I-5 Willamette River Bridge

Eugene & Springfield

Environmental Assessment

January 2008

Federal Highway Administration

Oregon Department
of Transportation

Alternative Format Availability

In Compliance with the Americans with Disabilities Act, alternative formats of this document will be made available upon request.

Oregon
Theodore R. Kulongoski, Governor

Department of Transportation
Major Projects Branch
680 Cottage St. NE
Salem, Oregon 97301-2412
Phone: (503) 986-4445
Fax: (503) 986-4469

January 8, 2008

TO THE INTERESTED PARTIES OF THE **I-5 Willamette River Bridge Project**

Interstate 5 (Pacific Highway 1)
Cities of Springfield and Eugene and
Lane County, Oregon
Key No. 14259

This Environmental Assessment is being distributed for your information according to state and federal regulations.

Your reply is anticipated by the date below in accordance with appropriate state and federal regulations. If comments are not received by the date stamped below, it will be assumed that you have no comments.

Written comments should be mailed or delivered to:

Jim Cox, Assitant Branch Manager
ODOT Major Projects Branch
680 Cottage Street NE
Salem, OR 97301

Comments can be submitted electronically through the project internet site http://www.oregon.gov/ODOT/HWY/REGION2/I-5WRB.shtml or by email to Jim Cox at Jim.B.Cox@odot.state.or.us

If you need additional information concerning this project, please contact Jim Cox at (503) 986-6612.

Thank you,

Thomas Lauer
ODOT Major Projects Branch Manager

COMMENTS DUE: February 19, 2008

This page left intentionally blank.

INTERSTATE 5 WILLAMETTE RIVER BRIDGE PROJECT
Cities of Springfield and Eugene and Lane County
Key No. 14259

ENVIRONMENTAL ASSESSMENT

Submitted pursuant to 42 U.S.C. 4332(2)(C) and 23 CFR Part 771

U.S. Department of Transportation, Federal Highway Administration
and
Oregon Department of Transportation

Cooperating Agencies
US Army Corps of Engineers
National Park Service

Jan. 8, 2008 — Date — FHWA Official

Jan. 7, 2008 — Date — ODOT Official

The following persons should be contacted for additional information

Tim Dodson
Project Leader
Oregon Dept of Transportation
680 Cottage Street NE
Salem, OR 97301
(503) 986-3311

Phillip Ditzler
Division Administrator
FHWA Oregon Division
530 Center St NE
Salem, OR 97301
(503) 399-5749

Thomas Lauer
Major Projects Branch Mgr
Oregon Dept of Transportation
680 Cottage Street NE
Salem, OR 97301
(503) 986-4412

Abstract:
The FHWA and ODOT propose one build alternative to replace the decommissioned and temporary detour bridges on Interstate 5 between the Glenwood Interchange (milepost 192.18) and the Centennial Boulevard Overcrossing (milepost 193.00). A No Build Alternative is also analyzed in this environmental assessment (EA).

The Build Alternative would construct parallel bridges (one for northbound and one for southbound traffic) over the Willamette River and the Canoe Canal. The Willamette River Bridge would also cross Franklin Boulevard, bicycle/pedestrian paths, the Union Pacific Railroad and the off ramp from northbound I-5 to westbound Franklin Boulevard. The Build Alternative also includes removal of the decommissioned and detour bridges and reconstruction of the approaches to the new bridges and the on and off ramps to Franklin Boulevard. The Build Alternative would result in impacts to biological resources, wetlands, noise, parks and water resources. The project would have "no adverse effect" on the Union Pacific Railroad and the historic Eugene Mill Race and Dam. Since no additional lands from those historic resources would be incorporated into the project, a Section 4(f) use would not occur. Part of Alton Baker Park adjacent to I-5 would be temporarily occupied for construction staging and a bike path would be temporarily occupied for a haul route. Temporary occupancy of the park is not expected to constitute a use under Section 4(f). Land and Water Conservation Fund Act (LWCF) grants may have been used to develop areas of the parks affected by the project. If LWCF grants were used, the temporary use of the park properties would be a conversion under Section 6(f)3 of the LWCF . No new right of way would be acquired.

The No Build Alternative includes improvements to the existing detour bridges to meet current seismic standards and removal of the two decommissioned bridges. Effects of the No Build Alternative would include: impacts to biological resources, wetlands, noise, parks and water resources. Temporary occupancy of Alton Baker Park for construction staging and material hauling would be required but is not expected to constitute a use under Section 4(f). If LWCF grants were used, use of the park would constitute a conversion under Section 6(f). A temporary easement from Willamalane Park and Recreation District would be permanently converted to right of way.

Construction is expected to begin in summer 2009. The approximate construction cost (2010 dollars) of the Build Alternative is $150 million.

This page left intentionally blank.

Table of Contents

List of Tables

List of Figures

List of Appendices

Acronyms and Abbreviations

ADT	average daily traffic
APE	Area of Potential Effect
BMP	Best Management Practices
CAG	Community Advisory Group
CETAS	Collaborative Environmental and Transportation Agreement for Streamlining
cfs	cubic feet per second
CMCS	Comprehensive Mitigation/Conservation Strategy
CM/GC	Construction Manager/General Contractor
CO	carbon monoxide
CS^3	Context Sensitive and Sustainable Solutions
CWA	Clean Water Act
dBA	A-weighted decibels
DEA	David Evans and Associates
DEQ	Department of Environmental Quality
DLCD	Department of Land Conservation and Development
DOT	Department of Transportation
DPS	Distinct Population Segment
DSL	Department of State Lands
EA	Environmental Assessment
EC	Eugene Code
ECSI	Environmental Cleanup Site
EPA	United States Environmental Protection Agency
EPS	Environmental Performance Standards
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FT	federally threatened
GIS	Geographic Information System
I-5	Interstate 5
ISCP	Indirect Source Construction Permit
lbs/yr	pounds per year
LCOG	Lane Council of Governments
L_{eq}	equivalent sound level
LRAPA	Lane Regional Air Protection Agency
LUST	leaking underground storage tank
LWCF	Land and Water Conservation Fund
LWI	Local Wetland Inventory
MB&G	Mason, Bruce & Girard
MBTA	Migratory Bird Treaty Act
Metro Plan	Eugene-Springfield Metropolitan Area General Plan
mg/L	milligrams per liter

MSAT	Mobile Source Air Toxics
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NWI	National Wetland Inventory
OAR	Oregon Administrative Rules
OBDP	Oregon Bridge Delivery Partners
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation
OHW	ordinary high water
OPRD	Oregon Parks and Recreation Department
ORNHIC	Oregon Natural Heritage Information Center
ORS	Oregon Revised Statutes
OSFM	Oregon State Fire Marshal
OTIA III	Oregon Transportation Investment Act III
OWRD	Oregon Water Resources Department
PARIT	Programmatic Agreements Reporting and Implementation Team
PDT	Project Development Team
PEC	Potential Environmental Condition
PM	particulate matter
RCRA	Resource Conservation and Recovery Act
ROW	right-of-way
RPEC	Recognized and Potential Environmental Condition
SAFETEA-LU	Safe, Accountable, Flexible, Efficient, Transportation Equity Act; A Legacy for Users
SDC	Springfield Development Code
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SWF/LF	solid waste facilities and landfills
T&E	threatened and endangered
TMP	Traffic Management Plan
TransPlan	Eugene-Springfield Transportation System Plan
UGB	Urban growth boundary
UPRR	Union Pacific Railroad
USACE	United States Army Corp of Engineers
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
UST	underground storage tanks
VMT	vehicle miles traveled
VOC	volatile organic compound
WPRD	Willamalane Park and Recreation District

Executive Summary

The purpose of the Interstate 5 (I-5) Willamette River Bridge Project is to improve safety and maintain connectivity and mobility for all users of I-5 over the Willamette River in the Eugene/Springfield Metropolitan Area.

The I-5 Willamette River Bridge crosses the Willamette River in the Eugene-Springfield area.

The original I-5 bridge over the Willamette River, Franklin Boulevard and the Union Pacific Railroad and the bridge over the Canoe Canal (also known as "Patterson Slough") were inspected in 2002 and found to have substantial problems. The bridges were taken out of service and temporary detour bridges were built to carry I-5 traffic. The I-5 Willamette River Bridge Project would build permanent replacement bridges.

The I-5 Willamette River Bridge Project is located on a section of I-5 that runs generally in a north-south direction, with the City of Eugene on the west side and the City of Springfield on the east side.

What is the I-5 Willamette River Bridge Project?

The I-5 Willamette River Bridge Project is a project to replace the existing I-5 bridges that cross the Willamette River and the Canoe Canal. The project is part of the Oregon Transportation Investment Act (OTIA) III State Bridge Delivery Program, which involves the repair and replacement of more than 300 bridges statewide over a ten year period. The I-5 Willamette River Bridge project is the largest in the $1.3 billion OTIA III program.

The proposed project has the following main components:

- Demolition of the decommissioned Willamette River bridge, Canoe Canal bridge, and detour bridges (salvaged portions of the bridges would be recycled or reused as much as possible);
- Construction of replacement bridges; and
- Reconstruction of the roadway near the bridges including the Franklin Blvd ramps.

The new bridges would be constructed in almost the same location as the existing bridges, there would be relatively minor shifts of alignment, as well as changes to the Franklin Boulevard ramps.

The new bridges would be designed with enough width to eventually carry up to six lanes of traffic (three in each direction) to meet the projected traffic needs for the next 20 years. The new bridges would be striped to carry two lanes in each direction which matches I-5 in this area. Any future widening of I-5 would require a full environmental review.

How long will the project take?

It is expected that it will take up to four years from start of construction in 2009 until the completion and the opening of the new bridges in 2012.

How much would the project cost?

The entire project would cost $180 million, which includes National Environmental Policy Act (NEPA) review, design, right-of-way acquisition (if required), demolition, road work, bridges, ramp improvements, and all construction and inspection. Of the overall budget, about $70 million is just for the bridges crossing the Willamette River, railroad, and Franklin Boulevard. This includes about $10 million earmarked for additional aesthetics for the bridge. Funding comes from OTIA III program funding ($150 million) and federal funding authorized in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) ($30 million).

The National Environmental Policy Act of 1970 provides an interdisciplinary framework for federal agencies to consider environmental factors in their decision making. This EA helps the Federal Highway Administration in its review of the I-5 Willamette River Bridge Project.

What are the purpose of and need for this project?

The purpose of the proposed project is to improve safety and maintain connectivity and mobility for all users of I-5 over the Willamette River in the Eugene/Springfield Metropolitan Area.

The need for the project is based on several factors. An inspection of the existing Willamette River Bridge in 2002 identified substantial problems. The bridge is cracked in many places, which affected its structural integrity and safety. The inspection resulted in a sufficiency rating of 20 on a 100 point scale. A bridge qualifies for replacement funding from the Federal Highway Bridge Replacement and Rehabilitation Funding Program if it has a sufficiency rating of less than 50.

In addition, the bridges' designs are no longer sufficient for the size of modern freight trucks that travel on I-5.

Temporary detour bridges were built in 2004 and the old bridges were removed from service.

The temporary detour bridge eliminated a 200-mile detour for heavy haul trucks that could not use the old bridge because of weight restrictions. The 200-mile truck detour had a big economic impact on the state and region.

Further, the current average daily traffic (ADT) volume is about 49,000 vehicles on the interstate facility in the project area and is predicted to increase to roughly 73,000 ADT by 2030. Upgrading and widening the decommissioned bridge to meet design standards or future traffic would be difficult and costly.

What are the project alternatives?

The Oregon Department of Transportation (ODOT) and the Federal Highway Administration (FHWA) are assessing two project alternatives in the NEPA process: The No Build Alternative and the Build Alternative. The No Build Alternative would include demolishing the decommissioned bridges and upgrading the detour bridges to meet current earthquake standards. It is estimated that upgrades to the detour bridges would cost $10 million to $15 million, not including demolition of the decommissioned bridges and other related costs.

The Build Alternative would involve demolishing the existing decommissioned and detour bridges and building new bridges. The Build Alternative would feature two separate parallel bridges – one carrying northbound and another carrying southbound traffic – crossing the Willamette River, Franklin Boulevard, and the Union Pacific railroad. There would be one set of bridge piers near the center of the Willamette River, and one set of piers on or near the shoreline on each side of the river. The new bridges would have much fewer bridge piers in and near the Willamette River than the decommissioned and detour bridges currently in place (11 sets of piers). There would also be bridges crossing the Canoe Canal. The bridges and nearby roadway would be shifted slightly from the existing alignment.

Several design options are part of the Build Alternative:

- There are two pier location options that feature slightly different locations for the bridge piers; and
- There are four bridge type options: girder, box segmental, through arch; and deck arch.

These options would allow the ultimate selection of a bridge that is within the available project funding, minimizes bridge piers in the Willamette River, and provides opportunities for aesthetic bridge treatments as part of the final design.

ODOT intends to select the bridge type after the NEPA process is finished to allow the selected design firm and the contractor to provide input into the bridge type. Their expertise on design and construction would help in choosing a bridge that is aesthetically pleasing, meets community goals, and is within budget. This provides a greater opportunity for ODOT to obtain and consider additional public input on bridge types.

How has the public been involved in the project?

Public involvement activities

- Open house meetings in 2006 and 2007
- Newsletters
- Community Advisory Group
- Website
- Briefings to community groups and local elected bodies

Public outreach and involvement for the I-5 Willamette River Bridge project has included: project information provided to the public through newsletters and the project website; public open house meetings in Eugene and Springfield to provide project information and gather public input; briefings to neighborhood and civic groups and local elected bodies; and meetings of the project's Community Advisory Group (CAG). The CAG has helped to develop project goals and objectives, gave input on alternatives development, and will continue to help shape the project into final design and construction. In addition, a member of the CAG is a voting member of the Project Development Team (PDT). The PDT is the main decision-making body for the project, and is made up of representatives of ODOT, FHWA, the cities of Eugene and Springfield, Lane County, and the CAG.

How would the project affect the environment?

Both the No Build and Build Alternatives would involve construction activities, though the scope of those activities would be greater for the Build Alternative. Neither the No Build nor the Build Alternative would result in changes in traffic volumes, as neither would affect the capacity of I-5.

The following sections highlight the findings of this analysis.

Air Quality

Roadway construction activities can temporarily create dust and small amounts of other pollutants. Heavy trucks and construction equipment powered by gasoline and diesel engines would generate exhaust emissions. These effects would be reduced by following applicable state regulations. The project would not result in long term air quality impacts.

Archaeological and Historic Resources

The area has been surveyed for archaeological sites and none were found within the area potentially affected by the project. The Eugene Mill Race and Dam is eligible for listing in the National Register of Historic Places. A study of possible project impacts to the Mill Race was prepared and submitted to the Oregon State Historic Preservation Office (SHPO). The SHPO concurred with a finding that the proposed project would have no adverse effects on the Mill Race.

Biology

The project would temporarily disturb wildlife and habitat in the project area during construction. In-water work would temporarily affect aquatic species. The adjacent heron

rookery would be affected by construction noise and activities. These effects would be minimized by using construction best management practices (BMPs) to reduce erosion, minimize impacted areas, and reduce construction noise. The project would result in fewer piers in the Willamette River and surrounding areas in comparison to the existing condition, thus providing an increase in river and terrestrial habitat.

Geology

Construction activities would disturb soil and involve excavation of foundations within the bedrock that is below the Willamette River. These effects would be localized and there would be no long term effects to geological resources from the project.

Hazardous Materials

Several sites with known environmental contamination are present within the project area. Demolition and excavation activities could affect two of the areas of concern that have been identified. No long term effects on hazardous materials sites are anticipated.

Land Use (including Sections 4(f) and 6(f))

Alton Baker Park, which includes the Whilamut Natural Area and the Eastgate Woodlands, is located on both sides of I-5 in the project area. Adjacent land uses include transportation, industrial, residential, and open space uses. The project would not change existing land use in the project area. The project would need the following land use actions: Willamette Greenway (statewide planning goal #15) exception; amendments to Eugene-Springfield Metropolitan Area Plan and the Willakenzie Area Plan; and land development permits.

Alton Baker Park is a public park, which qualifies it for protection under Section 4(f) of the Department of Transportation Act of 1966. Land and Water Conservation Fund Act (LWCF) grant money may have been used in the development of the park. If LWCF funds were used "conversion" of park property would need to be replaced with similar property.

Portions of Alton Baker Park would be temporarily used during construction for a haul road (via Leo Harris Parkway and North Walnut Street southeast of Autzen Stadium) and for materials and equipment storage, but no permanent new right of way is expected to be needed for the project. ODOT is working with the City of Eugene and Willamalane Park and Recreation District on measures to minimize construction effects on the park.

Section 4(f) of the Department of Transportation Act of 1966 states that publicly-owned park and recreation sites, wildlife and waterfowl refuges and significant historical sites cannot be used for transportation purposes unless there is no feasible and prudent alternative and the action includes all possible planning to minimize harm to the property.

Section 6(f) of the Land and Water Conservation Fund Act states that act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the National Park Service.

Noise

The proposed project would result in minor increases in noise in the surrounding area, primarily due to anticipated traffic increases over time. The results of the noise analysis of the No Build Alternative for the year 2030 predict that noise levels would increase by 1 to 2 decibels, or dBA, over existing conditions, and that 60 homes, 1 business, 1 park, and 1 cemetery would have noise levels that exceed the ODOT noise impact standards. For the Build Alternative it is predicted that changes in noise levels would range from a reduction of 1 dBA to an increase of 3 dBA over existing conditions. The Build Alternative results also show that changes in noise levels are predicted to range from a reduction of 2 dBA to an increase of 1 dBA over the No Build Alternative noise levels. Changes in noise levels are due to minor changes in roadway alignment and changes in shielding of noise from receptors. Under the Build Alternative, 67 homes, 3 businesses, 1 park, and 1 cemetery are predicted to have noise levels in excess of the ODOT noise impact standards.

Noise levels measured in A-weighted decibels, or dBA, approximate the response of the human ear by filtering out some of the low and high frequency ranges that the ear does not detect well. A-weighting is used in most environmental ordinances and standards.

Right of Way

The project would only require temporary use of areas adjacent to the existing roadway and bridges. No property would be acquired for new permanent right of way. The area on the south side of the river that would be used during construction is ODOT and other publicly-owned property. The area on the north side of the river would be on ODOT right of way and Alton Baker Park. ODOT would obtain agreements with the City of Eugene and Willamalane Park and Recreation District regarding the temporary occupancy of the park areas during construction, including measures to maintain park functions and restore the areas. ODOT will also work with the parks agencies to determine if LWCF funds were used in the park and, it they were, to satisfy the requirements of Section 6(f)(3) of the LWCF.

Socio-economics

The project would temporarily increase employment and economic activity in the Eugene-Springfield area due to construction jobs and spending. Local roadways and bicycle/pedestrian paths would be kept open during construction and access to local residences and businesses would be maintained. The project would involve a traffic management plan to ensure that all traffic, including pedestrian and bicycle, are maintained and safe during construction.

Transportation

The project would cause some traffic delays during construction. The project will include implementation of a traffic management plan to ensure that all traffic, including

pedestrian and bicycle, are maintained and safe during construction. The Build Alternative would result in wider bridges that could be re-striped in the future to carry additional travel lanes, but future expansion would only happen if I-5 north and south of the bridges is widened, which is not currently planned. The Build Alternative would provide bridges that meet current design standards and that would support long-term regional and statewide traffic needs.

Visual Quality

The project would have temporary impacts on the visual quality of the project area during construction. The park setting on the north side of the river would be affected by the presence of construction equipment and materials. The Build Alternative would provide a long term visual improvement by replacing the existing bridges, which have inconsistent appearance and numerous piers. The new bridges will have a consistent design and only three piers per bridge in the river and near shore areas. Plus, the project provides flexibility in final treatments, such as pier shape, textures, and colors which will be addressed during final design with input from the local community.

Visual simulations of bridge types were used to estimate impacts

Wetlands and Water Resources

Construction activities that involve earth movement and placement of fill material could temporarily affect water quality and wetlands from an increase in erosion, sedimentation and turbidity caused by these activities. In addition, the project would require work during up to four "in-water work periods." In-water work timing and guidelines are intended to avoid and minimize fish impacts and will be coordinated with the Oregon Department of Fish and Wildlife.

How would environmental impacts be avoided and minimized?

Construction best management practices will be implemented to minimize the effects of construction activities, such as dust, noise, and soil erosion. Traffic on roads and trails and park activities will be maintained during construction, although there will probably be short term closures during certain construction activities. Disturbed areas will be restored and ODOT will work with the community throughout the design and construction process to get input and advice on ways to avoid and minimize environmental impacts.

The project would meet the OTIA III Environmental Performance Standards in order to meet the requirements of the programmatic environmental permits that apply to the statewide bridge program. These performance standards define the level of effect that a project may have upon the environment, thereby limiting or avoiding impacts to the

environment through the use of proper planning, design, and construction activities.

Noise walls that meet the ODOT criteria for noise reduction and cost effectiveness are proposed to reduce noise impacts.

What are the benefits of the project?

The main benefit of the project would be the continued mobility and connectivity and improved safety of the users of I-5 and the regional transportation system. The proposed bridges would be modern facilities that would meet long-term traffic demands, as well as allow any future expansion of Franklin Boulevard, I-5 and the railroad. The proposed project would reduce the number of bridge piers in the Willamette River and surrounding areas.

How can the public provide comments on the project?

