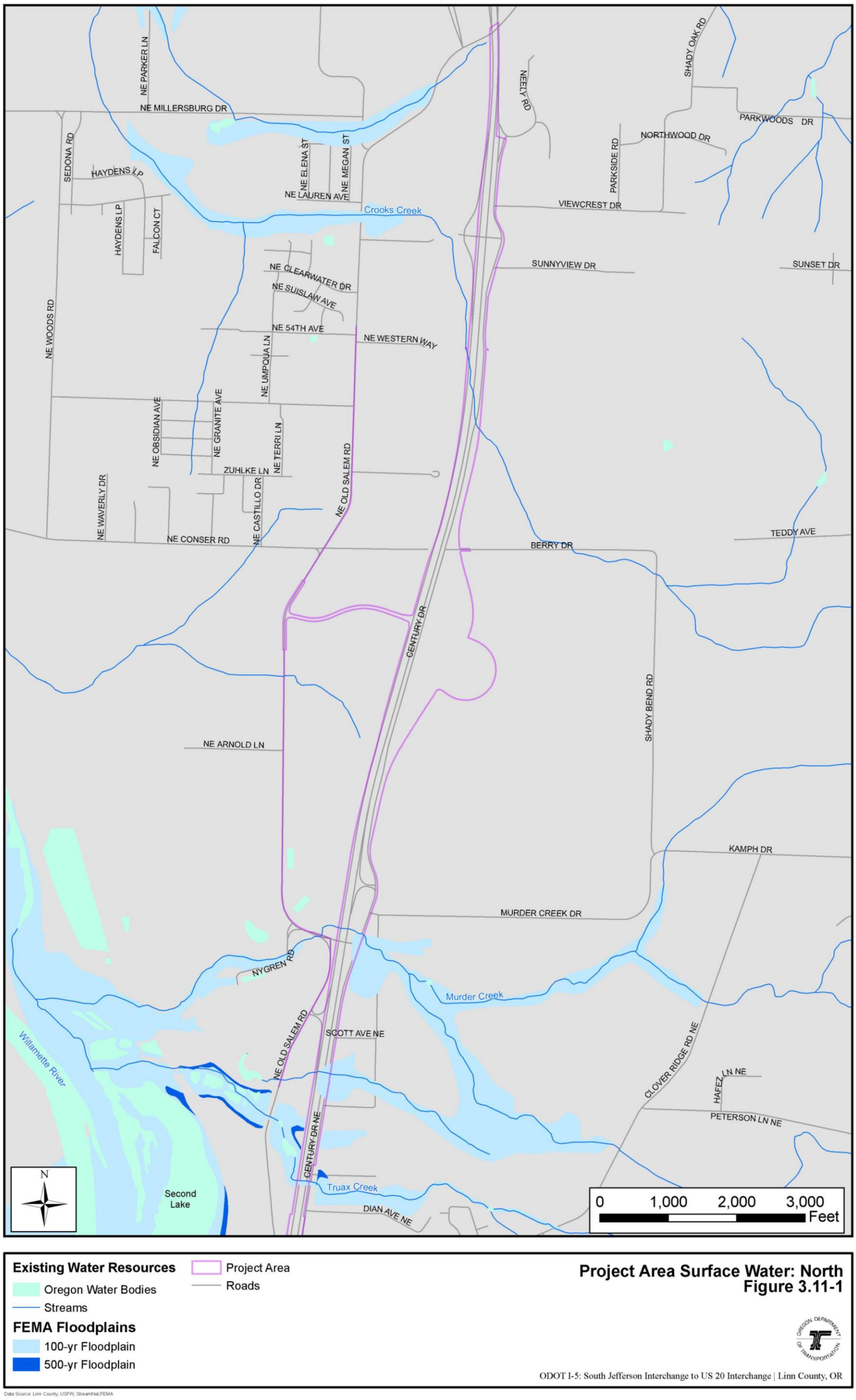


Figure 3.11-1: Project Area Water Resources: North

This page intentionally left blank.

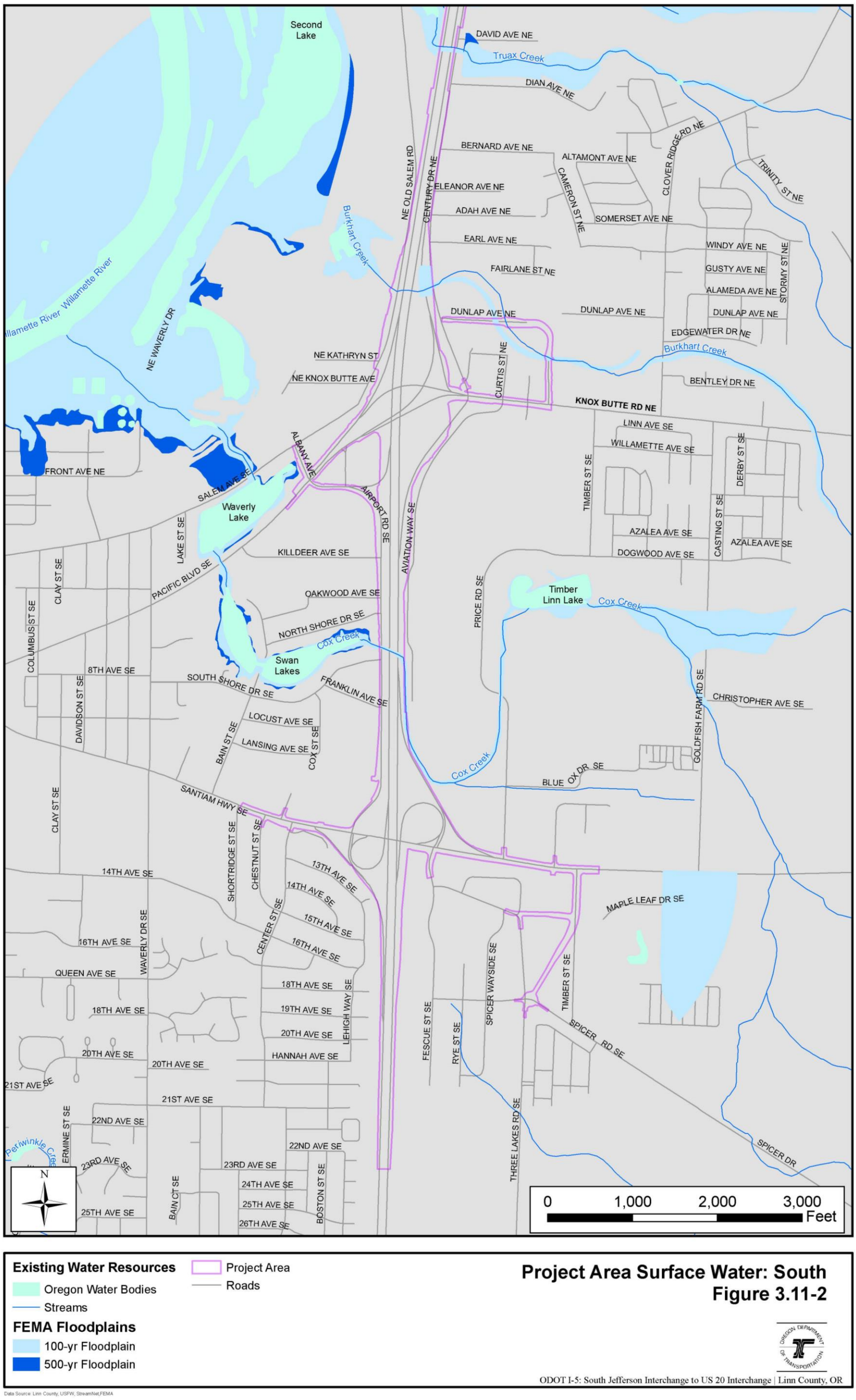


Figure 3.11-2: Project Area Water Resources: South

This page intentionally left blank.

3.11.1.3 Floodplains

With the exception of Crooks Creek, FEMA has designated 100-year floodplains associated with all creeks in the project area. Figure 3.11-1 and Figure 3.11-2 show the location of designated floodplains within the project area.

Crooks Creek – In Crooks Creek and its small tributary to the north, a FEMA-mapped 100-year floodplain (Oregon Department of Administrative Services Geospatial Enterprise Office and Oregon State University, 2013) extends into industrial/commercial areas and open space where the creeks cross Old Salem Road west of I-5.

Murder Creek – Murder Creek has a FEMA-mapped 100-year floodplain that encroaches into the project area on the east side of I-5 at Century Drive. This floodplain is in mainly open space, but also includes a few structures on Kenworthy Road and Century Drive to the east of the project area. The 100-year floodplain does not extend into the project area to the west; however, the south bank of Murder Creek encroaches into an industrial area just outside the project area. The unnamed stream to the south of Murder Creek has a 100-year floodplain that encroaches on the east side of the project area that includes a few structures along Century Drive as well as the northbound I-5 lanes and across the median.

Truax Creek – Truax Creek has a 100-year floodplain that extends across the full width of the project area including Century Drive and the northbound and southbound I-5 lanes.

Burkhart Creek – Burkhart Creek has a 100-year floodplain that encroaches into the east side of the project area. This floodplain includes some residential areas and Century Drive, as well as the northbound on-ramp to I-5.

Cox Creek – Cox Creek has a 100-year floodplain that crosses the project area. The floodplain follows the northbound I-5 on-ramp before it crosses I-5 and Airport Road on the west. To the west of the project area at Swan Lake, the 100-year floodplain widens.

3.11.2 Water Resource Impacts

To determine the potential impact to surface waters, pollutant loads under the Build and No Build alternatives were modeled using project-specific, pollution-generating, impervious surface (PGIS) area calculations, recorded precipitation, and water quality monitoring data from a similar project. Specific parameters that were evaluated included total suspended solids (TSS), total phosphorus (TP), total and dissolved copper, and total and dissolved zinc. BMP effectiveness was also evaluated using data from the International Stormwater BMP Database (2014).

The values shown in Table 3-20 represent a comparative estimate of PGIS between the Collector Distributor System and Auxiliary Lanes options and do not incorporate treatment BMPs. As a result, the values shown for the Build Alternative exaggerates the actual loads, because as required by regulatory review and permits required prior to construction, runoff would be treated under this condition.

Table 3-20: Pollution-Generating Impervious Areas Comparison

	Contributing Impervious Area (Acres)							
	Natural Dispersion	Crooks Creek	Murder Creek	Truax Creek	Burkhart Creek	Cox Creek	Pavement Removal	Net Total
Existing Conditions (No Build)	38.5	14.6	11.0	6.3	0.6	27.7	N/A	**98.7**
Build Alternative (Auxiliary Lanes)	51.7	19.6	15.6	13.2	0.9	27.8	6.7	**122.1**
Build Alternative (Collector Distributor System)	52.5	19.6	15.6	13.3	0.9	33.0	6.4	**128.5**
Net Increase – Build Alternative (Auxiliary Lanes) relative to NB	13.2	5.0	4.6	6.9	0.3	0.1	6.7	**23.4**
Net Increase – Build Alternative (Collector Distributor System) relative to NB	14.0	5.0	4.6	7.0	0.3	5.3	14.0	**29.8**

NB = northbound

No Build Alternative

The No Build Alternative would not directly impact water resources, as no construction activities would occur. However, the No Build Alternative would likely result in increased congestion and, therefore, more concentrated deposition of contaminants from vehicles, resulting in higher pollutant loads in project runoff into streams and lakes. As shown in Table 3-20, if the project were not constructed, approximately 98.7 acres of impervious surfaces would continue to convey untreated stormwater from existing roadways without treatment.

Build Alternative

The Build Alternative would result in both temporary and permanent impacts to water resources.

Temporary Impacts

Temporary impacts would be expected from construction activities and may include increased erosion sedimentation, soil compaction from heavy equipment, inadvertent hazardous material spills and releases, and construction runoff.

Groundwater

Staging may result in vegetation removal and soil compaction at staging sites, which could inhibit infiltration of groundwater. However, those areas would be small and would not present impacts to the groundwater system. Hazardous material spills from construction equipment may occur, potentially resulting in contamination of the shallow groundwater system.

Surface Water

Temporary impacts to surface waters would occur during construction from sediment and pollutants, from erosion during work activities, from materials accidentally deposited into surface waters, and from inadvertent releases of hazardous materials. Construction activities could increase sediment loads if erosion control measures and construction BMPs are not implemented. Vegetation removal, soil compaction from heavy equipment, excavation, and use of staging areas are typical sources of increased sediment loads, and, if uncontrolled, would have adverse impacts to the water quality in receiving waters.

Floodplains

Construction-related activities would occur within designated floodplains. These activities would be temporary and isolated to those areas directly adjacent to the project area. Construction BMPs would be implemented to minimize the potential for temporary floodplain impacts during construction. Therefore, temporary impacts to floodplains are not anticipated under the Build Alternative.

Permanent Impacts

Permanent impacts resulting from maintenance and operation of the project may include an increase in PGIS, runoff volumes and velocities, and pollutant loading to surface waters.

Groundwater

The increase in PGIS associated with the Build Alternative would result in an increase in contributing impervious area, reducing the area available for natural dispersion and infiltration. However, the reduction in shallow or deep infiltration and aquifer recharge would be small and would not result in impacts to groundwater. In addition, pollutant loads in project runoff would be reduced prior to infiltration through BMP treatment methods such as bioswales, grass strips, bioretention, or media filters. As noted below, specific treatment types would be identified during the design phase of the project.

Surface Water

Without the use of water quality treatment BMPs, the Build Alternative would result in increased pollutant loads to receiving waters due to stormwater runoff. As shown in Table 3-20, depending on the design option, a net increase of between 23 and 30 acres of impervious surface would be realized under the Build Alternative. The Collector Distributor System design option of the Build Alternative would increase PGIS more than the Auxiliary Lanes option and would, therefore, result in higher pollutant loads than the Auxiliary Lanes option. To estimate the potential impact of this increase in impervious surfaces, a Pollutant Load Comparison for the No Build and Build Alternatives was completed. Table 3-21 provides the pollutant load estimates in relation to the receiving waters of project runoff.

Table 3-21: Pollutant Load Comparison (lbs per year)

Receiving Water	Crooks Creek	Murder Creek	Truax Creek	Burkhart Creek	Cox Creek	Net Total
Total Suspended Solids						
No Build Alternative	29,558	22,270	12,755	1,215	56,080	**121,877**
Build Alternative (Auxiliary Lanes)	36,988	30,287	26,056	1,195	47,961	**142,487**
Build Alternative (Collector Distributor System)	36,988	30,287	26,258	1,195	59,177	**153,905**
Total Phosphorus						
No Build Alternative	58.8	44.3	25.4	2.4	111.6	**242.5**
Build Alternative (Auxiliary Lanes)	73.6	60.3	51.9	2.4	95.5	**283.7**
Build Alternative (Collector Distributor System)	73.6	60.3	52.3	2.4	117.8	**306.4**
Total Copper						
No Build Alternative	5.5	4.1	2.4	0.2	10.4	**22.6**

Receiving Water	Crooks Creek	Murder Creek	Truax Creek	Burkhart Creek	Cox Creek	Net Total
Build Alternative (Auxiliary Lanes)	6.8	5.6	4.8	0.2	8.9	**26.3**
Build Alternative (Collector Distributor System)	6.8	5.6	4.9	0.2	10.9	**28.4**
Dissolved Copper						
No Build Alternative	1.1	0.8	0.5	0.0	2.1	**4.5**
Build Alternative (Auxiliary Lanes)	1.4	1.1	1.0	0.0	1.8	**5.3**
Build Alternative (Collector Distributor System)	1.4	1.1	1.0	0.0	2.2	**5.7**
Total Zinc						
No Build Alternative	35.0	26.4	15.1	1.4	66.4	**142.9**
Build Alternative (Auxiliary Lanes)	43.8	35.9	30.9	1.4	56.8	**168.8**
Build Alternative (Collector Distributor System)	43.8	35.9	31.1	1.4	70.1	**182.3**
Dissolved Zinc						
No Build Alternative	8.4	6.3	3.6	0.3	15.9	**34.5**
Build Alternative (Auxiliary Lanes)	10.5	8.6	7.4	0.3	13.6	**40.4**
Build Alternative (Collector Distributor System)	10.5	8.6	7.5	0.3	16.8	**43.7**

Note: Values shown are estimates used for comparative purposes. Actual impacts would be revisited during the design phase of the project. In this table, values for the Build Alternative do not reflect the use of treatment BMPs that would be implemented under the build condition. Although the cul-de-sac option is not included in the calculations, the overall increase in PGIS would be less under this option than with the Bain Street connection.

As shown in Table 3-21, in the absence of treatment, increased impervious surfaces associated with the Build Alternative would increase runoff volumes and velocities, and pollutant loading to surface waters. However, stormwater water quality facilities would be built as part of the Build Alternative in accordance with the ODOT Hydraulics Manual (ODOT, 2011d).

Specific treatment types will be identified during the design phase of the project. To estimate pollutant loads for analysis, various treatment options were evaluated. Pollutant removal efficiencies for likely treatment BMPs were obtained from the International Stormwater BMP Database (2014) and applied to the No Build and Build alternatives in the Burkhart Creek and Cox Creek basins. For clarity and consistency, only the Collector Distributor System option of the Build Alternative was evaluated.

As shown in Table 3-22, different BMP treatment options would have different levels of effectiveness at removing different pollutants prior to discharging to receiving waters. With the specific treatment BMPs modeled for this report, TSS, total copper, and total zinc loading under the Build Alternative would generally decrease or stay about the same as under the No Build Alternative.

Table 3-22: Pollutant Loads after Treatment in Burkhart Creek and Cox Creek

Alternative	Treatment Method	Pollutant Load (lbs per year)					
		TSS	TP	Total Cu	Dissolved Cu	Total Zn	Dissolved Zn
Burkhart Creek							
No Build Alternative	None	1,215	2.4	0.2	0.0	1.4	0.3
Build Alternative (Collector Distributor System)	Without Treatment	1,195	2.4	0.2	0.0	1.4	0.3
	Grass Strip	529	3.1	0.1	0.0	0.3	0.1
	Bioretention	357	2.0	0.1	No Data	0.5	No Data
	Bioswale	793	3.9	0.1	0.0	0.9	0.2
	Composite	318	1.0	0.1	0.0	0.6	0.1
	Media Filter	296.9	1.3	0.1	0.0	0.4	0.1
Cox Creek							
No Build Alternative	None	56,080	111.6	10.4	2.1	66.4	15.9
Build Alternative (Collector Distributor System)	Without Treatment	59,177	117.8	10.9	2.2	70.1	16.8
	Grass Strip	26,225	151.4	3.3	1.0	16.5	6.5
	Bioretention	17,706	98.5	5.5	No Data	22.7	No Data
	Bioswale	39,297	194.9	7.0	1.7	46.9	8.7
	Composite	15,776	50.1	6.4	2.1	27.2	6.9
	Media Filter	14,710	64.8	6.3	1.9	21.6	5.3

Because the increase of project-related PGIS in the Burkhart Creek basin is substantially lower than the increase in PGIS in Cox Creek under the Collector Distributor System design option (see Table 3-21), the pollutant load would be substantially lower. The different evaluated BMP treatment types would provide varying levels of pollutant removal efficiencies under the Build Alternative. For example, media filters would provide a higher level of TSS reduction than grass strips; however, grass strips provide a higher level of total copper reduction from roadway runoff than media filters.

Floodplains

Project design would result in maintained or slightly improved hydraulic conveyance for project area streams and floodplains, in compliance with the FEMA's no rise criteria established for floodways. Any loss of floodplain capacity resulting from the project would be compensated for. Therefore, no adverse floodway impacts would result from the project. In addition, stormwater flow attenuation and design criteria would prevent changes to the 100-year floodplain.

3.11.3 Avoidance, Minimization, and Mitigation Measures

3.11.3.1 Construction

Potential temporary impacts to water quality during construction would be avoided through implementation of standard BMPs and erosion control practices. These measures would follow the ODOT Erosion Control Manual (ODOT, 2005), ODOT Special Specifications (ODOT, 2008), and local stormwater requirements. The following measures would be implemented for the Build Alternative to minimize potential impacts to water resources:

- Comply with the requirements of the CWA and ODOT Regional 1200-CA National Pollutant Discharge Elimination System (NPDES) permit for construction sites greater than 1 acre.

- All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) will be treated as follows:
  - Design, build, and maintain facilities to collect and treat all construction discharge water, using the best available technology applicable to site conditions, to remove debris, nutrients, sediment, petroleum products, metals, and other pollutants likely to be present.
  - If construction discharge water is released to surface waters using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed 1 inch.
  - Do not allow pollutants such as green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any water body, wetland, or stream channel below ordinary high water (OHW).
- Prepare a Stormwater Pollutant Prevention Plan/Pollution and Erosion Control Plan that contains the elements outlined in Sections 280.00 and 290.30 of ODOT's Standard Specifications for Construction (ODOT, 2008) and that meets requirements of all applicable laws and regulations. Measures outlined in these plans would include:
  - Practices to prevent erosion and sedimentation associated with connecting roads, stream crossings, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, and staging areas.
  - A description of any hazardous products or materials that will be used, including procedures for inventory, storage, handling, and monitoring.
  - A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.
  - Practices to prevent construction debris from dropping into any stream or water body and to remove any material that does drop with a minimum disturbance to the streambed and water quality.
- Schedule excavation, grading, and paving activities for dry weather periods, if possible. Limit staging areas to the minimum size necessary to complete the project.
- Obtain and comply with all required permits and facility approvals for discharges to surface water, storm drains, or sanitary sewers or for land application.
- ODOT would obtain all necessary permit approvals for impacts to water resources under USACE Section 404 Permit and DSL Removal-Fill Permits. In addition, the project would be subject to a 401 water quality certification from DEQ and the Federal Aid Highway Program Programmatic for ESA species (Appendix) for water quality treatment and flow control, the conditions of which would guide the environmental protections associated with in-water work.

3.11.4 Operational

Under the Build Alternative, stormwater water quality facilities would be built to provide treatment for all runoff generated by the water quality design storm (50 percent of the 2-year, 24-hour event) from all contributing impervious area using BMPs that utilize infiltration, media filtration, or vegetative filtration (ODOT, 2011d). If the project cannot entirely meet this standard, alternative actions, including off-site mitigation, that provide a similar water quality benefit would be used. However, if flow control is needed for environmental protection purposes (i.e., not flood control), the rate of runoff discharge would be regulated to match pre-project flows from 42 percent of the 2-year, 24-hour storm, up to the 10-year event.

During severe stormwater events, flows may overwhelm the stormwater treatment facilities and enter the project area streams untreated. Various options may be implemented under the Build Alternative to minimize these effects, such as using and expanding sheet flow from the highway, potentially modifying the roadside by amending soils, or

converting conveyance ditches to bioswales by widening the conveyance, amending the soils, and planting with appropriate vegetation. Stormwater quality treatment and flow attenuation facilities would be designed in accordance with the ODOT Hydraulics Manual (ODOT, 2011d). A Stormwater Management Plan would be prepared and implemented to increase infiltration of runoff water into the soil and improve the long-term water quality conditions associated with pollutant loading from the project. In addition, post-construction maintenance would ensure BMPs remain effective as required by permit terms and conditions.

3.11.5 Indirect Impacts

Infrastructure improvements associated with the Build Alternative would facilitate future growth and development planned for by Millersburg and Albany. Indirect impacts would be primarily related to an increase in PGIS and stormwater runoff from new residential and commercial/industrial development that could occur following the improvement of transportation facilities. In the absence of treatment, increased stormwater runoff could result in the increased transport of pollutants into receiving water bodies; however, future development would be required to comply with local land use regulations, including those related to stormwater management, which would greatly reduce the impacts of additional runoff from new impervious surface areas.

3.11.6 Cumulative Impacts

Cumulative effects include past, present, or other reasonably foreseeable funded actions within the project area and funded or unfunded projects adjacent to the project area that, together with the improvements that would occur under the Build Alternative, may have a cumulative effect on water resources.

The foreseeable roadway projects and land use developments were considered in relation to potential cumulative impacts associated with the Build Alternative improvements. Cumulative impacts to water resources may include:

- Increasing the demands for urban-level public services and facilities
- Long-term introduction of sediments into adjacent waterways
- Potential long-term degradation of water quality
- Decreasing the amount of open space and associated wildlife/vegetation habitat, including wetlands
- Increasing long-term stormwater peak flows and volumes
- Increasing economic development, which may involve increased land development; however, land would be developed in accordance with Albany, Millersburg, and Linn County land use regulations. The long-term impact would be determined by the adequacy of these regulations to protect water quality and stream hydrology.

3.11.7 Conclusion

The Build Alternatives would not substantially alter groundwater recharge or discharge, nor would they result in groundwater contamination. Project design would result in similar or slightly improved hydraulic conveyance for project area streams and floodplains compared to the No Build Alternative. BMPs would be implemented to address pollutant loading to nearby streams. Mitigation measures, such as water quality treatment facilities, flow control, and the use of infiltration, would be implemented in accordance with ODOT stormwater standards to minimize impacts. Under the Build Alternative, actual pollutant loads would be lower than under the No Build Alternative, because water quality treatment BMPs would be built as part of the project to remove pollutants from highway runoff before discharging it to receiving waters. Therefore, the project is not expected to result in significant impacts to water resources.