Public input is essential to understanding project issues and making decisions. ODOT and the Federal Highway Administration welcome your comments on the project and this environmental assessment. You can provide written comments to:

Jim Cox, Assistant Branch Manager
Oregon Department of Transportation
680 Cottage Street NE
Salem, OR 97301

You may also submit comments via the project website:

http://www.oregon.gov/ODOT/HWY/REGION2/I-5WRB.shtml

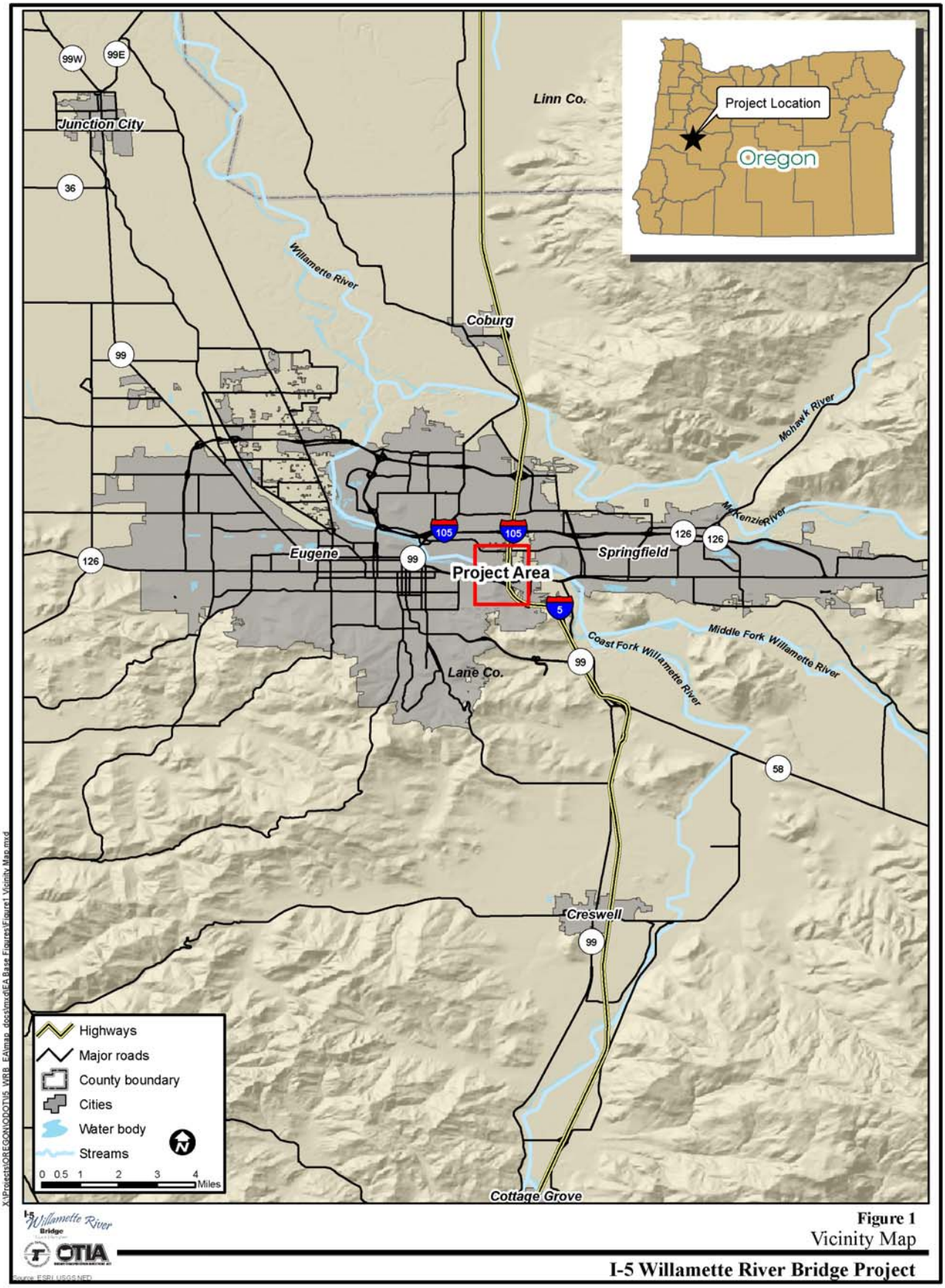
1.0 Project Introduction

1.1 Project Identification and Description

The Oregon Department of Transportation (ODOT) proposes to replace the existing bridges on I-5 over the Willamette River in Lane County. I-5 runs generally in a north-south direction, with the City of Eugene on the west side and the City of Springfield on the east side (Figure 1: Vicinity Map and Figure 2: Project Area). The project area is located within the urban growth boundary of both cities. The project would replace both the decommissioned bridge (completed in 1962) and the temporary detour bridge (completed in 2004 before the decommissioning of the existing bridge) with two new parallel bridges. In addition to crossing the Willamette River, the bridges also cross Franklin Boulevard and the Union Pacific Railroad. The decommissioned and detour bridges over the Canoe Canal (also called "Patterson Slough") would also be replaced by two parallel bridges.

The I-5 Willamette River Bridge Project is part of the Oregon Transportation Investment Act (OTIA) III State Bridge Delivery Program, which involves the repair and replacement of more than 300 bridges statewide over a 10 year period. The I-5 Willamette River Bridge project is the largest project – both in terms of cost and the size of the bridges -- in the $1.3 billion OTIA III program.

The proposed project consists of the following main components: demolition of the decommissioned Willamette River Bridge, Canoe Canal Bridge, and detour bridges; construction of replacement bridges; and reconstruction of the roadway approaches to the bridges (I-5 and ramps). Proposed construction would include: construction and later removal of one or more temporary work bridges, rehabilitation of the project area, and completion of any required mitigation of project impacts. The new bridges would be constructed in about the same location as the decommissioned and detour bridges, but would require minor shifts of alignment, as well as adjustment of the connections to I-5 of the Franklin Boulevard ramps to meet the necessary raising of I-5 by about ten feet (compared to the decommissioned bridge) where the bridge crosses Franklin Boulevard. The new bridges would be designed with enough width to eventually carry up to six lanes of traffic to meet the 20-year design for future traffic needs. The width of the proposed new Willamette River Bridges would be 64 feet "curb-to-curb" for each direction (northbound and southbound); total width of each bridge would be about 68 feet. The project would also be designed to allow reasonable future improvements to the Franklin Boulevard corridor and to not prohibit possible future interchange improvements in the Franklin-Glenwood section. The bridges over the Union Pacific Railroad (UPRR) would be long enough to allow the addition of a third track. Although the bridges would be wider than the decommissioned bridge, additional travel lanes are not proposed as part of this project and the new bridge would be striped to match the existing travel lanes at both the north and south ends. The new bridges would meet current minimum safety and design standards for all travel needs typical on this section of I-5. The new bridge would have wide enough shoulders for cars and trucks to pull completely off the highway in case of emergencies. That would be a major safety improvement over the narrow shoulders of the decommissioned and detour bridges.


Project Location
Oregon
Junction City
Linn Co.
Willamette River
Coburg
Mohawk River
McKenzie River
Eugene
Springfield
Project Area
Coast Fork Willamette River
Middle Fork Willamette River
Lane Co.
Creswell
Cottage Grove
99W
99E
36
99
126
105
5
58
Highways
Major roads
County boundary
Cities
Water body
Streams
0 0.5 1 2 3 4 Miles
I-5 Willamette River Bridge
OTIA
Figure 1
Vicinity Map
I-5 Willamette River Bridge Project

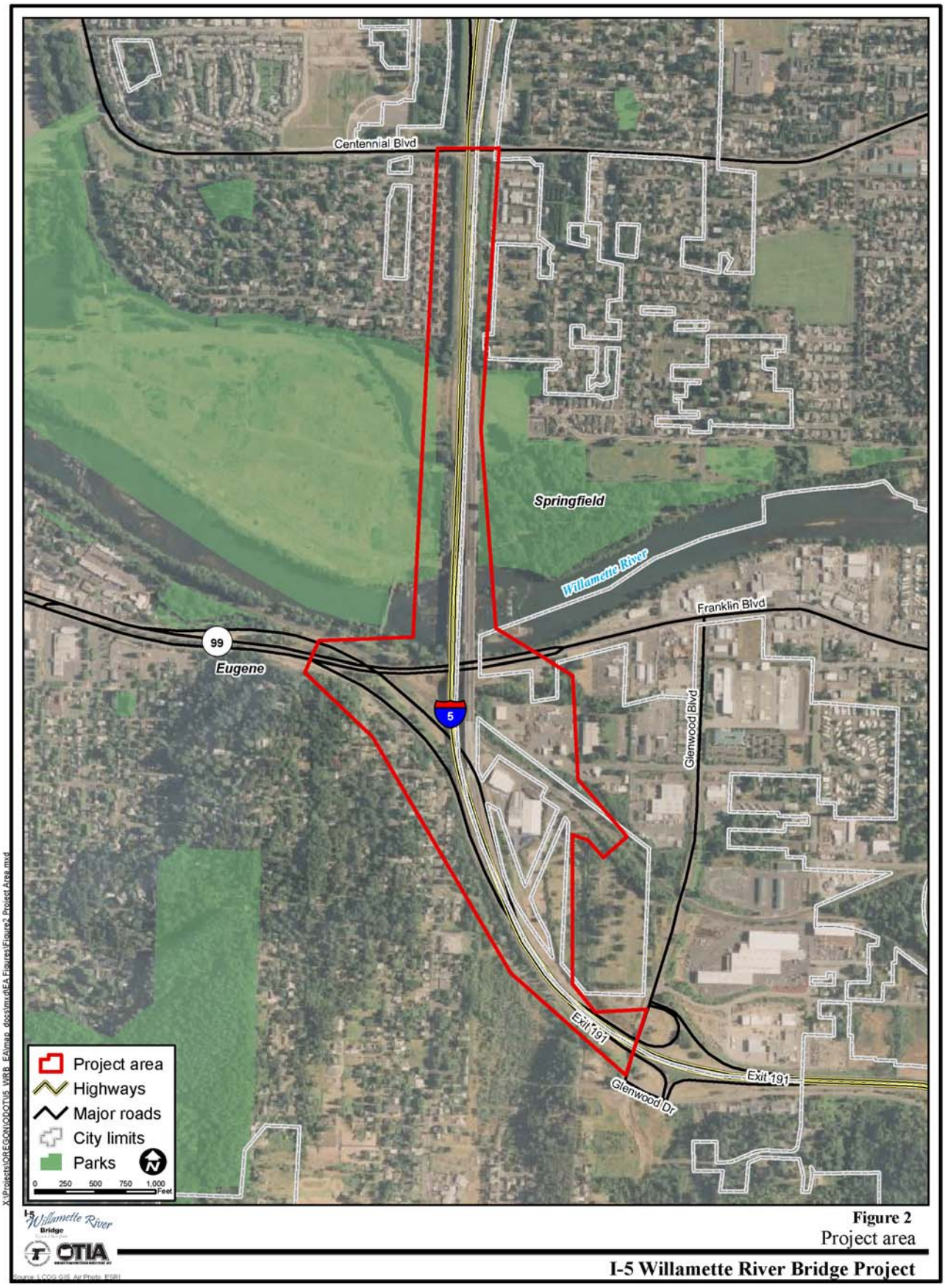


Figure 2
Project area

I-5 Willamette River Bridge Project

The project is funded at $180 million, which includes NEPA review, design, right-of-way acquisition, demolition, road work, bridges, ties to the existing transportation system, and all construction and inspection. Of the overall budget, about $70 million is for the bridges crossing the river, railroad, and Franklin Boulevard. This includes about $10 million earmarked for additional aesthetics for the bridge. Funding comes from the following sources:

- OTIA III -- $150 million.
- Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU), a federal transportation funding package -- $30 million.

The traffic capacity of I-5 would not change as a result of the proposed bridge replacement. No additional lanes, channelization changes, or speed zone changes are planned. Temporary construction easements may be required from Willamalane Park and Recreation District and/or the cities of Springfield and Eugene for construction activities in the project area. Environmental mitigation and/or enhancement construction activities may need to be accomplished outside ODOT's current right-of-way. Impacts to riparian areas (i.e., the areas immediately adjacent to the Willamette River and the Canoe Canal) from construction activities would be mitigated on-site as much as possible. Coordination for off-site mitigation, mitigation banking, or replacement property needed for mitigation of parks impacts would be ongoing throughout project development.

1.2 Purpose and Need

1.2.1 Purpose of the Project

The purpose of the proposed project is to improve safety and maintain connectivity and mobility for all users of Interstate 5 over the Willamette River in the Eugene/Springfield Metropolitan Area.

1.2.2 Need for the Project

An inspection of the existing Interstate 5 Willamette River Bridge in 2002 found it to have major structural problems that threatened the stability and safety of the bridge. The bridge is cracked in many places. The inspection resulted in a sufficiency rating of 20 on a 100 point scale. A bridge qualifies for replacement funding from the Federal Highway Bridge Replacement and Rehabilitation Funding Program if it has a sufficiency rating of less than 50. Based on this analysis, weight limits were placed on the bridge that required a 200-mile detour for heavy haul trucks. To eliminate this problem, a temporary detour bridge was built in 2004 and the existing Willamette River and Canoe Canal bridges were taken out of service.

The decommissioned Willamette River Bridge (constructed in 1962) cannot feasibly be repaired or widened to accommodate the traffic flow and vehicle capacity demands that are projected 20 years in the future. ODOT estimates that it would cost about $50 million to repair the decommissioned bridge to keep it in service for 20 more years. Those repairs would not widen the bridge.

The decommissioned bridge does not meet current design standards. It was designed using bridge standards that are no longer appropriate for the size of longer, heavier modern freight trucks. The bridge also has substandard shoulders that do not provide enough room for disabled vehicles to move completely out of the travel lanes, creating a safety problem.

The detour bridges over the Willamette River and Canoe Canal carry both the northbound and southbound lanes on a single bridge. New bridges are proposed to each carry traffic in one direction.

The existing bridges will not meet future traffic demands. The current average daily traffic (ADT) on I-5 in the project area is about 49,000 vehicles and is predicted to increase to roughly 73,000 ADT by 2030. Both the existing and detour bridges have four travel lanes, two in each direction. Six travel lanes, three in each direction, will be needed to handle the predicted 2030 traffic volumes. Replacement bridges would be wide enough for three lanes in each direction but would be striped for two lanes in each direction to match the number of lanes currently on I-5 in this area.

All traffic is now using the temporary detour bridge built in 2004. The detour bridge does not meet current earthquake standards and the construction methods used to build the bridge only meet environmental requirements as they apply to temporary, not permanent, bridges.

Alton Baker Park is located on both sides of I-5 on the north bank of the river. All public parks are protected under Section 4(f) of the Department of Transportation Act of 1966, which prohibits taking land from a public park for a transportation project unless there are no prudent and feasible alternatives. It appears that the replacement bridges could be built within the existing permanent right of way and additional right of way from the park would not be needed. To fit the proposed project within ODOT's right of way, retaining walls along the fill slopes within Alton Baker Park would be needed. Keeping the project within permanent ODOT right of way bars any major alignment shift for this project.

1.3 Goals and Objectives (Based on Key Issues and Concerns)

The project goals and objectives were developed by the Project Development Team (PDT) working with the public, local governments, resource and regulatory agencies, and the project Community Advisory Group (CAG). The goals and objectives help ODOT identify and respond to key issues and concerns as the project is developed. The goals and objectives will also be carried forward to help guide design and construction of the project.

1.3.1 Transportation and Mobility

Goal 1: Provide transportation facilities that complement and support state and local transportation systems and land use planning.

- Objective 1A: Meet Oregon Highway Plan mobility and access standards and policies for interstate highways to maintain an acceptable and reliable level of mobility now and in the future.
- Objective 1B: Accommodate transportation improvements planned for railroads, streets, highways, interchanges, and bicycle/pedestrian paths in the area.
- Objective 1C: Provide a freeway bridge and potential associated roadway improvements that are safe and effective.
- Objective 1D: Maintain and, where practicable, enhance connectivity for pedestrians and bicyclists during and after construction.

- Objective 1E: Keep bicycle/pedestrian paths open during construction and make them safe and compatible with long term usage.

1.3.2 Natural Resources

Goal 2: Avoid or minimize impacts to natural resources.

- Objective 2A: Avoid or minimize adverse impacts to the Willamette River and its tributaries, Canoe Canal, riparian areas, upland native plant communities, wetlands, and fish and wildlife in the area.
- Objective 2B: Eliminate or minimize the number of bridge piers in the Willamette River.
- Objective 2C: Minimize adverse alterations to river hydraulics.
- Objective 2D: Take advantage of practical opportunities to enhance habitats for native plants, fish and wildlife.
- Objective 2E: Mitigate unavoidable impacts to the natural environment.

1.3.3 Recreation

Goal 3: Protect and enhance recreation resources and the recreational experience of users in the vicinity of the project.

- Objective 3A: Protect and, as practical, enhance the pleasant pastoral character of the Whilamut Natural Area of Alton Baker Park (including Eastgate Woodlands Park).
- Objective 3B: Maintain access to park facilities during construction and minimize adverse construction impacts to park users.
- Objective 3C: Maintain or improve safety for river users.
- Objective 3D: Take advantage of practical opportunities to enhance the park environment and further park planning goals.

1.3.4 Aesthetics

Goal 4: Provide an aesthetically pleasing solution that recognizes the scenic beauty and community significance of the project area.

- Objective 4A: Design and construct a bridge that can enhance the views from the river and surrounding areas.
- Objective 4B: Design and construct an aesthetically pleasing bridge that is a signature or landmark bridge – a unique and special bridge that represents the community.
- Objective 4C: Design and construct a bridge that is aesthetically pleasing when viewed from the underside – where most people will see it.

1.3.5 Project Design, Construction, and Operation

Goal 5: Provide a sustainable, cost-effective solution that has performance durability during its expected design-life, minimizes construction impacts, and can be safely constructed and operated.

- Objective 5A: Minimize the impacts of construction staging and access disruptions on park users and neighborhoods.
- Objective 5B: Minimize noise impacts during construction and long-term operations.
- Objective 5C: Meet Oregon Freight Mobility Standards on I-5 during construction by minimizing traffic delays and detours.
- Objective 5D: Include design elements that discourage transient camping under the bridges.
- Objective 5E: Design and construct an affordable, cost-effective project.
- Objective 5F: Provide a facility that is easily maintainable.
- Objective 5G: Incorporate materials and construction techniques that allow for maintenance and sequential replacement of elements, as needed, to extend the lifespan of the bridge.

1.4 Public Involvement Summary

The National Environmental Policy Act (NEPA) process requires public involvement in agency planning and decision making. Public involvement is a way for ODOT and the Federal Highway Administration (FHWA) to gather input from the public and interested agencies on issues and impacts associated with the project and how they should be assessed in the Environmental Assessment (EA) and addressed during project design and construction. Public involvement also provides a way for ODOT to work directly with the community and other stakeholders to develop context-sensitive and sustainable solutions that meet transportation needs and fit into the natural and human environments. Context sensitive and sustainable solutions are discussed in more detail in Section 2.3.7.

Public outreach and involvement for the I-5 Willamette River Bridge project has included: project information provided to the public through newsletters and the project website, public open house meetings to provide project information and solicit public input, briefings to neighborhood and civic groups and local elected bodies, and meetings of the project's Community Advisory Group. Public opportunities to ask questions and provide input on the project have been made available by ODOT through the project website, at open houses, by mail, and directly to ODOT staff.

Public involvement activities to date are summarized below.

1.4.1 Public Open Houses

Open house meetings have been held at two points during project development. These meetings were held on April 5, 2006 and May 3, 2007. Separate meetings were held in Eugene and Springfield on these dates. The primary purpose of the April 5, 2006 meetings was to introduce the project to the public and gather feedback on the public's initial concerns, ideas, and expectations. A total of 84 people attended the meetings and 48 comments were received. The purpose of the May 3, 2007 meetings was to present information on the progress in project planning since the last meeting and the environmental process, as well as gather public input on the project and the scope of the environmental analysis. Seventy people attended the meetings and submitted 36 comments on the proposed action that were recorded on comment cards and flip charts.

A third open house will be the public hearing on the EA held following the publication of this environmental assessment, providing an opportunity for the public to offer comments.

1.4.2 Newsletters/Mailings

A mailing list was made for the project in winter of 2006 and revised in spring of 2007. Informational newsletters were sent to the mailing list in March 2006 and April 2007. Fact sheets were put on the project website in March 2006 and March 2007.

1.4.3 Project Website

A project website (http://www.oregon.gov/ODOT/HWY/REGION2/I-5WRB.shtml) has project information and links to public outreach/involvement materials. The website also provides the opportunity to submit comments and/or request information.

1.4.4 Community Advisory Group

An 11-member Community Advisory Group (CAG), composed of representatives of key community organizations, has given input on the purpose and need, goals and objectives, environmental issues, bridge type, and other project issues. Organizations represented on the CAG are:

- Citizen Planning Committee for the Whilamut Natural Area
- Willamalane Park and Recreation District
- Eugene Parks and Open Space Division
- Laurel Hill Valley Citizens Association
- East Alton Baker Park Neighborhood Association
- Fairmount Neighbors
- Harlow Neighbors
- Glenwood Neighborhood Group
- Springfield Chamber of Commerce
- Eugene Area Chamber of Commerce
- University of Oregon

The CAG functions in an advisory role and provides recommendations to the Project Development Team (PDT). A member of the CAG is also a member of the PDT. The PDT has 10 members from ODOT, FHWA, the cities of Eugene and Springfield, Lane County, and the Community Advisory Group. The PDT will use recommendations from the CAG, information from technical studies, and input from agencies and the public to make decisions for the project. The CAG met six times between January and October 2007 and provided recommendations to the PDT.

1.4.5 Agency Involvement

ODOT has provided project information to regulatory and resource management agencies and received input on the project. The project was presented to the Collaborative Environmental and Transportation Agreement for Streamlining (CETAS) committee in February 2006. This committee is composed of both federal and state agencies that would have an interest in major ODOT projects. Table 1 lists the state and

federal agencies that comprise the CETAS committee. Although the CETAS committee chose not to formally review the project, ODOT will continue consultation with regulatory agencies that compose the CETAS committee.

Resource and regulatory agency input has also been provided through the Programmatic Agreements Reporting and Implementation Team (PARIT), which tracks OTIA III bridge projects and compliance with the programmatic environmental permits that have been established for the OTIA III program. PARIT agencies are essentially the same as CETAS, with the exception of the U.S. Environmental Protection Agency (EPA) and the Oregon State Historic Preservation Office (SHPO). The PARIT agencies were provided information about the project and identified key resources and issues of interest for the project, such as minimizing the number of bridge piers in the Willamette River.

Table 1: CETAS Agencies

Federal Agencies	State Agencies
Federal Highway Administration	Oregon Department of Fish and Wildlife
United States Fish and Wildlife Service	Oregon Department of Environmental Quality
National Marine Fisheries Service	State Historic Preservation Office
Environmental Protection Agency	Oregon Department of State Lands
U.S. Army Corps of Engineers	Department of Land Conservation and Development

Local government agencies have been involved through the CAG, PDT, and through informal coordination with staff from the cities of Eugene and Springfield and Lane County.

1.4.6 Other Public Outreach/Involvement

The project team has provided briefings to neighborhood associations and civic interest groups, as well as briefings to the Lane County Board of Commissioners and Eugene and Springfield City Councils.

Public involvement will continue throughout the environmental, design and construction phases. The CAG will continue to meet throughout project design and construction and ODOT will continue public outreach and provide opportunities for input in the selection of the bridge type, design elements (such as architectural features, landscaping and lighting), and construction.

This page left intentionally blank.

2.0 Project Alternatives

2.1 Development Alternatives

ODOT worked with the CAG and PDT and considered public input to develop and evaluate ways to meet the project purpose and need. Because the project would replace existing bridges and only minor shifts in the I-5 alignment are possible, the development and evaluation of alternatives focused on bridge features, such as the bridge types, number of piers in or near the Willamette River, and cost. The following sections summarize the process of developing and evaluating possible alternatives.

All potential alternatives must be between the Glenwood Interchange on the south and MLK Centennial Boulevard overcrossing on the north. Any alternatives that would realign the bridges and roadway and that would not tie back into the existing I-5 alignment within those limits were not considered for the following reasons:

- Any realignment of I-5 north of the river would require acquisition of right-of-way from Alton Baker Park, which is located on both sides of the highway. Section 4(f) of the federal Department of Transportation Act of 1966 prohibits taking property from public parks for highway uses unless there is no prudent and feasible alternative. Because there are alternatives available that do not require use of park property, all alternatives that require buying park property for right of way were eliminated.
- The main purpose of this OTIA III project is to replace a structurally deficient bridge in the most cost-effective manner.
- It is not the purpose of the project to modernize I-5.
- A much longer section of I-5 would need to be reconstructed, which would include modifying the Glenwood Interchange and/or the Martin Luther King/Centennial Boulevard overcrossing, which would greatly increase the cost and require buying more right of way.
- Realignment of I-5 would place it closer to existing homes, resulting in higher noise and visual impacts.
- Existing high-tension power transmission lines on each side of the bridge would need to be relocated, which would be very costly.

For these reasons, no alignment options were considered that were not generally within the right of way of the existing bridges and roadway approaches.

In response to high public interest in visual quality and natural resource impacts, the focus of alternatives development was on the footprint and visual characteristics of the replacement bridges crossing the Willamette River. Key considerations included project cost, eliminating or minimizing the number of piers in the Willamette River, providing an aesthetically pleasing solution that recognizes the scenic beauty and community significance of the project area, and avoiding and minimizing park impacts. The following sections describe the process of screening alternatives, those alternatives that were dismissed from further consideration, and the No Build and Build Alternatives that are analyzed in this EA.

2.1.1 Initial Concepts Development and Screening Analysis

In early stages of project development, conceptual alternatives for bridge replacement were developed by ODOT. Given the surrounding land uses and sensitive environmental resources, alternatives that needed major realignment of the highway and bridges were eliminated from consideration early in the project development process.