3.12 Biology

This section describes biological resources located within the project area and surrounding areas that would be potentially affected by construction and/or operation of the project. Biological resources can generally be classified into three categories: fish and fish habitat, vegetation, and wildlife. Biological resources in the project area have been altered significantly over time as a result of urban and agricultural development.

3.12.1 Existing Conditions

Fish and wildlife habitat and species use of the project area were determined through a review of best available natural resource databases, discussions with natural resource agency specialists, interpretation of aerial photography, and on-site field investigations. Riparian habitat (at stream crossings or where the roadway intersects riparian zones) and aquatic area (in-river habitat) were mapped and evaluated qualitatively, with special attention to federally listed endangered and/or threatened fish species (Endangered Species Act [ESA]) and designated essential salmonid habitat (ESH) by the Oregon DSL. ESH is defined as the habitat necessary to prevent the depletion of native salmonids during their life history stages of spawning and rearing.

Collected information, site visits, and aerial photograph interpretation were used to map wildlife habitat types using GIS[6]. A 5-acre minimum for general habitat mapping was determined due to the size and the highly disturbed nature of the project area; wildlife that use these disturbed habitats generally do not differentiate between them.

3.12.1.1 Fish Habitat

The proposed project lies within the Willamette River Watershed and includes aquatic resources[7] associated with Cox, Burkhart, Truax, Murder, and Crooks creeks (see Figure 3.11-1 and Figure 3.11-2 in Section 3.11). In general, these five streams show signs of degraded riparian conditions, altered streambanks, and channelized streambeds within the project area (see Figure 3.12-1 through Figure 3.12-5). As such, many of the streams in the project area are included on the DEQ's 303(d) list of impaired waters (DEQ, 2012). The following section provides an overview of fish habitat within the project area.

Cox Creek

As the southernmost stream in the project area, Cox Creek (Figure 3.12-1) flows into three man-made lakes before entering the Willamette River. Fish are present in the stream and riparian vegetation is mostly herbaceous, providing a low overall function. This stream is not designated as ESH by DSL (2008). Cox Creek is not currently included on the 303(d) list.

[6] A GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

[7] Aquatic resources is a collective term used to describe a complex matrix of physical, chemical, and biological components of the environment that support fish during all life stages. In streams, these components include water quality, streamflow, physical features (such as riparian vegetation), and associated biological and ecosystem interactions.

Figure 3.12-1: Cox Creek

Burkhart Creek

Burkhart Creek (Figure 3.12-2), a Willamette River tributary, flows east to west through the project area, where it is conveyed under I-5 through a box culvert, and continues on through a man-made channel. Fish are present and riparian vegetation is composed of willows and Himalayan blackberries. This stream is not designated as ESH by DSL (2008). Burkhart Creek is not currently included on the DEQ 303(d) list.

Figure 3.12-2: Burkhart Creek

Truax Creek

Truax Creek (Figure 3.12-3) flows west and northwest via natural channels, culverts, and ditches across the project area through residential, commercial, and industrial land uses. Fish are present in the creek. The creek is an

unconfined, meandering stream channel with established willow and oak in the riparian area. Truax Creek is designated ESH by DSL (2008). Truax Creek is currently included on the DEQ 303(d) list of impaired waters in the state of Oregon.

Figure 3.12-3: Truax Creek

Murder Creek

I-5 crosses Murder Creek by two separate (northbound and southbound) three-span bridges. Invasive species dominate riparian vegetation with Himalayan blackberry and reed canary grass. Fish are present in the creek. Murder Creek (Figure 3.12-4) discharges to Truax Creek, which drains to the Willamette River. This stream is not designated as ESH by DSL (2008). Murder Creek is currently included on the DEQ 303(d) list of impaired waters in the state of Oregon.

Figure 3.12-4: Murder Creek

Crooks Creek

Crooks Creek (Figure 3.12-5) is the northernmost creek in the project area, flowing north before turning west and crossing underneath I-5 through twin box culverts. Fish are likely present, and riparian vegetation includes a thin corridor of willows and other shrubs, with some encroachment of Himalayan blackberry. Areas outside this corridor are disturbed by development and mowed grasses. This stream is not designated as ESH by DSL (2008). Crooks Creek is not currently included on the DEQ 303(d) list.

Figure 3.12-5: Crooks Creek

3.12.1.2 Fish

Due to the poor habitat, most of the fish species found in the project area streams are non-native, disturbance-tolerant species that are able to persist in waters with warm temperatures, sedimentation problems, and organic

pollution. The following non-native fish species are likely present in the creeks: black bullhead (*Ameiurus melas*), yellow bullhead (*A. natalis*), bluegill (*Lepomis macrochirus*), pumpkinseed (*L. gibbosus*), brown bullhead (*A. nebulosus*), common carp (*Cyprinus carpio*), crappie (*Pomoxis* spp.*),* largemouth bass (*Micropterus salmoides*), smallmouth bass (*M. dolomieu*), western mosquitofish (*Gambusia affinis*), and yellow perch (*Perca flavescens*).

Native fish species continue to occur in small numbers, including cutthroat trout (*Oncorhynchus clarki*), three-spine stickleback (*Gasterosteus aculeatus*), and sculpins (*Cottus* spp.). Native migratory fish are those fish species that migrate for their life-cycle needs, and includes all sub-species and their life history patterns. These species are protected under the Oregon Fish Passage Law. Native migratory fish present in project area streams are identified in Table 3-23.

Table 3-23: Native Migratory Fish in the Project Area

Species	Project Area Stream				
	Cox Creek	Burkhart Creek	Truax Creek	Murder Creek	Crooks Creek
Chinook salmon	X	X	X		
Steelhead, rainbow, and redband trout	X	X	X	O	O
Cutthroat trout	O	O	O	O	O
Largescale sucker	O	O	X	O	O
Pacific lamprey	O	O	O	O	O
Northern pikeminnow	O	O	O	O	O

X = Species known to be present in the stream
O = Species potentially present in the stream

3.12.1.3 Vegetation

The project area typically consists of managed agricultural fields, rights-of-way, and urban infrastructure. There is very little habitat available for unique or special status plants; however, a few are listed as potentially occurring.

Special Status Plants

A species list was requested from Oregon Biodiversity Information Center (ORBIC) for threatened, endangered, proposed, candidate, and sensitive species in the proposed project vicinity (ORBIC, 2013). The Federal- and State-listed plant species that could potentially occur in the project area include the Willamette Valley larkspur (*Delphinium oreganum*), the Willamette daisy (*Erigeron decumbens var. decumbens*), and the thin-leaved peavine (*Lathyrus holochlorus*). Generally, the project area is disturbed due to agricultural, residential, commercial, and transportation system development. Habitat was not found in the project area that would support these special status plant species.

Invasive Plants

The land within the project area has experienced development and disturbances as a result of the urban environment. Some of the most common invasive plant species known to occur within the project area include Himalayan blackberry (*Rubus armeniacus*), scotch broom (*Cytisus scoparius*), pennyroyal (*Mentha pulegium*), tall fescue (*Festuca arundinacea*), Italian ryegrass (*Lolium multiflorum*), English ivy (*Hedera helix*), European birch (*Betula pendula*), false brome (*Brachypodium sylvaticum*), and purple loosestrife (*Lythrum salicaria*).

Reed canarygrass is another prevalent species in the project area that is not listed as a noxious weed by the Oregon Department of Agriculture (ODA), but is listed as a noxious weed of the U.S., and has the potential to become invasive due to its invasive growth characteristics (USDA, 2014).

3.12.1.4 Wildlife

Wildlife habitat types used in this analysis are based upon definitions presented in *Wildlife Habitat Relationships in Oregon and Washington* (Johnson and O-Neil, 2001). These habitat types are characterized by a combination of vegetation types and geological and hydrological features that may be used by wildlife. The following habitat types are found within the project area and are listed in descending order of predominance: Urban, Agriculture, Westside Riparian-Wetland, Westside Oak Forest, Westside Lowlands Conifer-Hardwood Forest, Herbaceous Wetland , and Westside Oak and Dry Douglas-fir Forest. Habitat in the project area is generally dominated by landscaping associated with urban development and agricultural lands. The urban-developed areas include residential, commercial, and transportation (roadways and railroads) facilities that have been planted with landscape vegetation. Natural open-space areas also occur within the project area to a lesser extent. The natural open space areas include a combination of forested and emergent wetlands[8], upland forest (mixed deciduous-coniferous), mixed deciduous-coniferous riparian, and grassland-type habitats that are predominantly managed grass within the I-5 (right-of-way). Some of these open space areas are vegetated with a greater predominance of native species, although some have varying levels of disturbance that have allowed encroachment of invasive species as well.

ORBIC (2013) data were reviewed to determine the potential presence or absence of ESA[9] and other listed wildlife species. Field investigations were performed in the project area to identify signs of active use such as bird nests in nearby trees, bat roosts under road bridges, or notable trails or areas used for browsing by deer and other ungulates.

Avian

The northern spotted owl (*Strix occidentalis caurina*) is an ESA-listed wildlife species that occurs in Linn County. However, habitat used by northern spotted owls does not occur in the project area.

The streaked horned lark (*Eremophila alpestris strigata*) is ESA-listed as threatened and is present in Linn County. These birds use open habitats with no trees and few or no shrubs (USFWS, 2013b). Although some of these habitats are present in the project area, they are not of sufficient size to support streaked horned larks.

Bald eagle (*Haliaeetus leucocephalus)* use of the project area is confined to flyovers and limited perching. Bald eagles are protected by the Federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). The closeness of the project to the Willamette River and agricultural fields of the Willamette Valley provides habitat and prey for bald eagles. No known nesting territories occur within 2 miles of the project area (Isaacs and Anthony, 2011). Bald eagle nests or flyovers were not observed during field reconnaissance.

The project area is located within one of four major migratory routes in North America, the Pacific Flyway, which encompasses all areas west of the Continental Divide (USFWS, 2012). As such, various migratory bird species occur throughout the Willamette Valley and within the project area and are protected by the MBTA. Migratory birds could use trees, shrubs, bridges, and other structures in the project area for seasonal nesting and stopover habitat. Any shrub or tree planned for removal should be investigated for nesting during the spring or removed between August 31 and March 1. Additionally, each bridge or overpass should be investigated for possible nesting of MBTA-protected species before construction.

---

[8] Wetlands were not delineated to support this evaluation; habitat mapping was performed by aerial photography interpretation and cursory ground-truthing to generalize habitat in the project area.

[9] The ESA was enacted in 1973 to protect troubled species from extinction. National Oceanic and Atmospheric Administration Fisheries and the U.S. Fish and Wildlife Service decide whether to list a species as threatened or endangered. Federal agencies must avoid jeopardy to and aid in the recovery of listed species. Similar responsibilities apply to non-Federal agencies.

Reptiles and Amphibians

The following reptile species have been observed within 2 miles of the project area: Pacific pond turtle (*Actinemys marmorata*) and the painted turtle (*Chrysemys picta;* ORBIC, 2013). ODFW considers the Pacific pond turtle and painted turtle as sensitive species under Oregon's Sensitive Species Rule (OAR 635-100-040). Both the Pacific pond turtle and painted turtle were once common in the Willamette Valley, but years of draining wetlands, loss of floodplains, and channelizing river and stream channels has reduced available habitat and species densities. Several ponds and open-water areas (mainly small residential ponds) could provide habitat for these species; however, they were not observed during field surveys and are not known to occur in these areas.

The Oregon spotted frog (*Rana pretiosa*) is proposed as threatened under the ESA. Although they use habitats in the Willamette Valley, they are not known to be present in Linn County, and are unlikely to be present in the project area (USFWS, 2013a).

Invertebrates

Fender's blue butterfly (*Icaricia icarioides fenderi*) is an ESA-listed wildlife species that could occur in Linn County. Possible habitat for Fender's blue butterfly is listed along the northern portion of the project area, but habitat conditions within this portion are mainly managed for agriculture production, rural development, urban infrastructure, and associated managed right-of-way, and are no longer suitable for Fender's blue butterfly. Fender's blue butterfly is host-specific on Kincaid's lupine; field surveys did not identify the presence of this host species.

3.12.1.5 Federal and State Protected Species

A species list was requested from ORBIC for threatened, endangered, proposed, candidate and sensitive species in the proposed project vicinity (ORBIC, 2013). The State- and federally listed species identified by ORBIC as potentially present in the project area are listed in reports of sensitive species or species of concern are also listed on the ORBIC list; however, none are known to occur within the project area, and habitat that would support these sensitive species is not present.

ORBIC data are compiled from an extensive database containing site-specific information on the documented occurrences, biology, and status of more than 2,000 rare, threatened, and endangered species in Oregon. However, it is possible that some species inhabit areas in which they are not known to occur, and those occurrences are not represented in the ORBIC database. Additional protected species not listed by ORBIC, which may also be present in the project area, have been discussed in preceding sections.

Table 3-24: Federal- and State-Listed Species Identified by ORBIC (2013)

Species	Federal Status	State Status	Likely to Occur in Project Area	Comments
Fish				
Upper Willamette River spring Chinook (*O. tshawytscha*)	Threatened	N/A	Yes	Species present in Cox Creek, Burkhart Creek, and Truax Creek. No critical habitat present.
Upper Willamette River winter Steelhead (*O. mykiss*)	Threatened	N/A	Yes	Species present in Cox Creek, Burkhart Creek, and Truax Creek. Critical habitat present in Truax Creek and lower reach of Cox Creek (downstream of project area).
Wildlife				
Pacific pond turtle (*A. marmorata*)	Species of Concern	Sensitive-critical	No	Several ponds exist, but are not known to support this species.
Painted turtle (*C. picta*)	N/A	Sensitive-critical	No	Several ponds exist, but are not known to support this species.
Bald eagle (*H. leucocephalus*)	N/A	N/A	Yes	Presence in the project area isolated to flyover. Not protected by ESA, but coordination may be required for Bald and Golden Eagle Protection Act.
Plants				
Willamette Valley larkspur (*Delphinium oreganum*)	Species of Concern	Candidate	No	Habitat could not be identified; project area highly disturbed.
Willamette daisy (*Erigeron decumbens var. decumbens*)	Endangered	Endangered	No	Habitat could not be identified; project area highly disturbed.
Thin-leaved peavine (*Lathyrus holochlorus*)	Species of Concern	N/A	No	Habitat could not be identified; project area highly disturbed.

Source: ORBIC, 2013
N/A = Data are not available.

ESA-listed, Upper Willamette River, spring-run Chinook salmon and winter-run steelhead are present in Cox Creek, Burkhart Creek, and Truax Creek (StreamNet, 2013; ORBIC, 2013). Cox, Burkhart, and Truax creeks are considered essential fish habitat under the Magnuson-Stevens Act due to the presence of Chinook salmon. Truax Creek is considered ESH by the Oregon DSL and is also designated critical habitat for Upper Willamette River steelhead within the project area. Prior to construction, the Oregon Fish Passage Statute would need to be addressed at all road/stream crossings, of which there are approximately 10 in the project area.

As previously discussed, Bald eagle use of the project area is confined to flyovers and limited perching. The closeness of the project to the Willamette River and agricultural fields of the Willamette Valley (and associated livestock) provides habitat and prey for bald eagles. Limited habitat in the project area reduces the likelihood of this species using the project area for nesting or roosting. However, isolated large black cottonwoods (*Populus balsamifera*) along streams and rivers in the project area and a patch of mid-seral Douglas fir (*Pseudotsuga menziesii*) at the far northern end of the project could provide perch opportunities. No known nesting territories occur in the project area or within 2 miles of the project area limits, and no bald eagle nests or flyovers were observed during field reconnaissance.

3.12.2 Biological Resource Impacts

Impacts to fish and fish habitat were qualitatively evaluated by considering the loss or disturbance of riparian habitat, increased PGIS, and in-water work during construction. Potential impacts on vegetation and wildlife resources were quantitatively and qualitatively evaluated in terms of habitat loss and potential impacts to wildlife movement within the project area.

3.12.2.1 Direct Impacts

No Build Alternative

The No Build Alternative would not include any improvements to I-5 and the current interchanges, although routine maintenance would occur. The No Build Alternative would not result in any temporary or permanent impacts to biological resources because no construction would occur.

Build Alternative

The Build Alternative would result in both permanent and temporary impacts to fish and fish habitat, vegetation, and wildlife.

Temporary Impacts

Temporary impacts are expected from construction activities and may include temporary vegetation clearing, construction noise, in-water work, inadvertent hazardous materials spills and releases, and construction runoff.

Fish

Temporary impacts to fish and fish habitat could result from construction activities, including vegetation clearing and in-water work. These activities could lead to erosion and increased sedimentation to wetlands and waterways, resulting in degraded water quality. Additionally, accidental releases of hazardous materials and wastes may enter wetlands or waterways, decreasing water quality. This may affect fish in the project area and downstream by interrupting fish foraging activities and movement.

Construction activities in the active channel would require fish to be removed to isolate the work area. Handling of fish to remove them could harm them and downstream habitats. In-water work could also suspend sediments and degrade water quality temporarily, which could negatively affect fish. The Build Alternative may also involve either pile driving or drilled shaft construction below the OHW line at the stream crossings for construction of temporary work bridges or construction of new bridges. Impact pile driving would produce more sound energy than any other pile installation method. Impacts to fish would include temporary disorientation or possible mortality from the shock waves of piles being driven, or temporary effects to navigation from increased noise levels. If impact pile driving were necessary in proximity to the OHW line, the contractor shall provide measures (e.g., work area isolation, use of an attenuator) as necessary to minimize adverse impacts to fish and other aquatic life.

Both the Auxiliary Lanes and Collector Distributor System options would involve a crossing of Cox Creek; however, the Collector Distributor System option would include a much larger crossing, because the area of the proposed improvements parallels an approximately 1,000-foot section of the creek. Additional in-water or near-water work for the Collector Distributor System option would increase the risk of impacts on fish.

Vegetation and Wildlife

Temporary impacts to resident wildlife could be caused by noise and visibility of construction activities, such as clearing and grading, and noise and visual disturbance associated with construction equipment moving to and from

the project area. Noise levels from operation of machinery during certain construction activities would exceed ambient conditions, and may cause temporary, short-term, or localized increases in airborne sound. Increased sound may cause harassment or avoidance of the project area by local wildlife species.

Temporary vegetation removal would occur in herbaceous or shrubby communities and result in temporary fragmentation of habitat and migration corridors; however, vegetation and habitats temporarily affected during construction would be restored to their pre-existing conditions following the completion of work. Therefore, these effects would be short-term, and vegetation and habitats would likely be restored to the current condition within 5 to 10 years.

The Build Alternative would eradicate some of the noxious weeds through vegetation and seed bank removal. Conversely, there is a potential to introduce additional noxious and invasive species with the proposed improvements. This could occur through movement of seeds on construction equipment or vehicles. Measures to minimize the spread of noxious and invasive species are discussed in Section 3.12.3.

Permanent Impacts

Permanent impacts from maintenance and operation of the project may occur when habitat is permanently replaced with a project feature, or when fish or wildlife are directly disturbed. Habitat loss would displace fish and wildlife, permanently remove vegetation communities, fragment habitats, and increase noise and human disturbance. Loss of native habitat can also increase the likelihood of introduction and spread of invasive plants.

Fish

Operational impacts to fish could be caused by increased impervious surface area and the resulting potential effects of decreased base flows, increased peak flows, and degraded water quality. The proposed project includes stormwater management components designed to treat and detain highway runoff prior to its discharge to streams. The proposed stormwater BMPs are designed to reduce pollution and attenuate peak flows and volumes associated with stormwater runoff. New water body crossings would be sized to allow for fish passage, and any vegetation removed from these areas would be restored or enhanced following construction, where feasible.

The Collector Distributor System option would permanently impact a 1,000-foot stretch of Cox Creek, in addition to the more perpendicular crossing farther to the north. Riparian vegetation and function may be permanently replaced by a bridge or culvert structure to accommodate the Collector Distributor System lanes, resulting in additional negative impacts to fish.

Vegetation and Wildlife

Most of the habitat types affected under the Build Alternative are urban or agricultural lands, which provide limited wildlife habitat function. Westside Riparian-Wetland Habitat associated with Crooks Creek, Murder Creek, Truax Creek, Burkhart Creek, and Cox Creek would be permanently affected by the project. Westside oak and dry Douglas-fir forest habitats would also be replaced with paved roadways or other transportation-related features. The Auxiliary Lanes connection option would have a smaller effect on higher-quality habitat types than the Collector Distributor System lane connection options. For example, the Auxiliary Lanes connection option would affect 5.1 acres of Westside Riparian-Wetland habitat type[10], whereas the Collector Distributor System connection option would affect 6.0 acres of Westside Riparian-Wetland habitat. Based on preliminary designs, estimated habitat impacts (including both temporary and permanent impacts) are shown in Table 3-25.

[10] Westside Riparian-Wetland habitat type is in reference to the Johnson and O-Neil (2001) habitat classification and does not necessarily represent delineated, jurisdictional wetlands.

Table 3-25: Build Alternative Options and Habitat Impacts[a]

Habitat Type	Build Option Impacts (acres) – Auxiliary Lanes	Build Option Impacts (acres) – Collector Distributor System Lanes
Agriculture	50.0	50.0
Herbaceous Wetland[a]	0.5	0.5
Urban	299.5	302.5
Westside Lowlands Conifer-Hardwood Forest	0.7	0.7
Westside Oak and Dry Douglas-fir Forest	0.3	0.3
Westside Oak Forest	1.8	1.8
Westside Riparian-Wetland[b]	5.1	6.0
Total	**357.9**	**361.8**

[a] Both temporary and permanent impacts are included in the acreages presented in this table.
[b] Wetlands areas were determined based on aerial photography interpretation; no formal delineations occurred. "Herbaceous Wetlands" and "Westside Riparian-Wetlands" identified in this report are discussed as they relate to habitat as per Johnson and O-Neil (2001), not as they relate to regulatory jurisdiction.

Because roadways may intersect wildlife migratory paths, direct impacts of project operations would also include vehicle strikes on wildlife species present on any of the proposed improved roadways. Lane additions on I-5 would increase the capacity and, thus, the likelihood of a vehicle strike. Fencing along the ODOT right-of-way would deter wildlife from being present on the interstate and minimize the risk of vehicle strikes.

Routine maintenance of right-of-way within the project area would include mowing grass in medians and along the shoulders. Maintenance may also include removal of trees that are a hazard to roadways or the application of herbicides to manage invasive non-native species, such as Himalayan blackberry. Disturbance associated with the project, as well as vehicle and pedestrian use of the area, may aid in dispersion of non-native species to areas of new roadway construction.

3.12.3 Minimization, Avoidance, and Mitigation Measures

The following avoidance and minimization measures are proposed for the project:

- Existing vegetation to be retained, where shown in the plans, shall be protected through the life of the contract. Vegetation would be protected by a site preservation line, individual flagging, and/or high-visibility construction fencing.
- The Contractor shall fell trees only within the area to be cleared, leave standing any trees or native growth, and protect, by fencing if necessary, all trees or native growth from any damage caused by construction operations.
- Grubbing, clearing, and structure removal would occur outside of the nesting season (which can extend from March 1 through August 31, depending on the species), when feasible, to comply with the MBTA guidelines.
- A MBTA survey may be required prior to the beginning of construction activities if bush clearing and vegetation removal are needed.
- All disturbed areas shall be restored with a combination of native herbaceous and woody species, including grasses, shrubs, and trees per contract requirements (to be prepared in later phases of the project).
- Wetland mitigation shall be in accordance with Federal and State laws.
- Seed, fertilizer, and mulch shall be applied per contract requirements and ODOT Standard Specifications in Section 1030 (Seeding) to all areas requiring permanent seeding.
- Introduction, spread, and removal of invasive and noxious weeds shall be controlled by implementing the measures outlined in ODOT Standard Specifications 1030.42 (Weed Control) and other sections of 1030

requiring certain project elements to be "weed free." Implementation of these measures would meet the purpose of EO 13112 to control invasive species.

- Roadside cleanup, as directed by the Engineer, may include obliterating abandoned roads and reshaping the areas to blend naturally with surroundings. Methods and equipment used in roadside cleanup shall be approved by the Engineer.
- The Contractor shall acquire all permits and approvals required for the use of the disposal site. The Contractor shall provide the Engineer the locations of all disposal sites to be used and also provide copies of the permits and approvals for such disposal sites before any waste is hauled from the project area. Disposal of excess material within a wetland area shall not be allowed without a Section 404 permit issued by the USACE and a Removal-Fill authorization issued by the Oregon DSL.
- Temporary lighting shall be kept to the minimum necessary (i.e., in terms of both intensity and area illuminated). Lighting shall be prevented, where practicable, from shining directly on surface waters.
- The Contractor shall either adopt or modify an Erosion and Sediment Control and a Pollution Control Plan, as outlined in ODOT Standard Specifications Section 280 (Erosion and Sediment Control) to minimize construction-related impacts to natural resources.
- Clearing, grubbing, excavation, borrow, or fill within the right-of-way shall not expose soils for the timelines as stated in ODOT Standard Specifications Part 300 (Roadwork).
- The project will be covered by the FHWA Federal-Aid Highway Program programmatic ESA Section 7 consultation. All work shall comply with the terms and conditions set forth in this programmatic biological opinion.
- Fresh concrete and/or concrete byproducts and/or construction debris of any kind shall be prevented from entering surface waters during construction. Any water having direct contact with uncured concrete shall be contained and treated or removed from the site, as appropriate.
- If foundations or substructures are to be built or removed from areas within, or immediately adjacent to, running streams, the Contractor shall isolate the work area and perform fish salvage, where applicable, prior to construction or demolition.
- If impact pile driving is necessary in close proximity to the OHW line, the contractor shall provide measures (e.g., work area isolation, use of an attenuator) as necessary to minimize adverse impacts to fish or other aquatic life. The project would ensure piling installation operations do not cause or permit the release of any petroleum product to adjacent wetlands or water bodies.
- Stormwater treatment would be provided for impervious surfaces associated with the project.

3.12.4 Indirect Impacts

3.12.4.1 Fish and Fish Habitat

Fish and fish habitat resources may be indirectly affected by the Build Alternative as a result of increased impervious surfaces. In the absence of treatment, impervious surfaces (i.e., roadway surfaces) affect groundwater infiltration and increase runoff volumes and pollutant loads to receiving water bodies. In addition, impervious surfaces could result in slope instability and the possibility of slope failure, increasing sedimentation into streams and streambank erosion. Runoff from impervious surfaces would be treated for flow-control and water quality, thus minimizing the frequency and severity of these effects.

3.12.4.2 Vegetation and Wildlife

Indirect impacts to wildlife resources that would result from the Build Alternative may include: decreased water quality; decrease in vegetation and plants to provide habitat and foraging areas because of new impervious surfaces; or continued disturbances on natural areas to wildlife movement because of roadways and development. However,

most wildlife occurring within the project area have adapted to existing conditions of co-existing in an urban environment; therefore, the Build Alternative is not expected to cause a decrease of existing wildlife to utilize the area.

Indirect impacts to vegetation and plant resources that would result from the Build Alternative may include a decrease in native vegetation and plant diversity due to the disturbance, and a possible increase in non-native species.

3.12.5 Cumulative Impacts

Cumulative impacts include past, present, or other reasonably foreseeable funded actions within the project area and funded or unfunded projects adjacent to the project area that, together with the improvements that would occur under the Build Alternative, may have a cumulative effect on the environment.

The foreseeable roadway projects and land use developments were considered in relation to potential cumulative impacts associated with the Build Alternative improvements. Cumulative impacts to vegetation, fish, and wildlife may include:

- Increasing the demands for urban-level public services and facilities
- Long-term introduction of sediments into adjacent waterways
- Potential long-term degradation of water quality
- Decreasing the amount of open space and associated wildlife/vegetation habitat
- Increasing long-term stormwater peak flows and volumes
- Increased economic development may involve increased land development; however, land would be developed in accordance with Albany, Millersburg, and Linn County land use regulations, in compliance with Oregon's statewide planning goals.

3.12.6 Conclusion

The Auxiliary Lanes connection option would have a smaller effect on higher-quality Johnson and O-Neil (2001) habitat types than the Connector Distributor lane connection options. For example, the Auxiliary Lanes connection option would affect 5.1 acres of Westside Riparian-Wetland habitat, whereas the Connector Distributor connection option would affect 6.0 acres of Westside Riparian-Wetland habitat. Currently, degraded habitats dominate the project area and, as such, unique or special status plant and animal species are unlikely to occur within the project area due to limited wildlife habitat function. If such species are encountered during construction, applicable guidelines (MBTA, ESA, or Bald and Golden Eagle Protection Act) will be followed to avoid and minimize temporary impacts to protected species. Impacts to wetlands, streams, and riparian habitats would be mitigated to compensate for permanent habitat loss. Stormwater would be treated to minimize impacts to water quality and in-stream flows in receiving water bodies. Based on this analysis, the Build Alternative is not anticipated to result in significant impacts to biological resources.

3.13 Wetlands and Waters of the U.S.

Wetlands are defined by the USACE as areas that are inundated and saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (USACE, 1987). Wetlands are transitional zones between terrestrial and aquatic systems where the land is covered by shallow water, or the water table is at or near the surface of the ground. Wetlands filter excess nutrients, sediment, and toxic materials from agricultural runoff before discharging to waterways. Additionally, water is trapped in wetlands and slowly released over floodplains, buffering uplands from storm surges (EPA, 2004).

Under the Clean Water Act (40 CFR 230.3), Waters of the U.S. are defined as all waters currently used, waters used in the past, or those that maybe susceptible to use in interstate or foreign commerce, including waters that are subject to the ebb and flow of the tide. Waters of the U.S. also include wetlands, lakes, rivers, streams, wet meadows, and natural ponds.

3.13.1 Existing Conditions

Potential wetlands and waters of the U.S. were identified through a review of existing inventory documents, followed by field verification to determine presence and to map boundaries. Locations and approximate boundaries of wetlands not previously identified by existing documentation were also determined during site visits. Site visits were performed on May 21, 2010, and April 18, 2013, to note the presence of wetlands within 100 feet of the proposed project improvements. Wetland types and approximate boundaries of wetlands are based on National Resources Conservation Service (NRCS) mapping of hydric soils, wetland hydrology, and vegetation using the standard references and protocols (NRCS, 2011).

Wetlands in the project area have been significantly altered as a result of urban and rural (agricultural) development. Much of the natural drainage system has been diverted through pipes, culverts, or ditches to accommodate residential, industrial, agricultural, and infrastructure development. This has affected the functional capacity of the remaining wetlands and the natural connectivity of wetlands in the project area.

3.13.1.1 Wetlands

Wetlands within the project area can be divided into three palustrine plant communities,[11] including emergent, scrub-shrub, and forested. These communities were mapped using aerial photography and confirmed during reconnaissance site visits. Wetland delineations were not completed. In the project area, 62 acres of potentially jurisdictional[12] wetlands were identified (Figure 3.13-1 and Figure 3.13-2). The acreage falls within the following plant communities:

- 35.5 acres Palustrine emergent (PEM) wetlands
- 8.2 acres Palustrine scrub-shrub (PSS) wetlands
- 3.5 acres Palustrine forested (PFO) wetlands
- 9.5 acres Palustrine forested/emergent (PFO/PEM) wetlands

---

[11] Wetlands are classified according to the general appearance of their habitat in terms of vegetation, physiography and substrate (Cowardin et al. 1979). **Palustrine** wetlands are nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity, due to ocean-derived salts, is below 0.5 percent. It also includes wetlands lacking such vegetation, but with all of the following four characteristics: (1) area less than 8 hectares (20 acres); (2) active wave-formed or bedrock shoreline features lacking; (3) water depth in the deepest part of basin less than 2 meters at low water; and (4) salinity, due to ocean-derived salts, less than 0.5 percent. The **Emergent Wetland** Class is characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens, which are present for most of the growing season in most years. The Class **Scrub-Shrub Wetland** includes areas dominated by woody vegetation less than 6 meters (20 feet) tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. The Class **Forested Wetland** is characterized by woody vegetation that is 6 meters (20 feet) tall or taller.

[12] Jurisdictional wetlands are those regulated by USACE under Section 404 and DSL under Oregon's Removal-Fill Law (ORS 196.795-990). Jurisdictional wetlands exhibit all three characteristics: hydrology, hydrophytes, and hydric soils (USACE, 1987). It is important to understand that some areas that function as wetlands ecologically, but exhibit only one or two of the three characteristics, do not currently qualify as USACE jurisdictional wetlands, and thus activities in these wetlands are not regulated under the CWA Section 404 program. Such wetlands, however, may perform valuable functions.

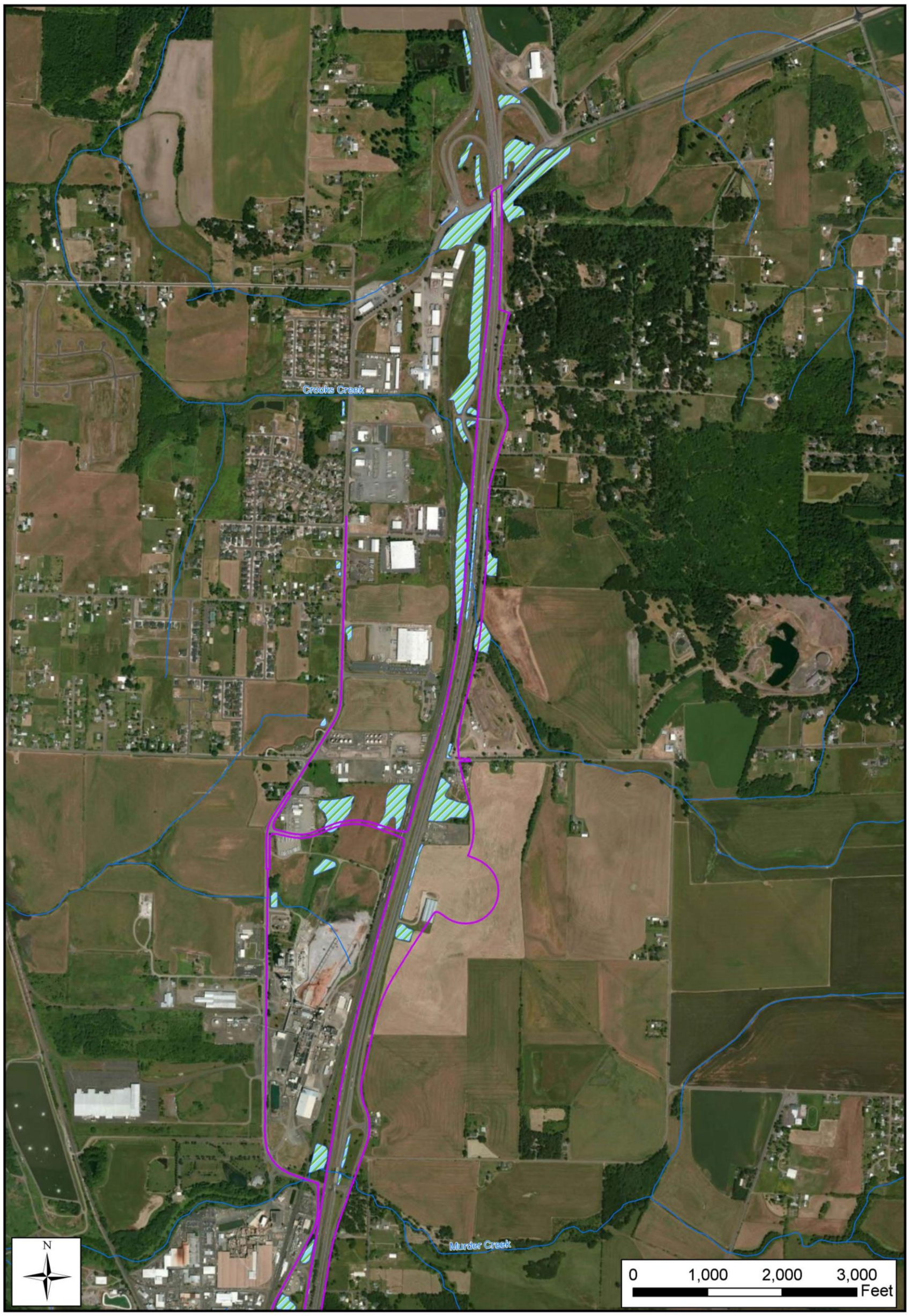
- 5.1 acres Palustrine scrub-shrub/emergent (PSS/PEM) wetlands

3.13.1.2 Streams and other Waters of the U.S.

Waters of the U.S. located within the project area are shown on Figure 3.13-1 and Figure 3.13-2.

Cox Creek

As the southernmost stream in the project area, Cox Creek flows to three man-made lakes (Swan, Timber-Linn, and Waverly) before entering the Willamette River.



Project Area
Potentially Jurisdictional Wetland
Streams

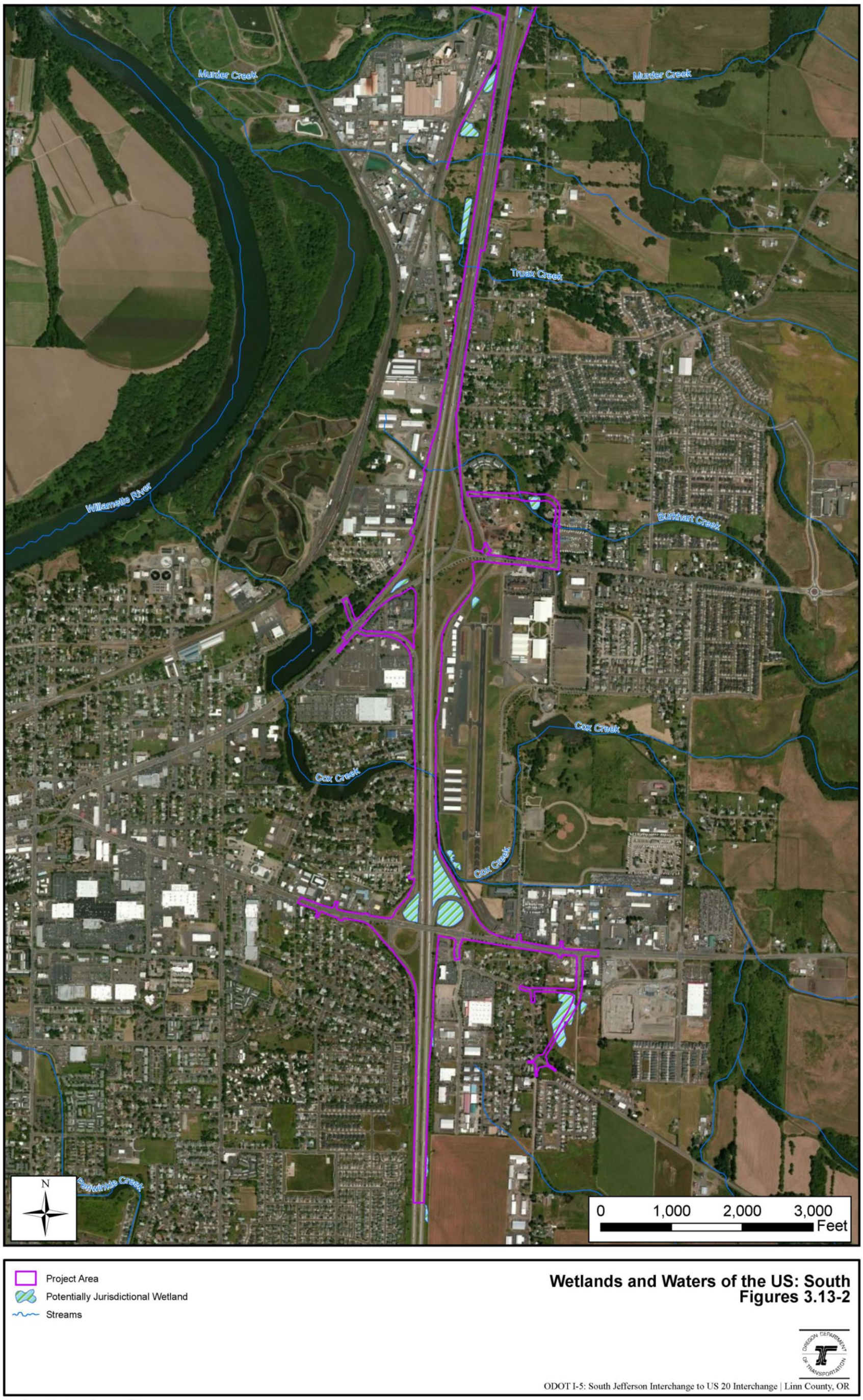
Wetlands and Waters of the US: North
Figure 3.13-1

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County, Streamnet, NWI

Figure 3.13-1: Project Area Wetlands and Waters of the US: North

This page intentionally left blank.



Data Source: Linn County, Streamnet, NWI

Figure 3.13-2: Project Area Wetlands and Waters of the US: South

This page intentionally left blank.

Burkhart Creek

Burkhart Creek, a Willamette River tributary, flows east to west through the project area and is conveyed under I-5 through a box culvert and a manmade channel, draining into Second Lake, just west of the project area.

Truax Creek

Truax Creek flows west and northwest via natural channels, culverts, and ditches across the project area through residential, commercial, and industrial land uses.

Murder Creek

I-5 crosses Murder Creek by two separate three-span bridges. Road fill confines Murder Creek between these bridges, but upstream and downstream of I-5 the creek is much less confined with areas of meandering channel. There is a water intake structure immediately downstream of the southbound bridge.

Crooks Creek

Crooks Creek is the northernmost creek in the project area, flowing north before turning west and crossing underneath I-5 through twin box culverts. The creek is confined between the highway and frontage road.

3.13.2 Wetlands Impacts

Using collected data and information about the project alternatives and construction methods, potential impacts to wetlands and waters of the U.S., including any regulated ditches, were determined. Permanent impacts of the project were quantitatively assessed based on the project footprint. Temporary and indirect effects were evaluated qualitatively.

3.13.2.1 Direct Impacts

No Build Alternative

Under the No Build Alternative, I-5 and current interchanges would remain in their current configurations, and no direct impacts to wetlands or other waters of the U.S. would occur.

Build Alternative

The proposed project would have both permanent and temporary impacts to wetlands and waters of the U.S. Permanent or temporary impacts would occur when these areas are filled or excavated to support project improvements. Wetlands that are completely permanently filled or excavated would lose their function. Loss of portions of wetlands would reduce wetland sizes, result in habitat fragmentation, decrease overall wetland functions, and may increase the potential for introduction and spread of invasive plant species.

Temporary Impacts

The Build Alternative would involve construction impacts that would likely include temporary fill and clearing for access and grading. Vegetation removal in emergent or scrub-shrub wetlands would result in the short-term loss of wetland functions, including a temporary reduction in evapotranspiration, water uptake, and soil stabilization, which could lead to increased water runoff and erosion. Forested wetlands would take longer to reestablish. Spills or leaks that may occur during construction could enter wetlands and impair water quality and damage wetland plants and wildlife.

Temporary impacts would not result in a permanent loss of wetlands. Wetlands temporarily impacted during construction would be restored to pre-existing conditions following the completion of construction. With the exception of forested wetlands, it is anticipated the wetlands would return to pre-construction condition within 5 years. Forested wetlands would take more time to return to pre-construction condition, and may never return to forested condition. For this reason, impacts to forested wetlands are generally considered permanent wetland impacts. Unavoidable and minimized permanent impacts to wetlands would trigger the need for compensatory mitigation.

Construction of staging areas and temporary access roads, as well as vegetation removal, could lead to erosion and increased sedimentation to wetlands, resulting in temporarily decreased water quality and reduced habitat availability. Accidental fuel and oil tank leaks and improperly disposed stormwater could enter wetlands and impair water quality and damage wetland plants and wildlife. Construction noise and increased human activity at the interchange and the wetland mitigation areas would temporarily disrupt wildlife associated with the wetlands.

Permanent Impacts

Table 3-26 and Table 3-27 summarize the estimated permanent impacts to wetlands and waters of the U.S. that would occur from the Build Alternative and its design options. The Build Alternative, regardless of design option, would result in approximately 13.4 acres of wetland impacts and 1.34 to 1.84 acre of impact to waters, depending on whether the Auxiliary Lanes or Collector Distributor System option is selected, respectively. All additional waters impacts associated with the Collector Distributor System option (0.7 acre) would result from a linear stretch of Cox Creek that would be impacted by the northbound Collector Distributor System lane. Although the project footprint associated with the Collector Distributor System lane connection between the Knox Butte and US 20 interchanges is larger than the footprint associated with the Auxiliary Lanes connection, no wetlands are present in this portion of the project area. Similarly, wetlands are not present in the area proposed for improvements on Airport Road SE. Therefore, wetland impacts resulting from each of the project design options are identical.

The majority of the wetlands impacted in the project area are PEM. Impacts would be caused by permanent removal or permanent fill placement. Vegetation composition could be altered as seeds and other plant materials are deposited in wetlands by way of runoff. Loss of portions of wetlands would reduce wetland sizes, result in habitat fragmentation, decrease overall wetland functions, and may increase the potential for introduction and spread of invasive plant species.

Table 3-26: Estimated Wetland Impacts Summary (Permanent Fill or Removal)

	Total Impact (acres)	Cowardin Class (acres)				
		PEM	PSS	PFO	PEM/ PSS	PEM/ PFO
Build Alternative – Auxiliary Lanes	13.4	9.9	2.5	0.3	0.1	0.6
Build Alternative – Collector Distributor System Lanes	13.4	9.9	2.5	0.3	0.1	0.6

PEM = Palustrine emergent wetlands; PFO = Palustrine forested wetlands; PSS = Palustrine scrub-shrub wetlands

Table 3-27: Estimated Waters of the U.S. Impacts (Permanent Fill or Removal)

	Crooks Creek (acres)	Burkhart Creek (acres)	Truax Creek (acres)	Murder Creek (acres)	Cox Creek (acres)	Total Acres
Build Alternative – Auxiliary Lanes	0.8	0.2	0.03 + 0.01 to Unnamed Trib	0.1	0.2	1.34
Build Alternative – Collector Distributor System Lanes	0.8	0.2	0.03 + 0.01 to Unnamed Trib	0.1	0.7	1.84

PEM = Palustrine emergent wetlands; PFO = Palustrine forested wetlands; PSS = Palustrine scrub-shrub wetlands

3.13.3 Minimization, Avoidance, and Mitigation Measures

Opportunities to avoid and minimize impacts have not yet been fully developed. As the design progresses, avoidance and minimization of wetland impacts will be refined, and compensatory mitigation opportunities will be evaluated.

Standard BMPs and erosion control practices as specified in the ODOT Standard Specifications for Construction (Sections 00280 and 00290), would be implemented during construction activities in an effort to avoid and minimize potential water quality impacts to wetlands and other waters. The following are some of the standard BMPs for this type of project:

- Equipment staging areas and soil stockpiles would be placed within upland areas of the site and outside of wetland buffers.
- The limits of the construction area would be clearly flagged to minimize construction-related effects to adjacent wetlands, and access beyond the flagged area would be prohibited.
- Soil stockpiles would be covered with an impervious material when unattended for long periods of time and during a storm event.
- Sediment or exclusionary fencing would be properly installed adjacent to all wetlands and would be regularly inspected and maintained. These fences would be in place before any grading or vegetation removal and would be maintained until groundcover was reestablished.
- Areas temporarily disturbed by project construction would be restored to original grades and surface conditions, then seeded or planted with native species appropriate to the affected area.
- Temporary Erosion and Sediment Control and Spill Prevention Control and Countermeasures plans would be developed by the Engineer/Contractor and approved prior to the start of construction.
- All hazardous substances, chemicals, fuels, and lubricating oils would be stored in uplands away from wetlands and wetland buffers.
- Stormwater runoff from the proposed improvements would be directed into stormwater treatment facilities to treat for water quality and flow control (see Section 3.11, Water Resources, for more information).

Impacts to wetlands and other waters would be further minimized by implementing the following strategies:

- Refining the design, where feasible, to reduce overall wetland impacts of the project
- Installing features (e.g., culverts) to provide hydrologic connectivity from one side of roadway to the other for wetlands that have been bisected
- Installing culverts to provide amphibian and small mammal passage, where appropriate
- Using fish-passable culverts or bridge structures, where appropriate
- Choosing alternative placement of project elements where opportunities are available

Roads impacting wetlands would be designed to maintain the surface and subsurface flows of water through the wetlands to avoid dewatering or hydrologic changes to the wetlands. Compensatory mitigation[13] would be provided for permanent wetland impacts to offset the loss of functions and values, depending on the type and quality of wetland and the mitigation strategy (i.e., restoration, creation, or enhancement based on the DSL formula for replacing wetland functions). Temporary impacts would be mitigated by on-site restoration or rehabilitation by

[13] Compensatory mitigation is the restoration, creation, enhancement, or preservation of wetlands to replace those lost or degraded as a result of a project.

returning ground contours, replanting with native vegetation, providing weed removal, or other methods to enhance wetlands disturbed during construction.

3.13.4 Indirect Impacts

Indirect temporary effects to wetlands and waters may result from construction activities that lead to erosion and increased sedimentation to receiving waters, resulting in temporarily decreased water quality and habitat availability. In addition, spills and releases of hazardous substances and improperly treated stormwater could enter receiving waters, impairing water quality and damaging wetland plants and wildlife.

The Build Alternative will increase the amount of PGIS within the project area, which could increase stormwater runoff and sedimentation to wetlands and waters. This, in turn, may compromise the water quality and functional capacity of receiving waters. Implementing BMPs and constructing stormwater facilities would minimize these effects.

3.13.5 Cumulative Impacts

Past land use actions and transportation projects have resulted in the conversion of most wetlands in the project area to urban uses and have disturbed the vegetation communities in wetland areas that remain. Consequently, there are few rare or unique wetland resources in the project area. Past actions along with foreseeable future roadway projects and land use developments were considered to determine potential cumulative impacts associated with the Build Alternative improvements. Cumulative impacts to wetland and water resources may include:

- Increasing the demands for urban-level public services and facilities
- Long-term introduction of sediments into adjacent waterways
- Potential long-term degradation of water quality
- Decreasing the amount of open space and associated wildlife/vegetation habitat, including wetlands
- Increasing long-term stormwater peak flows and volumes
- Increasing economic development, which may involve increased land development; however, land would be developed in accordance with Albany, Millersburg, and Linn County land use regulations

3.13.6 Conclusion

Based on preliminary design information and aerial-level mapping of wetlands, less than 14 acres of wetlands and less than 2 acres of waters of the US would be impacted by the Build Alternative. As the design progresses, the areal loss of wetlands would be minimized, and the total impact area may be reduced. Most of the wetlands impacted are emergent wetlands with disturbed vegetation communities; mitigating for impacts to wetlands with these functions is attainable. Substantial wetland loss to rare or unique resources would not occur. Compensatory mitigation would be implemented so the project results in no net loss of wetland function in the watershed.