After development of the project goals and objectives with the CAG and PDT, the project team developed a range of bridge types for the Willamette River crossing for more detailed consideration and screening. These concepts included:

- I-girder
- Box girder
- Deck arch
- Through arch
- Cable stayed
- Steel truss
- Extradosed

Example illustrations of these bridge types are provided in Appendix A. The Preliminary Bridge Concepts Report (OBDP 2007a) was developed to evaluate these bridge types. Early public involvement and coordination with natural resource agencies identified the need to minimize the number of bridge piers below the ordinary high water elevation. The analysis for the Bridge Concepts Report assumed for all bridge types that no more than three piers per bridge would be below ordinary high water of the Willamette River. Cost estimates were developed for each of these bridge types to determine which were within the project budget. The budget for the bridge crossing the Willamette River, Franklin Boulevard, and the UPRR is $70 million. The following bridge types were determined to exceed the available budget for the project: cable stayed, steel truss, and extradosed. The I-girder, box girder, through arch[1], and deck arch types were retained for further evaluation (OBDP, 2007a). The bridge types that can be constructed within the available budget have maximum span lengths of 350 to 400 feet. The Willamette River is about 800 feet wide at the bridge crossing, requiring a minimum of two bridge piers below ordinary high water.

The project team worked with CAG and PDT regarding bridge types, pier location options, and whether the crossing of the Willamette River, Franklin Boulevard, and UPRR should be with one bridge (carrying all travel lanes) or two bridges (carrying northbound and southbound traffic separately). The CAG reviewed the options and recommended to the PDT the bridge type and pier locations described in Section 2.3. The CAG also recommended two separate bridges, instead of a single bridge. The PDT reviewed the CAG's recommendation at their next meeting and decided to proceed with those options.

[1] The original CAG recommendation and PDT decision did not include the through arch option because initial analysis showed it would not fit within the project budget. Later research and analysis showed that it may be possible to construct that style of bridge within budget.

2.1.2 Alternatives Eliminated from Further Consideration

The alternatives that were initially identified but not evaluated in detail are described below.

2.1.2.1 Repair the Existing Decommissioned Bridge

The decommissioned bridge, constructed in 1962, is structurally deficient and is cracked in many places. In addition the bridge was designed to standards that are no longer sufficient for today's freight movement. As noted in Section 1.2.2, the 2002 bridge inspection resulted in a sufficiency rating of 20 on a 100 point scale. A bridge qualifies for replacement funding from the Federal Highway Bridge Replacement and Rehabilitation Funding Program if it has a sufficiency rating of less than 50.

Repairing the decommissioned bridge would cost an estimated $50 million. The repairs would make the bridge useable for about 20 years, at which time it would have to be replaced. The bridge repair cost does not include widening and it would not meet projected traffic demands in 20 years. Future widening, if possible, would be very costly. Concrete box girder bridges like the decommissioned bridge are difficult and expensive to widen and could not be funded by the OTIA III program. The repaired bridge would require ongoing maintenance averaging $50,000 per year. Factors such as commitments to local agencies and stakeholders regarding eventual removal of the detour bridge, and the potential loss of $30 million in federal funds were also considered.

Although the short term cost savings of repairing the bridge are attractive, the other factors discussed above show that replacing the bridge has a greater value than repairing it. Therefore, repairing the decommissioned bridge was dropped from further consideration.

2.1.2.2 Remove the Decommissioned and Detour Bridges; do not Build a New Bridge

This would not meet the Purpose and Need of the project to maintain connectivity and mobility for all users of I-5 over the Willamette River.

2.1.2.3 Alignment Alternatives

Shifting the alignment was considered but not studied in detail for the following reasons:

- Right-of-way would need to be acquired from Alton Baker Park, which is prohibited under Section 4(f) of the federal Department of Transportation Act of 1966 unless there are no other prudent and feasible alternatives.
- Right-of-way would need to be acquired from homes and/or businesses on the south side of the river that would not be required if the highway remains on its current alignment.
- A shifted highway would be closer to existing homes, resulting in higher noise and visual impacts.
- Major high-tension power transmission lines are located on both sides of the bridge and one would need to be relocated if the alignment was shifted.

2.1.2.4 Bridge Alternatives

Bridge alternatives with the following features were considered but not studied in detail:

- More than three piers in or near the Willamette River. This alternative was dropped due to community and resource agency interests to eliminate or minimize piers in the Willamette River

- Bridge types that exceeded the project budget. The cable stayed, steel truss, and extradosed bridge types exceeded the budget for the portion of the bridge crossing the Willamette River.
- Single bridge carrying all traffic. Substantial CAG and PDT concerns regarding maintenance, visual impacts, and operational flexibility of one bridge led to this bridge alternative's removal from further consideration.

The Build Alternative described in Section 2.3 incorporates the bridge type and pier location options advanced by the PDT with the CAG's recommendation.

2.2 No Build Alternative

The No Build Alternative provides the basis for evaluating the environmental effects of the proposed project. For the I-5 Willamette River Bridge Project, the No Build Alternative would:

- Leave the existing I-5 detour bridge in place.
- Conduct necessary work, such as seismic upgrades, to allow traffic to use the I-5 detour bridge on a long-term basis.
- Remove the decommissioned bridge.

Approvals from agencies including the Willamalane Park and Recreation District would need to be obtained to allow the detour bridge to be left in place. The detour bridge was designed as a temporary bridge and commitments made by ODOT as part of the construction of the detour bridge require that it be removed after a permanent replacement is built. The upgraded detour bridge would have substandard shoulder widths. Removal of the decommissioned bridge and improvements to the detour bridge would occur during a construction period that would last about two years.

2.3 Build Alternative

The Build Alternative incorporates the bridge types and pier location options recommended by the CAG and PDT. The Build Alternative includes the following elements:

- Remove the existing decommissioned I-5 bridges and temporary detour bridges over the Willamette River (including Franklin Boulevard and the UPRR tracks) and over the Canoe Canal.
- Construct new I-5 bridges over the Willamette River. These bridges would cross the river, Franklin Boulevard, and UPRR. Parallel bridges would be constructed – one for northbound and one for southbound traffic – and would be about 1800 feet long.
- Construct new I-5 bridges over the Canoe Canal; the parallel bridges would each be about 200 feet long.
- Reconstruct highway approaches to the I-5 bridges
- Change the Franklin Boulevard on/off ramps.

Figure 3: Location of Proposed Replacement Bridges illustrates the existing bridges, the proposed location of the replacement bridges, and the alignment of highway approaches (i.e., rebuilt roadway sections).

The elements of the Build Alternative are described in the following sections.

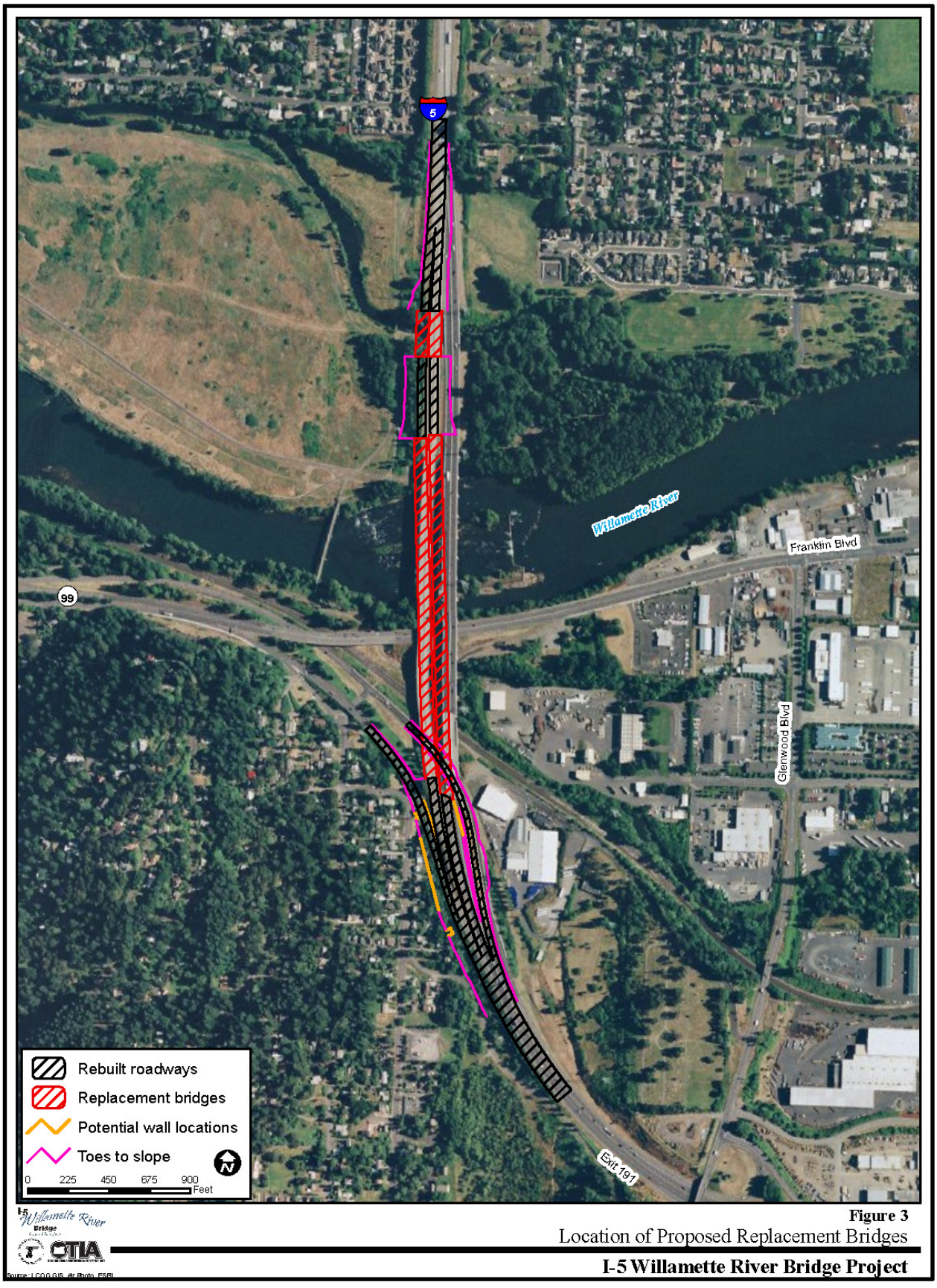


Figure 3
Location of Proposed Replacement Bridges

I-5 Willamette River Bridge Project

2.3.1 Removal of Existing Bridges

Four bridges would be removed: two over the river and two over the Canoe Canal. The decommissioned I-5 bridge and the detour bridge are each about 1,800 feet long and cross over environmentally-sensitive areas, They also cross Franklin Boulevard, UPRR tracks, and an off-ramp to Franklin Boulevard, all of which must be kept open during removal. Additionally, they cross bicycle/pedestrian paths that must remain open throughout construction.

The two shorter bridges over the Canoe Canal would also be removed: the decommissioned bridge and the detour bridge. The bicycle/pedestrian path under these bridges must be kept connected.

2.3.2 Construction of New I-5 Bridges over the Willamette River and Design Options

The Build Alterative would construct two new I-5 bridges over the Willamette River. One would carry northbound and the other southbound traffic. Each bridge would be 64 feet wide curb-to-curb. At the end of construction, each of these bridges would be striped for two lanes to match the I-5 lanes approaching each end of the bridge. The new bridges would be wider than needed to carry two lanes. The additional width would provide flexibility if I-5 is widened in the future to meet projected traffic growth; however, there are currently no plans to do so.

The main design issues associated with the environmental impacts of the new bridges over the river are pier locations and the bridge type. One of the most important project development objectives identified through the public involvement process and coordination with natural resource agencies was to minimize the number of piers in the river and riparian area. In addition, the form and architectural aesthetics of the bridge are important project objectives. Consequently, multiple bridge type have been identified that can conform to the pier placement constraint.

Another feature of the proposed bridge design is avoiding or minimizing the need for new permanent right-of-way. Presently fill material that supports the roadway approaches to the detour bridges over the Canoe Canal and Willamette River occupies a portion of the Eastgate Woodlands under a temporary easement with the Willamalane Park and Recreation District. An objective of developing project concepts has been to fit the project's footprint within the permanent right-of-way, so that the fill for the detour bridge may be removed in accordance with the agreement establishing the temporary easement. To fit the bridges and roadway approaches within the existing, permanent ODOT right of way, relatively steep side slopes and retaining walls would be required for the portion of fill that supports I-5 between the Canoe Canal and Willamette River bridges.

2.3.2.1 Design Options - Pier Locations

Two design options for pier locations for the bridges over the Willamette River are included in the Build Alternative. Figure 4: Pier Location Options provides a conceptual illustration of the approximate location of the bridge piers. Both options seek to:

- Minimize the number of piers in the river and riparian areas to the extent possible within the project budget; and
- Retain design flexibility related to bridge type, materials, and aesthetic treatments.

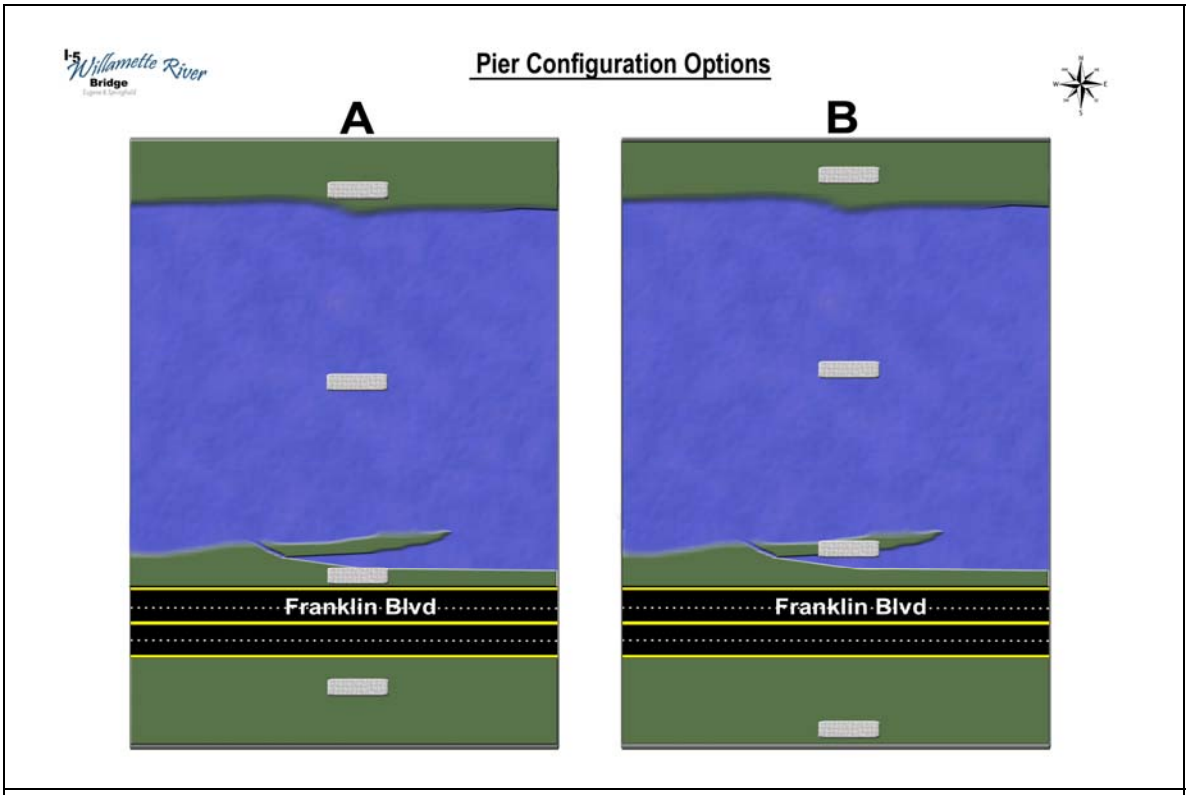


Figure 4: Pier Location Options

Pier Location Option A

Each bridge would have two main spans about 390 feet in length. For each bridge, one pier would be located on the north shore, one pier would be located near the middle of the river, and one pier would be on the south shore (close to Franklin Boulevard).

Pier Location Option B

Each bridge would have two main spans about 360 feet in length over the river. One pier for each of the bridges would be located on the north shore, one pier would be located near the middle of the river, and one pier would be in the river near the south shore area (near the existing power line tower).

As discussed below, some of the bridge types could be used with either pier location option, but it would not be possible with other bridge types.

The final location of the piers would depend on a number of factors, including aesthetics, hydraulics, bridge type, and other environmental considerations. The exact pier locations would be determined during final project design.

North of the river there would not be an additional pier between the pier located on the bank and the bridge abutment.

Piers south of the river would be positioned to accommodate possible future improvements to the Franklin Boulevard corridor and for potentially adding another railroad track (there are currently no plans to do either of these improvements). Piers would also be positioned to avoid the northbound I-5 off-ramp to Franklin Boulevard.

The pier size(s) would be determined during design; however, because of the long spans over the river, the pier footings, or foundations, would be quite large. For the environmental analysis, it is assumed the size of the footings in the river and on the banks would be the width of the bridge (68 feet) and 30 feet across. Footings for the through arch bridge would be about 80 feet wide. All footings are planned to be flush with the ground surface and river bottom. Above the footing, the pier itself would be much smaller. The pier would be no more than the width of the bridge and 8 feet across.

Footings south of Franklin Boulevard would be smaller because span lengths would be less. The footings likely could be set so the top of the footing is near the ground line. Pier sizes could also be smaller.

2.3.2.2 Design Options – Bridge Type

There are multiple design options for bridge types that could be constructed with the two pier location options. ODOT is developing the project to retain design flexibility related to bridge form, materials, and aesthetic treatments as well as to allow flexibility to the engineers to design an economical bridge that also meets community requirements. As such, a specific bridge design will not be selected in the NEPA process. ODOT prefers to have the bridge designer and contractor involved in the evaluation of bridge types. ODOT plans to have the designer and contractor on board by mid-summer of 2008 to allow for collaboration among the designer, construction contractor, ODOT and the community to select the bridge type. ODOT will continue to work closely with the local community to select the bridge type to be built.

Some of the bridge types under consideration could be used with either of the pier location options; however, certain bridge types could only be used with one of the pier location options. These are discussed below.

The new Willamette River bridges would have three individual segments: (1) over the river; (2) over Franklin Boulevard; and (3) over the railroad. The segment over the railroad would include the recreation trail and the off-ramp to Franklin Boulevard. Each segment could have a different type of bridge. Selection of the bridge type for each segment is dependent primarily on aesthetic considerations and budget.

Segment over the Willamette River

The bridge type for the segment over the Willamette River could be an I-girder, box girder, through arch or deck arch. The I-girder and deck arch could be used with either Pier Location Option. A box girder or through arch bridge over the river that continues over Franklin Boulevard could only be used with Pier Location Option B. However Pier Location Option A could be used if a box girder or through arch over the river is combined with an I-girder bridge over Franklin Boulevard. This is due to depth of the box near the pier and the need to maintain a minimum vertical clearance over Franklin Boulevard. Because the arches would be located outside of the roadway portion, the through arch bridge type would be wider than the other bridge types. Each bridge would be about 80 feet wide, including the arch.

Each bridge type is illustrated (with computer renderings) in Figure 5: Potential Bridge Types.

I-GIRDER BRIDGE.

BOX GIRDER BRIDGE

DECK ARCH BRIDGE

THROUGH ARCH BRIDGE TYPE

Figure 5: Potential Bridge Types

Note: Pier options shown on Figure 4.

Segment over Franklin Boulevard

The new bridges would be about ten feet higher than the decommissioned bridge to provide more clearance over Franklin Boulevard. The additional clearance at Franklin Boulevard is to provide flexibility to local jurisdictions for future improvements to the Franklin Boulevard corridor. Additional clearance is also required to meet current vertical clearance requirements for state highways. Although there are no specific plans for future improvements to Franklin Boulevard, the proposed clearances (a maximum opening width of 104 feet) would allow the addition of turning or through lanes, sidewalks or bicycle/pedestrian paths, transit lanes, aesthetic treatments, or other improvements.

Any of the bridge types described for use over the river segment could be used over Franklin Boulevard except the deck arch because it would not provide the required vertical clearance over Franklin Boulevard. If a deck arch was used over the Willamette River, a different bridge type would need to be used over Franklin Boulevard and the railroad. A box girder bridge type could be used over Franklin Boulevard, but Pier Location Option B would have to be used.

Segment over the Railroad

The segment over the railroad would probably need to be an I-girder type or box girder due to budget constraints.

2.3.3 Construction of New I-5 Bridges over the Canoe Canal

The new bridges would use single spans to cross the Canoe Canal and the parallel bicycle/pedestrian path. Selection of the bridge type at this location would be based primarily on cost.

2.3.4 Roadway Elements

About 2,500 feet of I-5 would be reconstructed to connect with the new bridges. This would include minor horizontal realignment and raising the profile elevation of the roadway.

Roadway elements also include changes to the on- and off-ramps to Franklin Boulevard. These changes would be necessary to connect the ramps to the shifted alignment and raised elevation of I-5. The southbound on-ramp would be raised and would likely need a retaining wall on its west side to avoid impacts to adjacent power lines.

2.3.5 Duration and Sequence of Construction

Construction of the Build Alternative would take about four years. As planned, demolition would begin in 2009, and construction would begin in 2010 and continue through 2012. Demolition of the existing bridges and construction of the new facilities would require four summers of in-water work.

The actual sequence of construction has not been determined, but a likely sequence would be:

- Construct temporary work bridge(s) over the Willamette River (these bridges would be for construction activities only and would not carry traffic).
- Remove the decommissioned bridges (temporary work bridge would not be constructed for the Canoe Canal bridges).

- Construct new southbound bridges and connecting roadway.
- Temporarily put both directions of I-5 traffic on the new southbound bridge.
- Remove the detour bridges and construct temporary work bridge.
- Construct the new northbound bridges and connecting roadway.
- Remove the work bridge and restore the project area.

Traffic would be maintained on I-5, Franklin Boulevard, the railroad, and the bicycle/pedestrian paths throughout construction. Some short term road closures may be required, but these would be limited to a few hours. It may be necessary to close portions of the bicycle/pedestrian paths for longer periods (i.e., up to several days). A continuous route across ODOT right-of-way for the bicycle/pedestrian pathways would be maintained on both the north side and the south side of river during construction.

2.3.6 Temporary Construction Facilities

Specific construction operations will be determined by the contractor hired by ODOT. However, restrictions would be placed on their operations to minimize environmental impacts, meet regulatory requirements, and meet commitments made during the public involvement process. These restrictions would include keeping bicycle/pedestrian paths open, noise restrictions, etc. Staging areas and haul roads would be designated for the CM/GC. For the purpose of this environmental analysis, the following assumptions were used regarding staging areas and haul routes:

- Two staging areas would be required for construction: one on the north side of the river and one on the south side.
- Haul routes and staging areas used for construction of the detour bridge would be available for this project.
- The northern staging area would be located on ODOT right of way and in Alton Baker Park just off the bicycle/pedestrian paths and to the east and west of the existing decommissioned and detour bridges. This site would be accessed via the North Walnut Path off of Leo Harris Parkway southeast of Autzen Stadium in Eugene and the path leading to the area (this is the same path that was used for access during construction of the detour bridge).
- The southern staging area would be located in a clearing adjacent to the pedestrian trail east of the detour bridge. The southern location is currently clear and unoccupied. Franklin Boulevard would be used for access to the southern staging area.