3.14 Hazardous Materials

This section describes the potential impacts from hazardous materials located within the project area and surrounding areas that may be encountered during construction and/or operation of the proposed project. Hazardous materials include all types of contaminated or hazardous media, including dangerous waste, hazardous waste, toxic waste, problem waste, and hazardous substances considered toxic to humans or the environment.

3.14.1 Existing Conditions

Hazardous materials in the project area were identified through database searches, review of historical aerial photographs and topographic maps, and a site reconnaissance. The database search was performed on April 1,

2013, and included Federal, State, local, and Tribal databases, as well as Environmental Data Resources (EDR) Historic Auto Stations and EDR Historic Cleaners, which identify potential sites of concern based on past business directories. The environmental database search encompassed a 0.5-mile radius from the approximate center line of the project alignment in the area of proposed improvements, and in the area of potential right-of-way acquisition. The results of the database search are summarized below.

3.14.2 Hazardous Materials Impacts

All sites identified in the database search were evaluated in terms of their potential for contamination and risk to the project. They were ranked into three categories:

High – Documented soil and/or groundwater contamination on a site within the project area that would be disturbed by construction activities (i.e., ground-disturbing activities), sites proposed for partial or full property acquisition, or sites located adjacent to proposed roadway improvements where documented contamination has migrated offsite and contaminated other soil and groundwater resources.

Moderate – Documented sites located adjacent to or within in the project area that may be potential release sites. These sites would be partially disturbed or completely displaced by construction activities (e.g., partial property acquisition where a small manufacturing business is located, but the building where the manufacturing is taking place would not be acquired; hazardous waste generators; small quantity generators; or gas stations with no reported releases).

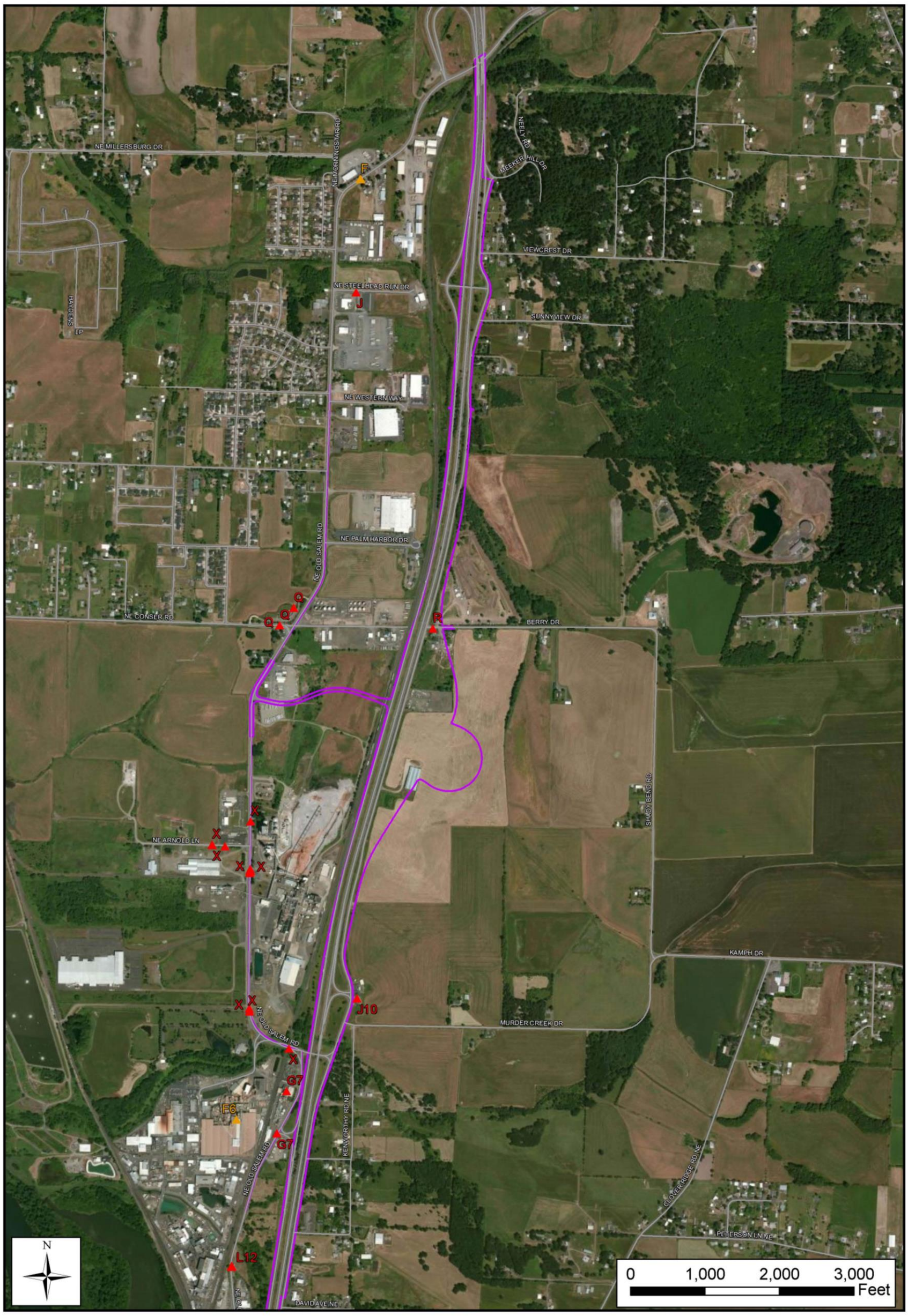
Low – Documented sites located within the project area where the property would not be disturbed by construction activities or where the site is listed only as a hazardous waste generator and no other indications of releases have been found.

Sites of moderate and high risk that were identified within the project area are listed in Table 3-28 and illustrated in Figure 3.14-1 and Figure 3.14-2.

Table 3-28: Moderate- and High-Risk Sites within Project Area

Map ID[a]	Site Name	Risk Level
F	Plywood Components, Inc.	Moderate
Q	Kinder Morgan SFPP LOP Albany Terminal Tosco Owned Equipment Southern Pacific Prop.	High
R	Oregon Dust Control	High
X	Imperial West Chemical Co. Amerigas Propane Inc. International Paper Albany Paper Mill Willamette Industries Weyerhaeuser Company Weyerhaeuser Company NR Albany Containerboard CAMCO Kenwater North America	High
F6	Flakeboard America Limited Willamette Industries, Inc. Duraflake Division Weyerhaeuser Co. Duraflake	Moderate
G7	Georgia Pacific Georgia Pacific Resigns GP Millersburg Resign Plant Georgia Pacific Chemicals	High
J10	Spray Foam, Inc.	High
L12	Wah Chang Teledyne Wah Chang ATI Wah Chang Teledyne Industries, Inc. Teledyne Wah Chang Albany Wah Chang Research Center Dremet Wah Chang TDY Industries, Inc. Ormet Wah Chang (North)	High
P16	Pacific Power and Light Pavement Rehabilitation Pacificorp Willamette Operations Center	Moderate
Z26	Elstor Sales Corporation	Moderate
O41	Shalimar Properties, Inc. Pacifica West Enterprises	High
G59	Arco Facility No. 04379	Moderate
Z104	S&S Easy Mart Dave's Freeway Texaco 76 Food Mart	High
R122	Jack's Truck Stop Jacksons Soil Company # 5781 Jack's Truck Stop #5781	High
W153	AA Towing Company Economy Towing	High

[a]*Map ID corresponds to labels on Figure 3.14-1 and Figure 3.14-2.*



Hazardous Materials*

- High Risk
- Moderate Risk
- Roads
- Project Area

* F-X: refer to Table 3-22 for site name

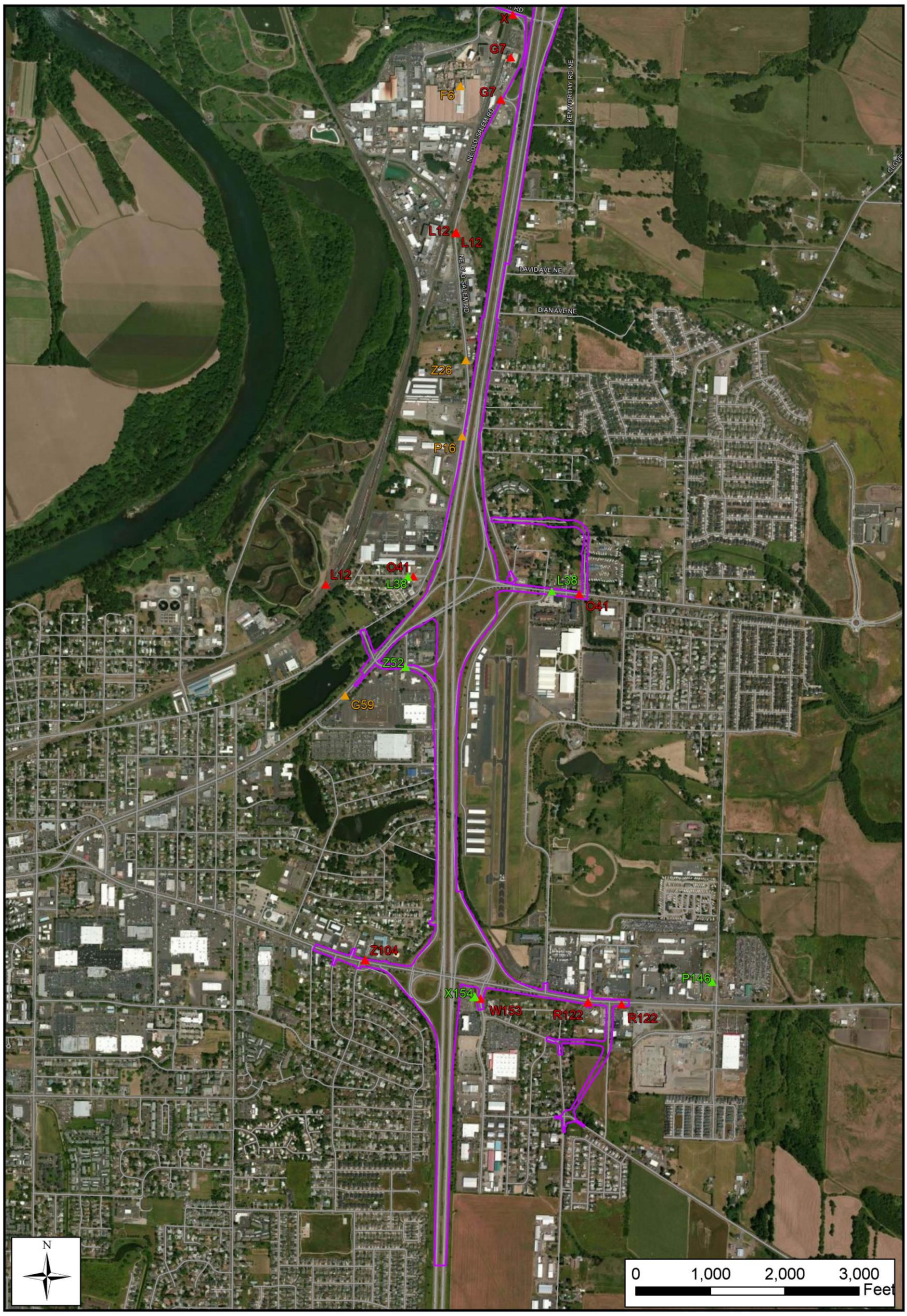
Moderate and High Risk Sites for Hazardous Materials: North
Figure 3.14-1

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County,EDR, Bing

Figure 3.14-1: Moderate- and High-Risk Sites: North

This page intentionally left blank.



Hazardous Materials*

- High Risk
- Moderate Risk
- Potential Sources of Hazardous Materials*
- Project Area
- Roads

* F-X: refer to Table 3-22 for site name

Moderate and High Risk Sites for Hazardous Materials: South
Figure 3.14-2

ODOT I-5: South Jefferson Interchange to US 20 Interchange | Linn County, OR

Data Source: Linn County,EDR, Bing

Figure 3.14-2: Moderate- and High-Risk Sites: South

This page intentionally left blank.

3.14.2.1 Direct Impacts

No Build Alternative

Minor maintenance and repair activities in the project area would occur as part of the No Build Alternative. Existing conditions and hazardous materials would persist under the No Build Alternative.

Build Alternative

Ten sites of high risk and five sites of moderate risk could be impacted by the Build Alternative. In addition, the following sites identified from the database search could be impacted as well; these sites were not identified as moderate- or high-risk sites, but are potential sources of hazardous materials requiring further investigation and assessment:

- Beacon T&R Truck Stop No. 5-15 (Site X154), Tom Tom Deli-Market/Chevron (Site Z52), and Albany Municipal Airport (Site L38): underground storage tank (UST) sites
- Truck Maintenance Facility (Former; P146): a suspected contaminated waste site under the Environmental Cleanup Site Information System

Impacts would be the same under both design options for the Build Alternative.

Temporary Impacts

Temporary impacts to hazardous materials include the risk of exacerbation of and/or exposure to existing contamination, accidental release of hazardous substances, and generation of hazardous and/or non-hazardous waste during construction. If encountered during construction, the presence of contaminated soil or groundwater could result in public health or environmental effects through the release and spread of contaminated soil, sediment, or groundwater; altering the flow or generating contaminated groundwater if dewatering is required; and creating pathways for contamination to migrate through the soil column. Exposure to such contamination can adversely affect construction worker and public safety and lead to diminished quality of natural resources. Mitigation measures would be included in the project to avoid and minimize possible short-term exposure to the public and environment during construction. Project responses to deal with this contamination can increase project costs and cause project delays. At the same time, there can be long-term benefits to human health and the environment when construction activities result in identifying and remediating soils or groundwater that are already contaminated with hazardous materials.

The following sections describe the potential temporary impacts associated with discrete project elements.

Mainline Lane Addition

Construction of the mainline lane addition could result in public health or environmental impacts from contaminated sites located along the mainline of I-5, as well as from past spills or releases along the freeway. In general, groundwater is expected to flow west toward the Willamette River; as a result, potentially contaminated groundwater from sites including Oregon Dust Control (Site R), Spray Foam, Inc. (Site J10), Albany Municipal Airport (Site L38), Shalimar Properties (Site O41), Jack's Truck Stop (Site R122), and Beacon T&R Truck Stop (Site X154) may be encountered. In addition, potentially contaminated soil or groundwater from unreported spills along the I-5 corridor may be encountered.

Millersburg Interchange

Construction of the interchange could include additional impacts to potential soil and groundwater contamination associated with Oregon Dust Control (Site R), as property acquisition and construction activities could be conducted at the site.

Construction of the roadway connection to Old Salem Road could impact potential soil and groundwater contamination associated with Kinder Morgan (Site Q), an old tank farm with multiple reported USTs and aboveground storage tanks. Soil and groundwater associated with Kinder Morgan, which is located approximately 500 feet northwest of the proposed connection, may be impacted with petroleum products.

Knox Butte Interchange

Construction activities associated with the interchange could encounter potential soil contamination associated with Tom Tom Deli-Market (Site Z52).

Improvements to local streets near the interchange could encounter contaminated soil and groundwater from Shalimar Properties, Inc. (Site O41), Elstor Sales (Site Z26), and Pacific Power and Light (Site P16), as construction activities would occur at or adjacent to these sites.

US 20 Interchange

Improvements to local streets within the US 20 Interchange could impact contaminated soil and groundwater from sites including S&S Easy Mart (Site Z104), Jack's Truck Stop (Site R122) and Truck Maintenance Facility (Site P146). Local streets are heavily commercial and include numerous USTs; as such, additional impacts from unreported releases may be encountered.

Permanent Impacts

Operating and maintaining highway facilities may result in spills and leaks of hazardous substances or petroleum products. Stormwater can transport these materials from the highway to surface water or into the water table, where they can persist and accumulate for long periods of time and cause harm to species and their habitats. However, the Build Alternative would have beneficial effects on stormwater quality, because stormwater would be managed and treated prior to infiltration into soil or release to surface waters.

3.14.3 Minimization, Avoidance, and Mitigation Measures

During final design, construction at known or suspected contaminated sites would require further hazardous materials investigation to identify an estimated quantity of contamination and provide recommendations on how to minimize potential effects and cost-effectively manage and dispose of contaminated material generated during project construction.

Based on potential soil and groundwater contamination that may be encountered, the following BMPs would be employed to avoid, control, and manage potential effects from hazardous materials:

- Preparation of a Level 2 Preliminary Site Investigation report at or adjacent to locations including Oregon Dust Control (Site R), Pacific Power and Light (Site P16), Elstor Sales (Site Z26),Shalimar Properties, Inc. (Site O41), Tom Tom Deli-Market (Site Z52), S&S Easy Mart (Site Z104), and Jack's Truck Stop (Site R122).
- Performing site-specific hazardous material investigations where and when necessary
- Preparing and implementing a project-specific hazardous material management plan

- Preparing and implementing a Construction Stormwater Pollution Prevention Plan
- Preparing and implementing a Spill Prevention, Control, and Countermeasures Plan
- Altering construction design or techniques to avoid contaminated areas or minimize quantity of material generated

3.14.4 Indirect Impacts

The Build Alternative could result in changes in groundwater flow direction and velocity due to excavation during construction. These changes may result in groundwater flow along new preferential pathways, such as within utility corridors, exacerbating existing contamination in soil and/or groundwater. This also has the potential to influence cleanup of existing contamination over the long term since it could potentially cause existing contamination to impact new areas, which would then need to be addressed. The project would improve safety and mobility, thus decreasing the likelihood of vehicle accidents and resulting hazardous material spills.

3.14.5 Cumulative Impacts

Development in the Millersburg-Albany area, when combined with the Build Alternative, could potentially have beneficial and non-beneficial cumulative effects, both during and after construction. The potential cumulative effects include:

- Improved public and environmental safety as a result of potential subsurface investigations and site remediation actions required for construction activities
- Potential capping of contaminated materials due to paving efforts
- Enhanced understanding of existing hazardous materials located above and below the ground surface
- Enhanced understanding of existing geologic conditions due to subsurface investigations and excavations

3.14.6 Conclusion

The project would improve safety and mobility, thus decreasing the likelihood of vehicle accidents and the likelihood of hazardous material spills. Although sites of both high concern and moderate concern could be impacted by the Build Alternative, standard mitigation measures would be utilized to decrease potential short-term exposure to hazardous materials. Additionally, the removal of potentially impacted materials in the construction area would provide long-term cleanup benefits due to removal of the contamination source. Based on the hazardous materials analysis and associated mitigation measures, the Build Alternative is not anticipated to result in significant hazardous materials impacts.

3.15 Geology

This section describes geologic resources located within proposed project area and surrounding areas that would be potentially affected by construction and/or operation of the proposed project. Geologic resources include local features such as formation names and rock types, soils and seismic hazards (such as active faults), liquefaction risk, and mapped landslides. Selected soil attributes identified for evaluation include erosion by wind and water, typical drainage capacity, frost action, and corrosiveness. Seismic hazards can include the primary effects of an earthquake (such as surface rupture, ground shaking, ground failure, lateral spreading, fault displacement and subsidence), as well as secondary responses (such as liquefaction or seismically induced landslides, and tsunami inundation). Liquefaction is the phenomenon by which water-saturated, loose soils substantially lose strength and stiffness in response to an applied stress (shaking), usually an earthquake, that causes the soils to behave like a liquid. Liquefaction can result in failure of structures, including bridges and retaining walls, due to the sudden loss of strength, as well as drastic and irregular foundation settlement.

3.15.1 Existing Conditions

Information on geology and soils in the project area was gathered from the USGS, Oregon Department of Geology and Mineral Industries (DOGAMI), ORWD, NRCS, aerial photographs, and past project-specific studies.

3.15.1.1 Geology

The project area is characterized by broad, flat, alluvial plains flanked by the Tertiary marine and sedimentary rocks of the Coast Range to the west, Tertiary- and Quaternary-age volcanic/volcanoclastic rocks of the Cascades to the east, and the Columbia River to the north (USGS, 2013a).

3.15.1.2 Soils

Using the NRCS Web Soil Survey (NRCS, 2013), a site-specific soil survey was generated and clipped to the limits of the project area. Soils in the project area consist primarily of silty and clay loams. Most of the soil types (approximately 83 percent) have moderate erosion, are a Category 5 (about 74 percent) for Tolerable Soil loss (T), and have a relatively low sensitivity to soil loss. Most of the soils within project area (approximately 87 percent) are in Wind Erodibility Groups 5 through 8, meaning these soils have a low susceptibility to erosion by wind action. According to the NRCS, about 18 percent of the project area is known to have restrictive layers, including shallow bedrock (between 12-72 inches below ground surface), abrupt textural changes, and bedrock outcrops.

No soil types within the project area are anticipated to have a high response to frost action, including expansion due to frost and rapid loss of strength due to thaw. Most soil types within the project area have a high potential for causing corrosion on uncoated steel and have a low to moderate corrosion potential for concrete.

3.15.1.3 Seismic Hazards

The USGS Quaternary Fault and Fold Database (USGS, 2013b) was reviewed to identify potentially active faults within about 31 miles (50 kilometers) of the project area (considered to have moved in the past 10,000 years [approximately]). No Quaternary-age faults are known to occur within the project area. The Owl Creek fault is the closest Quaternary-age fault. It is located between Albany and Corvallis, approximately 6 miles (10 kilometers) from the project area (750,000 years; USGS 2013b). There are several faults (e.g., Mill Creek fault and Salem-Eola Hills homocline) located north of the project area (approximately 6 miles, or 10 kilometers); however, these are considered inactive faults.

A review of the USGS database of earthquakes (USGS, 2013c) lists seven earthquakes, ranging in magnitude from 1.4 to 3.6 within about a 31-mile (50-kilometer) radius of the project area, with the most recent documented in April 2013. There are no mapped landslides within the project area. The closest documented landslide is nearly 1 mile (1.43 kilometers) from the north tip of the project area (DOGAMI, 2013). The project area is located within a region that is moderately susceptible to earthquake-induced landslides (DOGAMI, 2008).

Most soils within the project area are classified as moderately to highly prone to liquefaction during large earthquakes (DOGAMI, 2008), because the project area is located within the floodplains of the Willamette and Santiam rivers.

3.15.2 Geology Impacts

Potential impacts to geologic resources and soils were determined using collected data and information about the project alternatives and construction methods. The project site plan and construction impact footprint were viewed in GIS with mapped soil data and geologic hazards data.

3.15.2.1 Direct Impacts

No Build Alternative

There would be no direct geologic or soils impacts associated with the No Build Alternative. Under the No Build Alternative, substandard structures (e.g., bridges, culverts, and retaining walls) would remain in place and could expose the public to structure failure during a seismic event.

Build Alternative

With the Build Alternative, existing structures would be replaced with structures designed to meet current design standards for seismicity. Temporary impacts during construction could occur, but permanent impacts are not expected. Temporary impacts would be the same for both design options under the Build Alternative.

Temporary Impacts

The potential for temporary slope instability and soil erosion is greatest during construction, when removal of vegetation for initial clearing, grubbing, and grading activities exposes soil and makes it more susceptible to erosion. Soils with a high silt content are extremely susceptible to sheet and rill erosion, and produce a high rate of runoff. Standard construction erosion and sediment BMPs would be needed during staging, clearing, and grading activities. Revegetation of disturbed ground would be required for permanent stabilization once construction is complete.

Permanent Impacts

No permanent impacts are expected to geology and soils. Soil productivity and loss would occur in areas where asphalt and other concrete materials replace soils. However, soils in the project area are highly disturbed due to previous highway construction and current agricultural activities.

3.15.3 Minimization, Avoidance, and Mitigation Measures

Based upon the preliminary review of local and regional geology and soils within the project area, no specific hazards were identified. Further geotechnical investigation and characterization are necessary to assess the impact of local geology and soils on bridge or structure design; however, preliminary design should assume that structure foundations would need to be founded on or in non-liquefiable soils or in competent bedrock. Further geotechnical investigation would occur during final design.

To prevent erosion and soil loss, temporary and permanent erosion control BMPs may include silt fences, flotation silt curtains, retention basins, detention ponds, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching.

Most soils within the project area should be able to easily sustain a healthy and diverse assemblage of native plants and grasses upon completion of construction.

3.15.4 Indirect Impacts

No indirect impacts to geology and soils are anticipated.

3.15.5 Cumulative Impacts

Roadway improvements would occur as planned by the City of Albany, the City of Millersburg, and Linn County. Development would occur as allowed by local land use ordinances. Future construction in the project area would further reduce soil productivity and loss by replacing the soil substrate with an impervious service material.

3.15.6 Conclusion

Geotechnical design for the proposed project must meet the design guidance required by ODOT's Geotechnical Design Manual (ODOT, 2013c). Materials and construction practices used for the proposed project will be in accordance with the Standard Specifications for Construction (ODOT, 2008).

3.16 Utilities

This section describes utilities located within the project area that could be affected by construction and/or operation of the proposed project. Both underground and aerial utilities are located within the project area. Underground utilities include water, sanitary sewer facilities, storm sewer facilities, and natural gas lines. Electrical service facilities and communication lines are sometimes located underground. Aerial utilities typically include communication facilities that are attached to electric distribution poles or on their own special-purpose structures, such as high-tension power lines or wireless communication towers.