2.3.7 Context Sensitive and Sustainable Solutions

Context Sensitive and Sustainable Solutions (CS^3) is the project delivery approach used by ODOT for the OTIA III bridge program. CS^3 grew out of the principles of "context sensitive solutions," which the Federal Highway Administration defines as "an interdisciplinary approach that involves all stakeholders to develop transportation solutions that:

- Fit the physical setting.
- Preserve or enhance scenic, aesthetic, historic, environmental resources, and community values.
- Maintain safety and mobility.

Community participation is a critical element of developing context sensitive solutions.

Sustainable design essentially means taking a long-term view. It is defined as using, developing, and protecting resources at a rate and in a manner that allows people to meet their needs today, while ensuring that future generations can meet their own needs (OBDP, 2007b). Sustainability also includes reuse and recycling of materials from the removal of the decommissioned and detour bridges.

ODOT took these innovative concepts a step further, and has become the first department of transportation in the nation to merge them into the Context Sensitive and Sustainable Solutions approach and apply this process to a large transportation program – the OTIA III program. The CS^3 process is designed to meet traditional ODOT goals of maintaining safety and mobility while reflecting community values, supporting economic prosperity, achieving responsible stewardship of the natural environment and facilitating cost-effective solutions.

In practice, CS^3 is a way of delivering projects that consider the community values, economic development potential, long-term sustainability, environmental impacts, and other key factors in decision-making and design. ODOT will continue to employ specific CS^3 procedures throughout the environmental, design, and construction processes for the I-5 Willamette River Bridge Project.

2.4 Required Permits and Planning Actions

Table 2 presents the likely permits and planning actions that would be required for the I-5 Willamette River Bridge Project. Because the project is part of the OTIA III program, the project is covered under the programmatic environmental permits that have been established for the program. Key to coverage under the programmatic permits is meeting the OTIA III Environmental Performance Standards (EPS). These performance standards define the level of effect that a project may have on the environment, thereby limiting or avoiding impacts to the environment through the use of proper planning, design, and construction activities. To meet the performance standards, projects must meet the terms and conditions specified in the relevant performance standards unless approved by ODOT and Oregon Bridge Delivery Partners (OBDP), the organization managing the implementation of the OTIA III program.

Performance standards are goal-oriented, and offer flexibility in implementing context-sensitive environmental protection measures. Rather than prescribe how an activity must be done, performance standards set the thresholds for an activity's effects, leaving room for flexibility and creativity in how the standards are met.

Table 2: Permits and Planning Actions

Permit/Planning Action	Issuing Agency
Amendments to Metro Plan, Willakenzie Area Plan, and exceptions to Statewide Planning Goals 5 and 15	Cities of Eugene and Springfield; Lane County
Local development permits	Cities of Eugene and Springfield
National Pollutant Discharge Elimination System 1200 C or 1200-CA	Oregon Department of Environmental Quality
Clean Water Act Section 404 Permit	U.S. Army Corps of Engineers
Fill and Removal Permit	Oregon Department of State Lands
Clean Water Act Section 401 Water Quality Certification	Oregon Department of Environmental Quality
National Historic Preservation Act Section 106 Consultation	Oregon State Historic Preservation Office
Endangered Species Act	National Marine Fisheries Service; US Fish and Wildlife Service

3.0 Affected Environment and Environmental Consequences

The affected environment includes the natural and human resources within the project area that could be affected by the No Build and Build alternatives. The project area includes residential areas, parks, wetlands, fish habitat, industrial development, a rail corridor, and other features that could be affected by the project. The currently existing I-5 bridges over the Willamette River include the original I-5 bridge (completed in 1962 and decommissioned in 2004) and the temporary detour bridge (completed and opened in 2004 before the decommissioning of the original bridge). The project area extends north to Centennial Boulevard and south to the Glenwood Interchange. In addition to the bridges crossing the Willamette River, the project area includes the I-5 bridges over the Canoe Canal (also referred to as "Patterson Slough").

3.1 Air Quality

3.1.1 Methods and Coordination

The 1990 Clean Air Act requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Geographic areas where concentrations of a pollutant exceed the ambient air quality standards are classified as nonattainment (do not attain standards) areas. Areas that used to be nonattainment that now meet air quality standards are classified as maintenance areas. Areas that meet air quality standards are classified as attainment areas. Federal regulations require states to prepare State Implementation Plans (SIPs) that identify pollutant emission reduction strategies for nonattainment and maintenance areas to ensure they are in conformity (compliance) with the NAAQS.

In order to comply with the regulations included in the Clean Air Act, Oregon developed regulations designed to ensure that transportation plans and regionally significant transportation projects are consistent (in conformance) with the SIP. Federal and State regulations exempt certain highway projects from the requirement to determine conformity. Exempt projects include the reconstruction of bridges where no additional travel lanes are added. Although this project may be considered except, it is in conformity based on its inclusion in the 2006-2009 Metropolitan Transportation Plan. Because no additional travel lanes would be added as part of this project, a demonstration of conformity is not required. If the bridge is reconfigured or restriped in the future to accommodate additional travel lanes, a conformity determination would be required at that time.

3.1.1.1 Mobile Source Air Toxics (MSATs)

The Clean Air Act identified 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list of toxics and identified a group of 21 as mobile source air toxics (MSATs). The EPA also extracted a subset of this list of 21 that it now labels as the six priority MSATs. These are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene.

The FHWA uses a tiered approach for analyzing MSATs in NEPA documents, depending on the specific project circumstances. The project would not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or other factors that would cause an increase in emissions impacts relative to the No Build

Alternative. In cases such as this, FHWA has determined that minimal air quality impacts for the Clean Air Act criteria pollutants would be generated, and would not be linked with any special MSAT concerns. Consequently, this project is exempt from analysis for MSATs.

3.1.1.2 Indirect Source Construction Permit (ISCP) Requirement

An ISCP is required for any highway section proposed for construction in or within five miles of the municipal boundaries of the City of Eugene that met certain traffic volume standards.

Projects that do not add capacity to the transportation system are exempt from the requirement to obtain an ISCP. Because the project is a bridge replacement with no additional travel lanes and is not adding capacity, an ISCP is not required.

3.1.2 Baseline Conditions

The Eugene-Springfield area is designated as a maintenance area for carbon monoxide (CO), a nonattainment area for coarse particulate matter (PM_{10}), and an attainment area for all other pollutants. PM_{10} refers to particulate matter less than 10 microns in diameter, about one-seventh the thickness of a human hair.

The Eugene-Springfield area experiences periods of air stagnation. This occurs during winter months when cold, stagnant air and restricted ventilation traps air pollutants near the ground (called temperature inversions). Wintertime temperature inversions contribute to higher particulate and CO levels, while summertime inversions contribute to increases in ozone levels, both causing deterioration of the local air quality.

Particulate matter causes haze, reduces visibility, and can cause respiratory problems. According to the Lane Regional Air Protection Agency's (LRAPA) emission inventory, transportation sources do not contribute significantly to the particulate emissions inventory in the Eugene-Springfield area. Particulate levels have been decreasing in the Eugene area; in fact, the last time particulate levels exceeded the PM_{10} standard was in 1987. In March 1998, $PM_{2.5}$ (particulate matter less than 2.5 microns in diameter) monitoring began in Eugene. The Eugene area currently meets the $PM_{2.5}$ standards.

CO is a pollutant of local concern with highest concentrations usually measured near heavily congested roadway intersections. The focus of the control strategies for CO is on reducing emissions from vehicles. No exceedances of the CO standard have occurred in Eugene during the last 10 years of ambient air quality monitoring.

Unlike CO, ozone is not directly emitted from vehicles, but instead results from chemical reactions in the atmosphere between volatile organic compounds (VOCs), nitrogen oxides (NOx) and sunlight. The rates of the complex photochemical reactions that create ozone vary with factors such as the amount of sunlight, and the amount of mixing of VOCs and NOx in the atmosphere. As a result, ozone production occur longer periods of time and disperses ozone concentrations over a larger regional area than more localized pollutants such as CO. Vehicle emissions are the primary source of VOCs and NOx, but other sources include lawn mowers, other gas-powered tools, and household products and paints, the use of which increases with population growth. The last exceedance of the ozone standard in Eugene occurred in 1997.

3.1.3 Temporary Effects

3.1.3.1 No Build Alternative

Construction impacts would result from the generation of dust from site clearing, excavation and grading; direct emissions from construction vehicles; and temporary impacts to traffic flow in the project area. State and local regulation require that reasonable precautions be taken to avoid dust emissions, such as applying water or suppressants during dry weather and truck and equipment washing, or prevent inadvertently transporting dirt and dust from the construction areas onto nearby roads.

3.1.3.2 Build Alternative

Construction impacts would result from the generation of dust from site clearing, excavation and grading; direct emissions from construction vehicles; and increased traffic congestion in the project area. Traffic congestion increases idling times and reduces travel speeds, resulting in increased vehicle emission levels. Construction of concrete bridges may have associated dust-emitting sources, such as concrete mixing operations. Stationary sources such as concrete mix plants are generally required to obtain air permits from the Department of Environmental Quality (DEQ) or LRAPA and to comply with dust control regulations and other pollutant emissions.

Construction contractors are required to comply with state and local regulations requiring that reasonable precautions be taken to avoid dust emissions. These regulations require the use of dust suppression measures (such as applying water or suppressants during dry weather and truck and equipment washing) to prevent inadvertently transporting dirt and dust from the construction areas onto nearby roads.

3.1.4 Permanent Effects

3.1.4.1 No Build Alternative

There would be no anticipated permanent air quality impacts associated with the No Build Alternative.

3.1.4.2 Build Alternative

The project is exempt from conformity and mobile source air toxics requirements. The project would not result in meaningful changes in traffic volumes, vehicle mix, location of vehicle emissions, or other factors that would cause an increase in emissions.

There would be no permanent air quality impacts associated with the Build Alternative.

3.1.5 Indirect and Cumulative Effects

3.1.5.1 No Build Alternative

There are no anticipated cumulative or indirect air quality impacts associated with the No Build Alternative.

3.1.5.2 Build Alternative

The project would not result in meaningful changes in traffic volumes, vehicle mix, location of vehicle emissions, or other factors that would cause an indirect increase in emissions. There are no anticipated cumulative air quality impacts associated with the Build Alternative.

3.2 Archaeology

3.2.1 Methods and Coordination

The project's Area of Potential Effect (APE) for archaeology is the existing I-5 north-south corridor extending north of the Willamette River to about Martin Luther King/Centennial Boulevard, and south of the Willamette River to about the Glenwood Interchange. South of the river and west of the interstate includes tax lots adjacent to I-5 west to Franklin Boulevard and Judkins Point.

Archaeological investigations for the I-5 Willamette River Bridge Project were completed in 2003, and most recently in 2006, by the University of Oregon Museum of Natural and Cultural History. Investigations included site reconnaissance and exploratory probing. No prehistoric artifacts or features were discovered; however, historic artifacts were recovered from probes located in the far northeastern portion of the APE. Due to the disturbed nature of the deposits and low density of artifacts, it was determined that the cultural remains have no archaeological value and no special avoidance measures were recommended (Connolly et al. 2003; Winterhoff and Connolly 2006).

3.2.2 Baseline Conditions

Much of the project APE is urbanized and is characterized by development of industrial buildings, railroads, local roads, and residences. Dominant disturbances within the APE include prior interstate construction, emplacement of utilities, residential housing, and industrial parks. North of the Willamette River, the APE is typified by residential housing, asphalt bike paths, landscape changes due to prior highway construction, and Alton Baker Park. South of the Willamette River, the APE is characterized by prior highway construction, industrial buildings, and a railroad corridor.

Based on the negative 2003 archaeological explorations and the 2006 field observations, no identified archaeological resources are known to be present within the APE.

3.2.3 Temporary Effects

3.2.3.1 No Build Alternative

The No Build Alternative would not temporarily affect any known archaeological resources.

3.2.3.2 Build Alternative

The Build Alternative would not temporarily affect on known archaeological resources.

3.2.4 Permanent Effects

3.2.4.1 No Build Alternative

The No Build Alternative would not permanently affect any known archaeological resources.

3.2.4.2 Build Alternative

The Build Alternative would not permanently affect on known archaeological resources.

3.2.5 Indirect and Cumulative Effects

3.2.5.1 No Build Alternative

The No Build Alternative would have no indirect or cumulative impacts to archaeological resources.

3.2.5.2 Build Alternative

The contractor would be responsible for identifying fill material sources, disposal areas, and any environmental mitigation areas outside the areas previously surveyed to ensure archaeological sites are avoided to the extent practicable. Proposed water quality treatment areas are located within the areas previously surveyed and no impacts are anticipated to archaeological resources due to storm water quality treatment. No indirect impacts to archaeological resources would result from the Build Alternative.

There would be no cumulative impacts of project activities on known archaeological resources with the Build Alternative.

3.3 Biology

3.3.1 Methods and Coordination

The project team reviewed existing information on fish and wildlife habitat and occurrence within the project area and conducted an onsite inspection to assess the quality of fish, wildlife, and plant habitats within the project area.

Surveys for threatened and endangered (T&E) plants potentially affected by the I-5 Willamette River Bridge Project were conducted in 2003 and 2006. Vegetation information was obtained from wetland delineation and determination reports, Geographic Information System (GIS) data, observations during site visits, restoration plans prepared for the temporary detour bridge, and restoration and management plans for the Whilamut Natural Area and the Eastgate Woodlands of the Whilamut Natural Area.

Information related to federal- and state-listed and nonlisted species present within the project area was obtained from: previous environmental documentation prepared for the existing temporary detour bridge (ODOT, 2003a); species request letters from the National Marine Fisheries Service (NMFS) and United States Fish and Wildlife Service (USFWS); the restoration and management plans for the Whilamut Natural Area and the Eastgate Woodlands of the Whilamut Natural Area, an Oregon Natural Heritage Information Center (ORNHIC) database search, and observations during site surveys.

3.3.2 Baseline Conditions

3.3.2.1 Plants and Vegetation

Vegetation and habitat types within the project area are generally associated with urban development or natural/open space areas. The urban developed areas include residential, commercial, and transportation (roadways and railroads) that have been planted with landscaping. The open space areas include a combination of forested and emergent wetlands, upland forest (mixed deciduous-coniferous type), mixed deciduous-coniferous riparian, and grassland type habitats that are predominantly managed grass areas within the I-5 corridor. These natural/open space areas are vegetated with a

predominance of native species, although disturbance has allowed encroachment of invasive species.

No federal or state Endangered Species Act (ESA)-listed plant species or plant habitats have been identified within the project area.

3.3.2.2 Fish

Two salmonid populations listed under the ESA are documented as occurring within the reach of the Willamette River that flows through the project area:

- Upper Willamette River spring Chinook (*Oncorhynchus tshawytscha*) and critical habitat – federally threatened (FT)
- Columbia River bull trout (*Salvelinus confluentus*) Distinct Population Segment (DPS) and critical habitat - FT

The Willamette River supports resident populations of numerous native and introduced species that are not threatened or endangered. It supports two anadromous salmonids that are not listed or proposed for listing within the project area. Specifically, it provides spawning and rearing habitat for fall Chinook and a migration route for steelhead.

Resident native fish that are likely to be present in the project area include:

- Rainbow trout (*O. mykiss*)
- Cutthroat trout (*O. clarkii*)
- Sculpins (*Cottus spp*.)
- Leopard dace (*Rhinichthys flacatus*)
- Longnose dace (*Rhinichthys cataractae*)
- Redside shiner (*Richardsonius balteatus*)
- Northern pikeminnow (*Ptychocheilus oregonensis*)
- Largescale sucker (*Catostomus macrocheilus*)

The Willamette River is about 660 feet wide at the project site. Through the project area, the Willamette River is generally confined by a bedrock channel. Near the existing bridges, the Willamette River consists of shallow riffle habitat. The River supports a productive algal community. Insects and some vertebrates feed on these plants, and, in turn, many vertebrates such as salmonids feed on stream-dwelling insects (ODOT, 2003a). Along this reach of the Willamette River, the Oregon Department of Fish and Wildlife (ODFW) designated in-water work window is June 1 to October 31. This is the time period when construction activities may occur within the active waterway.

The project-area reach of the Willamette River contains primarily salmonid migration habitat. There appears to be relatively little high-flow refuge, off-channel habitat, or other rearing habitat.

North of the Willamette River, the Canoe Canal (Patterson Slough) begins upstream from the project area through a culvert connected to the Willamette River and flows through the project area and reconnects with the Willamette River about 2.5 miles downstream. The Canoe Canal is unlikely to provide salmonid spawning habitat due to

the lack of suitable spawning gravel, but likely serves as off-channel rearing habitat for steelhead and resident trout as well as Chinook salmon. This water body also provides potential Oregon chub habitat (ODOT, 2003a; ODOT, 2006a).

In the southern portion of the project area there is a small, unnamed stream that flows to the Willamette River. It is generally low quality fish habitat and there is little cover or riparian vegetation. This stream connects to the Willamette River through a culvert underneath Franklin Boulevard that drops about one foot onto riprap with no pool at the outlet, which makes this culvert a fish passage barrier. The stream provides no habitat for salmon, steelhead, or other anadromous species; however, resident cutthroat trout have been observed in the stream (ODOT, 2003a).

Augusta Creek/Laurel Valley Creek is conveyed from the west under I-5 through a box culvert near the terminus of Judkins Road. This stream flows through a concrete arch culvert and under the railroad grade to converge with the unnamed tributary (discussed above) upstream of the Franklin Boulevard culvert. Upstream of I-5 Augusta Creek/Laurel Valley Creek is likely to provide habitat for species such as sculpins (*Cottus spp.)* and resident cutthroat trout.

3.3.2.3 Terrestrial Wildlife

There are 18 amphibian, 15 reptile, 154 bird, and 69 mammal species native to the Willamette River basin. Some of these species are listed as threatened, endangered, or species of conservation concern, including 60 percent of the amphibian species. Factors contributing to these species' declines include habitat loss, introduced species, contaminants, and direct human disturbance (OBDP, 2007c).

A species list provided by ORNHIC indicated that there are no federal- or state-listed ESA terrestrial wildlife species known to reside within the project area. There are reports of sensitive or species of concern terrestrial wildlife within two miles of the project study area; however there is habitat that would support only one of these sensitive species in the project study area (i.e., the Northern Pacific pond turtle; Table 3).

Table 3: Terrestrial Wildlife Species Reported to Occur Within Two Miles of Project Study Area (ORNHIC 2006)

Species	Federal status	State status	Likely to occur in study area?
Purple martin	Species of Concern	Sensitive-Critical	No
Townsend's big eared bat	Species of Concern	Sensitive-Critical	No
Clouded salamander	N/A	Sensitive-Undetermined	No
Painted turtle	N/A	Sensitive-Critical	No
Northern Pacific pond turtle	Species of Concern	Sensitive-Critical	Yes

North of the Willamette River, the project area includes portions of Alton Baker Park designated as the Whilamut Natural Area, including the Eastgate Woodlands. The Eastgate Woodlands are located east of I-5, and consist of second growth forest dominated by deciduous trees. This area is also heavily infested with nonnative invasive vegetation. To the northwest of I-5 is a large meadow that is preserved as open space within the Whilamut Natural Area and is dominated with a mix of native and nonnative grasses.

There are several wetlands located throughout the project area that provide moderate habitat quality for perching birds and human-tolerant mammals. The areas north of the

Willamette River within the Whilamut Natural Area, of Alton Baker Park which includes Eastgate Woodlands, provide high value wildlife habitat. The project area south of the Willamette River is mostly developed with scattered patches of upland and wetland.

The project area provides potential habitat for bird species protected by the Migratory Bird Treaty Act (MBTA): Cliff swallows (*Hirundo pyrrhonota*). These birds may use the existing bridges for nesting locations, although none were present during field investigations.

Human-tolerant wildlife species such as raccoons (*Procyon lotor*), coyote (*Canis latrans*), and various perching birds occur within the project area. Beavers (*Castor canadensis*), bats (*Myotis spp*.), osprey (*Pandion haliaetus*), great horned owl (*Bubo virginianus*), western meadowlark (*Sturnella neglecta*), western gray squirrel (*Sciurus griseus*), northwestern pond turtle (*Clemmys marmorata*), river otters (*Lutra canadensis*), great blue heron (*Ardea herodias*), osprey (*Pandion haliaetus*), and other raptors may also be present. The existing bridges in the area may provide roosting habitat for bats such as the little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), and yuma myotis (*Myotis yumanensis*). Townsend's big-eared bats (*Corynorhinus townsendii*) are known to occur on the I-5 bridge over the McKenzie River located about four miles north of the project area (ODOT, 2007b).

Northwestern pond turtles have been reported in Canoe Canal within the project area (ORNHIC, 2006). However, much of the Canoe Canal within the project area is a concrete channel with steep banks and lack of suitable nesting habitat, which is likely to reduce the frequency of pond turtle occurrence.

There is a great blue heron rookery along Canoe Canal located about 800 feet east of the project area. City of Eugene Parks and Open Spaces Division and Willamalane Park and Recreation District staff have noted the ephemeral ponds located throughout the Whilamut Natural Area of East Alton Baker Park provide habitat for amphibian species (French, 2007; Taylor, 2007). Western meadowlark nesting habitat has been documented in the vicinity of the meadow immediately northwest of the project study area (ODOT, 2003b).

3.3.3 Temporary Effects

3.3.3.1 No Build Alternative

The No Build Alternative would have temporary adverse effects on biological resources within the study area because of work to upgrade the existing temporary detour bridge to standards for load rating and seismic hazards. In addition, the removal of the decommissioned bridge would cause temporary effects to biology resources from construction, such as decreased water quality, in-water work, noise increases, temporary habitat alternation, and fish capture and release.

No listed plants are located within the project area; therefore there would be no impacts to listed plants from the No Build Alternative. (ODOT, 2003a; USFWS, 2003).

Vegetation and Habitat

The No Build Alternative would result in the clearing and temporary alteration of land in order to remove the old bridge and access the detour bridge. Temporary vegetation removal would reduce the number of plant and tree seed banks (native and nonnative),

which could reduce some localized genetic diversity and increase the distances necessary for plant pollination.

Riparian vegetation removal would be necessary within the project study area. Because the Willamette River is so wide, riparian vegetation does little shading on the river system as a whole to noticeably decrease water temperatures. The amount of riparian vegetation to be cleared at the project site for construction activities is small relative to the amount of riparian vegetation available to the stream systems within the project area. This clearing would not extend more than 300 feet on either side of the proposed bridge work.

For terrestrial wildlife, temporary effects would occur from minor temporary fragmentation of habitat, habitat alternation, and disruption of migration corridors. Construction activities would temporarily displace species and may potentially kill some individuals that are not able to move out of the area. Dust from demolition and construction activity could also affect habitat. However, this would be minimized by following state and local regulations that require dust suppression activities like applying water or other dust suppressants and washing trucks and equipment.

Implementation of the No Build Alternative also has the potential to spread invasive weeds and grasses through translocation of plants and/or seeds from the project site to other project areas on construction equipment or vehicles. In addition, disturbance associated with the project and vehicle and pedestrian use of the area may aid in dispersion of invasive species to areas of roadway construction.

Water Quality and In-Water Work

Construction activities would include vegetation removal and soil disturbance, which could lead to erosion and increased sedimentation to wetlands and waterways resulting in decreased water quality. This would affect fish downstream of the project area by interrupting fish foraging activities and movement.

Construction activities would require in-water work. Temporary effects from in-water work would include construction or removal of piers, which involves site preparation, dewatering and isolation, and rewatering once work is complete. There is also the potential for materials to drop into waterways during demolition and new construction. Increased turbidity from in-water work should be minimal because the new and temporary piers for the work bridges would be drilled or driven into bedrock. There may be an increase of turbidity during rewatering of the isolation area or from pulling isolation structure(s). This increase is anticipated to be within allowable limits (OAR 340-041-0036), which is an increase of up to10 percent over natural background turbidity 100 feet downstream of the fill point.

Proposed in-water work would require work area isolation with the use of cofferdams or similar measures designed to isolate work areas from the river. Work area isolation would require fish capture and release operations in the Willamette River, which would affect both listed and nonlisted fish species. All fish capture and release operations would be conducted by experienced biologists following guidelines established by ODFW and NMFS.

Noise Effects to Wildlife

Effects to fish species from noise created in-water during construction include temporary disorientation and, potentially, mortality.

Temporary effects on resident wildlife would be caused by noise associated with construction activities and construction equipment moving to and from the project site. Noise levels from operation of machinery during certain construction activities would cause temporary, short-term, or localized noise increases. The blue heron rookery located northeast of the study area in Eastgate Woodlands Park would be temporarily affected by increased noise levels in combination with general construction activities.

Visual Effects to Wildlife

Temporary construction-related visual impacts would affect the No Build Alternative study area and surrounding areas from which the site is visible. These impacts would result from detours and additional signage, vegetation removal, excavated areas, and the presence of building materials and construction equipment. Construction lighting would disturb wildlife, particularly nocturnal birds and mammals. Impacts from these activities would be contained within established staging and construction limits, and would be limited to the areas adjacent to the freeway corridor, Franklin Boulevard, and UPRR tracks.

3.3.3.2 Build Alternative

The Build Alternative would have temporary effects on biological resources within the project study area from the construction of the replacement bridges, construction of temporary work bridges, removal of the decommissioned bridges and existing temporary detour bridges, and associated activities such as grading, clearing, excavation, staging, and hauling. Demolition of the four existing bridges and construction of the four new bridges would take about four years and require four in-water work periods. Temporary effects on biological resources would result from construction activities that contribute to decreased water quality, noise increases, temporary habitat alteration, and require in-water work or fish capture and release.

No listed plants are located with the project area; therefore, there would be no impacts to listed plants.

Vegetation and Habitat

The Build Alternative would result in the clearing and temporary alteration of about a 9-acre area. About 1 acre of proposed clearing would occur within developed areas and the remaining 8 acres would occur in undeveloped areas (vegetation, wetlands, and open water[2]). The impacts of removing vegetation would include increased water runoff and erosion. Temporary vegetation removal would also reduce the number of plant and tree seed banks (native and nonnative), which could reduce some localized genetic

[2] The areas of open water described herein refer to the areas under the bridge deck that would be temporarily affected.

diversity and increase the distances necessary for plant pollination. Vegetation is also a primary basis for wildlife species support, which are discussed in detail below.

Construction has the potential to spread invasive weeds and grasses, through movement of plants and/or seeds from the project site to other project areas on construction equipment or vehicles. In addition, disturbance associated with the project and vehicle and pedestrian use of the area may aid in dispersion of invasive species to areas of roadway construction.

For wildlife, temporary effects from vegetation/habitat removal would result in fragmentation of habitat during soil disturbance activities and would displace species and may potentially kill some individuals (including amphibians, reptiles, birds, and mammals) that are not able to move out of the area. Although already partially impeded by existing development, wildlife passage through riparian, wetland, and upland habitat areas would be further impeded with the clearing of vegetation and use of heavy equipment (i.e., movement and use of equipment on haul roads through Whilamut Natural Area, and equipment use along the banks of the Willamette River, and wetland areas located within the study), which provides perching and nesting habitat for birds and cover for other animals.

Dust from demolition and construction activity could also affect habitat. However, this would be minimized by following state and local regulations that require dust suppression activities like applying water or other dust suppressants and washing trucks and equipment.

Water Quality and In-water Work

Bridge and roadway construction may disturb soil and streambank/bed materials, which could increase the potential for delivery of fine sediment to streams. Short-term, localized effects of sedimentation may occur during the in-water work activities associated with bridge removal and construction; however, these impacts would be limited by the implementation of the erosion and sediment control measures outlined in the standards.

Construction activities would have similar impacts on water quality as those described for the No Build Alternative, though impacts would be greater due to the larger scope of the Build Alternative.

Construction activities would require four in-water work periods. Temporary impacts associated with the Build Alternative are similar to those described for the No Build Alternative. Proposed in-water work would require work area isolation with the use of cofferdams or similar measures designed to isolate work areas from the river. Work area isolation would require fish capture and release operations in the Willamette River, which would affect both listed and nonlisted fish species. All fish capture and release operations would be conducted by experienced biologists following guidelines established by ODFW and NMFS.

Noise Effects to Wildlife

The Build Alternative would include excavation, drilling, and/or pile driving into bedrock substrate for construction of temporary work bridges, construction of replacement bridges, and demolition of two existing bridges. Effects of noise associated with these activities on fish species could include temporary disorientation or, potentially, mortality.

Noise levels associated with construction activities range from 70 to 100 decibels (dBA) at sites 50 feet from the activities. Construction noise in combination with general construction activities (i.e., excavation, grading, etc.) could temporarily affect the blue heron rookery located 1,000 feet northeast of the project study area in Eastgate Woodlands Park. Construction noise generated by the project would decrease to between 32 and 68 dBA[3] at a distance of 1,000 feet and could affect nesting success of blue heron during the nesting season (February 15 through July 31).

Visual Effects to Wildlife

Temporary construction-related visual impacts would affect the Build Alternative study area and surrounding areas from which the site is visible. These impacts would result from detours and additional signage, vegetation removal, excavated areas, and the presence of building materials and construction equipment. Construction lighting used at night would disturb wildlife, particularly nocturnal birds and mammals. Impacts from lighting could extend outside of the established staging and construction limits; however, the light would be more diffuse moving away from the construction limits and would affect the areas immediately adjacent to the freeway corridor, Franklin Boulevard, and UPRR tracks.

3.3.4 Permanent Effects

3.3.4.1 No Build Alternative

Vegetation and Habitat

The No Build Alternative would not result in the permanent removal of vegetation for new impervious surfaces. Net impervious surfaces within the project study area would be decreased with the removal of the decommissioned bridge. Areas where the decommissioned bridge was located would be replanted with native vegetation. The impacts of additional vegetation would include an increased water uptake and soil stabilization, which would result in minor decreases of water runoff and erosion. Permanent vegetation would also increase the number of plant and tree seed banks (native and nonnative), which could improve some localized genetic diversity and decrease distances necessary for plant pollination. The No Build Alternative would eradicate some of the noxious weeds through vegetative and seed bank removal. Conversely, there is also a potential to introduce additional invasive species with proposed improvements.

The No Build Alternative would reduce the number of piers in the Willamette River, allowing for increased opportunities for fish and aquatic resources to utilize the project area.

Fish Passage

The No Build Alternative would not obstruct native fish passage across the Willamette River, Canoe Canal, or adjacent unnamed waterways where resident fish are present.

---

[3] *Attenuation noise levels were calculated using the methods in the 2007 Washington Department of Transportation Advanced Training Manual for preparing Biological Assessments.*

Noise Effects to Wildlife

There would be no impacts to wildlife from increased noise levels during operational activities.

Visual Effects to Wildlife

Visual changes that would result from the No Build Alternative would not affect wildlife.

3.3.4.2 Build Alternative

Vegetation and Habitat

The Build Alternative would result in the removal of about 9 acres of vegetation, wetlands, and open water habitat[4] as a result of the new bridge and roadway development. The impacts of removing vegetation would include a reduction in water uptake and soil stabilization, which could lead to minor increases in water runoff and erosion, which would affect fish and aquatic species. Permanent vegetation removal would also reduce the number of plant and tree seed banks (native and nonnative), which could reduce some localized genetic diversity and increase the distances necessary for plant pollination. The project would eradicate some of the noxious weeds through vegetative and seed bank removal. Conversely, there is also a potential to introduce additional invasive species with proposed improvements.

Removal of the decommissioned bridge would open areas for natural habitat regeneration. This benefit would offset some of the loss of vegetation, wetlands, and open water resulting from the new bridges.

There would be permanent direct effects to fish or aquatic resources, such as loss of habitat or habitat alteration by the placement of piers within the ordinary high water (OHW) of the Willamette. The pier placements for either Option A or B would result in direct impacts to fish habitat. Impacts from the through arch bridge design would be about 15% higher than for the other designs because it would require wider footings. Although this would be a direct impact to fish habitat within the Willamette River, it would represent a benefit when compared to the existing conditions and the number of piers currently below the OHW and within wetlands (a total of 29 piers[5]). The Build Alternative would have a smaller footprint within the Willamette River, allowing increased opportunities for fish and aquatic resources to utilize the project area.

No direct permanent impacts would occur to fish or aquatic resources from the loss of habitat or habitat alteration over the Canoe Canal.

---

[4] *The areas of open water described herein refer to the areas under the bridge deck that would be permanently affected.*

[5] *The existing bridge has five piers located within the main channel and two piers located in each overbank at a spacing of about 143 feet. The detour bridge has 7 piers (constructed from 18 columns in the Willamette River and 6 columns in adjacent wetlands and unnamed waterways) located within the main channel and one pier located in each overbank at a spacing of about 115 feet.*

Construction of the Build Alternative would result in permanent vegetation removal, thereby removing habitat for local wildlife species. At the bridge pier locations, abutments, and proposed retaining wall locations some vegetation would be removed, which would result in habitat alternation. The ground surface below the bridge spans should receive enough light to allow existing and replanted native vegetation to grow maintaining habitat similar to existing conditions. Although there would be some changes to existing habitats onsite, there would be no permanent impacts to wildlife movement because there is enough clearance at the site to allow continued wildlife movement beneath the bridges.

Fluvial and Hydraulic Conditions of the Willamette River

Build Alternative Options A and B would result in minimal changes to the hydraulic characteristics of the Willamette River when compared to existing conditions. The Build Alternative (both Options A and B) would satisfy the OTIA III EPS fluvial standard. The Build Alternative would not have a direct impact to existing hydraulic and fluvial conditions that would cause changes to the aquatic environment.

Fish Passage

The Build Alternative would not obstruct fish passage in the Willamette River, Canoe Canal (Patterson Slough), or adjacent unnamed waterways where resident fish are present.

Noise Effects to Wildlife

There would be no impacts anticipated to wildlife from increased noise levels during operational activities.

Visual Effects to Wildlife

Visual changes that would result from the Build Alternative would not affect wildlife.

3.3.5 Indirect and Cumulative Effects

3.3.5.1 No Build Alternative

No indirect effects to vegetation, fish, or wildlife are anticipated to result from the No Build Alternative. Demolition debris that is not be recycled or reused would be placed at a state-approves disposal site. The potential improvements to vegetation and habitat from removal of the decommissioned bridge (see Section 3.3.4.1), when considered with other actions affecting vegetation and habitat in the project area and surrounding regions, would not contribute to a significant cumulative effect on these resources.

3.3.5.2 Build Alternative

ODOT has coordinated with NMFS and USFWS and informed these agencies that, while the Build Alternative bridges would be wide enough to accommodate six lanes of traffic (three lanes in each direction), they would be striped for four lanes. Further, any future changes to the striping of the bridges would be contingent on increasing the lanes of I-5 north and south of the bridges, which would require additional review by the agencies.

NMFS and USFWS agree that there would be no additional effects to listed species beyond those analyzed in the OTIA III Biological Opinion, provided that the OITA III EPS are met.

Cumulative effects of Build Alternative on vegetation, fish, and wildlife would include the same effects as those noted for the No Build Alternative.

3.4 Geological Resources

3.4.1 Methods and Coordination

The investigation of geological resources was based on review of available literature and geotechnical data pertaining to the project area. Impacts were assessed by reviewing available geologic information and comparing it with proposed project activities and facilities.

3.4.2 Baseline Conditions

Geological resources in the project area consist of fill material, alluvium, and bedrock. Bedrock consists of thick bedded to massive sandstone and siltstone interspersed with conglomerate beds and tuff layers. A thin layer of basalt occurs within the bedrock and is exposed in the streambed of the shallow portion of the Willamette River beneath the project area (ODOT, 2004a). The bedrock layers are overlain with fill and alluvium. Fill material in the project area consists of sandy or silty gravel or basalt gravel, cobbles, and boulders. Alluvium in the project area consists of gravel, cobbles, and boulders.

Geologic hazards in the study area include earthquakes, liquefaction, and landslides. Based on earthquake hazard maps, the project area has a low earthquake hazard rating, with the exception of the southwest corner of the project site, which has a low-to-intermediate hazard (Black et al., 2000). The process of liquefaction occurs when ground shaking associated with an earthquake causes some soils to lose shear strength and behave like a liquid. The fill and alluvium in the project area may be susceptible to a liquefaction hazard. The only areas subject to landslides in the project area are the riverbanks along the Willamette River. The riverbanks have the potential for slope failure; however, the banks are only a few yards high, so any landslide would be minor.

In the event of a catastrophic earthquake, any of the six dams on the Willamette River upstream of the I-5 Willamette River Bridge could fail. Due to the uncertainty of the number of potential failures, if any, no estimate on potential water volume in the project area can be given.

Groundwater is encountered at shallow depths in the project area (3 to 10 feet in wells) along Franklin Boulevard (OWRD, 2006). The groundwater elevation (410 feet average above mean sea level) is closely related to the Willamette River ordinary high water level, which is 423 feet above mean sea level in the project area. This indicates groundwater would likely be encountered in either the alluvium or a few meters below it, at an elevation similar to the surface elevation of the Willamette River.

3.4.3 Temporary Effects

3.4.3.1 No Build Alternative

Impacts related to demolition of the decommissioned bridges and upgrade of the detour bridge would be limited to temporary, localized changes to the river flow, and some minor increases in erosion and sedimentation.

3.4.3.2 Build Alternative

The temporary effects described below are applicable to all design options for pier locations and bridge types of the Build Alternative.

Impacts related to construction would be limited to temporary, localized changes to the river flow regime, stability of partially-constructed slopes, erosion, and resultant sedimentation. In-water work on bridges (both removal and emplacement) would alter the river flow in the immediate vicinity of the construction equipment and may cause releases of sediment into the river. Landslides could be caused by construction activities that temporarily create unstable slopes. The highest risk due to landslide would be slope failure into the Willamette River. Considering the low height of the riverbank, such a failure would be limited to a small area relative to the width of the river. It could result in temporary damming of a portion of the river and the release of silt, which could temporarily adversely affect aquatic life and water quality in the Willamette River.

3.4.4 Permanent Effects

3.4.4.1 No Build Alternative

The No Build Alternative would have no permanent effects on geological resources. The existing detour bridges would be repaired with seismic upgrades to reduce the safety risk associated with potential impacts from earthquakes.

3.4.4.2 Build Alternative

The Build Alternative would have no permanent effects on geological resources. Based on the earthquake hazard, geotechnical investigations should be completed prior to construction to determine the best method to seat foundations, piers, and bents to reduce effects related to earthquakes (e.g., lateral spread, liquefaction). In addition, slopes should be constructed in a manner that reduces the potential for erosion or small landslides.

3.4.5 Indirect and Cumulative Effects

3.4.5.1 No Build Alternative

The No Build Alternative would have no indirect or cumulative effects on geological resources.

3.4.5.2 Build Alternative

The Build Alternative would have no indirect or cumulative effects on geological resources. It would not contribute to geologic hazards or alter large-scale geologic features. When considered with past, ongoing, and reasonably foreseeable future actions, the localized changes to topography from excavation, grading, erosion, and sedimentation related to the Build Alternative would not contribute to a measurable effect on the geology of the study area. The Build Alternative, combined with other state-wide projects to improve bridge stability, would contribute to an overall cumulative beneficial impact of increased public safety during seismic events.

3.5 Hazardous Materials

3.5.1 Methods and Coordination

To identify recognized and potential environmental conditions (RPECs) that could affect the construction of the project, a review of available government records was conducted

to identify environmental cleanup sites (ECSIs), Resource Conservation and Recovery Act (RCRA) generators, solid waste facilities and landfills (SWF/LF), leaking underground storage tank (LUST) sites, or sites with registered underground storage tanks (USTs). The Oregon State Fire Marshal (OSFM) hazardous substance incident database also was reviewed. A site reconnaissance was conducted to identify sites suspected of having potential environmental conditions (PECs). Historical maps and aerial photographs were reviewed to identify PECs from historic land uses. The impact analysis evaluates the potential for the alternatives to affect existing hazardous materials sites, or to create new hazardous materials sites as a result of construction or other activities. The evaluation focuses on areas where hazardous materials are most likely to be encountered or areas that present some adverse health risk to construction crews, the public, or the environment. For sites with the potential for affecting the project, mitigation procedures to eliminate or minimize impacts were established.

3.5.2 Baseline Conditions

A review of government records identified nine RPECs within the study area and the site reconnaissance identified one additional PEC. No sites were identified from historical aerial photographs or maps.

Figure 6 illustrates the location of these ten areas of concern for the I-5 Willamette River Bridge Project. Complete descriptions of these sites are provided in the Hazardous Materials Technical Report (OBDP, 2007d).

3.5.3 Temporary Effects

Temporary effects associated with hazardous materials can occur as a result of releases to the environment from construction activity and equipment; demolition of bridges; and exposure to subsurface hazardous materials from subgrade excavation.

3.5.3.1 No Build Alternative

The No Build Alternative includes demolition and removal of existing decommissioned I-5 bridges, which would require construction of a temporary work bridge and staging. Construction activities can result in a release of fuel products and machine lubricants during heavy equipment fueling and operation. Chemical usage for activities such as asphalt paving and treatment of concrete during curing can result in releases of hazardous materials and possibly impact soil and groundwater resources. These impacts can be avoided or prevented with proper work practices, including spill prevention and response plans.

Figure 6
Hazardous Materials Areas of Concern
I-5 Willamette River Bridge Project

3.5.4 Permanent Effects

3.5.4.1 No Build Alternative

Direct permanent effects could occur as a result of traffic accidents in the project area that cause spills of vehicle fuels or hazardous material cargo being transported through the project area. Impacts from spills of vehicle fuel or vehicle cargo are removed or minimized through the State Fire Marshall using the Oregon Emergency Response System to coordinate the level and amount of response needed by local, state, and private incident response teams.

The No Build Alternative would have no permanent effects on hazardous materials. No actions would be completed that would affect existing hazardous material sites; therefore, no impacts to human health or the environment would result from the No Build Alternative.

3.5.4.2 Build Alternative

Direct permanent effects could occur as a result of traffic accidents in the project area that cause spills of vehicle fuels or hazardous material cargo being transported through the project area. Impacts from spills of vehicle fuel or vehicle cargo are removed or minimized through the State Fire Marshall using the Oregon Emergency Response System to coordinate the level and amount of response needed by local, state, and private incident response teams.

The Build Alternative would have no direct permanent effects on known hazardous materials sites; therefore, no direct impacts to human health or the environment would result from the Build Alternative.

3.5.5 Indirect and Cumulative Effects

3.5.5.1 No Build Alternative

The No Build Alternative would have no indirect or cumulative effects on hazardous materials. There is the possibility of indirect exposure of the general public to demolition debris and dust containing asbestos and lead paint. Containment structures would help minimize impacts from demolition waste entering the environment.

3.5.5.2 Build Alternative

Indirect effects could result from the movement of contaminated soil or groundwater at known hazardous materials sites within the project area caused by actions of the Build Alternative. There is also the possibility of indirect exposure of the general public to demolition and construction debris and dust containing asbestos and lead paint.

It is unlikely that indirect effects would result from the Build Alternative. Mitigation approaches include removal and proper disposal of hazardous materials, if encountered, such that any remaining material not present a risk to the general public or the environment via subsurface movement away from the source areas. Containment structures would help minimize impacts from demolition waste entering the environment.

The Build Alternative would have no direct or indirect effects with respect to hazardous materials; therefore, it would not contribute to a cumulative effect on hazardous materials.

3.6 Historic Resources

3.6.1 Methods and Coordination

ODOT prepared a historic resources inventory that identified historic properties within the project's area of potential effect (ODOT, 2006b). Identification of historic resources was based on review of available literature, including printed and graphic materials (such as maps and aerial photos) that document the historic conditions and development of the project area. An ODOT historic resources specialist conducted a reconnaissance survey of the APE to identify and assess the build features that were 45 years old or older. The historic resources inventory identified two historic properties in the APE: the UPRR corridor and the Eugene Millrace and Dam.

The archives at Eugene Water and Electric Board, as well as Lane County Museum and University of Oregon's Oregon Collection, were also consulted for materials pertaining to the portion of the Millrace within the APE. The City of Eugene provided background material on the millrace from their files that had been obtained during earlier research efforts on downstream portions of the Millrace.

3.6.2 Baseline Conditions

There are two properties eligible for listing in the National Register of Historic Places that are within the APE: the Union Pacific Railroad corridor and the Eugene Dam and Millrace.

The UPRR was constructed around 1895 and was previously property of the Southern Pacific Railroad.

The Eugene Millrace and Dam describes a grouping of all the related millrace resources upstream of the present intake, extending from the diversion dam, located about 300 feet upstream of the detour bridge, westward about 0.3 miles to the present intake and pump house. The dam and all of the related features on the south bank have been determined eligible for the National Register due to their association with the industrial development of the Eugene area.

Although no longer serving their historic function, the diversion dam and mill race are clearly visible today. The existing concrete features in the project APE are located beneath and adjacent to the I-5 bridge alignment on the south bank of the river. By comparing the features still present on the ground with the alignments shown in a 1951 ODOT sketch map of the area prepared in conjunction with the initial construction of I-5, it appears that most of the Eugene Millrace features are still present, but in ruins. The southern portion of the millrace in the APE is no longer visible as it has been buried under fill during the relocation of Franklin Boulevard. In addition, a small portion was apparently removed during construction of a powerline tower base, sometime after the initial construction of I-5.

3.6.3 Temporary Effects

3.6.3.1 No Build Alternative

The No Build Alternative would not affect historic resources in the APE. The construction activities associated with demolition of the decommissioned bridges and upgrades to the detour bridge would not affect the characteristics of the UPRR corridor that make it eligible for listing in the National Register. Similarly, the removal of the

decommissioned bridge and upgrade of the detour bridge over the Eugene Millrace would not alter the features of that property that make it eligible for the National Register.

3.6.3.2 Build Alternative

Construction activities associated with the Build Alternative would not affect the characteristics of UPRR corridor that make it eligible for listing in the National Register.

Construction of the Build Alternative would affect the Eugene Millrace. Construction activities such as material storage and movement, clearing, grading and excavation would occur within and around the existing, remnant features of the Millrace that are in the APE.

3.6.4 Permanent Effects

3.6.4.1 No Build Alternative

The No Build Alternative would have no permanent effects on the UPRR corridor or the Eugene Millrace. Under the No Build Alternative, an interstate freeway bridge would still cross these historic resources. The No Build Alternative would not permanently alter the setting or characteristics of these resources that make them eligible for the National Register.

3.6.4.2 Build Alternative

The Build Alternative would have no permanent effects on the UPRR corridor.

The Build Alternative would affect the Eugene Millrace. The setting of the Eugene Millrace in the APE would not be substantially changed by the Build Alternative. The resource would continue to be located under and adjacent to major transportation facilities and would not serve its historic function. The bridge piers associated with the decommissioned and detour bridges, which currently span the remnant features of the Millrace, would be removed. Fewer but larger bridge piers would be constructed on or adjacent to the remnant features of the Millrace. The dam would not be affected.

Pier Location Option A would not directly impact the Millrace features: the piers would be located between the Millrace and Franklin Boulevard. Pier Location Option B would directly impact the Millrace by permanent placement of a set of piers on the existing Mill Race features directly within the footprint of the project.