3.16.1 Existing Conditions

The following section was prepared based on information collected from public agency websites and communications with agency personnel[14].

Underground utilities in the project area include:

- ODOT stormwater facilities
- City of Albany Water and Sewer
- Northwest Natural (natural gas lines)
- ATI-Wah Chang (high-pressure gas lines)
- Kinder Morgan Energy (high-pressure gas lines and cathodic protection station)
- International Paper – Albany (associated facilities)
- City of Albany IT Department (fiber optic)
- LightSpeed (LS) Networks (communication lines)
- Qwest Communications (Century Link) (communication lines)

Aerial utilities in the project area include:

- ODOT electrical facilities
- PacifiCorp
- Qwest Local Network
- Qwest Communications (Century Link)
- Verizon
- Comcast
- AT&T Corp

[14] ODOT Region 2, District 4 Permits Specialist. 2013. Conversation with HDR, Inc. November 8.

- U.S. Federal Aviation Administration (FAA)
- Level 3 Communications
- Century Link

Although they were requested, several utility owners did not provide maps showing their facilities; therefore, potential conflicts could not be verified. These include:

- PacifiCorp
- Qwest Local Network
- Qwest Communications (Century Link)
- Verizon
- Comcast
- AT&T Corp
- FAA
- Level 3 Communications
- Century Link
- International Paper – Albany location of aerial facilities was completed via limited site inspection and review of aerial photographs.

3.16.2 Utilities Impacts

Impacts of the project on utilities were assessed based on:

- Potential impacts to utility facilities requiring functional replacements
- Major impacts to irrigation facilities
- Impacts to city or county water and sewer facilities
- Ease of moving or mitigating impacts to utilities

Ultimately, reimbursement for relocation of utilities encompassed under the ODOT utility program resides in a utility owner's prior property right. Prior property rights (Prior Rights) refer to the right of a private easement, deeded parcel or property, public utility easement, or other conveyance to reimbursement for facility relocation or abandonment costs required by an agency during design or construction of a project for public purpose.

3.16.2.1 Direct Impacts

No Build Alternative

Under the No Build Alternative, no construction activities would occur that require relocation or adjustment of utilities; therefore, no impacts would occur to existing utilities.

Build Alternative

The Build Alternative could result in both temporary and permanent impacts to utilities, as discussed below. Impacts under both the Auxiliary Lanes and Collector Distributor System design options would be similar, and any differences

would likely be minor. Therefore, potential impacts to utilities are discussed as they relate to the Build Alternative, regardless of design option.

Potential substantial constraints are conflicts with a utility facility that could result in additional cost to ODOT in their relocation or adjustment, or have the potential to result in a construction delay due to issues such as complexity or permitting requirements. The following utilities pose a potentially substantial constraint:

ATI-Wah Chang: High-pressure gas lines (10-inch, 800 pounds per square inch) and cathodic protection station. High-pressure gas lines cross I-5 between MP 236 and 237, approximately. The ODOT utility permits list indicates three permits for ATI-Wah Chang facilities located between MP 234 and 236. Further research of the utility permits would be required in order to determine Prior Rights of these facilities. This research would be completed during the design phase of the project.

The cathodic protection station and gas lines west of I-5 are located on private property. The proposed option for Millersburg is potentially in conflict with the cathodic protection station, which was constructed in the 1990s. The gas lines have a minimum of 5 feet of cover and are also within the footprint of the over-crossing structure and touchdown locations. If the structures, including retaining walls, cannot be designed to avoid the gas lines and maintain the minimum coverage requirement (5 feet), their relocation or adjustment would need to occur.

Kinder Morgan Energy: High-pressure gas lines. Facilities that cross I-5 do not appear to have an ODOT utility permit approximately between MP 236 and 237, and further investigation is necessary in order to determine Prior Rights. Facilities also parallel Old Salem Road. Cover ranges in depth from 3 feet to 8 feet. Kinder Morgan's facilities east of I-5 are located on private property and lie within the footprint of the folded diamond interchange. If the project cannot be designed to avoid the gas lines and maintain Kinder Morgan's minimum coverage requirement, relocation would need to occur.

FAA Communication lines: Locations are unknown. Should potential conflicts arise, resolution would occur during the design phase of the project. Discussions with permit specialists indicate that relocation could be challenging (ODOT, February 2013).

Northwest Natural Gas Lines: Several large-diameter mainlines occur within the project area (Airport Road SE, Old Salem Road NE, and Spicer Road SE). A large mainline (approximately 10.75 inches in diameter) crosses I-5 south of the US 20 Interchange at approximately MP 233.1. This appears to have an existing ODOT utility permit. Due to the large size of these lines, their relocation or adjustment would need to occur.

LS Networks: These facilities are attached to electrical poles along US 20 and Waverly Road. Bringing these roadways to current design standards may require relocation of the poles and, therefore, relocation of LS Networks' facilities. LS Networks currently have a franchise agreement (AMC, 2013a) with the City of Albany. Relocation or adjustment of LS Networks facilities on City of Albany rights-of-way undertaken by anyone other than the City of Albany (e.g., ODOT) would require compensation.

Qwest Telephone: Qwest Telephone currently has a franchise agreement (AMC, 2013b) with the City of Albany. Relocation or adjustment of Qwest Telephone facilities on City of Albany rights-of-way undertaken by anyone other than the City of Albany (e.g., ODOT) would require compensation.

Comcast Telecommunication Franchise: Although review of the One-Call™ tickets indicates that Comcast facilities are not located within the project area, only a preliminary review was completed. If upon further investigation Comcast facilities are found to be located within the project area, it should be noted that Comcast currently has a franchise agreement (AMC, 2013c) with the City of Albany. Relocation or adjustment of Comcast telecommunication facilities on City of Albany rights-of-way undertaken by anyone other than the City of Albany (e.g., ODOT) would require compensation.

AT&T Corp. Telecommunication Franchise: AT&T currently has a franchise agreement (AMC, 2013c) with the City of Albany. Relocation or adjustment of AT&T telecommunication facilities on City of Albany rights-of-way undertaken by anyone other than the City of Albany (e.g., ODOT) would require compensation.

Of the above utilities, the ATI-Wah Chang, Kinder Morgan, Northwest Natural mainlines, and FAA communication lines have the greatest potential to result in additional cost or schedule delay to the project.

Cost estimates for utility relocation have been requested from each utility owner; however, some costs have not been provided as of completion of this analysis. Utility relocation costs can range from $250,000 per mile of roadway reconstructed to $2,000,000 per mile (Brian Thompson [ODOT], 2013). For estimating purposes, the same cost per linear foot was assumed for utility coordination, regardless of whether the facility may be totally relocated or adjusted in place. Table 3-29 provides a summary of estimated utility relocation or adjustment costs based on the information available at the time this analysis was completed.

Table 3-29: Estimated Utility Relocation Costs

Utility Owner	Approximate Relocation / Adjustment (feet)		Approximate Cost per Linear Foot	Approximate Cost (2013 dollars)	
	Compensable	Not Compensable		Compensable	Not Compensable
COA Water	12,166	11,671	$175	$2,219,050	$2,042,425
COA Sanitary	2,026	363	$150	$303,900	$54,450
COA IT	868	380	$150	$130,200	$57,000
FAA	1,000 [a]	0	$500	$500,000	$0
Level 3 Communications	1,000 [a]	0	$150	$150,000	$0
LS Networks	430	0	$150	$64,500	$0
NWN	2,545	2,406	$500	$1,272,500	$1,203,000
Pacific Power	22,713	11,915	$95	$2,157,735	$1,131,925
Kinder Morgan	3,427	0	$500	$1,713,500	$0
ATI-Wah Chang	5,013	353	$500	$2,506,500	$1,765,000
Century Link	1,000[a]	0	$150	$150,000	$0
Total Approximate Relocation / Adjustment Costs				**$11,167,885**	**$6,253,800**

[a] Exact location unknown, assumed value for estimating.
COA: City of Albany; NWN: Northwest Natural Gas Lines

Temporary Impacts

Temporary impacts as a result of constructing the Build Alternative may include temporary disruption of utilities to residents and commercial/industrial properties. Careful coordination with utility companies to locate and/or switch over utility lines or wires would help minimize this potential Impact.

Permanent Impacts

Based on preliminary research, no major utility facilities (i.e., electric substations) would be affected by the project. Following project completion, potential disruptions to utilities would no longer occur, and services would be restored to normal operating conditions. Therefore, permanent impacts to utilities are not expected to occur.

3.16.3 Minimization, Avoidance, and Mitigation Measures

Further investigation of utilities in the project area would occur during the design phase. This investigation would include contacting all utility owners within the proposed project limits. ODOT and local jurisdictions would work with utility owners to develop plans to either protect or relocate utility facilities within the proposed project area limits.

The relocations of utilities can involve impacts of their own, including the need to reconstruct or widen existing public rights-of-way, and could require acquisition of additional property, or temporary or permanent easements for the utilities. During the design phase, utilities would be more thoroughly mapped and the effects of the project on those utilities would be re-examined.

Proper coordination and the use of standard construction procedures and techniques would ensure minimal disturbance to system users, and avoid damage or impacts to existing facilities that would not require relocation or upgrades. For example, typically, new facilities such as poles or ducts are installed, and then service is switched over to the new facilities, thereby minimizing any disruption of service to the utility users.

3.16.4 Indirect Impacts

Expected use of the existing utilities may increase in the area due to the Build Alternative. New infrastructure may need to be installed to handle additional load requirements. Indirect impacts to utilities may occur due to an increase in population.

3.16.5 Cumulative Impacts

Unplanned impacts are not expected. Therefore, cumulative impacts are not anticipated.

3.16.6 Conclusion

Both aerial and underground utilities occur within the project area. Based upon this assessment, potentially substantial conflicts include ATI-Wah Chang gas lines and cathodic protection station, Kinder Morgan gas lines, U.S. FAA communication lines, and Northwest Natural gas lines (mainlines crossing I-5). These facilities have the greatest potential to result in additional cost. Provided utility coordination occurs in accordance with ODOT's Utility Relocation Guide (ODOT, 2011c) and the Oregon Right of Way Manual, Chapter 10 (ODOT, 2013a), and occurs early during the design process to allow new facilities to be brought on-line prior to the construction, substantial impacts are not expected.

3.17 Climate Change and Greenhouse Gas Emissions

3.17.1 Greenhouse Gas Impacts and Global Climate Change

The issue of greenhouse gas (GHG) emissions and global climate change is an important national and global concern that is being addressed by various State and Federal agencies, including ODOT and FHWA.

The transportation sector is the second-largest source of total GHG in the U.S., and the largest source of CO_2 emissions—the predominant GHG. In 2004, the transportation sector was responsible for 31 percent of all U.S. CO_2 emissions. The principal anthropogenic (human-made) source of carbon emissions is the combustion of fossil fuels, which accounts for approximately 80 percent of anthropogenic emissions of carbon worldwide. Almost all (98 percent) transportation-sector emissions result from the consumption of petroleum products, such as gasoline, diesel fuel, jet fuel, and residual fuel.

GHG emissions analyses may be informative at regional, state, or national levels when conducted during local and regional land use planning processes. ODOT's recent land use and transportation modeling efforts have shown that land use patterns have a much greater impact on all emissions than do highway expansions. Further, the needs for

most highway projects are typically a result of land use changes, development, growth, and other local and regional changing trends.

As of the date of publication of this document, no Federal laws specifically require GHG emissions analysis in project-level NEPA documents. NEPA requires Federal agencies to scope and address the significant issues of any proposal and to concentrate on the analyses of issues that can be truly meaningful to the consideration of and comparison between project alternatives. In the absence of Federal regulations and a regional or national framework for considering the implications of project-level GHG analyses, FHWA concludes that GHG emissions calculated for project alternatives cannot be usefully evaluated in the same way that vehicle emissions are evaluated within a local project-level context, and that such an attempted analysis would not inform project decision-making in any meaningful way.

Because climate change is a global issue, the emission changes due to project alternatives are minute. For this reason, FHWA did not calculate the GHG emissions associated with individual alternatives or design options. FHWA is working with other modal administrations through the Department of Transportation Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to GHGs—particularly CO_2 emissions—and to assess the risks to transportation systems and services from climate changes.

3.17.2 Oregon and USDOT Strategies

GHG emissions are currently not regulated in the state of Oregon. However, there are numerous goals for states and the nation to meet, and strategies to reduce GHG emissions are currently being addressed by ODOT and other State agencies throughout Oregon. On August 7, 2007, the Climate Change Integration Act came into effect with the passage of Oregon House Bill 3543. The Act creates GHG emission reduction goals for the State of Oregon, which aim to reduce the emissions 10 percent below 1990 levels by 2020 and achieve a 75 percent reduction below the 1990 levels by 2050. Oregon HB 3543 also created the Oregon Global Warming Commission, which is responsible for recommending policies to State and local governments to reduce GHG emissions. The Commission is expected to promulgate rules to direct agencies on how to regulate and enforce the legislation.

In addition, House Bill 2186, adopted in 2009, is a wide-ranging piece of legislation that seeks to reduce Oregon's GHG emissions. Section 10 requires the creation of a Metropolitan Planning Organization GHG Emissions Task Force to evaluate alternative land use and transportation scenarios that would meet community growth needs, while reducing GHG emissions and recommend future legislative action to support such efforts.

Intelligent transportation systems (ITS) and land use planning policies will be among several strategies necessary to meet the State's goal of reducing GHG emissions. To accomplish this, the Oregon Global Warming Commission has formed a Land Use and Transportation Committee (Committee). The scope and function of the Committee is to work with State agencies, including ODOT and the Oregon Department of Land and Conservation and Development (DLCD), to integrate GHG reduction goals into State transportation planning and land use policies currently under development. Transportation and land use policies will be designated to stop the growth of GHG emissions, and then reduce emissions over time according to the specific goals set out by the Oregon Legislature. Previously, this collaboration resulted in Oregon Senate Bill 1059, passed during the Oregon Legislative Assembly 2010 Special Session. The Act more formally expresses the work that the two agencies (ODOT and DLCD) will perform regarding reducing GHG emissions and limiting expenditures.

Research is underway to develop more capable models for measuring, analyzing, evaluating, and reporting GHG emissions. ODOT is coordinating with other State and Federal agencies (Department of Energy, DEQ, FHWA, EPA) to determine appropriate contexts for measuring impacts from transportation and land use changes.

ODOT began development of the GreenSTEP (Greenhouse gas State Transportation Emission Planning) model in 2008 to provide modeling support for the development of a statewide strategy for reducing transportation-sector GHG emissions. The model is being used to estimate VMT and GHG emissions both statewide and within the various

metropolitan areas in Oregon, and combines household-level modeling of vehicle types and usage with more aggregate-level modeling of factors such as fuel types. The model is being used to assist in the development of a statewide strategy for reducing GHG emissions from the transportation sector in Oregon.

3.17.3 Conclusion

Climate change and GHG emissions are global issues occurring on a mega-scale. The project is not sufficiently large to have an effect on these global issues; therefore, the Build Alternative is not anticipated to result in substantial impacts to climate change issues. ODOT is pursuing these issues on a statewide basis, while USDOT and FHWA pursue these issues on a national basis.

3.18 Probable Permits and Approvals Needed

This project would require further coordination. Likely permits and clearances are identified in Table 3-30 below.

Table 3-30: Coordination, Permits, and Clearances from the Agencies/Jurisdictions

Agency	Requirements
FEDERAL AGENCIES	
U.S. Army Corps of Engineers	Section 404 Permit
U.S. Army Corps of Engineers/Department of State Lands	Compensatory Mitigation Plan
National Park Service	Section 6(f) conversion
Federal Highway Administration	Section 4(f) "*de-minimis*" use
National Marine Fisheries Service	ESA Section 7 Consultation/Biological Opinion
STATE OF OREGON AGENCIES	
Oregon Department of Transportation	Section 402 1200-CA NPDES Permit
Department of State Lands	Removal/Fill Permit
Oregon Department of Fish and Wildlife	Scientific Sampling Permit
Department of Fish and Wildlife	Fish Passage Plan
Department of Environmental Quality	Section 401 Water Quality Certification
LINN COUNTY	
Goal Exception Modification	Amendment of 2005 Exception to Oregon's Statewide Planning Goals 3, 11 and 14
Land Use Approval	Conditional Use Permit

4.0 SUMMARY OF PROPOSED MITIGATION AND CONSERVATION MEASURES

Table 4-1 provides a brief summary of the proposed mitigation and conservation measures to offset impacts associated with the proposed project.

Table 4-1: Summary of Proposed Mitigation and Conservation Measures

Area of Mitigation	Proposed Measures
Transportation	• Schedule lane shifts, closures, realignments, and detours to minimize adverse effects on interstate access and local traffic conditions. • Use construction phasing to minimize impacts on travel patterns. • Notify emergency service providers before any changes to travel patterns are made. • Coordinate bicycle and pedestrian facilities improvements with the City of Albany. • Approval for the Proposed New Millersburg Interchange will need to be received prior to the approval for final design of the interchange.
Socioeconomics	• Manage traffic to maintain traffic flow during construction as much as possible. • Incorporate signage and coordinate with businesses to keep vehicle and pedestrian connections to businesses open during construction. • Maintain emergency vehicle travel at all times. • Maintain public transportation connections. • Use noise abatement measures to minimize temporary impacts due to construction. • Coordinate with the Environmental Justice neighborhood prior to a construction project. • Provide translated materials to affected LEP neighborhoods.
Archaeological and Historic	• As final design occurs, continue to work with SHPO, appropriate Tribes, and other consulting parties to avoid impacts. • If archaeological resources are inadvertently encountered during the course of construction for this project, all earth disturbance in the vicinity of the find should be halted immediately in accordance with State and Federal laws. • When possible, locate noise barriers in a manner sensitive to the historic character of the area. • As final design occurs, work in consultation with the SHPO to avoid impacts where possible and to minimize effects where eligible resources cannot be avoided.
Section 4(f)	Measures to reduce potential impacts to Waverly Park include: • Implementing design refinements during project design phases to minimize the impact on Waverly Park, to the extent practicable. Design elements could include use of walls or steeper slopes to minimize slope encroachment on parkland. • Replanting vegetation temporarily impacted during construction. • Restoring facilities (such as paths) adjacent to affected areas. • Replacing acquired park property prior to construction Measures to reduce potential impacts to historic sites include: • Implementing design refinements during project design phases to minimize the impact on properties listed in or eligible for listing in the NRHP. • Continuing to work in consultation with the Oregon SHPO to avoid impacts where possible and to minimize effects where eligible historic resources cannot be avoided. • Conducting additional historical resource investigations in any other areas of potential impact added to the project footprint.
Section 6(f)(3) of the Land and Water Conservation Fund Act	• Coordinate with the City of Albany during design to identify design features that would lessen, to the extent practicable, the area of Waverly Park affected by the proposed project. • Coordinate with the City of Albany and park uses to incorporate park user input into construction and restoration plans. Restore facilities (such as paths) adjacent to affected areas. • Per Section 6(f)(3) requirements, seek replacement property for acquired park property (where impacts are known) prior to construction. • Replace acquired park property prior to construction.

Area of Mitigation	Proposed Measures

Noise	• Abatement: During final design, consider noise wall height, length, and locations, where cost/benefit allows.
	• Implement other noise abatement measures, as appropriate, in response to noise impact complaints.
	• If a specific noise impact complaint occurs during the construction of the project, one or more of the following noise mitigation measures may be required at the Contractor's expense as directed by the ODOT Construction Project Manager:
	  ○ Locate stationary construction equipment as far from nearby noise-sensitive properties as feasible.
	  ○ Shut off idling equipment.
	  ○ Notify nearby residents whenever extremely noisy work will be occurring.
	  ○ Install temporary or portable acoustic barriers around stationary construction noise sources.

Visual Resources	• Apply consistent design types, textures, materials, and colors to structures and roadway elements (e.g., guardrails, retaining walls, etc.) and surrounding areas throughout the project area. • Avoid and minimize the removal of vegetation (e.g., large old trees, etc.) from the area necessary for construction and staging activities. • Re-vegetate disturbed areas. • Vegetate road embankments to blend and integrate the roadway into the surrounding landscape and create a sense of continuity with the surrounding community. • Where feasible, vegetate medians within the freeway corridor to provide a glare screen between opposing lanes of traffic. • Use directional lighting when feasible to minimize nighttime glare to surrounding areas. • Explore design options for potential sound attenuation wall treatments that create a gateway to the City of Albany that are aesthetically pleasing in line, color, pattern, and/or texture.

Water Resources	• All discharge water created by construction (e.g., concrete washout, pumping for work area isolation, vehicle wash water) would be treated as follows:
	  ○ Design, build, and maintain facilities to collect and treat all construction discharge water, using the best available technology applicable to site conditions, to remove debris, nutrients, sediment, petroleum products, metals, and other pollutants likely to be present.
	  ○ If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 feet per second, and the maximum size of any aperture may not exceed 1 inch.
	  ○ Do not allow pollutants such as green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any water body, wetland, or stream channel below ordinary high water.
	• Schedule excavation, grading, and paving activities for dry weather periods, if possible.
	• Limit staging areas to the minimum size necessary to complete the project.

Area of Mitigation	Proposed Measures
Biology	• Existing vegetation to be retained, where shown in the plans or designated by the Engineer, shall be protected through the life of the contract. The Engineer shall designate the vegetation to be protected by a site preservation line, individual flagging, and/or high-visibility construction fencing. • The Contractor shall fell trees only within the area to be cleared, leave standing any trees or native growth indicated by the Engineer, and protect, by fencing if necessary, all trees or native growth from any damage caused by construction operations. • All disturbed areas shall be restored with a combination of native herbaceous and woody species, including grasses, shrubs, and trees per contract requirements (to be prepared in later phases of the project). • Roadside cleanup, as directed by the Engineer, may include obliterating abandoned roads and reshaping the areas to blend naturally with surroundings. Methods and equipment used in roadside cleanup shall be approved by the Engineer. • Temporary lighting shall be kept to the minimum necessary (i.e., in terms of both intensity and area illuminated). Lighting shall be prevented, where practicable, from shining directly on surface waters. • Fresh concrete and/or concrete byproducts and/or construction debris of any kind shall be prevented from entering surface waters during construction. Any water having direct contact with uncured concrete shall be contained and treated or removed from the site, as appropriate. • If foundations or substructures are to be built or removed from areas within or immediately adjacent to running streams, the Contractor shall isolate the work area and perform fish salvage, where applicable, prior to construction or demolition. • If impact pile driving is necessary in close proximity to ordinary high water line, the contractor shall provide measures (e.g., work area isolation, use of an attenuator) as necessary to minimize adverse impacts to fish or other aquatic life. The project would ensure piling installation operations do not cause or permit the release of any petroleum product to adjacent wetlands or water bodies. • The FAHP Programmatic will be used for potential impacts to ESA species.
Wetlands and Waters of the U.S.	• Wetland mitigation shall be in accordance with Federal and State laws.
Geology	• Design and construct retaining walls, embankment fills, cut slopes, and bridges with appropriate temporary and permanent erosion and/or scour control measures to minimize erosion potential and slope instability. • To prevent erosion and soil loss, temporary and permanent erosion control BMPs may include silt fences, flotation silt curtains, retention basins, detention ponds, seeding and sodding, riprap of exposed embankments, erosion mats, and mulching.
Utilities	• During final design, work with local jurisdictions and utility owners to develop plans to either protect or relocate utility facilities within the proposed project limits.

This page intentionally left blank.

5.0 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

Public involvement and agency coordination efforts were conducted to ensure that residents, land and business owners, and other interested parties were informed of the project as it moved forward and had opportunities to participate and provide input in the decision-making process. Public involvement was used to facilitate input on key elements and decisions for the development and evaluation of the Build Alternative, including the following:

- Identification of the project Purpose and Need
- Establishment of project Goals and Objectives
- Development of criteria for determining the range of alternatives
- Narrowing design options for inclusion in the Build Alternative
- Identification and assessment of potential impacts and mitigation measures

The Purpose and Need, Goals and Objectives, Build Alternative, and potential mitigation measures included in this document are the result of more than 5 years of meetings and community outreach in the Albany-Millersburg area. This chapter includes a description of the Project Teams involved in development of this analysis, and a summary of public outreach and agency coordination activities.

5.1 Project Partners

Development and assessment of the Build Alternative was a collaborative process involving ODOT, FHWA, City of Albany, City of Millersburg, Linn County, and ODOT's consultant team (a.k.a., the project partners), with input from the public and other resource agencies. Project decisions were made by the project partners using a series of Project Teams and a process of recommendations and reviews that allowed input from all project partners at appropriate levels in their organization. Figure 5.1-1 shows the roles and relationships of the Project Teams.