In accordance with the requirements of the National Historic Preservation Act, ODOT and FHWA consulted with the Oregon State Historic Preservation Office regarding whether the effects of the Mill Race would be adverse. The SHPO concurred with a finding that the project would have No Adverse Effect on the UPRR corridor or the Eugene Millrace..

3.6.5 Indirect and Cumulative Effects

3.6.5.1 No Build Alternative

The No Build Alternative would not result in actions that would have indirect effects on the Eugene Millrace and Dam or the UPRR corridor, nor would it contribute to cumulative effects on either of these resources.

3.6.5.2 Build Alternative

The Build Alternative would not result in changes in the APE that would have indirect effects on the Eugene Millrace and Dam or the UPRR corridor, nor would the Build Alternative contribute to cumulative effects on these resources.

3.7 Land Use

3.7.1 Methods and Coordination

The following relevant land use plans, codes, and other documents (with published dates) were reviewed to characterize baseline conditions and potential land use impacts associated with the project:

- Oregon Statewide Planning Goals (2006)
- Oregon Transportation Plan (2006)
- Oregon Highway Plan (1999)
- Eugene-Springfield Metropolitan Area General Plan (2004)
- Eugene-Springfield Transportation System Plan (*TransPlan*; 2002)
- Eugene Code (2001)
- Springfield Development Code (2006)
- Willakenzie Area Plan (1992)
- East Alton Baker Park Plan (1996)
- Laurel Hill Plan (1982)

GIS data from the Lane Council of Governments (LCOG) (2007a), aerial photographs (LCOG, 2005), maps, public agency websites, and information from government agencies, local residents, and local businesses were also used to complete this analysis. The project team consulted planners from the cities of Eugene and Springfield and Lane County. Site visits were conducted on February 28 and May 31, 2007.

3.7.2 Baseline Conditions

Most of the land within the project area is within the Eugene or Springfield city limits. There are unincorporated areas within the project area, but they are within the combined Eugene and Springfield urban growth boundary (UGB).

3.7.2.1 Existing Uses

There are five residential neighborhood areas within the project area. The Harlow, Fairmount, and Laurel Hill Valley neighborhoods are located in the Eugene portion of the project area. The West Centennial and Glenwood areas are located in the Springfield portion of the project area.

The parks and open spaces in the project area include the Whilamut Natural Area of Alton Baker Park, the Eastgate Woodlands of Alton Baker Park, Franklin Park, and Prefontaine Memorial Park. Within the project area, the North Bank Trail extends along the northern border of the Willamette River though the Whilamut Natural Area and the Eastgate Woodlands. The southeast loop of Pre's Trail is located within the Whilamut Natural Area with an extension to the Eastgate Woodlands. There are additional

connecting paths throughout the Whilamut Natural Area and Eastgate Woodlands, on the Knickerbocker Bridge, and along Franklin Boulevard.

The existing industrial uses consist of a waste management site, a Pepsi bottling plant, and other light industrial uses.

In addition to the park and open space areas mentioned above, the Laurel Grove Cemetery is located on Judkins Road, which is 0.1 mile east of the project.

3.7.2.2 Land Use Zoning Designations

Various land use zoning designations apply to lands within the project area. These Eugene and Springfield zoning designations are in compliance with the *Eugene-Springfield Metropolitan Area General Plan* (*Metro Plan)*. Unincorporated land within the cities' UGB is zoned in compliance with the cities' zoning and is also designated in compliance with the *Metro Plan*. Zoning designations include Residential, Commercial, Industrial, Agricultural, Public Land, and Open Space, Riverfront Park Special Area, Node Special Area (a mixed use zone), Water Resources Overlay Zone, and Willamette River Greenway Overlay District.

3.7.3 Temporary Effects

3.7.3.1 No Build Alternative

The No Build Alternative would require temporary occupancy of existing open space areas (along Franklin Boulevard and within Alton Baker Park) for staging and material storage. Zoning and land use plans would not be affected by construction activities.

3.7.3.2 Build Alternative

Construction impacts associated with the construction of the Build Alternative would occur during removal of the decommissioned I-5 bridge and the temporary detour bridges and construction of the new I-5 bridges, reconstruction of highway approaches, and ramp changes. The Build Alternative would require temporary occupancy of existing open space areas (along Franklin Boulevard and within Alton Baker Park) for staging and material storage. Zoning and land use plans would not be affected by construction activities.

3.7.4 Permanent Impacts

3.7.4.1 No Build Alternative

Property acquisitions would not be required for improvements under the No Build Alternative; therefore, there would be no permanent direct land use impact in terms of converting existing land uses to transportation right-of-way use or requiring a zoning change.

Table 4 summarizes the plan consistency determinations for both the No Build and Build Alternatives. (OBDP, 2007e).

Table 4: Plan Consistence Determination

Plan	Alternative	Plan Consistency Determination
Oregon Statewide Planning Goal 15	No Build	*Inconsistent
	Build	*Inconsistent
Oregon Transportation Plan	No Build	Consistent
	Build	Consistent

Table 4: Plan Consistence Determination

Plan	Alternative	Plan Consistency Determination
Oregon Highway Plan	No Build	Inconsistent
	Build	Consistent
Eugene-Springfield Metropolitan Area Plan	No Build	*Inconsistent
	Build	*Inconsistent
Eugene-Springfield Metropolitan Area Transportation Plan	No Build	Consistent
	Build	Consistent
Springfield Development Code	No Build	Consistent
	Build	Consistent
Eugene Code	No Build	Consistent
	Build	Consistent
Willakenzie Area Plan	No Build	*Inconsistent
	Build	*Inconsistent
East Alton Baker Park Plan	No Build	Consistent
	Build	Consistent
Laurel Hill Plan	No Build	Consistent
	Build	Consistent

**Plan amendments proposed as part of the I-5 Willamette River Bridge project would result in the project being consistent with these goals and plans.*

The following describes the approvals required to remove the decommissioned I-5 bridge crossing the Willamette River and upgrade the detour bridge (Greenfield, 2007). Plan inconsistencies are addressed by plan amendments.

Plan Amendments:

Amendments to statewide planning goal 15 and the Oregon Highway Plan would be required.

An amendment to the *Metro Plan*, in the form of a goal exception to Statewide Planning Goal 15 (Willamette River Greenway) as required by *Metro Plan*, Chapter III, Section D, Policy 11, may be required to authorize the placement of fill within the greenway setback associated with removal of the original I-5 Willamette River bridge and upgrades on the detour bridge.

An amendment to the Willakenzie Area Plan is needed to allow bridges and fill associated with the upgrade of the detour bridge to be constructed within the first 35 feet from the top of the riverbank in the greenway in the Willakenzie area.

Permits and Approvals:

An administrative "determination" from the Springfield Planning Director pursuant to Springfield Development Code (SDC) 31.240(2) that the removal of the original I-5 bridge and upgrades to the detour bridge, would not "diminish riparian function" of affected riparian areas.[6]

[6] The City recommends that this determination be made as part of the Discretionary Use Permit process.

A Type II "Standards Review" approval from the City of Eugene pursuant to Eugene Code (EC) 9.4930(3)(b), 9.4980 and 9.8460 through 9.8474, etc., for any fill, grading, vegetation removal, or new bridges within a conservation area.

A Type I permit from the City of Springfield to allow construction in the floodplain or floodway.

A Site Development Permit (or similar building permit), and a Federal Emergency Management Agency (FEMA) "no-rise" certification from the City of Eugene, for any construction or bridges within the floodway/special flood hazard area.

3.7.4.2 Build Alternative

Property acquisitions would not be required for improvements under the Build Alternative; therefore, there would be no permanent direct land use impact in terms of converting existing land uses to transportation right-of-way use or requiring a zoning change.

Table 4 summarizes the plan consistency determinations for the Build Alternative, as well as the No Build Alternative. (OBDP, 2007e).

The following describes the land use approvals to allow ODOT to construct a replacement I-5 bridge and remove the original I-5 bridge crossing the Willamette River in Eugene/Springfield (Greenfield, 2007).

Plan Amendments:

- An amendment to the Metro Plan[7], in the form of a goal exception to Statewide Planning Goal 15 (Willamette River Greenway), is needed to authorize a non water-dependent and non water-related use within the established greenway setback. Under Goal 15, the approaches associated with the replacement I-5 bridge are considered to be a non water-dependent and non water-related use.
- An amendment to the Metro Plan, in the form of an exception as required by Metro Plan, Chapter III, Section D, Policy 11 is needed to authorize the placement of fill within the greenway setback associated with the replacement bridge. In addition, Policy 11 exceptions may be needed to place fill in the greenway associated with (1) removal of the original I-5 Willamette River bridge, and (2) construction of a temporary work bridge to remove the detour bridge currently in use and construct new bridges. . The Metro Plan amendments would require the joint approval of the City Councils of Eugene and Springfield and the Lane County Board of Commissioners.
- An amendment to the Willakenzie Area Plan is needed to allow bridges and fill associated with the replacement I-5 bridge to be constructed within the first 35 feet from the top of the riverbank within the greenway in the Willakenzie area. This amendment would require the approval of the Eugene City Council.

[7] The *Metro Plan* serves as the comprehensive plan for Eugene, Springfield, and Lane County.

Permits and Other Approvals:

- A Type III Discretionary Use Approval from the City of Springfield under SDC 25.050 and 10.030(1), because the replacement bridge would have a significant visual impact.
- An administrative "determination" from the Springfield Planning Director pursuant to SDC 31.240(2) that the replacement bridge, and also possibly the removal of the original I-5 bridge and construction of a temporary demolition bridge for the detour bridge, would not "diminish riparian function" of affected riparian areas.8
- A Type III Willamette River Greenway permit from the City of Eugene under EC 9.8800 through 9.8825, because the replacement bridge is a "development" within the greenway boundary.
- A Type II "Standards Review" approval from the City of Eugene pursuant to EC 9.4930(3)(b), 9.4980 and 9.8460 through 9.8474, etc., for any fill, grading, vegetation removal, or new bridges within a conservation area.
- A Type I permit from the City of Springfield to allow construction in the floodplain or floodway.
- A Site Development Permit (or similar building permit), and a FEMA "no-rise" certification, from the City of Eugene, for any construction or bridges within the floodway/special flood hazard area.

The *TransPlan* (2002) includes two I-5 projects (No. 260 and150) in the list of Future (Beyond 20-Years) Capital Investment Actions (Chapter 3: Table 1b-Future (Beyond 20-Years) Capital Investment Actions: Roadway Projects, Page 31) described as:

> *No. 260 I-5 from 1-105 to Highway 58 (Goshen): Widen remaining sections to 6 lanes.*
>
> *No. 150 I-5 at Willamette River/Franklin Boulevard Interchange: Interchange reconstruction to create one full interchange to improve operations and safety, reconstruct ramps and bridges to modern standards, and provide for 6 lanes on I-5.*

The I-5 Willamette River Bridge Project is included in *TransPlan's* list of authorized transportation improvements by way of these two projects; therefore, an amendment to the *TransPlan* would not be required.

3.7.5 Indirect and Cumulative Effects

3.7.5.1 No Build Alternative

The No Build Alternative would not result in indirect land use impacts because it would not alter the existing transportation system, increase capacity, or facilitate development in the project area.

When considering past, present and reasonably foreseeable actions along with the No Build Alternative, there would not be cumulative impacts for land use in the project area.

[8] The City recommends that this determination be made as part of the Discretionary Use Permit process.

The cities of Eugene and Springfield plan for growth and development in the project area are consistent with existing plans and goals. The No Build Alternative would require some plan amendments and approvals, but would not contribute to a significant cumulative effect on land use.

3.7.5.2 Build Alternative

The Build Alternative would not result in indirect land use impacts. The Build Alternative would not, of itself, increase the capacity of I-5 nor facilitate development in the project area. The new bridge would be part of the transportation system needed to support the planned growth.

When considering past, present and reasonably foreseeable actions along with the Build Alternative, there would not be cumulative impacts for land use in the project area. The cities of Eugene and Springfield plan for growth and development in the project area are consistent with existing plans and goals. The Build Alternative would require some plan amendments and approvals, but would not contribute to a significant cumulative effect on land use.

3.8 Noise

3.8.1 Methods and Coordination

The technical noise analysis for this project was prepared to meet the FHWA's *Procedures for Abatement of Highway Traffic Noise and Construction Noise,* and follows the guidance contained in the ODOT *Noise Manual*. Additional details related to the analysis of highway traffic noise can be found in the *I-5 Willamette River Bridge Project Technical Noise Report* (OBDP, 2007f).

The traffic noise abatement criteria and impact levels used to evaluate the project traffic noise levels are taken from the ODOT *Noise Manual*. The noise abatement criteria and impact levels are listed in Table 5. ODOT is responsible for implementing the FWHA regulations in Oregon, and considers an "absolute" traffic noise impact to occur if predicted noise levels are within 2 dBA of the FHWA criteria. This accounts for the 2-dBA difference between the federal abatement criteria and the state impact levels shown in Table 5. A "relative" noise impact is considered to occur if predicted noise levels substantially exceed the existing noise levels. ODOT considers a 10-dBA increase over existing noise levels to be substantial. The criteria are applied to the peak noise impact hour.

Note that parks included in the noise analysis are considered recreational uses and are judged to be noise-impacted if predicted noise levels exceed 65 dBA. The cemetery included in the noise analysis is considered to be under the same category as Churches, and so are also judged to be noise-impacted if predicted noise levels exceed 65 dBA.

Table 5: FHWA & ODOT Noise Impact Guidelines by Land Use (L_{eq} - dBA)

Land Use - Primary Activity	FHWA Noise Abatement Criteria	ODOT Noise Impact Criteria
Residential, Recreation, Churches, Schools, Hotels (Exterior Levels)	67	65
Commercial, Industrial (Exterior Levels)	72	70
Residential, Recreation, Churches, Schools, Hotels (Interior Levels)	52	50

3.8.2 Baseline Conditions

Existing noise levels were monitored at nine locations within the project area. The sites where baseline noise monitoring was conducted and the location of the receivers (noise prediction sites) included in the noise analysis are shown in Figures B1 through B6 of Appendix B. Measured noise levels at these locations ranged between 58 and 64 dBA.

Based on measured noise levels, existing sound levels were modeled at 79 receivers, representing 119 residential properties, 8 commercial properties, 1 park, and 1 cemetery. Model results indicated existing noise levels range from the 50s to low 70s dBA at properties located adjacent to the project area. The model results indicated 34 residential properties, one commercial property, one park, and one cemetery have existing noise impacts (i.e., where noise levels exceed ODOT noise abatement criteria). Noise impacts under the existing condition are predicted at:

- Properties in the Anderson Lane subdivision on the north end of the project area, on the east side of I-5
- Alton Baker Park
- The residential property adjacent to Franklin Boulevard on the east side of I-5, south of the Willamette River
- One commercial property east of I-5, south of the Willamette River
- The Laurel Hill Cemetery
- Properties near I-5 in the Laurel Hill neighborhood on the west side of I-5, south of the Willamette River

Table 6 shows the modeled existing noise levels. Noise levels exceeding the ODOT noise impact levels are shown in shaded cells.

Table 6: Predicted Peak Hour Sound Levels for the Existing Condition, 2030 No Build Alternative, and the 2030 Build Alternative

Receiver	Land Use	Noise Impact Level (dBA)*	Number of Properties	Existing 2007 Noise Levels (dBA)	2030 No Build Alternative Noise Levels (dBA)	2030 Build Alternative Noise Levels (dBA)
R1	Residential	65	6	58	60	60
R2	Residential	65	1	72	74	73
R3	Residential	65	6	58	60	60
R4	Residential	65	1	73	74	74
R5	Residential	65	2	68	70	70
R6	Residential	65	6	55	57	57
R7	Residential	65	6	58	59	60
R8	Residential	65	2	72	73	73
R9	Residential	65	1	68	70	69
R10	Residential	65	1	70	72	70
R11	Residential	65	1	66	67	66
R12	Residential	65	2	62	63	61
R13	Residential	65	1	63	64	62
R14	Residential	65	2	64	65	63
R15	Residential	65	2	62	63	61
R16	Residential	65	1	61	62	60

Table 6: Predicted Peak Hour Sound Levels for the Existing Condition, 2030 No Build Alternative, and the 2030 Build Alternative

Receiver	Land Use	Noise Impact Level (dBA)*	Number of Properties	Existing 2007 Noise Levels (dBA)	2030 No Build Alternative Noise Levels (dBA)	2030 Build Alternative Noise Levels (dBA)
R17	Residential	65	2	59	61	59
R18	Residential	65	4	58	59	58
R19	Park	65	-	59	61	60
R20	Park	65	-	66	67	66
R21	Park	65	-	63	65	66
R22	Park	65	-	64	65	66
R23	Commercial	70	1	65	67	67
R24	Residential	65	1	66	68	68
R25	Commercial	70	1	61	63	63
R26	Commercial	70	1	61	63	63
R27	Commercial	70	1	64	66	66
R28	Residential	65	1	59	61	62
R29	Residential	65	2	62	63	64
R30	Residential	65	1	61	63	64
R31	Residential	65	1	62	64	65
R32	Residential	65	1	63	64	65
R33	Residential	65	1	62	64	64
R34	Residential	65	1	61	63	64
R35	Residential	65	1	62	64	65
R36	Residential	65	1	63	64	65
R37	Residential	65	2	64	65	65
R38	Residential	65	1	62	63	64
R39	Residential	65	2	63	64	65
R40	Residential	65	1	62	64	65
R41	Residential	65	1	63	64	64
R42	Residential	65	1	63	65	65
R43	Residential	65	2	64	66	66
R44	Residential	65	1	65	66	66
R45	Commercial	70	1	70	72	70
R46	Residential	65	1	60	62	62
R47	Residential	65	1	62	64	64
R48	Residential	65	1	63	65	65
R49	Residential	65	2	64	66	66
R50	Residential	65	1	65	66	66
R51	Residential	65	1	65	67	67
R52	Residential	65	1	62	63	64
R53	Residential	65	1	63	65	65
R54	Residential	65	1	64	66	65
R55	Residential	65	1	66	67	68
R56	Residential	65	2	66	68	68
R57	Residential	65	1	61	63	63
R58	Residential	65	2	62	64	65
R59	Residential	65	1	63	65	65

Table 6: Predicted Peak Hour Sound Levels for the Existing Condition, 2030 No Build Alternative, and the 2030 Build Alternative

Receiver	Land Use	Noise Impact Level (dBA)*	Number of Properties	Existing 2007 Noise Levels (dBA)	2030 No Build Alternative Noise Levels (dBA)	2030 Build Alternative Noise Levels (dBA)
R60	Residential	65	1	64	66	66
R61	Residential	65	1	65	66	66
R62	Residential	65	1	66	68	67
R63	Residential	65	2	67	68	69
R64	Residential	65	2	65	66	66
R65	Residential	65	2	62	64	65
R66	Residential	65	2	67	69	68
R67	Commercial	70	2	69	71	70
R68	Residential	65	2	63	65	65
R69	Residential	65	2	67	69	68
R70	Commercial	70	1	65	66	67
R71	Residential	65	2	64	66	66
R72	Residential	65	2	67	69	69
R73	Residential	65	1	67	69	69
R74	Residential	65	5	64	66	65
R75	Residential	65	3	64	66	66
R76	Residential	65	4	67	69	69
R77	Cemetery	65	-	63	65	65
R78	Residential	65	1	62	64	64
R79	Cemetery	65	-	66	67	67

Source: ODOT Noise Manual

3.8.3 Temporary Effects

Temporary noise level increases for the I-5 Willamette River Bridge project would result from normal construction activities. Construction noise would result from activities under both the No Build and Build Alternatives. The No Build Alternative includes the removal of the decommissioned bridge. The Build Alternative includes the removal of the decommissioned and detour bridges, and the construction of the new bridge; therefore, construction noise would last longer under the Build Alternative. Noise levels for these activities can be expected to range from 70 to 100 dBA at sites 50 feet from the activities. These noise levels, although temporary in nature, can be intrusive. Measures for reducing noise from construction activities are discussed in Chapter 5.

3.8.4 Permanent Effects

3.8.4.1 No Build Alternative

Because the project would not be adding any capacity to the roadway network, traffic volumes are the same for both the No Build Alternative and the Build Alternative; however, traffic noise levels at sensitive receivers would be different for the two alternatives due to minor changes in roadway alignment, changes in shielding, and decibel rounding. The results of the analysis of the No Build Alternative for the year 2030 show that noise levels are predicted to increase by 1 to 2 dBA over existing conditions, and that 60 residential properties, 1 commercial property, 1 park, and 1 cemetery are predicted to have noise impacts. Noise impact levels for each land use described are shown in Table 5. Noise impacts under the No Build Alternative are predicted at:

- Properties in the Anderson Lane subdivision on the north end of the project area, on the east side of I-5
- The western-most properties on Walnut Road, north of the Willamette River
- The park areas on the north bank and bicycle/pedestrian path on the south bank of the Willamette River
- The residential property adjacent to Franklin Boulevard on the east side of I-5, south of the Willamette River
- Commercial properties east of I-5, south of the Willamette River
- The Laurel Hill Cemetery
- Properties near I-5 in the Laurel Hill neighborhood on the west side of I-5, south of the Willamette River.

Table 6 shows the noise levels predicted under the 2030 No Build Alternative. No substantial noise level increases (i.e., an increase of 10 dBA over existing levels) would result from the No Build Alternative.

3.8.4.2 Build Alternative

The Build Alternative includes physical alterations to the existing highway that change the vertical and horizontal alignment, resulting in changes to noise levels. The results of the analysis of the Build Alternative for the year 2030 show that changes in noise levels are predicted to range from a reduction of 1 dBA to an increase of 3 dBA over existing conditions. The results also show that changes in noise levels are predicted to range from a reduction of 2 dBA to an increase of 1 dBA over the No Build Alternative noise levels. Under the Build Alternative, 67 residential properties, 3 commercial properties, 1 park, and 1 cemetery are predicted to have noise impacts. Noise impacts under the Build Alternative are generally predicted in the same locations as impacts under the No Build Alternative. Table 6 shows the noise levels predicted under the 2030 Build Alternative.

No substantial noise level increases (i.e., an increase of 10 dBA over existing levels) would result from the Build Alternative.

3.8.5 Indirect and Cumulative Effects

3.8.5.1 No Build Alternative

The traffic data used in the noise analysis was developed by traffic engineers using information and assumptions from locally-adopted development plans and captures indirect or secondary traffic noise effects that may result from the project. No other indirect noise impacts would occur.

The No Build Alternative would not change the roadway or bridge configuration from what exists today, or affect the volume or vehicle class mix of I-5 northbound and southbound traffic. The project is not anticipated to have cumulative impacts under the No Build Alternative.

3.8.5.2 Build Alternative

The traffic data used in the noise analysis was developed using information and assumptions from locally-adopted development plans and captures indirect or secondary

traffic noise effects that may result from the project. No other indirect noise impacts would occur.

The project does not include an increase in the number of travel lanes and would construct the replacement bridge generally on the alignment of the decommissioned bridges. The Build Alternative would not affect the volume or vehicle class mix of I-5 traffic, as no capacity would be added to the system.

Changes in noise levels under the Build Alternative are minor when compared to the No Build Alternative; however, these minor changes would occur in the context of the broader noise environment (other noise sources include the interstate and local roadways in the area, the UPRR line, and light industrial commercial activities in the area east of I-5 and south of the Willamette River) and would be cumulative relative to other changes that may occur.

The cumulative effects of the project, combined with past, present, and future development in the area at residences, parks and trails, and commercial land uses between now and the project design year (2030) are likely to be minor due to the negligible changes in noise levels as a result of the project when compared to existing conditions.

3.9 Right-of-way

3.9.1 Methods and Coordination

ODOT's right-of-way in the project area was verified by reviewing right-of-way maps, Lane County GIS data, and consulting with ODOT and OBDP right-of-way specialists. Concept plans for the project alternatives were used to determine whether and how much right-of-way would be needed for the I-5 Willamette River Bridge Project.

3.9.2 Baseline Conditions

I-5 is located in ODOT right-of-way through the project area. ODOT right-of-way also encompasses the Franklin Boulevard ramps and Franklin Boulevard. A temporary easement agreement was reached between the Willamalane Park and Recreation District and ODOT to allow ODOT to construct, maintain, and operate the temporary detour bridge. When the permanent replacement bridge becomes operational, ODOT is to remove the temporary detour bridge and slopes, and return the easement property to an agreed-upon condition within five years.

3.9.3 Temporary Effects

3.9.3.1 No Build Alternative

For the No Build Alternative, right-of-way impacts would only occur during construction and therefore are temporary. Some work outside of the existing ODOT right-of-way would occur during construction of the No Build Alternative. Two staging areas for material storage and stockpiling, equipment storage, job trailers, employee parking, and other construction-related uses would be occupied during construction; one on the north side of the river and one on the south side (see Section 2.3.6). The currently-proposed staging areas would be located on ODOT right-of-way, but would also require the temporary occupancy of three parcels not currently owned by ODOT, including portions of Alton Baker Park adjacent to I-5. ODOT would acquire temporary easements for use of nonODOT property during construction.

3.9.3.2 Build Alternative

The Build Alternative would have temporary right-of-way impacts similar to the No Build Alternative. Construction staging areas would be larger than those required for the No Build Alternative, but would be in the same locations adjacent to I-5. ODOT would acquire temporary easements for use of nonODOT property during construction.

3.9.4 Permanent Effects

3.9.4.1 No Build Alternative

Acquisition of permanent rights of way is not anticipated for improvements under the No Build Alternative.

3.9.4.2 Build Alternative

Acquisition of permanent rights of way is not anticipated for improvements under the Build Alternative.

3.9.5 Indirect and Cumulative Effects

3.9.5.1 No Build Alternative

No indirect or cumulative right-of-way effects are anticipated for the No Build Alternative.

3.9.5.2 Build Alternative

No indirect or cumulative right-of-way effects are anticipated for the Build Alternative.

3.10 Section 4(f) and 6(f)

Section 4(f) of the USDOT Act of 1966 provides protection to public parks and recreation lands, wildlife and waterfowl refuges, and historic sites. Section 4(f) prohibits the FHWA from using land from a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or from a significant historical site unless the Secretary of Transportation determines that:

- The project would not have more than a *de minimis*[9] impact on the area; or
- There is no feasible and prudent alternative to the use of such land; and
- Such action includes all possible planning to minimize harm to such park, recreational area, wildlife or waterfowl refuge, or historic site resulting from such use. Historic resources subject to Section 4(f) are described in Section 3.7.

Section 6(f) of the Land and Water Conservation Act of 1965 states that public property acquired or developed using Land and Water Conservation Fund (LWCF) monies shall not be converted to uses other than public outdoor recreation unless properties of at least equal fair market value and of reasonably equivalent usefulness and location are substituted.

[9] *De minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not "adversely affect the activities, features and attributes" of the Section 4(f) resource. *De minimis* impacts related to historic sites are defined as the determination of either "no adverse effect" or "no historic properties affected" in compliance with Section 106 of the National Historic Preservation Act (NHPA).

3.10.1 Methods and Coordination

The project team reviewed planning documents of the City of Eugene Parks and Open Space Department and the Willamalane Park and Recreation District, including the Willakenzie Area Plan, the Restoration and Management Plan for the Landfill Cover and Adjacent Riparian Area in the Whilamut Natural Area, the East Alton Baker Park Plan, and the Alton Baker Park Master Plan, and coordinated with staff of the managing agencies, the Oregon Parks and Recreation Department and the National Park Service. The project team also reviewed the existing project documentation on the detour bridge.

3.10.2 Baseline Conditions

Alton Baker Park is a Section 4(f) resource located in the project area. The park is about 440 acres in size and is located in the cities of Eugene and Springfield; and contains the 235 acre Whilamut Natural Area and Eastgate Woodlands. Eugene Parks and Open Space Department administers Alton Baker Park/Whilamut Natural Area in Eugene and Willamalane Park and Recreation District (WPRD) administers Alton Baker Park in Springfield. Eastgate Woodlands is part of Alton Baker Park and Whilamut Natural Area in Springfield. Activities in the park in areas adjacent to I-5 include the complex of multi-use paths than run through the area. These trails are heavily used for bicycling (both commuting and recreational), jogging and walking. The Whilamut Natural Area and Eastgate Woodlands have open spaces and woodlands that provide habitat values. The Whilamut Natural Area also features interpretation of the natural and cultural environment, including the “talking stones” located in the area. Figure 7 in Section 3.11 illustrates the location of these park areas. The multiuse trails in the project area are considered recreational facilities under Section 4(f). There are no waterfowl or wildlife refuges in the project area. Historic properties are described in Section 3.7; the Eugene Mill Race and Dam is a historic property that is considered a Section 4(f) resource.

WPRD has received LWCF grants to purchase land or develop facilities for Alton Baker Park (ODOT 2005). However, there is no indication that the monies were used to purchase or develop the areas potentially affected by the proposed project. As part of the environmental process, ODOT will confirm whether LWCF monies were used for the specific portions of the park affected by the project and meet the requirements of Section 6(f)(3) of the Land and Water Conservation Act. Section 6(f)(3) conversion requires the replacement of the converted property with property of equal cost, size and recreation value.

3.10.3 Temporary Effects

3.10.3.1 No Build Alternative

The No Build Alternative would involve temporary occupancy (i.e., about two years) of some of the areas of Alton Baker Park during construction for staging and material storage. North Walnut Street in Eugene (off of Leo Harris Parkway southeast of Autzen Stadium) and the connecting path would be used as a haul route through Alton Baker Park during construction. ODOT would keep park facilities open and functioning to the maximum extent practicable. Areas disturbed during construction would be restored following construction.

The No Build Alternative would include development and implementation of a traffic management plan to keep multiuse trails in the project area open and safe during construction, or provide alternative routes. Areas affected by construction activities would be restored following construction. The temporary occupancy of the Section 4(f) property would not be considered “use” if the following conditions are met:

- The occupancy would be of a duration shorter than the period of construction
- Changes to the resource would be localized, i.e., only affect the Section 4(f) resource, in the immediate vicinity of the project
- Uses, particularly multiuse trails, would be preserved during occupancy
- The temporary occupancy would not result in permanent physical effects on the Section 4(f) resource
- The property would be fully restored to a condition at least as good as that which existed prior to the proposed project.

ODOT would need to reach a documented agreement with both the Willamalane Park and Recreation District and with Eugene Parks and Open Space Division regarding the measures taken to avoid and minimize impacts such that the above conditions would be met and temporary occupancy of the park areas during construction would not be considered a "use" of the Section 4(f) property.

In addition, according to the Oregon Parks and Recreation Department's (OPRD) Section 6(f) grants manual (OPRD 2004), temporary occupancy of the park areas would be considered a conversion of a 6(f) property to non-recreation use. ODOT will confirm whether the affected areas are encumbered under Section 6(f) and, if required, will consult with the park agencies, the OPRD and National Park Service regarding necessary actions to address this conversion and resolve these issues prior to the completion of the NEPA process.

3.10.3.2 Build Alternative

The Build Alternative would involve temporary occupancy of portions of Alton Baker Park during construction for staging, material storage, and transportation of materials and equipment. Walnut Street and the connecting path would be used as a haul route through Alton Baker Park during construction. The occupancy would be during the term of construction (i.e., about four years) and park uses would be preserved during construction. ODOT would keep park facilities open and functioning during construction. The Build Alternative would include development and implementation of a traffic management plan to keep multiuse trails in the project area open and safe during construction, or provide alternative routes. Areas affected by construction activities would be restored following construction. If the conditions described under the No Build Alternative (Section 3.10.3.1), are met then the temporary occupancy of the Section 4(f) property would not be considered "use."

Temporary occupancy of the park areas would be considered a conversion of a LWCF 6(f) property to non-recreation use if the affected areas are encumbered under Section 6(f). ODOT will confirm whether the affected areas are encumbered under Section 6(f) and, if required, will consult with the park agencies, the OPRD and National Park Service regarding necessary actions to address this conversion.

3.10.4 Permanent Effects

3.10.4.1 No Build Alternative

Under the No Build Alternative disturbed areas would be restored to a condition that is at least as good as those prior to the project. The detour bridge and roadway approaches are on fill that occupies a temporary easement in Alton Baker Park. The No Build Alternative would require either purchase of additional right-of-way or a permanent easement for the area where the fill is located.

3.10.4.2 Build Alternative

Because the Build Alternative would not require acquisition of new permanent right-of-way from Alton Baker Park and disturbed areas would be restored to a condition that is at least as good as those prior to the project, there would be no permanent effects on any 4(f) or 6(f) resources in Alton Baker Park. Conversion of lands developed with LWCF funds would require purchase of replacement property but that would not have a permanent impact on Alton Baker Park. While no permanent impact would occur to Alton Baker Park, LWCF Section 6(f)(3) conversion would require the purchase of replacement property which would result in a permanent increase in park lands.

Two historic properties are located within the current I-5 right of way: the Eugene Mill Race and Dam and the Union Pacific Railroad. Since no additional part of either property would be incorporated in the project, Section 4(f) "use" would not occur.

3.10.5 Indirect and Cumulative Effects

3.10.5.1 No Build Alternative

The No Build Alternative would not alter the alignment of I-5 or result in indirect effects on park uses. The No Build Alternative would result in minor noise increases in Alton Baker Park adjacent to I-5, but the increase would not affect park uses. The No Build Alternative would not have indirect or cumulative effects on 4(f) or 6(f) resources.

3.10.5.2 Build Alternative

The Build Alternative would not substantially alter the alignment of I-5 or result in indirect effects on park uses. The Build Alternative would result in minor noise increases in Alton Baker Park adjacent to I-5, but the increases would not affect park uses. The Build Alternative would replace the existing decommissioned and detour bridges with bridges that are more harmonious with the surrounding areas and with fewer piers in the Willamette River, which would enhance the aesthetics of the parks (see Section 3.13). Therefore, the Build Alternative would not have indirect or cumulative effects on 4(f) or 6(f) resources.

3.11 Socioeconomics and Environmental Justice

The following socioeconomic elements are assessed in this section: community characteristics (including environmental justice), economic factors, community cohesion (i.e., neighborhoods; community facilities, public safety, public transit facilities, parks and recreation, and pedestrian and bicycle facilities), and utilities.

3.11.1 Methods and Coordination

The project team reviewed the 2000 U.S. Census information on population, race and ethnicity, income levels, population ages, and housing statistics. Information was also gathered from other sources, including site visits (February 28 and May 31, 2007), aerial photographs (2005), GIS data from LCOG (2007a), public agency websites, regional and local planning documents, real estate websites, public involvement, and communication with local officials. The LCOG GIS data were used to identify the locations of community facilities important to community cohesion, such as schools, medical facilities, police and fire stations, religious institutions, cemeteries, and parks and recreational facilities. Information was verified during field visits by the project team. For the analysis of socioeconomic characteristics, the study area was defined as the area within 0.25 miles of the Build Alternative footprint.

3.11.2 Baseline Conditions

3.11.2.1 Community Characteristics

This section summarizes the population, housing, and minority and low-income populations within the study area.

Population

Table 7 presents population trends for Eugene, Springfield, and Lane County from 1970 to 2005. During this period, populations within Eugene and Springfield increased by 85 and 108 percent respectively.

Table 7: Population Growth from 1970 to 2005

Area	Year							
	1970	1975	1980	1985	1990	1995	2000	2005
Eugene	79,028	94,600	105,664	106,100	112,669	121,905	137,893	146,160
Springfield	26,874	34,900	41,621	40,690	44,683	49,005	52,864	55,860
Lane County	215,401	241,800	275,226	269,500	282,912	301,900	322,977	336,085

Source: LCOG, 2006

Housing

Table 8 summarizes the numbers and types of housing units in Eugene and Springfield. According to the 2000 US Census there are 61,332 total housing units in Eugene and 21,572 in Springfield.

Table 8: Housing Types in Eugene and Springfield in 1990 and 2000

Housing Types	Eugene		Springfield	
	1990	2000	1990	2000
Single Family Units*	29,782	36,881	11,442	13,515
Multi-family Units	15,959	21,170	4,777	6,118
Manufactured Units	1,855	3,249	1,777	1,900
Other	395	32	125	39
Total Units	47,991	61,332	18,121	21,572

**Includes attached and detached units.*

Source: U.S. Census Bureau, 2000

Environmental Justice Populations

Executive Order 12898 of February 11, 1994, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires federal agencies to consider whether federal agency actions would have a disproportionately high and adverse impact on minority or low-income populations.

This section provides information on minority and low-income populations in the study area. Census data at the block group level were used to determine the percentages of minority and low-income persons within the study area. Block groups are geographic subdivisions of counties used by the Census; the population of a block group typically ranges between 600 and 3,000 people.

Minority Populations

The United States Department of Transportation's Order on Environmental Justice defines a minority as a person who is:

- Black: A person having origins in any of the black racial groups of Africa.
- Hispanic: A person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
- Asian: A person having origins in any of the original peoples of the Far East, Southeast Asia, and the Indian subcontinent or Pacific Islands.
- American Indian and Alaskan Native: A person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition.

The study area minority population average is 18.2 percent, which is lower than the Eugene and Springfield average (22.5 percent and 23.8 percent respectively). None of the block groups in the study area have minority populations higher than those of the surrounding jurisdiction.

Low-Income Populations

A low-income individual is defined as a person whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines (i.e., poverty level) (FHWA, 2000).

Based on US Census data, the overall study area low-income population (i.e., for all Census block groups that fall within the study area) average is 25.3 percent, which is higher than Eugene (17.1 percent) and Springfield (17.9 percent). Three Census block groups (two in Eugene and one in Springfield) have higher low-income population percentages than neighboring block groups and surrounding jurisdictions.

High low-income population percentages within study area block groups may be due to the University of Oregon student population. According to the *Environmental Justice Baseline Data Summary* (LCOG, 2004b), in Lane County there were 66 block groups where the concentration of persons living at or below the poverty level was above the regional percentage. There were 34 block groups, generally located near the urban core, where 25 percent or more of the population was living in poverty. Block groups with the highest percentages were associated with the University of Oregon. (LCOG, 2004b).

3.11.2.2 Economic Elements

This section discusses the general economic conditions in the Eugene-Springfield area, including the economy, industry and employment, and income.

Economy

Historically, Lane County's economy has been based on timber and agriculture and the lumber and wood products sector is still the area's dominant manufacturing activity. However, the structure of the Eugene-Springfield metropolitan area economy is undergoing a shift away from lumber and wood products manufacturing (and other heavy industrial activities) and moving toward a more diverse economic base characterized by growth in light manufacturing activities and the nonmanufacturing

activities of trade, commercial and professional services, finance, insurance, and real estate (LCOG, 2004a). In addition, the Eugene-Springfield metropolitan area is developing as a regional center for activities such as tourism, distribution, and financial services for serving the southwestern and central Oregon area.

Industry and Employment

The main industries in the Eugene-Springfield area, in terms of employment, are manufacturing, retail trade, and health and social services (LCOG 2005).

Major employment areas in the Eugene-Springfield area include the central business districts, the University of Oregon area, Sacred Heart Hospital, the west Eugene industrial area, the north (Gateway) and south Springfield industrial areas, the Highway 99N industrial area, Country Club Road, Chad Drive, and the Mohawk-Northgate area (LCOG, 2004a). Commercial and light industrial areas are located along the Franklin Boulevard corridor, both east and west of I-5, within the study area.

Income

Based on data from the 2000 U.S. Census, the per capita income in 1999 for the Eugene-Springfield metropolitan area was lower than for Oregon as a whole. In 2000, the unemployment rate in the Eugene-Springfield metropolitan area was comparable to Oregon and higher than the national rate. Median household income in Eugene was $35,850 and in Springfield was $33,031 (LCOG, 2004a).

3.11.2.3 Community Cohesion

Community cohesion refers to the nature and extent of social interactions among members of a community. This interaction may involve regular participation in community social events or neighborly exchanges on the street. Community cohesion includes the linkage of the community with churches, schools, and other community facilities and services.

Indicators of community cohesion include:

- Neighborhoods
- Community facilities and linkages with and access to such facilities
- Public safety
- Public transit facilities
- Parks and recreation activities
- Pedestrian and bicycle facilities.

Neighborhoods

There are five residential neighborhood areas within the study area. The Harlow, Fairmount, and Laurel Hill neighborhoods are located in the Eugene portion of the study area. The East Alton Baker Park and Glenwood areas are located in the Springfield.

The Harlow Neighbors, Fairmount Neighbors, and Laurel Hill Valley Citizens associations are located in the Eugene portion of the study area. Eugene provides services to neighborhoods and neighborhood associations, including staff to support

neighborhood organizations and activities, information updates, publishing of association newsletters and other public information activities, city/association collaboration, and support for the Safe Communities radar volunteer program and the Good Neighbor Agreement process.

The Harlow neighborhood is located in the northwest section of the study area. The area is bounded by I-5 on the east, the Willamette River and Alton Baker park on the south, Coburg Road on the west, and Beltline on the north. There is quick and easy access to I-5 from both the north and south portions of the neighborhood. In addition to residences, other uses in the Harlow neighborhood include parks, retail, public services, industrial, agriculture, and vacant land.

The Fairmount neighborhood is located in the southwest section of the study area. The neighborhood encompasses that area bounded by a line extending the alignment of Agate Street north in a straight line to the Willamette River. From this point of intersection, the boundary follows the river east to I-5, then south along I-5 to Franklin Boulevard, and west on Franklin to Judkins Point. The boundary is then concurrent with the boundary of the Laurel Hill Valley Citizens Association. In addition to residences, other uses in the Fairmount neighborhood include parks, retail, public service, industrial, and vacant land.

The Laurel Hill neighborhood is located in the southwest section of the study area. In addition to residences, other uses in the Laurel Hill neighborhood include parks, retail, public service, and vacant land.

Springfield provides services to neighborhoods, including the Neighborhood Watch program, which provides staff, organization, and support to participating neighborhoods.

The East Alton Baker Park neighborhood area is located in the northeast section of the study area. West Centennial is a small neighborhood that shares its western border with Eugene. The area includes businesses, restaurants, and shopping. Because of its convenient location, homes are in high demand in the East Alton Baker Park neighborhood. Parks and the Willamette River are located nearby.

The Glenwood area is located in the southeast section of the study area. The Glenwood area is entirely bordered by the Willamette River and Eugene. Springfield and Lane County have been planning to revitalize the Glenwood area. Glenwood has a high concentration of industrial and commercial uses and a limited supply of residential uses, most of which are older, low value residences and mobile homes (Leland Consulting Group, 2007). However, open spaces, and quiet streets are also present within the residential areas of Glenwood.

Community Facilities and Public Services

Public services, such as schools, medical facilities, emergency services, libraries, religious institutions, parks, and public transit are significant factors of community cohesion.

The study area is served by Eugene School District 4J and Springfield School District 019. There are no schools located within the study area.

There are no hospitals or medical facilities, libraries, religious institutions, or fire or police stations located within the study area

The Laurel Hill Cemetery is located on Judkins Road in Eugene in the southern portion of the study area.

Regional public transit within the study area is provided by Lane Transit District, which provides service to the Eugene-Springfield metropolitan area, as well as the cities of Coburg, Creswell, Cottage Grove, Lowell, Veneta, and Junction City. Lane Transit District operates 46 transit routes to serve the residents and students within its service area. There are currently five routes that provide service within the study area.

The parks and open spaces in the study area include the Whilamut Natural Area of Alton Baker Park, Eastgate Woodlands of Alton Baker Park, Franklin Park, and Prefontaine Memorial Park. Figure 7 identifies parks and open space areas within the study area. Alton Baker Park provides a valuable and heavily used recreational resource to residents of the study area and the Eugene-Springfield area. Alton Baker Park in Eugene is administered by the City of Eugene's Parks and Open Space Department and the park in Springfield is administered by the Willamalane Park and Recreation District. The Whilamut Natural Area of Alton Baker Park encompasses 237 acres of Alton Baker Park (which has a total area of 440 acres) and includes the Eastgate Woodlands in Springfield. Planning and management of the Whilamut Natural Area is overseen by a Citizen's Planning Committee. The trails in the park are heavily used and provide connections with other park facilities as well as the local transportation network. The Whilamut Natural Area also includes environmental and cultural interpretive facilities.

Within the study area, there are sidewalks along portions of Garden Way, Centennial Boulevard, Walnut Road, Franklin Boulevard, and 15th Avenue. There are paths (for bicycle and pedestrian use) throughout the Whilamut Natural Area and Eastgate Woodlands, on the Knickerbocker Bike Bridge, and along Franklin Boulevard. Within the study area, there are bicycle lanes along portions of Garden Way, Centennial Boulevard, and Franklin Boulevard. Other popular biking streets within the study area include Walnut Road (closed to motor vehicles), Riverview Street, Augusta Street, and 16th Avenue.

3.11.2.4 Utilities

Utilities provide necessary amenities to residences and businesses within a community. Table 9 shows the utilities and providers that service the study area.