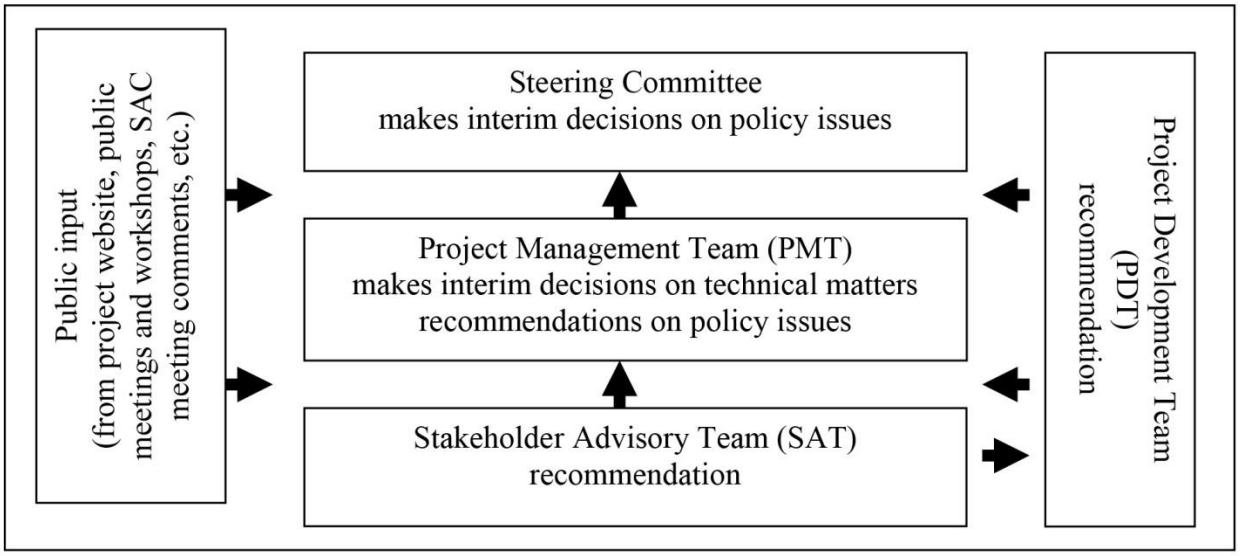


Figure 5.1-1: Project Team Roles and Relationships

The following sections describe the composition of the Project Teams and their role in the decision-making process during development and evaluation of the Build Alternative.

5.1.1 Project Management Team

The Project Management Team (PMT) directed project development at the management and policy levels. It was comprised of FHWA and ODOT staff, members of the consultant team, and representatives of the City of Albany, City of Millersburg, and Linn County. The PMT considered input from the Project Development Team (PDT) and Stakeholder Advisory Committee. The PMT made interim decisions on technical matters in the NEPA process, and made recommendations to the Steering Committee on broader policy issues. The PMT, a subset of the PDT, was also the forum for resolving issues not resolved by the PDT. The PMT met as needed to provide direction for preparation of this analysis.

5.1.2 Steering Committee

The Steering Committee (SC) made decisions on policy issues and was comprised of elected officials from the City of Albany, City of Millersburg, and Linn County, as well as the project leadership from FHWA and ODOT. The Steering Committee met as needed to make decisions on policy and to review progress on preparation of this document.

5.1.3 Project Development Team

The PDT directed project development at the technical level. It was made up of project area city and county public works and transportation staff, as well as ODOT and consulting team project leadership. The PDT made recommendations on interim decision points (e.g., on draft purpose and need, etc.) for the PMT's consideration. They met 11 times through the course of the preparing this document.

5.1.4 Stakeholder Advisory Team

The Stakeholder Advisory Team (SAT) was made up of community-based leaders and representatives. They considered input from ODOT staff and consultants to provide input and make recommendations on key decisions in preparation of this document that reflected community and stakeholder perspective. The SAT met 10 times during preparation of this document, most recently in February 2014. Project leadership kept SAT members informed regularly of project status with e-mails and mailings between meetings.

In developing SAT membership, telephone and in-person interviews with project area stakeholders were conducted between September 28 and October 20, 2009. The purpose of the interviews was to coordinate with key community stakeholders and local agency staff members regarding issues of concern early in the project, and to identify potential community representatives for the SAT. Thirty interviews were completed. As part of this process, considerable effort was made to interview members of low-income and minority populations and recruit representatives of these populations for membership on the SAT.

5.2 Public Involvement

The Oregon Transportation Commission (OTC) and ODOT have established a Public Involvement Policy to "meaningfully involve the public in important decisions by providing for early, open, continuous, and effective public participation in and access to key planning and project decision-making processes."[15] This policy was adopted because the OTC and ODOT recognize that public involvement is crucial to ensuring that statewide transportation plans and the projects selected for funding in the Statewide Transportation Improvement Program effectively and efficiently provide for Oregonians' transportation needs. Under this policy and its implementation actions, the public is given opportunities to provide input into the development of plans and possible projects, consistent with State and Federal requirements for public involvement.

[15] OTC Policy No: Transportation Commission-11, May 28, 2009.

In 2009, ODOT developed a Public Involvement Plan to guide public involvement for this analysis. The plan calls for stakeholder interviews, newsletters, public open house meetings, a project website, media coordination, and focused community meetings.

The public involvement efforts for this project are intended to ensure that residents, land and business owners, and other interested parties are informed of the proposed project as it moves forward and have a range of opportunities to provide input into decisions. At the start of this analysis, ODOT conducted outreach activities to inform key stakeholders about the project need and its potential impacts. Public scoping meetings and presentations provided opportunities to identify and determine the scope of issues and hear comments and concerns about potential impacts to the built and natural environment. A summary of the public involvement activities that have been undertaken during development of this analysis and the key issues identified in that process are presented in the following sections.

5.2.1 Public Open Houses

The Public Involvement Plan developed for this analysis calls for holding open houses and community meetings at key project milestones, including: development of project Goals and Objectives, scoping of the Build Alternative, and assessment of environmental impacts and proposed mitigation measures.

ODOT held the first set of public meetings on Jan. 26, 2010, in Albany at the Linn County Fair and Expo Center from 12 p.m.–2 p.m. and from 6 p.m.–8 p.m.

The main purpose of the first open house was to solicit public input on issues and conditions that would help identify the scope of the EA. ODOT encouraged community members to attend whichever time was most convenient for them. The formal program was the same at each meeting.

ODOT asked participants to review work to date; identify issues of concern; review and comment on the draft purpose and need; review and comment on the draft goals and objectives and provide input on interchange concepts. More than 70 community members attended the early afternoon session, and 43 community members attended the evening event.

For the second milestone, draft improvement concepts, two open houses were held on November 17, 2010, in Albany at the Holiday Inn Express. The first was from 11:30 a.m.–1:30 p.m. and the second from 6 p.m.–8 p.m. More than 40 community members attended the early after afternoon session, and 34 community members attended the evening session. The program was the same for both meetings.

The format was an interactive public open house focused on the I-5 mainline layout and interchange design concepts developed to date. ODOT asked community members to review information and make comments. Staff documented suggested design changes on maps according to participant comments. All material was posted to the website in advance of the meeting, and similar opportunities for comment were also available online through a virtual open house format.

Prior to each of the first two open houses, flyers were mailed to every household and business within the project area. Spanish-language ads were placed in local area Spanish newspapers prior to each of the first two open houses. Translation services were offered for each meeting, but there were no requests for this service. Spanish-speaking translation service was also provided through the ODOT website.

5.2.2 Additional Public Outreach

ODOT leadership was committed to meaningful outreach to specific low-income and minority communities and limited English proficiency (LEP) populations to help ensure opportunities for full and fair participation in the process. Outreach efforts provided opportunities for people who would potentially be adversely impacted to participate in and

inform the decision-making process. Seven community and business outreach meetings were held between February 7, 2011, and March 1, 2011, to augment other public involvement activities. The following meetings were held for the communities around each interchange for potentially affected residents, property owners, and business owners:

- Businesses at the U.S. 20 Interchange and Knox Butte Interchange. February 7, 2011 from noon–1:30 p.m. at Linn County Fair & Expo Center
- Neighborhoods east of I-5 between Knox Butte and US 20. February 7, 2011 from 2:30–4 p.m. at Linn County Fair & Expo Center
- South Shore, LeHigh, Spicer, and Timber Neighborhoods. February 7, 2011 from 7–8:30 p.m. at South Shore Elementary School
- Heatherdale Mobile Village (residents only). February 7, 2011 from 4–5:30 p.m. at Heatherdale Mobile Village (Spanish and English materials)
- Millersburg and Viewcrest area businesses. February 7, 2011 from 5–6:30 p.m. at Millersburg City Hall
- Millersburg and Viewcrest area residents. February 7, 2011 from 7–8:30 p.m. at Millersburg City Hall
- Bicycle and Pedestrian Commission. February 7, 2011 from 11:30 a.m.–1 p.m. at Albany City Hall

ODOT notified community members of the series of community outreach meetings through a direct mail postcard and an announcement on the project website. Project information was translated into Spanish and sent to representatives of the Spanish-speaking communities in the project area. The project team also sent e-mail notices to the existing stakeholder database, SAT members, and PDT members. SAT members were encouraged to forward the announcement to their contacts and networks.

The outreach meeting format was interactive, including a project overview presentation followed by a discussion on the designs specific to each meeting. Oral and written comments were actively encouraged throughout each meeting. Each participant received a Frequently Asked Questions handout and a comment form to aid with feedback. Participants were also given a Voluntary Disclosure Form to help inform ODOT about the demographics of the population in attendance. All meeting materials were posted to the project website, and similar opportunities for comment were also available online through a virtual open house format.

More than 90 people participated in these meetings. Comments received at outreach meetings expressed concerns over noise and noise barriers, changes in travel patterns, and potential displacement and need for relocation.

In the summer and fall of 2013, ODOT conducted targeted outreach to members of the community in the Albany and Millersburg areas. Additional SAT members were also added to represent the traditionally underrepresented populations in the Albany and Millersburg areas and to replace SAT members who were unable to participate or dropped out. ODOT also contacted the various County/City social services at that time to ensure that appropriate underrepresented communities in the project area were contacted.

Additional targeted community meetings were held for the residents of the Heatherdale Mobile Village on February 12 and 24, 2014, to obtain input on design options that would impact that community. These meetings were informal informational sessions followed by discussion, and were conducted in English and Spanish, with the services of a professional Spanish interpreter. The project team gave an overview of the current status of the proposed project, including proposed design options that were under consideration at that time, and encouraged residents to participate in the formal comment period expected in summer 2014. ODOT notified Heatherdale community members of the meeting through a direct mail postcard in English and Spanish. Flyers were sent directly to the co-managers of

Heatherdale Mobile Village to post in office and community spaces. ODOT staff also went door-knocking to every unit to notify members of the meeting and distribute the English/Spanish-language flyer.

5.2.3 Newsletters/Mailings

Newsletters and postcards in English and Spanish, as needed, were written and distributed throughout the course of this project in conjunction with outreach activities aimed at recommending and selecting build alternatives to be evaluated in this analysis. The newsletters and postcards were distributed to the mailing list, which includes residents, as well as property and business owners in the project area. The mailing list is maintained and updated as new contacts are made through meetings, website correspondence, and other sources.

The following is a summary of past newsletters and other mailings.

- Newsletter #1 was sent in the beginning of January 2010 to announce the project, provide information, and advertise the first open house.
- Newsletter #2 was sent in the beginning of November 2010 to give a project update and advertise the second open house.
- A postcard was sent in January 2011 to announce the seven community meetings taking place in February and March of 2011.
- A Spanish-language flyer was sent to the Spanish-speaking residents of Heatherdale Mobile Village in April 2011 providing project information and the opportunity for a meeting conducted in Spanish.
- An English/Spanish postcard was sent to the Heatherdale Mobile Village announcing the community meeting on February 12, 2014. In addition, project team members went door-to-door on February 10 to advise residents of the meeting.

5.2.4 Project Website

The project team website is a public resource for project information and allows for public comments on the project at any time. ODOT manages the website located at: www.i5sj20.com.

The website includes both text and links to PDF graphics and reports. The website includes the following information:

- Project Overview
- Project Schedule
- SAT meeting schedule, agendas, summaries, and materials
- Announcements of public meetings
- Materials from public meetings, including displays and summaries, posted 1 week before the event
- Contact information
- Comment forms

5.3 Agency Coordination

Coordination with Federal and State agencies included agency coordination letters requesting participation in the NEPA process and through the Collaborative Environmental and Transportation Agreement for Streamlining (CETAS).

ODOT developed a coordination plan in accordance with the Safe, Accountable, Flexible, and Efficient Transportation Equality Act: A Legacy for Users (SAFETEA-LU) Section 6002. This act requires coordination plans for all projects where an environmental impact statement (EIS) is being prepared. While this requirement is not applicable to the proposed project (because an EIS is not being prepared), ODOT developed a coordination plan to provide the framework for public and agency involvement during the environmental review and evaluation process. As such, the coordination plan provided general guidance for communication and information sharing with State and Federal agencies.

FHWA and ODOT sent coordination letters to Federal and State agencies in 2010 requesting that they participate as cooperating agencies in the environmental review process for the proposed project. Requests were made based on the agencies' jurisdiction over or expertise about resources to be assessed in the project. ODOT sent letters to State of Oregon agencies in January 2010; agencies contacted and responses received are summarized in Table 5-1 below.

Requests for agencies' cooperation were made pursuant to SAFETEA-LU requirements, and included responsibilities to:

- Provide meaningful input on the purpose and need, alternatives, methodologies, and level of detail used in alternative analysis
- Participate in meetings or reviews as requested
- Review and comment on environmental documents to reflect the agencies' views and concerns regarding alternatives, environmental impacts, and proposed mitigation

Table 5-1: Cooperating Agency Request Responses

Agency	Response
Federal Agencies	
Federal Aviation Administration	Accepted Cooperating Agency Status
National Marine Fisheries Service	Declined to be Cooperating Agency
U.S. Army Corps of Engineers	Accepted Cooperating Agency Status
U.S. Fish and Wildlife Service	No Response
Federal Emergency Management Agency	Accepted Cooperating Agency Status
USDA – Natural Resources Conservation Service	No Response
U.S. Environmental Protection Agency	No Response
State Agencies	
Department of Environmental Quality	Declined to be Cooperating Agency
Department of Fish and Wildlife	Accepted Cooperating Agency Status
Department of Forestry	No Response
Department of Geology and Mineral Industries	Accepted Cooperating Agency Status
Department of Land Conservation and Development	Accepted Cooperating Agency Status
Department of State Lands	Accepted Cooperating Agency Status

Agency	Response
Department of Economic and Community Development	Declined to be Cooperating Agency
Parks and Recreation Department	No Response
Water Resources Department	Declined to be Cooperating Agency
Business Development Department	Declined to be Cooperating Agency
Public Utilities Commission	Declined to be Cooperating Agency

It should be noted that ODOT coordinated with the State and Federal agencies through the CETAS process, as well as informally during the development of the EA. ODOT presented the proposed project to the CETAS triage team on May 18, 2011. CETAS team members provided input on natural resource concerns, including wetlands and water resources, and determined to not track the project through its development.

Coordination with local jurisdiction partners—the cities of Millersburg and Albany and Linn County—was accomplished through the PDT (a team of technical resources that provided direction and recommendations to the project team), which included representatives of each jurisdiction, the SAT, and the project SC (that included an elected official for each jurisdiction).

5.4 Public Involvement Integration in Project Development

Public involvement and agency coordination efforts for this project allowed public input on key elements and decisions for the development and evaluation of the Build Alternative. Public input was used to develop and refine the Purpose and Need Statement and the Project Goals and Objectives. Public input was also used to ensure that these elements of this analysis reflect local concerns and needs. Key issues addressed in the Purpose and Need Statement and Project Goals and Objectives based on public and agency input include the following:

- Existing and forecast levels of congestion on the I-5 mainline, at I-5 interchanges, and on the associated local street system, and the resulting impacts on travel times and business activity.
- Safety concerns arising from congested conditions, including mixing and weaving of traffic on mainline I-5 and a lack of gaps in traffic on local streets for pedestrians and vehicles seeking to cross a roadway.
- Geometric deficiencies at the existing Murder Creek Interchange that create challenging conditions for freight truck traffic serving existing and planned industrial development in Millersburg.
- Lack of southbound I-5 access at the Knox Butte Interchange, and the resulting impact on local traffic and travel patterns in Albany.
- Poor conditions for pedestrians and cyclists in portions of the project area.
- A desire to minimize impacts on existing neighborhoods, businesses, and natural resources.
- The need for a cost-effective project to support existing and planned economic activity.

Public involvement and agency coordination was used extensively to narrow the range of design options considered for improvements in the Build Alternative. Public and agency input were used to assess potential impacts and identify critical issues associated with each design option under consideration, and to dismiss some options based on their potential impacts and performance on critical issues. Key decisions and design adjustments based on public input and agency coordination include the following:

- At the proposed Millersburg Interchange, the location of the interchange was shifted slightly south to avoid potential impacts to businesses located on Conser Road west of I-5. The location of the interchange connection with Old Salem Road was selected to align with the entrance of a proposed industrial park in Millersburg. The design of the interchange was driven primarily by the need to minimize impacts to farmland east of I-5 and to avoid impacts to the rail line west of I-5.

- At the Knox Butte Interchange, public and agency input identified the need for an interchange design that can be built in phases to make the project more affordable and responsive to community needs, and for a design that avoids or minimizes impacts to public resources including Waverly Park and the Albany Airport.

- At the US 20 Interchange, public and agency input identified the need for an interchange design that can be built in phases to make the project more affordable and responsive to community needs, and for a design that avoids or minimizes impacts to businesses and residential neighborhoods.

Improvements proposed at the US 20 Interchange include development of a new southbound I-5 off-ramp, which will require elimination of the existing Airport Road connection with US 20. With the Build Alternative, Airport Road would terminate in a cul-de-sac at the entrance to the Heatherdale Mobile Village. Traffic analysis shows that there would be little traffic on Airport Road with the Build Alternative as vehicles use more direct routes to their destinations. Residents of the Swan Lake neighborhood, located immediately west of I-5 between the Knox Butte and US 20 interchanges, expressed concerns that termination of Airport Road would force traffic to seek a connection between the Knox Butte and US 20 interchange areas by using residential streets in the Swan Lake neighborhood. To address this concern, several design options were developed to reconnect Airport Road to the local street system while avoiding residential streets in the Swan Lake neighborhood. Public input and agency coordination on these design options resulted in selection of an option to extend Airport Road westward from its proposed termination to connect to Bain Street.

To avoid or minimize impacts to residents and businesses, the proposed Airport Road extension was routed along the boundary of the Heatherdale Mobile Village and commercial businesses on US 20. After development of a preliminary design and assessment of potential impacts, the project team reviewed these with the SAT and at outreach meetings held at Heatherdale Mobile Village on February 12 and 24, 2014. Assessment of potential impacts revealed that the proposed extension of Airport Road to Bain Street had the potential for disproportionately adverse impacts on populations protected by Title VI of the Civil Rights Act and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Public input by residents of Heatherdale Mobile Village revealed that there were alternative routes for the extension of Airport Road to the local street network; however, these routes would put traffic on residential streets in the Swan Lake neighborhood, which the Airport Road extension was intended to avoid. After review of the potential impacts and public comment, the option to extend Airport Road to Bain Street was dropped from the Build Alternative.

To address remaining concerns about potential traffic in the Swan Lake neighborhood with the proposed termination of Airport Road, ODOT staff recommended a series of traffic controls on Airport Road and adjoining local streets that would restrict through traffic from using local streets in the Swan Lake neighborhood. The use of traffic controls was identified by the City of Albany several years before initiation of the evaluation in response to traffic concerns resulting from proposed commercial development north of the Swan Lake neighborhood.

Other issues raised by the public during public outreach activities while the Build Alternative was under development included the following:

- Concerns about proposed changes to the existing transportation system in Albany and Linn County, such as changes in access in the Viewcrest, Knox Butte, and US 20 interchange areas.

- Potential noise impacts in areas adjacent to the I-5 corridor and proposed local system improvements.

- Potential neighborhood impacts to residential areas, including likely low-income and minority communities near proposed transportation improvements (see Section 5.2.1 for a discussion specific to environmental justice issues identified during public outreach efforts and addressed in this analysis).
- Potential wetlands impacts.
- Existing drainage and flooding issues.
- Safety and access concerns for bicyclists and pedestrians.
- Concerns about access to local businesses and residential areas during construction.
- Concerns about direct and indirect impacts to local residences and businesses.

These issues were considered by ODOT in developing a Build Alternative that avoids or minimizes these potential impacts to the extent possible, as well as in the process of identifying potential mitigation measures to reduce the effect of potential impacts.

This page intentionally left blank.

6.0 REFERENCES

6.1 List of Preparers and Reviewers

6.1.1 Oregon Department of Transportation

Bell, Christopher S., Historic Resource Program Coordinator, BA Architecture, MSc Historic Preservation, applied history experience since 2004.

Cary, Molly A., Region Two Environmental Unit Manager, BS Forestry, environmental experience since 1988.

Fletcher, William B., Water Resources Specialist, BS Geology, Cand. Real. Physical Geography, environmental experience since 1984.

Francis, Ron, Wetlands Biologist, BS Soil Science and Crop Science, environmental experience since 1992.

Geddes, Sara, Landscape Architect, BLA University of Oregon 1982, professional registration/experience since 1986.

Gutierrez, Rodger C., Bicycle and Pedestrian Standards Specialist, BS Civil Engineering, Oregon PE license in Civil Engineering, engineering experience since 2003.

Heitch, Bonnie, Attorney, JD, BS Natural Resource Management, BLA Landscape Architecture, environmental experience since 1980.

Helton, David I. Transportation / Land Use Planner, BS Economics, environmental experience since 1992.

Heyn, Alfred H., Senior Structural Design Engineer, Bridge Design Lead worker, BS Civil Engineering, Oregon PE license in Civil Engineering, bridge and structures engineering experience since 1990.

Liljenwall, Natalie, Environmental Engineer, MS and BS Environmental Engineering, environmental experience since 1996.

McDaniel –Wilson, Christina A., Senior Transportation Analyst, BS Civil Engineering, Oregon PE license in Civil Engineering, traffic engineering experience since 2005.

Morales, Michael, Senior Environmental Project Manager, BS Wildlife Management, environmental experience since 1992

Newvine, Carole, Senior Acoustical Specialist, Noise Specialist/Program Coordinator, MS Environmental Science, environmental experience since 1984.

Orlando, Marina, Senior Air Quality Specialist, BS General Science, engineering experience since 1990, environmental experience since 1995.

Roedel, Kurt, Archaeologist, MA Anthropology, environmental experience since 2000.

Upton, Dorothy, Region Two - Senior Transportation Analyst, BS Civil Engineering, BS Industrial Management, Oregon PE license in Civil and Traffic Engineering, traffic engineering experience since 1989.

Ulm, Irene M., Wetland Specialist, BA Biology/BA Environmental Studies, Environmental experience since 1985.

West, James E., Region 2 Technical Center Manager, BS and MS Civil Engineering, planning, engineering, and land development services since 1989.

White, Susan, Statewide NEPA Program Coordinator, BS Ecology, graduate work in Recreation and Environmental Planning, environmental experience since 1970.

Whitney-Dahlke, Denise D, Transportation Economist, BS Economics, economic analysis experience since 1995.

6.1.2 Federal Highway Administration

Morrow, Michael, PE, Senior Field Operations Engineer, BS Civil Engineering, FHWA experience since 1990.

Eraut, Michelle, Environmental Program Manager, MPA, FHWA experience since 2000.

6.1.3 Linn County

Lane, Darren, P.E., Director, Linn County Road Department, BS Civil Engineering, public works and infrastructure management experience since 1995.

6.1.4 City of Albany

Irish, Ron, Transportation Systems Analyst, transportation engineering and planning experience since 1994.

6.1.5 City of Millersburg

Driscoll, Don, City Planner (Consultant)

6.1.6 HDR

Atkinson, Corrinne, AICP, Environmental Planner, BA Business Administration, MS Community and Regional Planning, 27 years experience.

Auten, Marc, Wetlands and Biology, BS Environmental Sciences, 9 years experience.

Black, Carrie, Technical Editor, BA Visual Communication/Photography, BS Communications, 5 years experience.

Breeden, Stephanie, Editor and Author, BA Biology, MS Environmental Sciences, 7 years experience.

Bridger, Glenn, Right-of-Way, BA Economics, 48 years experience.

Gregory, James, Team Leader Section 4(f)/6(f), BS Biology, MA Urban and Environmental Planning, 25 years experience.

Hawkins, Kimberly, Hazardous Materials, BS Agricultural Sciences, 13 years experience.

LaRue, Nicholas, GIS Analysis and Graphics, 12 years experience.

Milliken, Craig, Air Quality and Noise, BA Geography, MS Environmental Science, 17 years experience.

Miranda, Donette, Land Use, BS Environmental Sciences, Courses Master of Urban and Regional Planning Program, 12 years experience.

Sahatjian, Brittany, Climate Change and Author, BS Environmental Science and Resource Management, Masters Environmental Management, 5 years experience.

Snead, Carol, Quality Control, BS Geology, MS Geological Sciences, 28 years experience.

Tannler, Dillon, Visual Quality, BS Environmental Policy, 3 years experience.

Taylor, Gary, Right-of-Way, Licensed Real Estate Broker, 34 years experience.

Williams, Shannon, Geology and Utilities, Bachelor of Engineering, 14 years experience.

6.1.7 Sub-consultants

Green, Kirstin, Cogan-Owens-Cogan, Public Involvement Specialist

6.2 Technical Reports Prepared for this Project

This document contains information summarized from the following technical reports, memoranda, and files which are incorporated by reference:

Angelo Planning Group. 2014. I-5 South Jefferson to US 20: Final Land Use Technical Report. April 2014.

Cogan Owens and Cogan. 2014. I-5 South Jefferson to US 20: Public Involvement Summary Report. May 2014.

HDR

2014a I-5 South Jefferson to US 20: Final Socioeconomics Technical Report. April 2014.

2014b I-5 South Jefferson to US 20: Final Section 4(f) Technical Memorandum. September 2014.

2014c I-5 South Jefferson to US 20: Final Section 6(f)(3) Technical Memorandum. September 2014.

2014d I-5 South Jefferson to US 20: Final Air Quality Technical Report. April 2014.

2014e I-5 South Jefferson to US 20: Final Biology Technical Report. April 2014.

2014f I-5 South Jefferson to US 20: Final Right-of-way Technical Report. April 2014.

2014g I-5 South Jefferson to US 20: Final Water Resource Technical Report. April 2014.

2014h I-5 South Jefferson to US 20: Final Wetlands Technical Report. April 2014.

2014i I-5 South Jefferson to US 20: Final Visual Resources Technical Report. April 2014.

2014j I-5 South Jefferson to US 20: Final Noise Technical Report. April 2014.

2014k I-5 South Jefferson to US 20 EA: Geological Resources Technical Memorandum-Final. April 2014.

2014l I-5 South Jefferson to US 20 EA: Utilities Technical Memorandum-Final. April 2014.

2014m I-5 South Jefferson to US 20: Final Hazardous Materials Technical Report. April 2014.

2014n I-5 South Jefferson to US 20: Roadway Design Concepts. Technical Memorandum #3. March 2014.

2014o I-5 South Jefferson to US 20: Structural Design Elements. Technical Memorandum #4. March 2014.

2014p I-5 South Jefferson to US 20: Bridge Widening and Replacement Options. Technical Memorandum #5. March 2014.

2014q I-5 South Jefferson to US 20: Preliminary Drainage Design. Technical Memorandum #6. June 2014.

2014r I-5 South Jefferson to US 20: Conceptual Stormwater Facilities Plan. Technical Memorandum #7. June 2014.

2014s I-5 South Jefferson to US 20: Document, Data Review and Map Development. Technical Memorandum #8. June 2014.

2014t I-5 South Jefferson to US 20: Scoping Report. March 2014.

2015 Range of Alternatives Development, Screening, and Evaluation Technical Memorandum – I-5: South Jefferson to US 20.

These documents are available upon request. Requests should be directed to:

Region 2 Headquarters
455 Airport Road, Building B
Salem, Oregon 97301-5395

Phone: (503) 986-2600

or see ODOT's website: http://www.oregon.gov/ODOT/HWY/REGION2/pages/i-5_southjefferson_home.aspx

6.3 Works Cited

Albany Area Chamber of Commerce, 2013. "Employers." http://www.albanychamber.com/employment/

Albany Municipal Code (AMC)

2013a Chapter 3.70 LightSpeed (LS) Networks Franchise. May 10, 2013. http://www.cityofalbany.net/municipal_code/Albany03/Albany0370.html

2013b Chapter 3.20 Qwest Telephone Franchise. May 10, 2013. http://www.cityofalbany.net/municipal_code/Albany03/Albany0320.html#3.20.040

2013c Chapter 3.26 Comcast Telecommunication Franchise. May 10, 2013. http://www.cityofalbany.net/municipal_code/Albany03/Albany0326.html#3.26.180

American Association of State Highway Transportation Officials (AASHTO). 2004. A Policy on Geometric Design of Highways and Streets (Green Book). Fifth Edition.

Angelo Planning Group. 2014. I-5 South Jefferson to US 20: Final Land Use Technical Report. April 2014.

Baker, R. Todd, Mini Sharma, Jason M. Allen, and Matthew J. Steinkamp. 2010. *Cultural Resource Inventory for ATI* Wah *Chang Wastewater Pipeline Project, Albany, Linn County, Oregon*. SWCA Project No. 15943, SWCA Environmental Consultants, Portland, Oregon. On file, Oregon State Historic Preservation Office, Salem (SHPO Report No. 24248).

Beckam, Stephen D. and Toeple, Kathryn A. 1981. Historical Overview. In *Prehistory and History of BLM Lands in West-Central Oregon: A Cultural Resource Overview.* pp. 187-271. University of Oregon Anthropological Papers 25. Eugene.

Boyd, Robert T. 1990. Demographic History. In *Handbook of North American Indians*, Volume 7: Northwest Coast, edited by Wayne Suttles, pp. 135-148. Smithsonian Institution, Washington, D. C.

CH2M Hill

2006 *Millersburg I-5 Corridor Refinement Plan and Existing Environmental/Cultural Features: South Jefferson, Viewcrest, Murder Creek, and the Proposed Tank Farm Interchanges*. Oregon Department of Transportation, Region 2.

2008 *Albany I-5 Corridor Refinement Plan and Existing Environmental/Cultural Features: Albany Knox Butte and Santiam Interchanges*. Oregon Department of Transportation, Region 2.

Chapman, Judy, Maureen Zehendner, and Julie Schablitsky. 2000. Archaeological Site Record Form for 35LIN733. On file, Oregon State Historic Preservation Office, Salem.

City of Albany

1980 *Comprehensive Plan*. Accessed online March 2, 2014 at: http://www.cityofalbany.net/departments/community-development/comprehensive-plan

2007 *Albany Housing Needs Analysis, 2005-2025*, prepared by the Albany Community Development Department. http://www.cityofalbany.net/images/stories/planning/2006AlbanyHousingNeedAnalysis.pdf

2010 *Transportation System Plan*. Prepared by Kittelson & Associates, Inc. http://www.cityofalbany.net/departments/public-works/engineering/transportation-system-plan

City of Millersburg. 2006. Land Use Development Code. November, 2006.

Cogan Owens and Cogan. I-5 South Jefferson to US 20: Public Involvement Summary Report. May 2014.

Connolly, Thomas J. 2006. *Archaeological Survey of the OR 164 @ Scravel Hill Road Intersection Project, Linn County*. Report No. 2006-165, Museum of Natural and Cultural History, University of Oregon, Eugene. On file, Oregon State Historic Preservation Office, Salem (SHPO Report No. 21083).

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. Washington, D.C: Government Printing Office.

Driscoll, D., and Wood, C. (2010, June 17). City of Millersburg: Contract Planner and Mayor, respectively. (B. Dann, & D. Heffernan, Interviewers) Millersburg, Oregon Environmental Data Resources, Inc. (EDR)

2010 EDR Historical Topographic Map Report, I-5 South Jefferson to US 20, Albany, Oregon 97322, Inquiry Number 2770354.3. May 20, 2010.

2013 EDR DataMap Area Study, I-5 South Jefferson to US 20, Albany, Oregon 97321, Inquiry Number 3561246.1s. April 1, 2013.

Environmental Protection Agency (EPA)

1971 Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances. NTID300.1.

2004 Wetlands Overview. Accessed online June 1, 2014. http://water.epa.gov/type/wetlands/upload/2005_01_12_wetlands_overview.pdf

2012 *Overview of Impaired Waters and Total Maximum Daily Loads Program.* Updated March 6, 2012. Accessed online March 6, 2014 at: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/intro.cfm#section303

2013a *National Ambient Air Quality Standards*. Accessed online, November 7, 2013 at: http://www.epa.gov/ttn/naaqs/

2013b *Overview of Impaired Waters and Total Maximum Daily Load Program*. Accessed online, March 1, 2014 at: http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/intro.cfm#section303

Federal Highway Administration (FHWA)

1970 The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act). http://www.fhwa.dot.gov/realestate/ua/index.htm

1998 FHWA Traffic Noise Model® User's Guide. FHWA-PD-96-009. January 1998.

2004 FHWA Traffic Noise Model® User's Guide (Version 2.5 Addendum). April 2004.

2011a Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low Income Populations.* Accessed online at: http://environment.fhwa.dot.gov/projdev/guidance_ej_nepa.asp

2011b Office of Environment and Planning. Highway Traffic Noise Analysis and Abatement Policy and Guidance. December 2011.

2012 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA. December 6, 2012.

Federal Register

1994 "Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations," Volume 59, Number 32. http://www.archives.gov/federal-register/executive-orders/pdf/12898.pdf

1997 "Department of Transportation (DOT) Order To Address Environmental Justice in Minority Populations and Low-Income Populations," Volume 62, Number 72, pp. 18377-18381. http://www.gpo.gov/fdsys/pkg/FR-1997-04-15/pdf/97-9684.pdf

Forkenbrock, D.J., and Weisbrod, G.E. 2001. *Guidebook for Assessing the Social and Economic Effects of Transportation Projects*. National Cooperative Highway Research Program Report 456, Transportation Research Board. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_456-a.pdf

HDR

2014a I-5 South Jefferson to US 20: Final Socioeconomics Technical Report. April 2014.

2014b I-5 South Jefferson to US 20: Final Section 4(f) Technical Memorandum. September 2014.

2014c I-5 South Jefferson to US 20: Final Section 6(f)(3) Technical Memorandum. September 2014.

2014d I-5 South Jefferson to US 20: Final Air Quality Technical Report. April 2014.

2014e I-5 South Jefferson to US 20: Final Biology Technical Report. April 2014.

2014f I-5 South Jefferson to US 20: Final Right-of-way Technical Report. April 2014.

2014g I-5 South Jefferson to US 20: Final Water Resource Technical Report. April 2014.

2014h I-5 South Jefferson to US 20: Final Wetlands Technical Report. April 2014.

2014i I-5 South Jefferson to US 20: Final Visual Resources Technical Report. April 2014.

2014j I-5 South Jefferson to US 20: Final Noise Technical Report. April 2014.

2014k I-5 South Jefferson to US 20 EA: Geological Resources Technical Memorandum-Final. April 2014.

2014l I-5 South Jefferson to US 20 EA: Utilities Technical Memorandum-Final. April 2014.

2014m I-5 South Jefferson to US 20: Final Hazardous Materials Technical Report. April 2014.

2014n I-5 South Jefferson to US 20: Roadway Design Concepts. Technical Memorandum #3. March 2014.

2014o I-5 South Jefferson to US 20: Structural Design Elements. Technical Memorandum #4. March 2014.

2014p I-5 South Jefferson to US 20: Bridge Widening and Replacement Options. Technical Memorandum #5. March 2014.

2014q I-5 South Jefferson to US 20: Preliminary Drainage Design. Technical Memorandum #6. June 2014.

2014r I-5 South Jefferson to US 20: Conceptual Stormwater Facilities Plan. Technical Memorandum #7. June 2014.

2014s I-5 South Jefferson to US 20: Document, Data Review and Map Development. Technical Memorandum #8. June 2014.

2014t I-5 South Jefferson to US 20: Scoping Report. March 2014.

Heritage Research Associates. 2014. I-5: South Jefferson to US 20 Final Historical Resources Technical Report. April 2014.

International Stormwater BMP Database 2014. International Stormwater BMP Database Website. Accessed January 2014. http://www.bmpdatabase.org/

Isaacs, F. B. and R. G. Anthony. 2011. *Bald eagles (Haliaeetus leucocephalus) nesting in Oregon and along the lower Columbia River, 1978-2007*. Final Report, 18 March 2011. Oregon Cooperative Fish and Wildlife Research Unit, Department of Fisheries and Wildlife, Oregon State University, Corvallis, Oregon, USA.

Johnson and O-Neil. 2001. *Wildlife-Habitat Relationships in Oregon and Washington*. Oregon State University Press, Corvallis, Oregon

Lichvar, R.W. 2012. *The National Wetland Plant List*. ERDC/CRREL TR-12-11. Hanover, NH: U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory. http://acwc.sdp.sirsi.net/client/search/asset:asset?t:ac=$N/1012381

Linn County. (2005, August 23). *Transportation Plan Code*. Linn County Code: Title 9 - Community Development, 907-23. Linn County, Oregon.

Linn County Assessor, 2013. Summary of Assessment and Tax Roll—Linn County, Oregon. http://www.co.linn.or.us/assessorshomep/docs/Taxsum2012.pdf

Minor, Rick, Stephen D. Beckham, Phyllis E. Lancefield-Steeves, and Kathryn A. Toepel. 1980. Ethnographic Overview. In *Cultural Resource Overview of the BLM Salem District, Northwestern Oregon: Archaeology, Ethnography, History*, by R. Minor, S. D. Beckham, P. Lancefield-Steeves, and K. A. Toepel, pp. 45-92. University of Oregon Anthropological Papers 20. Eugene.

Natural Resource Conservation Service (NRCS).

2011 *Field Indicators of Hydric Soils in the United States, Version 7.0*. G.W. Edited by Hurt and L.M. Vasilas. USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

2013 "NRCS Web Soil Survey." Accessed online May 2013 at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Northwest Habitat Institute (NWI) 2014. *Wildlife-Habitat Types.* Accessed March 27, 2014 at: http://www.nwhi.org/index/habdescriptions

O'Neill, Brian L., Thomas J. Connolly, and Dorothy E. Freidel. 2004. *A Holocene Geoarchaeological Record for the Upper Willamette Valley, Oregon: The Long Tom and Chalker Sites.* University of Oregon Anthropological Papers 61. Eugene.

Oregon Department of Environmental Quality (DEQ)

2005 *Erosion and Sediment Control Manual – Appendix B Soil Survey Information*. May 3, 2013. http://www.deq.state.or.us/wq/stormwater/docs/escmanual/appxb.pdf

2011 Oregon Air Quality Data Summaries. June, 2012.

2012 Oregon's Draft 2012 Integrated Report Assessment Database and 303(d) List. http://www.deq.state.or.us/wq/assessment/rpt2012/search.asp#db

2013 *DEQ Environmental Cleanup Site Information (ECSI) Database*." http://www.deq.state.or.us/lq/ECSI/ecsi.htm. Website accessed May 2013

Oregon Department of Geology and Mineral Industries (DOGAMI).

2008 IMS-24 Geologic Hazards, Earthquakes and Landslide Hazard Maps, and Future Earthquake Damage Estimates for six counties in the Mid/Southern Willamette Valley including Yamhill, Marion, Polk, Benton, Linn, and Lane Counties and the City of Albany, Oregon. http://www.oregongeology.com/sub/publications/ims/ims-024/pdfs/ims-24-text-main_screen.pdf

2013 Statewide Landslide Information Layer for Oregon. May 2, 1013. http://www.oregongeology.org/slido/index.html

Oregon Department of State Lands (DSL). 2008 *Essential Salmonid Habitat: Linn County.* March 27, 2008. Accessed online, March 1, 2014 at: http://www.oregon.gov/dsl/PERMITS/docs/maps/linn.pdf

Oregon Department of Transportation (ODOT).

1999 *Oregon Highway Plan*. March 18, 1999. Amended July 2006.

2000 1-5 State of the Interstate Report.

2002 Environmental Procedures Manual. November, 2002.

2005 Erosion Control Manual: Guidelines for Developing and Implementing Erosion and Sediment Controls.

2006 *Oregon Transportation Plan*. September 20, 2006.

2007 *Climate Change Integration Act*, House Bill 3543. http://www.oregon.gov/ODOT/TD/CLIMATECHANGE/pages/orclimatechangeleg.aspx

2008 *Oregon Standard Specifications for Construction. Volume 2; Technical Specifications*. http://www.oregon.gov/ODOT/HWY/SPECS/docs/08book/08_00200.pdf

2009a House Bill 2186. http://www.oregon.gov/ODOT/TD/CLIMATECHANGE/pages/orclimatechangeleg.aspx#House_Bill_2186

2009b Technical Memorandum #1. Data Review and Gaps. October 2009.

2009c Technical Memorandum #2. Project Design Criteria. November 2009.

2010 *Oregon Sustainable Transportation Initiative*, House Bill 1059. http://www.oregon.gov/ODOT/TD/CLIMATECHANGE/docs/legislativeupdate_june2010_ghg_final.pdf

2011a *Noise Manual*. July, 2011.

2011b *Oregon Freight Plan*. June 15, 2011.

2011c *Utility Relocation Guide.* December 2011. http://www.oregon.gov/ODOT/HWY/ROW/docs/utility_relocation_guide_2011.pdf

2011d ODOT Hydraulics Manual 2011.

2012a *Safety Priority Index Reporting System*. 1986. http://www.oregon.gov/ODOT/HWY/TRAFFIC-ROADWAY/pages/spis.aspx

2012b Greenhouse gas Strategic Transportation Energy Planning (GreenSTEP) Model. http://www.oregon.gov/ODOT/TD/TP/Pages/GreenSTEP.aspx

2013a *Oregon Right of Way Manual, Chapter 10.* July 2013. http://www.oregon.gov/ODOT/HWY/ROW/docs/chapter_ten_2013.pdf

2013b *ODOT' Crash Data* accessed November 25, 2013 from https://zigzag.odot.state.or.us/uniquesig2a2763047fdf9d8485a3bef41dc862de/uniquesig0/SecurezigzagAPortalHomePage/

2013c Geotechnical Design Manual (GDM), Volumes 1, 2 and 3. September 2013. http://www.oregon.gov/ODOT/HWY/GEOENVIRONMENTAL/Pages/geotechnical_design_manual.aspx#GDM_Downloads

Oregon Employment Department, 2013. "Local Area Employment Statistics." http://www.qualityinfo.org/olmisj/labforce

Oregon Parks and Recreation Department *n.d. Oregon Historic Sites Database*. Accessed online at: http://heritagedata.prd.state.or.us/historic/

Oregon Transportation Commission 2011. *Oregon Highway Plan Policy 1F Revisions*, December 21, 2011.

Oregon Water Resources Department (OWRD). 2013.Well log database. Available online at http://apps.wrd.state.or.us/apps/gw/well_log/ (accessed October 7, 2013).

OWRD and USGS 2005. *Groundwater Hydrology of the Willamette Basin, Oregon*. 2005. Accessed online March 6, 2014 at: http://pubs.usgs.gov/sir/2005/5168/pdf/sir2005-5168.pdf

Oregon Biodiversity Information Center (ORBIC). 2013. Data Request for the I-5 South Jefferson Interchange to US 20 Project. March 28, 2013.

Portland State University 2013. Center for Population Research, Portland, OR. Population Estimates http://www.pdx.edu/prc/population-estimates-0

StreamNet. 2013. http://www.streamnet.org/mapping_apps.html. Accessed March 8, 2010

U.S. Army Corps of Engineers (USACE) Environmental Laboratory. 1987. *Corps of Engineers Wetland Delineation Manual*. Vicksburg, MS., US Army Engineer Waterways Experiment Station, Technical Report Y-87-1

U.S. Census Bureau

2010 *2010 Census*, Census Tract Reference Maps. http://www2.census.gov/geo/maps/dc10map/tract/st41_or/c41043_linn/DC10CT_C41043_001.pdf

2012 "American Community Survey 5-Year Estimates," American FactFinder. http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t

U.S. Code

1964a Title VI of the 1964 Civil Rights Act, 42 U.S.C. 2000d-2000d-7. http://www.justice.gov/crt/about/cor/coord/titlevistat.php

1964b Land and Water Conservation Funds Act, 16 U.S.C 460-4. http://www.nps.gov/ncrc/programs/lwcf/lwcf_act.pdf

1966a Department of Transportation Act, 49 U.S.C. 303. http://www.cr.nps.gov/local-law/FHPL_DOTAct.pdf

1966b *National Historic Preservation Act of 1966*, 16 U.S.C. 470. Accessed online at: http://www.nps.gov/history/local-law/nhpa1966.htm

1968 *Fair Housing Act*, 42 U.S.C. 3601. http://portal.hud.gov/hudportal/HUD?src=/program_offices/fair_housing_equal_opp/progdesc/title8

1970 *National Environmental Policy Act*, 42 U.S.C. 4321-4347. http://ceq.hss.doe.gov/laws_and_executive_orders/the_nepa_statute.html

40 CFR 230.3

2012a Highways, 42 U.S.C. 109(h). http://www.fhwa.dot.gov/legsregs/title23.pdf

2012b Uniform Relocation Assistance and Real Property Acquisition Policies for Federal and Federally Assisted Programs, 42 U.S.C. 61. http://uscode.house.gov/download/pls/42C61.txt

United States Department of Agriculture (USDA) 2014. *Introduced, Invasive, and Noxious Plants.* Accessed March 27, 2014 at: http://plants.usda.gov/java/invasiveOne?startChar=P

United States Fish and Wildlife Service (USFWS)

2013a *Species Fact Sheet: Oregon spotted frog*. December 3, 2013. Available online at http://www.fws.gov/oregonfwo/Species/Data/OregonSpottedFrog/

2013b *Species Fact Sheet: Streaked horned lark*. November 4, 2013. Available online at http://www.fws.gov/oregonfwo/Species/Data/StreakedHornedLark/

United States Geological Service (USGS)

2010 "Oregon Active Water Level Network." Accessed online September 2010 at: http://groundwaterwatch.usgs.gov/countymaps/OR_043.html.

2012 Migratory Bird Flyways. Accessed online June 1, 2014. http://www.fws.gov/migratorybirds/flyways.html

2013a National Geologic Map Database. Accessed May 2, 2013. http://ngmdb.usgs.gov/ngm-bin/pdp/zui_pdpViewer.pl?id=15630

2013b Quaternary Faults Web Mapping Application. Accessed May 2, 2013. http://geohazards.usgs.gov/qfaults/map.php

2013c Comcat Search Beta – Results. May 2, 2013. http://earthquake.usgs.gov/earthquakes/eqarchives/epic/results.php

Zenk, Henry B.

1976 *Contributions to Tualatin Ethnography: Subsistence and Ethnobiology.* Unpublished Masters Thesis. Department of Anthropology, Portland State University. Portland, OR.

1990 Kalapuyans. In *Handbook of North American Indians, Volume 7: Northwest Coast*, edited by Wayne Suttles, pp. 547-553. Smithsonian Institution, Washington, D. C.

APPENDICES

Appendix A: Farmland Conversion Rating Form

Appendix B: Right-of-way Brochures

Appendix C: Historic Resources Summary and Commitments

Appendix D: Noise Impacts Summary

Appendix E: Biological Summary and Commitments

Appendix A:
Farmland Conversion Rating Form

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 9/25/14	4. Sheet 1 of 3
1. Name of Project I-5: South Jefferson to US 20	5. Federal Agency Involved Federal Highway Administration	
2. Type of Project Transportation	6. County and State Linn County, Oregon	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☐		4. Acres Irrigated / Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment Millersburg I/C			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	17.95 Ac.			
B. Total Acres To Be Converted Indirectly, Or To Receive Services	24.49 Ac.			
C. Total Acres In Corridor	42.44 Ac.			
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*				

PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15	5			
2. Perimeter in Nonurban Use	10	4			
3. Percent Of Corridor Being Farmed	20	11			
4. Protection Provided By State And Local Government	20	20			
5. Size of Present Farm Unit Compared To Average	10	0			
6. Creation Of Nonfarmable Farmland	25	25			
7. Availablility Of Farm Support Services	5	5			
8. On-Farm Investments	20	6			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	7			
TOTAL CORRIDOR ASSESSMENT POINTS	160	83	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	83	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	83	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
Option 2b- Corridor A	42.44	4/14/14	YES ☐ NO ☑

5. Reason For Selection:

This Alternative (Option 2b) has the least impact on farmland, as compared to the other options considered and dismissed (particularly due to this consideration - impact to farmland).

Signature of Person Completing this Part: **Michael Morales** DATE **9/25/14**

NOTE: Complete a form for each segment with more than one Alternate Corridor

Clear Form

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?
More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?
More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?
More than 90 percent - 20 points
90 to 20 percent - 19 to 1 point(s)
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
Site is protected - 20 points
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ?
(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with $1,000 or more in sales.)
As large or larger - 10 points
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?
Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?
High amount of on-farm investment - 20 points
Moderate amount of on-farm investment - 19 to 1 point(s)
No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?
Substantial reduction in demand for support services if the site is converted - 25 points
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?
Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

Appendix B:
Right-of-way Brochures

When improving highway facilities, the Department of Transportation has the task of acquiring right of way. It is the aim and desire of the Department to obtain right of way with fairness and equity.

The State is empowered to acquire private property for public use. With this power goes the obligation to protect the rights of the individual property owner. The Department thus has a dual responsibility. It is to recognize and protect the individuals who are affected by acquisition of land, as well as competent and efficient service to the public.

▪ Public Hearings

Public hearings, when required, are held during the location and design stages of a project. Such hearings provide opportunities for public participation to ensure that highway locations and designs are consistent with Federal, State and Local goals and objectives.

The corridor hearing is held after preliminary studies have been made on several possible routes. During the course of this hearing, testimony is recorded for study by Department personnel and the Transportation Commission.

Upon selection of a corridor, a detailed survey within that corridor is made and a preliminary design plan developed for presentation at a "Design Hearing".

The "Design Hearing" provides an opportunity to present testimony about the final highway design.

In an instance where a choice of corridors is not involved, such as the case of an improvement to an existing highway, a single "Combination Corridor-Design Hearing" may be held.

After all data and testimony has been studied, a final design is adopted by the Transportation Commission and the acquisition of rights of way is authorized.

▪ Just Compensation

Owners of property needed for a highway project will be offered Just Compensation for the required rights of way. Just Compensation includes the estimated value of all the land and improvements within the needed area. In addition, if only a part of a property is to be acquired, Just Compensation will also include any measurable loss in value to the remaining property due to the partial acquisition.

Just Compensation is based on the Department's valuation of the needed property and its estimation of any damages to the remaining property. Department procedures, guided by Federal Regulations, have been designed to protect both owners of properties needed for highway rights of way as well as other taxpayers. The valuation process will be conducted either by an experienced and qualified employee of the Department or by an independent fee appraiser under a contract with the Department. The value arrived at will be by comparison of similar properties in the market that have recently sold, by knowledge and consideration of costs and depreciation for any improvement(s) to be acquired, and when applicable, by the property's income potential. The final value determination will be based on this type of information from the local real estate market.

The property to be acquired is inspected by a qualified appraiser during the first part of the valuation process. With complex acquisitions involving large portions of the property, major buildings or improvements on the property, displacement of residents, and/or damages to the remaining part of the property not being acquired, property owners will be given 15 days to prepare the property, and will be given the opportunity to accompany the appraiser during a detailed inspection of their property.

Any increase or decrease in the value of needed property brought about by public knowledge of the upcoming highway project, is disregarded in the valuation process.

The final value estimate is reviewed for completeness and accuracy, and Just Compensation is established by the Department's Review Appraiser. In addition to this estimate of Just Compensation, the Department will make an offer to purchase any remaining property determined to have no remaining economic value to the owner.

▪ Acquisition Procedure

The Right of Way Agent who calls on you has studied the Department's valuation of the needed property and can illustrate with maps and other data how the acquisition will affect your property. The Department's offer will be confirmed in writing, together with an acquisition summary statement, and an appraisal, or evaluation sheet, which provides the basis for that amount. The Agent is authorized to obtain a deed from you to purchase your property, subject to the approval of the Transportation Commission. The Agent is unable, under Department procedures governing acquisitions, to engage in "horse trading"; rather the Agent is confined to those monetary values indicated by the appraisal process.

However, the Department is ready and willing to reconsider its position in light of any new evidence of value presented by you including a documented professional appraisal.

The Department may not take any action which would coerce you into accepting its offer. Prohibited actions include advancing the time of condemnation, deferring negotiations or condemnation or postponing the deposit of funds in court for your use.

You need not accept the State's offer or enter an agreement felt to be unfair. Owners have a minimum 40-day period to accept or reject the offer, unless an emergency has been declared. A refusal is simply a case of disagreement between the two parties on the value of the property.

In the event the parties are still unable to agree as to the compensation to be paid, or you cannot clear the title, mediation of differences between parties, conducted by an independent mediator, can be arranged by the Department in order to reach settlement prior to filing any condemnation action.

In the event parties are still unable to agree as to compensation to be paid, or if title cannot be cleared, a condemnation action will be filed. Once condemnation is filed, a trial date will be determined.

Discussions and mediation can, of course, continue even after a condemnation action is filed in an effort to resolve differences. The filing allows the State to proceed with the construction project.

▪ Improvements

When the Department acquires an interest in your land, it must acquire an equal interest in your house or any other improvements located on the land acquired. If buildings are required to be removed, the Department may allow the owner to retain the improvements. If you are interested, this can be discussed with the Right of Way Agent.

▪ Payment

If you sign a deed and any accompanying agreements, and the Transportation Commission approves it, then the transfer of title and payment may proceed. As in a private sale, you are responsible for clearing encumbrances to the title such as unpaid taxes, assessments, mortgages, outstanding leases and other liens against your property. The Right of Way Agent will assist you in clearing title. No payment can be made until a warranty deed conveying clear title to the Department has been recorded in the appropriate county records.

At the time the deed is available for recording, authorization is given to prepare a check for your property. Normally, when no cloud obscures the title, you will receive payment for your property about three weeks after you give the Department a deed to the property.

If the condemnation action has been filed, the amount established by the Department as Just Compensation will be deposited with the court for distribution in accordance with the order of the court.

You are entitled to be reimbursed for fair and reasonable costs you incur for expenses incidental to conveying your property to the Department. Such expenses could be, but are not necessarily limited to, penalty costs for prepayment of any pre-existing recorded mortgage encumbering your property, mortgage release fees, and the State's portion of real property taxes.

▪ Possession

You are not required to surrender possession of your property until you have been paid the agreed purchase price or an amount equal to the Department's established estimate of just compensation has been deposited with the court for your benefit.

When negotiations begin, you, as well as any tenants occupying your property, will be notified in writing that it is the Department's intent to acquire the property. You will not be required to move from your home, farm, or business location earlier than 90 days following that notice or within 30 days after payment, whichever is later. However, if the purchase does not require you to move, the agreement to purchase your property may require you to surrender possession of your property upon payment.

The Department is aware of the need for a reasonable time for relocation. If your property is not needed for several months, your continued occupancy may be permitted on a short-term basis. The amount of rent the Department may charge you, or another tenant, may not exceed the fair rental value of the property to a short-term occupant.

▪ Right of Way Offices

For your convenience the Department maintains Regional Right of Way Offices in the following locations:

Region 1 – Portland
123 NW Flanders
Portland, OR 97209
Voice: 503-731-8200
Fax: 503-731-8458
Toll Free: 888-769-7341

Region 2 – Salem
455 Airport Road SE Bldg. A
Salem, OR 97301-5397
Voice: 503-986-2601
Fax: 503-986-2622
Toll Free: 888-769-7342

Region 3 – Roseburg
3500 Stewart Parkway Suite 164
Roseburg, OR 97470
Voice: 541-957-3559
Fax: 541-957-3563
Toll Free: 888-769-7343

Region 4 – Bend
63055 N Highway 97 Bldg. M
Bend, OR 97701-9901
Voice: 541-388-6196
Fax: 541-388-6381
Toll Free: 888-769-7344

Region 5 – LaGrande
3012 Island Avenue
LaGrande, OR 97850
Voice: 541-963-7552
Fax: 541-962-9819
Toll Free: 877-851-9097

734-3773 (05-2015)

Oregon Department of Transportation

Acquiring Land for Highways & Public Projects

A description of the
Department of Transportation
Land Acquisition Program

Si es necesario quitar edificios, el Departamento puede permitir que el propietario retenga las mejoras. Si Ud. está interesado, puede conversar sobre esto con el Agente de Derecho de Paso.

Pago

Si Ud. firma el acuerdo de opción y la transferencia, y la Comisión de Transporte los aprueba, se puede proceder entonces a la transferencia del título de propiedad y al pago. Como en cualquier venta privada, Ud. es responsable del pago de gravámenes sobre el título tales como impuestos sin pagar, tasas de impuestos, hipotecas, arrendamientos pendientes y otras prendas contra su propiedad. El Agente de Derecho de Paso le ayudará a remover los impedimentos de su título. No se puede hacer ningún pago hasta que se haya asentado en los registros apropiados del condado un documento que garantice la entrega al estado de un título carente de defectos, gravámenes o condicionamientos.

Cuando la transferencia está disponible para ser registrada, se da autorización para preparar el cheque por su propiedad. Normalmente, cuando no hay ningún problema con el título, Ud. recibe el pago por su propiedad alrededor de cuatro *semanas después de haber transferido la propie*dad al Departamento.

Si se ha iniciado una acción de expropiación, la cantidad establecida por el Departamento como compensación justa será depositada en la corte para su distribución de acuerdo con el orden de la corte.

Usted tiene derecho a ser reembolsado por los gastos justos y razonables en que incurra como consecuencia del traspaso de su propiedad al Departamento. Tales gastos pueden ser, entre otros, multas por pago adelantado de alguna hipoteca registrada pre-existente relacionada con su propiedad, gastos de terminación de hipoteca, y la parte de los impuestos a la propiedad que le corresponde pagar al estado.

Posesion

Ud. no tiene que renunciar a la posesión de su propiedad hasta que se le haya pagado el precio de compra acordado o hasta que se haya depositado en la corte para su beneficio una cantidad igual a la estimación de compensación justa establecida por el Departamento.

Al comienzo de las negociaciones, tanto Ud. como cualquier inquilino que esté ocupando su propiedad, recibirá(n) una notificación escrita de la intención del Departamento de adquirir la propiedad. No se le pedirá que desaloje su hogar, granja, o negocio antes de 90 días a partir de la fecha de esa notificación o dentro de los 30 días siguientes a la fecha del pago, la fecha que resulte más tarde de las dos. Sin embargo, si la compra no requiere que Ud. se mude, el acuerdo de compra de su propiedad puede requerir que Ud. entregue posesión de su propiedad en el momento del pago.

El Departamento es consciente de la necesidad de un tiempo razonable para la reubicación. Si su propiedad no se necesita por varios meses, se le puede permitir que continúe ocupándola por un corto plazo. La cantidad que el Departamento le cobrará a Ud. o a otros inquilinos en concepto de renta no puede exceder el valor de renta justa de la propiedad a un ocupante por corto plazo.

Oficinas De Derecho De Paso

Para su conveniencia, el Departamento mantiene Oficinas Regionales de Derecho de Paso en las siguientes ubicaciones:

Región 1
123 NW Flanders
Pórtland, Oregon 97209
No. De Teléfono 503-731-8400
Fax 503-731-8458

Región 2
455 Aeropuerto Rd SE
Salem, Oregon 97301-5397
No. De Teléfono 503-986-2601
Fax 503-986-2622

Región 3
3500 Stewart Parkway #164
Roseburg, Oregon 97470
No. De Teléfono 541-957-3559
Fax 541-957-3563

Región 4
63055 N Hwy 97 edificio "M"
Bend, Oregon 97703
No. De Teléfono 541-388-6196
Fax 541-388-6381

Región 5
3012 Island Avenue
La Grande, Oregon 97850
No. De Teléfono 541-963-7552
Fax 541-962-8919

Form 734-3773S (05/2015)

Oregon Department of Transportation

Adquisicion De Tierras Para Carreteras Y Proyectos Publicos

Descripción del programa de adquisición de tierras del Departamento de Transporte

Cuando se hacen mejoras a las carreteras, el Departamento de Transporte tiene que adquirir el derecho de paso. El objetivo y deseo del Departamento es obtener el derecho de paso en forma justa e igualitaria.

El Estado está facultado para adquirir propiedades privadas para uso público. Pero este poder viene también con la obligación de proteger los derechos de los propietarios. De modo que el Departamento tiene una doble responsabilidad -- reconocer y proteger a los individuos afectados por la adquisición de la tierra, y servir al público en forma eficiente y competente.

Audiencias Publicas

Las audiencias públicas, cuando son necesarias, tienen lugar durante las etapas de ubicación y diseño de un proyecto. Tales audiencias permiten la participación del público para asegurar que la ubicación y diseño de la carretera estén de acuerdo con los objetivos y metas locales, federales y estatales.

La audiencia del corredor tiene lugar después de los estudios preliminares sobre las diferentes rutas posibles. Durante el curso de esta audiencia, se registran testimonios para su estudio por parte del personal del Departamento y de la Comisión de Transporte.

Una vez elegido el corredor, se hace un estudio detallado de ese corredor y se desarrolla un plan de diseño preliminar para su presentación en la "Audiencia de Diseño."

La "Audiencia de Diseño " es una oportunidad para prestar testimonio sobre el diseño final de la carretera.

Cuando el proceso de selección de corredor no es necesario, como en los casos de mejoras de carreteras ya existentes, es posible hacer una sola "Audiencia Combinada de Corredor- Diseño.'

Después de estudiar todos los datos y testimonios, la Comisión de Transporte adopta un diseño final y se autoriza la adquisición de los derechos de paso.

Compensaction Justa

A los propietarios de terrenos necesarios para un proyecto de carreteras se les ofrece una Compensación Justa por los derechos de paso requeridos. La Compensación Justa incluye el valor estimado de toda la tierra y de las mejoras dentro del área necesaria. Además, si se va a adquirir sólo una parte de la propiedad, la Compensación Justa también incluye cualquier pérdida notable en el valor del resto de la propiedad causada por la adquisición parcial.

El Departamento hace una Compensación Justa basada en la valoración de la propiedad necesaria y la estimación de cualquier daño al resto de la propiedad. Los procedimientos del Departamento, que se hacen de acuerdo con Regulaciones Federales, están diseñados para proteger tanto a los propietarios de los terrenos necesarios para el derecho de paso de las carreteras, como a los demás contribuyentes. El proceso de valoración está a cargo de un empleado calificado y experimentado del Departamento o de un evaluador independiente contratado por el Departamento. El valor se establece por comparación con propiedades similares vendidas recientemente en el mercado, por el conocimiento y consideración del costo y la depreciación para adquirir cualquier mejora, y si corresponde, por el potencial de la propiedad para producir ingresos. La determinación final del valor se basa en este tipo de información del mercado local de bienes raíces.

Durante la primera parte del proceso de valuación, un evaluador calificado inspecciona la propiedad a ser adquirida. Si se trata de adquisiciones complejas que involucran grandes porciones de propiedad, edificios o mejoras importantes de la propiedad, desplazamiento de residentes y/o daños a la parte de la propiedad que no va a ser adquirida, los propietarios tienen 15 días para preparar la propiedad y pueden acompañar al evaluador durante la inspección detallada de su propiedad.

En el proceso de valuación no se tiene en cuenta aumento o disminución alguna en el valor de la propiedad necesaria que ocurra como consecuencia del conocimiento público del proyecto de carretera próximo a construirse.

Procedimiento De Adquiscion

El Revisor de Valoración del Departamento controla que la estimación final de valor esté completa y exacta y establece la Compensación Justa. Además de esta estimación de Compensación Justa, el Departamento hace una oferta de compra del resto de toda propiedad si se determina que ésta no tiene valor económico restante para el propietario.

En el caso de que los partidos aun no lleguen a un acuerdo con respecto a la compensación a pagar, o si usted no puede librar el título de propiedad, el Departamento puede hacer arreglos para la mediación de las diferencias entre los partidarios, a cargo de un mediador independiente, para tratar de llegar a un acuerdo antes de iniciar una acción de expropiación. La mediación es un proceso no obligatorio donde todos los partidarios llegan a un acuerdo.

Usted no tiene que aceptar la oferta del Estado ni entrar en un acuerdo que Ud. no considere justo. Los propietarios tienen un período mínimo de 40 días para aceptar o rechazar la oferta, a menos que se declare una emergencia. Un rechazo es simplemente un caso de desacuerdo entre las dos partes sobre el valor de la propiedad.

En el caso de que los partidos aun no lleguen a un acuerdo con respecto a la compensación a pagar, o si usted no puede librar el título de propiedad, el Departamento puede hacer arreglos para la mediación de las diferencias entre los partidarios, a cargo de un mediador independiente, para tratar de llegar a un acuerdo antes de iniciar una acción de expropiación. La mediación es un proceso no obligatorio donde todos los partidarios llegan a un acuerdo.

En el caso de que los partidos aun no lleguen a un acuerdo con respecto a la compensación a pagar, o si usted no puede librar el título de propiedad, una acción de expropiación será llenada. Una vez presentada la acción de expropiación, se pone fecha para el juicio. Sin embargo, el propietario puede optar por arbitraje obligatorio previo al juicio, mediante el Tribunal, para cantidades de $20,000 o menores, y por arbitraje no obligatorio para cantidades de $20,000 a $50,000. El arbitraje no se puede usar para cantidades mayores de $50,000.Las conversaciones pueden continuar aún después de ser presentada la acción de expropiación, en un esfuerzo por resolver diferencias. La presentación permite al Estado proceder con el proyecto de construcción.

Mejoras

Cuando el Departamento adquiere un interés en su tierra, debe adquirir un interés igual en su casa o cualquier otra mejora ubicada en el terreno adquirido.

Appendix C:
Historic Resources Summary and Commitments

Historic Resources Summary and Commitments

The Build Alternative is not anticipated to result in significant impacts to NRHP eligible historic resources. An analysis of eligible resources in relation to the Build Alternative indicates that none of these resources would be subject to removal or displacement. If project impacts are confined to the existing ROW, or if the settings of these resources are not substantially altered, then adverse effects are not anticipated to these resources. As project design progresses, it is possible that some of the eligible resources may be subject to effects, either directly or indirectly, but it is anticipated that any such effects can be avoided or reduced through project design, where feasible, or through the implementation of mitigation measures to be determined in consultation with SHPO.

There are 190 historic resources located within the APE specified for this project that are 45 years of age or older. Of these resources, only one—the Albany Municipal Airport Historic District (Resource 31)—has been formally listed on the NRHP. Thirty-four additional resources are potentially eligible for listing on the NRHP or listed as EC in the Oregon Historic Sites Database. The remaining155 resources are not eligible due to alterations.

When historic resources are found that are eligible for the NRHP, federal laws and regulations, if applicable, require that project designs should be considered that avoid them. If the project is federally funded or involves permitting, the project's effects to such resources shall be determined using the criteria set forth in Section 106 of the National Historic Preservation Act of 1966, as amended; and Section 4(f) of the Department of Transportation Act of 1966.

Of the 35 eligible or listed historic resources identified within the project APE, no resources will be subject to a total taking that would require displacement of the resource. None of the effects on the 35 potentially eligible or listed historic resources is anticipated to be adverse. Ten of the historic properties are anticipated to be subject to effects (primarily right-of-way strip takes) that will not be adverse; the remaining 25 historic properties are expected to be subject to no project effect.

Eligible resources have been identified early in the project design process, and as project design is further refined, ODOT and project staff will continue to work in consultation with the SHPO to avoid impacts where possible and to minimize effects where eligible resources cannot be avoided. As a result, it is anticipated that no historic resources will sustain adverse effects as a result of the project

As project design is further refined, ODOT and project staff shall continue to work in consultation with the SHPO to avoid impacts where possible and to minimize effects where eligible resources cannot be avoided.

If plans for the APE change and other areas of potential impact are added to the project corridor then additional historical and cultural resource investigations should be conducted within those areas.

At present, no significant historical resources have been identified that will be subject to adverse effects, and no mitigation measures are required.

At present, no significant historical resources have been identified that will be subject to adverse effects, and no mitigation measures are required.

Appendix D:
Noise Impacts Summary

Noise Impacts Summary:

The results of noise analysis conducted in support of the Oregon Department of Transportation's (ODOT) Interstate 5 (I-5) South Jefferson to US Highway 20 (US 20) Environmental Assessment (project) shows that under existing conditions, exterior noise levels range from 53 to 77 A-weighted decibels (dBA) at modeled receiver locations in the project area. Two hundred and twenty six residential properties, one cemetery, one commercial property, one recreational facility (motorcross track), and two parks are predicted to exceed the Oregon NAAC (i.e., where noise levels exceed ODOT noise abatement criteria) under existing conditions.

Under the 2035 No Build Alternative, exterior noise levels would range from 54 to 79 dBA at receivers in the project study area. Two hundred and sixty six residential properties, one cemetery, one church, one commercial property, one recreational facility (motorcross track), and two parks are predicted to exceed the Oregon NAAC under the No Build Alternative.

Under the 2035 Build Alternative noise levels in the project area would range from 54 to 78 dBA at receivers in the project study area. Noise levels under the Build Alternative would change from a reduction of 2 dBA to an increase of 10 dBA over existing levels as a result of the project. In addition, noise levels under the Build Alternative would change from a decrease of 4 dBA to an increase of 9 dBA over No Build Alternative levels as a result of the project.

Under the Build Alternative with the Collector-Distributor Design Option, 262 residential properties, one cemetery, one church, one commercial property, one recreational facility (motorcross track), and two parks are predicted to have noise impacts. Under the Build Alternative with the Auxiliary Lane Design Option, 265 residential properties, one cemetery, one church, one commercial property, one recreational facility (motorcross track), and two parks are predicted to have noise impacts. One substantial noise increase impact is predicted as a result of the project under each of the two design options under the Build Alternative.

Noise mitigation was considered and evaluated for feasibility and reasonableness for properties predicted to meet or exceed the ODOT NAAC, or that are predicted to experience substantial increases in noise levels. ODOT does not have an FHWA-approved Type II program and so would not provide noise abatement for highway noise under a No Build Alternative.

Noise walls to mitigate traffic noise impacts were modeled in detail in ten locations. Three of the walls (Walls 5, 7, and 8) evaluated were found to be able to meet ODOT's feasibility and reasonableness criteria. Walls 5 and 8 were found to meet the ODOT criteria under both Build design options. Wall 7 would only be feasible under the Auxiliary Lane design option. For Wall 5 under the CD Road design option, 89 receptors would be benefitted by the proposed wall, and 19 impacted receptors would not be benefitted. For Wall 5 under the Auxiliary Lane design option, 81 receptors would be benefitted by the proposed wall, and 19 impacted receptors would not be benefitted. For Wall 7, 38 receptors would

be benefitted by the proposed wall, and 12 impacted receptors would not be benefitted. For Wall 8 under both design options, 76 receptors would be benefitted by the proposed wall, and 1 impacted receptor would not be benefitted. The wall locations evaluated are preliminary and final decisions about whether to include mitigation would be made during the final design phases of the project in compliance with the ODOT Noise Manual (July, 2011).

Section 7.0 of this noise report contains information for local officials. One of the requirements of the ODOT Noise Manual is to supply information to local governments on existing and future noise levels so that the information can be used in guiding local land use decisions. The City of Millersburg, the City of Albany, and Linn County should consider the information in this report regarding traffic noise levels within the project area.

Appendix E:
Biological Summary and Commitments

Biological Summary and Commitments:

Based on the analysis and associated avoidance, minimization, and mitigation measures discussed in this report, the Build Alternative would result in temporary effects to fish, wildlife, and vegetation. Currently, degraded habitats dominate the study area; most of the habitat types that would be impacted by the project are Urban and Agriculture (Johnson and O-Neil, 2001). Impacts to wetlands, streams, and riparian habitats would be mitigated to compensate for permanent habitat loss. Stormwater would be treated to minimize impacts to water quality and in-stream flows in receiving water bodies. Based on this documentation, the Build Alternative is not anticipated to result in significant impacts to biological resources.

The following avoidance and minimization measures are recommended for future projects or phases:

- Existing vegetation to be retained, where shown in the plans or designated by the Engineer, shall be protected through the life of the contract. The Engineer shall designate the vegetation to be protected by a site preservation line, individual flagging and/or high visibility construction fencing.
- Grubbing, clearing, and structure removal would occur outside of the nesting season (which can extend from March 1 through August 31, depending on the species), when feasible, to comply with the MBTA guidelines. Exclusion of habitats would be performed by the Wildlife Service of United States Department of Agriculture, Animal and Plant Health Inspection Service through its Inter-government Agreement with ODOT.
- The Contractor shall fell trees only within the area to be cleared, leave standing any trees or native growth indicated by the Engineer, and protect, by fencing if necessary, all trees or native growth from any damage caused by construction operations.
- All disturbed areas shall be restored with a combination of native herbaceous and woody species, including grasses, shrubs, and trees per contract requirements (to be prepared in later phases of the project).
- Wetland mitigation shall be in accordance with federal and state laws.
- Seed, fertilizer, and mulch, shall be applied per contract requirements and ODOT Standard Specifications to all areas requiring permanent seeding.
- Introduction, spread, and removal of invasive and noxious weeds shall be controlled by implementing the measures outlined in ODOT Standard Specifications 1030.42 (Weed Control) and other sections of 1030 requiring certain project elements to be “weed free.” Implementation of these measures would meet the purpose of Executive Order 13112 to control invasive species.
- Roadside cleanup, as directed by the Engineer, may include obliterating abandoned roads and reshaping the areas to blend naturally with surroundings. Methods and equipment used in roadside cleanup shall be approved by the Engineer.
- The Contractor shall acquire all permits and approvals required for the use of the disposal site. The Contractor shall provide the Engineer the location of all disposal sites to be used and also

provide copies of the permits and approvals for such disposal sites before any waste is hauled off the project. Disposal of excess material within a wetland area shall not be allowed without a Section 404 permit issued by the U.S. Corps of Engineers and a Removal-Fill authorization issued by the Oregon Department of State Lands.

- Temporary lighting shall be kept to the minimum necessary (i.e., in terms of both intensity and area illuminated). Lighting shall be prevented, where practicable, from shining directly on surface waters.
- The Contractor shall either adopt or modify an Erosion and Sediment Control and a Pollution Control Plan, as outlined in the ODOT Standard Specifications to minimize construction-related impacts to natural resources.
- Clearing, grubbing, excavation, borrow, or fill within the ROW shall not expose soils for the timelines as stated in the ODOT Standard Specifications.
- The project will be covered by the FHWA Federal-Aid Highway Program programmatic ESA Section 7 consultation. All work shall comply with the terms and conditions set forth in this programmatic biological opinion.
- Fresh concrete and/or concrete byproducts and/or construction debris of any kind shall be prevented from entering surface waters during construction. Any water having direct contact with uncured concrete shall be contained and treated or removed from the site, as appropriate.
- If foundations or substructures are to be built or removed from areas within or immediately adjacent to running streams, the Contractor shall isolate the work area and perform fish salvage, where applicable, prior to construction or demolition.
- If impact pile driving is necessary in close proximity to ordinary high water line, the contractor shall provide measures (e.g., work area isolation, use of an attenuator) as necessary to minimize adverse impacts to fish or other aquatic life. The project would ensure piling installation operations do not cause or permit the release of any petroleum product to adjacent wetlands or water bodies.
- In-water work will conform to Oregon Guidelines for Timing of In-Water Work to Protect Fish and Wildlife Resources (ODFW 2008), which establishes an in-water work window of June1-October 15 for streams within the project area.
- Stormwater treatment would be provided for impervious surfaces associated with the project.