Table 9: Utilities and Providers Within the Study Area

Utility	Provider(s)
Electric and Water - Eugene	Eugene Water and Electric Board
Electric and Water - Springfield	Springfield Utility Board
Internet Access	CMC.Net Comcast
Natural Gas	NW Natural
Telecommunications	Qwest AT&T
Sewer/Stormwater	Metro Wastewater Commission

Source: Lane Metro Partnership, 2007

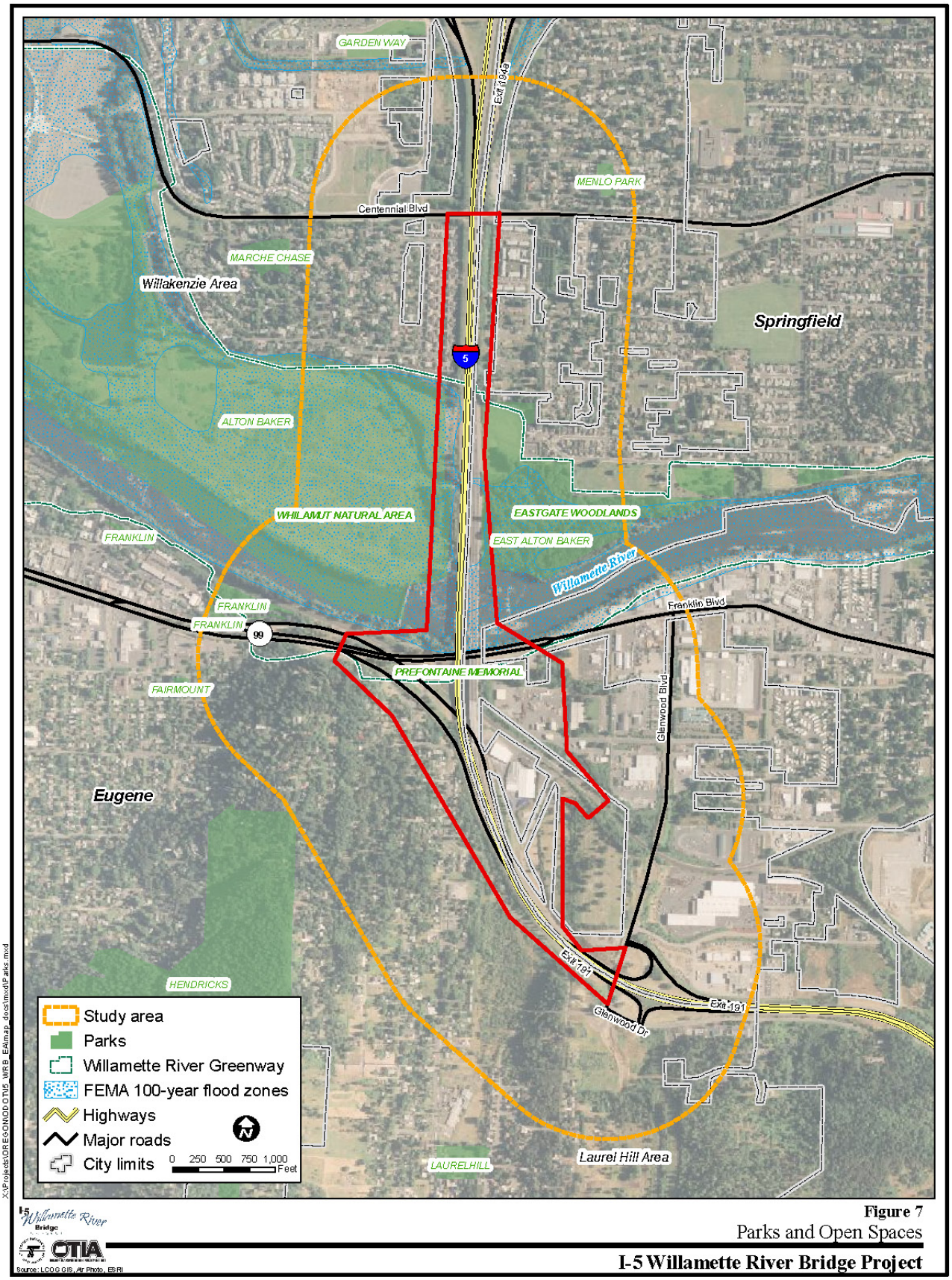


Figure 7
Parks and Open Spaces
I-5 Willamette River Bridge Project

3.11.3 Temporary Effects

3.11.3.1 No Build Alternative

Construction activities associated with the No Build Alternative would result in a temporary, minor increase in population within the study area and the local communities due to construction workers and other related jobs during construction. Population would not be affected on a regional scale. Housing within the study area would not be affected by construction activities associated with the No Build Alternative.

Construction-related impacts associated with the No Build Alternative, including increased noise, traffic delays, dust, and visual impacts associated with construction activities, would be experienced by persons living near or traveling through the study area during construction. The No Build Alternative would not isolate existing neighborhoods or disrupt access to community facilities or transit services. ODOT has proposed measures to avoid and minimize temporary impacts associated with the No Build Alternative (see Section 4). As the anticipated temporary impacts of the No Build Alternative would be minor and would be borne by all individuals in the area, it is not anticipated that minority or low-income persons would experience these impacts disproportionately in comparison to the entire study area population. Therefore, the No Build Alternative construction impacts would not be high, adverse, or disproportionately borne by low-income or minority populations.

Road closures or detours are not anticipated as a result of No Build Alternative construction. Construction activities would temporarily limit road capacity on I-5, which would result in minor delays. Any traffic interruptions due to construction activities would be temporary and access to local businesses would be maintained. Because road closures and detours are not anticipated, and traffic interruptions would be temporary, the No Build Alternative would not affect the transit routes that serve the project area.

Construction activities associated with the No Build Alternative would temporarily stimulate the economy as businesses within or near the study area would experience an increase in sales by patronage of construction workers. There would be a temporary, minor increase in construction-related employment opportunities within the study area, local communities, and the region.

As construction staging areas and haul roads would utilize park lands and facilities, park users may temporarily be inconvenienced. Temporary noise, visual, and air quality impacts may affect park users (see Sections 3.1.3, 3.8.3, and 3.13.3).

Pedestrians and bicyclists utilizing facilities in the park areas or along Franklin Boulevard would experience inconveniences during construction due to construction activity. Construction activities may result in short term, temporary closures of sidewalks, paths, or bicycle lanes. Appropriately signed and/or flagged detour routes will be provided for temporary closures of sidewalks, paths, or bicycle lanes.

Construction activities associated with the No Build Alternative would not affect utilities.

3.11.3.2 Build Alternative

Construction activities associated with the Build Alternative would result in a temporary, minor increase in population within local communities due to construction workers and other related jobs during construction. Population would not be affected on a regional

scale. Housing within the study area would not be affected by construction activities associated with the Build Alternative.

Construction-related impacts associated with the Build Alternative, including noise, dust, traffic, park and visual impacts, would be experienced by park users and persons living near or traveling through the study area during construction. The Build Alternative would not isolate existing neighborhoods or disrupt access to community facilities or transit services. ODOT has proposed measures to avoid and minimize temporary impacts associated with the Build Alternative (see Section 4). As the anticipated temporary impacts of the Build Alternative would be minor and would be borne by all individuals in the area, it is not anticipated that minority or low-income populations would experience these impacts disproportionately in comparison to the entire study area population. Thus, the Build Alternative construction impacts would not be high, adverse, or disproportionately borne by low-income or minority populations. Further, the public involvement process conducted to date, and described in Section 1.4, did not identify specific concerns regarding environmental impacts to environmental justice populations. The information gathered from public involvement, combined with census data and review of other technical reports written for this project, concludes that temporary effects associated with construction of the Build Alternative would not cause a disproportionate adverse impact on environmental justice populations.

I-5 and Franklin Boulevard would generally remain open and functioning during construction of the Build Alternative. Any traffic interruptions due to construction activities would be temporary and access to local businesses would be maintained. Road closures and detours are not anticipated, and traffic interruptions would be temporary, the Build Alternative would not affect the transit routes that serve the project area.

Construction activities associated with the Build Alternative would temporarily stimulate the economy as businesses within or near the study area would experience an increase in spending on construction materials, fuel, food, and other products during the about four years of construction activities. There would be an increase in construction-related employment opportunities and spending within the study area, local communities, and the region.

Access to community facilities, residences, and roadways would be maintained during construction.

Construction staging areas and haul roads would temporarily impact some park and recreation lands. A northern staging area would be located near the decommissioned bridge abutment near the pedestrian trail. The southern staging area would be located in a clearing adjacent to the pedestrian trail east of the detour bridge. Both locations currently are undeveloped. The park trail on the north side of the Willamette River that connects with Leo Harris Parkway southeast of Autzen Stadium would be used for a haul road for the north bank location. This is the same haul road that was used for construction of the detour bridge. Park trails along the north and south shore of the Willamette River and Canoe Canal may be temporarily re-routed during construction; therefore, construction activities associated with the Build Alternative would temporarily affect users of the Whilamut Natural Area, the Eastgate Woodlands, and park trails north and south of the Willamette River. Pedestrians and bicyclists utilizing facilities in the park areas or along Franklin Boulevard would experience inconveniences during construction due to construction activity. Construction activities may result in short term, temporary closures of sidewalks, paths, or bicycle lanes. Appropriately signed and/or

flagged detour routes will be provided for temporary closures of sidewalks, paths, or bicycle lanes.

Construction activities associated with the Build Alternative would not affect utilities.

3.11.4 Permanent Effects

3.11.4.1 No Build Alternative

Operation of the No Build Alternative would not affect the study area population or the population on a community or regional scale. Housing within the study area would not be affected by operation of the No Build Alternative. Property acquisitions and resulting displacements/relocations would not be required under the No Build Alternative.

Operational impacts from the No Build Alternative would be borne by all individuals in the area. It is not anticipated that environmental justice populations would experience these impacts disproportionately in comparison to the entire study area population. For this reason, the No Build Alternative permanent impacts would not be high, adverse, or disproportionately borne by low-income or minority populations.

The No Build Alternative would provide continuance of local and regional connectivity and continuance of people and freight/goods movement. The economic base and types of employment in the area would not be altered by the No Build Alternative.

The No Build Alternative would provide continued access via I-5 to and from community facilities and parks, emergency service response, and public transit.

The No Build Alternative would not permanently affect utilities.

3.11.4.2 Build Alternative

Long term effects of the Build Alternative would not affect the study area population or the population on a community or regional scale. Housing within the study area would not be affected by operation of the Build Alternative.

The Build Alternative would result in the construction of bridges that meet the required safety standards, providing local and regional connectivity and continuance of people and freight/goods movement. A major safety improvement would be the use of standard width shoulders that would provide enough room for drivers to pull completely off the highway when they have emergencies. This would allow for the continued support of local and regional economy and employment. The economic base and types of employment in the area would not be altered by the Build Alternative.

The Build Alternative would result in the construction of bridges that meet the required safety standards and provide the continuance of access to community facilities and parks, emergency service response, and public transit. Pier location Option A may result in the relocation of the trail along the north side of the river to a location away from the river. Pier location Option B may result in realignment of the existing trail on the south side of the Willamette River (i.e., the trail adjacent to Franklin Boulevard).

3.11.5 Indirect and Cumulative Effects

3.11.5.1 No Build Alternative

The No Build Alternative would not alter the existing transportation system or increase capacity and would not support projected future traffic demands (see Section 3.12.4.1).

As a result, it could influence the amount and rate of long-term development in the project area and have an indirect socioeconomic effect.

Growth in the project area, as addressed by plans and policies adopted by the cities of Eugene and Springfield, could be affected by the No Build Alternative.

The cumulative socioeconomic impacts of the No Build Alternative, combined with past, present, and reasonably foreseeable future actions in the area, would be generally minor with respect to socioeconomic conditions.

3.11.5.2 Build Alternative

The Build Alternative would not alter the existing transportation system or increase capacity; it would not result in indirect socioeconomic effects.

Cumulative socioeconomic impacts associated with the Build Alternative would be the same as those associated with the No Build Alternative.

3.12 Transportation

3.12.1 Methods and Coordination

The project team assessed transportation facilities and operations by reviewing existing plans, roadway designs, and traffic analyses. The project team also coordinated with local agencies regarding transportation facilities and traffic operations.

3.12.2 Baseline Conditions

I-5 runs in a generally north-south direction through the project area, with the City of Eugene on the west side and the City of Springfield on the east. The decommissioned I-5 bridges over the Canoe Canal and the Willamette River were completed in 1962. The temporary detour bridges were completed in 2004 following the decommissioning of the existing bridge. The bridges that cross the Willamette River also cross Franklin Boulevard and the UPRR.

Franklin Boulevard is a major east-west arterial in the Eugene-Springfield area that crosses under the south end of the Willamette River Bridge and provides a connection between the two cities. Numerous local streets connect to Franklin Boulevard in and adjacent to the project area. Interchanges with I-5 are located at Franklin Boulevard and Glenwood Drive.

Several multiuse trails are located in the project area. These trails are heavily used, but are not classified as transportation facilities in local plans.

The UPRR tracks that cross below I-5 include one mainline track and one siding track.

The Willamette River is not considered a navigable waterway for purposes of commercial navigation.

The current ADT is about 49,000 vehicles on I-5 in the project area and is predicted to increase to roughly 73,000 ADT by 2030.

3.12.3 Temporary Effects

3.12.3.1 No Build Alternative

The No Build Alternative would remove the decommissioned bridges and upgrade the detour bridges. Traffic would be maintained on I-5, Franklin Boulevard and the UPRR throughout construction associated with the No Build Alternative. Two lanes of traffic each direction would be maintained on I-5 and one lane of traffic would be maintained on each ramp at all times. Some short-term closures of Franklin Boulevard may be required during demolition, but these would be limited to a few hours.

It may be necessary to close the multiuse trails for short periods. Detours would be provided in those cases similar to what was done during construction of the detour bridge. The closures would be coordinated with park officials.

There would be short term closure of the railroad to set beams or other construction work. These would be coordinated with the UPRR to minimize rail traffic disruptions.

Franklin Boulevard would be used for access to the southern staging area. The northern staging area would be accessed via North Walnut Street off of Leo Harris Parkway southeast of Autzen Stadium, which is used as a recreation trail and closed to traffic within the park. The recreation trail would temporarily be converted to a haul route, as was done for construction of the detour bridge. Recreation trail users would be rerouted.

3.12.3.2 Build Alternative

Traffic would be maintained on I-5, Franklin Boulevard and the UPRR throughout construction of the Build Alternative. No detours would be required. Two lanes of traffic each direction would be maintained on I-5. One lane of traffic would be maintained on each ramp at all times. A detour ramp would be required during reconstruction of the Franklin Boulevard southbound on-ramp.

Some short term closures of Franklin Boulevard may be required during construction, but these would be limited to a few hours. There would likely be short periods when I-5 would be reduced to one lane in one direction, i.e., when connections to adjacent pavement or ramps are constructed.

It may be necessary to close the recreation trails for short periods, up to several days. Detours would be provided in those cases similar to what was done during construction of the detour bridge. The closures would be coordinated with the park officials.

There would be short term closure of the railroad to set beams or other construction work. These would be coordinated with the UPRR to ensure rail traffic disruptions are kept to a minimum.

Standard ODOT procedures would be followed for all road and lane closures.

Franklin Boulevard would be used for access to the southern staging area. The northern staging area would be accessed via Walnut Street. The recreation trail would temporarily be converted to a haul route as was done for construction of the detour bridge. A detour would be required for the recreation trail.

3.12.4 Permanent Effects

3.12.4.1 No Build Alternative

The No Build Alternative would provide safer bridges and would ensure long-term regional and statewide mobility. It would not support projected future traffic demands.

3.12.4.2 Build Alternative

The Build Alternative would provide new and safer bridges that would support long-term regional and statewide mobility if improvements to the system are needed in the future. A major safety improvement would be the use of standard width shoulders that would provide enough room for drivers to pull completely off the highway when they have emergencies. The Build Alternative would have no long term effects on Franklin Boulevard, the UPRR, or trails.

3.12.5 Indirect and Cumulative Effects

3.12.5.1 No Build Alternative

The No Build Alternative would have no indirect or cumulative effects. No changes in system capacity would result from the No Build Alternative.

3.12.5.2 Build Alternative

The Build Alternative would have no indirect or cumulative effects. The Build Alternative would provide bridges that would be wide enough to carry three lanes in each direction, but would be striped for two lanes in each direction. Restriping of the bridges to three lanes in each direction would require the widening of I-5 north and south of the bridges, which would involve additional environmental analysis, and agency and public review. This expansion is discussed as a future project in the TransPlan but is not funded and, therefore, not a reasonably foreseeable action. As such, the Build Alternative would not change the capacity of I-5.

3.13 Visual Quality

3.13.1 Methods and Coordination

The project team reviewed existing project documents, site and aerial photographs, and GIS data, and performed site visits to observe and document site conditions, determine areas visible both from and of the project site, and identify key views. The project team members also coordinated with local agency staff and participated in public involvement efforts. Of note regarding the assessment of visual quality is the high priority on aesthetics that has been voiced by the public through the CAG and broader public outreach efforts. There is a strong desire to improve the aesthetics of the project area and construct a bridge that is aesthetically pleasing, while being sensitive to its setting, and recognizing the significance of the community where it is located.

The project team used public input and the evaluation techniques outlined in the FHWA's Visual Impact Assessment for Highway Projects (FHWA, 1981) to identify the landscape setting and key public views, existing visual quality, and potential visual impacts. Key views were chosen to provide representative examples of the existing visual environment.

Visual effects of the project were assessed using FHWA methods. Three factors are considered when establishing the existing visual conditions and assessing the potential

visual impacts of the proposed project: 1) visual character, 2) visual quality, 3) viewer response.

Visual character describes existing visual resources. It involves identifying visual features within the landscape, patterns, and relationships between the features and patterns.

Visual quality is a quantitative assessment of the value of viewers' experience of existing conditions and project alternatives. Assessing visual quality results in visual quality scores that can be used to compare project alternatives. An analysis of the alternatives used a matrix system in which three visual quality criteria were evaluated:

- Vividness, which measures the distinctiveness or memorability of the view as comprised by its individual landscape features.
- Intactness, which measures the visual integrity of the patterns of features, and the extent to which the landscape is free from visually-encroaching elements.
- Unity, which measures the visual coherence, compatibility, and compositional harmony of the overall view.

Each of these criteria is independent and intended to measure only one aspect of visual quality. Scores are given from one to seven, where seven indicates high levels of vividness, intactness, or unity, and one indicates low levels. Scores for the three criteria were averaged to obtain an overall visual quality score. These scores were used to compare the impacts of the Build and No Build Alternatives.

- *Viewer response* is composed of the exposure and sensitivity of viewer groups to the visual environment. Exposure is based on viewer location, number, frequency, and duration. Sensitivity is based on the values and opinions of the viewer groups.

Computer simulations of the appearance of the proposed facilities at project completion were used to illustrate the visual impacts of the Build Alternative from three key viewpoints where the potential changes would be typical. Effects of the Build and No Build alternatives are described in terms of changes from the existing conditions. Evaluation of the Build Alternative considered the basic components of the proposed bridges, such as long span length and fewer piers, but did not differentiate between the bridge type options. Differences among the options were evaluated qualitatively and are discussed below.

3.13.2 Baseline Conditions

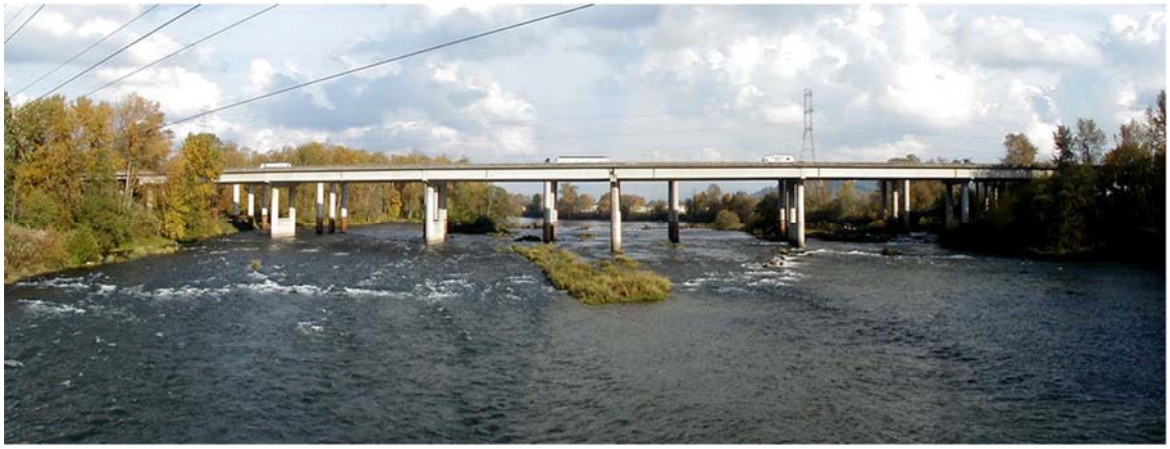
3.13.2.1 Key Views

The project team, in coordination with the CAG and PDT, identified three key views for analysis of visual impacts. The views were selected as representative based on input from the CAG and PDT, and the relatively large number and variety of viewers that would see the project from these locations. These views are:

- View 1: From Franklin Boulevard (roadway landscape unit)
- View 2: From Knickerbocker Bridge (ped landscape unit)
- View 3: From path under bridge in Alton Baker Park on the north shore of the Willamette River (ped landscape units).

The key views are illustrated in Figure 8.

Key View 1: From Franklin Boulevard looking west.



Key View 2: From Knickerbocker bridge looking east.

Key View 3: From path in Alton Baker Park looking south.

Figure 8: Key Views

3.13.2.2 Visual Character

The visual character of the project area is varied. Alton Baker Park north of the river features open space, wooded areas, and a park-like setting. The Canoe Canal runs through the park and a decommissioned bridge and detour bridge cross the Canoe Canal. The Willamette River is a dominant and aesthetically pleasing visual feature. Visual character south of the Willamette River is dominated by urban development (Franklin Boulevard, UPRR, commercial and residential development). All of the key views include the I-5 Willamette River Bridge as a dominant built element.

View 1 looks west from the south side of Franklin Boulevard and is generally urban in nature with the bridges, Franklin Boulevard, and the trail south of Franklin Boulevard as major visual elements in the foreground. The embankment that carries the UPRR tracks and Franklin Boulevard ramps is visible in the middleground, and the power transmission towers and trees located on Laurel Hill rise above the I-5 bridges in the background.

View 2 includes a panoramic view of the Willamette River as seen looking east from the Knickerbocker bicycle/pedestrian bridge over the river. This view is representative of the views from the shoreline areas on either side of the river looking toward the bridges, although vegetation blocks the view on most of the south shore. The river is the dominant visual feature of the foreground and provides an aesthetically pleasing and natural character to the view. The bridges, river, and riparian vegetation are the dominant visual elements in the middleground. The bridges provide a contrast to the natural appearance of the river and riparian areas. The multiple piers in the river on both bridges obstruct and divide views of the river upstream of the bridge and have a generally cluttered appearance. The river, vegetation, and hills are seen in the background.

View 3 provides a view of the Willamette River and bridges from the path on the north shore of the river. Riparian vegetation is visible in the foreground. Beyond the vegetation, the bridges and the river are the dominant visual elements in the middleground. As with View 2, the bridges provide a stark contrast to the natural appearance of the river. The bridges' multiple piers and urban appearance distract from the more natural visual characteristics of the river and shoreline vegetation. The background features the riparian vegetation of the river's south shore and the overhead power lines. The Franklin Boulevard ramps are visible beyond the shoreline trees.

3.13.2.3 Visual Quality

Visual quality is evaluated by considering the vividness, intactness, and unity present within a view. The project team scored visual quality using a evaluation matrix that allowed for numeric description from each of the three key views consistent with the FHWA method. Each of these criteria is independent and intended to measure only one aspect of visual quality (FHWA, 1981). The three criteria are averaged to obtain an overall visual quality score that is, in turn, used to characterize impacts. Table 10 presents the existing visual quality of the key views along with the criteria.

Table 10: Existing Visual Quality[1] – I-5 Willamette River Bridge Project Key Views

		Key View		
		View 1	View 2	View 3
View Orientation	Toward or away from project	Toward	Toward	Toward
View Position	Inferior, level, or superior	Inferior	Level/Inferior	Inferior

Table 10: Existing Visual Quality[1] – I-5 Willamette River Bridge Project Key Views

		Key View		
		View 1	View 2	View 3
Viewer Distance	From the project (feet, approximate)	500	500	100
	Landform	3	5	4
	Vegetative	3	5	4
Vividness	Water	NA	7	5
	Human-made	2	3	2
	Average	2.7	5.0	3.8
	Development	3	3	2
Intactness	Encroachment	3	3	2
	Average	3	3	2
Unity		3	4.3	3
Total Visual Quality		2.9	4.3	2.9

[1]FHWA VISUAL QUALITY CRITERIA (FHWA, 1981)

Vividness	Intactness		Unity	Total Visual Quality
Memorability of View Elements	Integration of Human and Natural Elements	Encroachment by Undesirable Elements	Compositional Harmony of the View	Average of Vividness, Intactness, Unity
7 = Very High	7 = Very High	7 = None	7 = Very high	7 = Very high
6 = High	6 = High	6 = Few	6 = High	6 = High
5 = Moderately High	5 = Moderately High	5 = Some	5 = Moderately high	5 = Moderately high
4 = Average	4 = Average	4 = Average	4 = Average	4 = Average
3 = Moderately Low	3 = Moderately Low	3 = Several	3 = Moderately low	3 = Moderately low
2 = Low	2 = Low	2 = Many	2 = Low	2 = Low
1 = Very low	1 = Very low	1 = Very many	1 = Very low	1 = Very low

3.13.2.4 Viewer Response

Viewer types include through travelers on I-5 passing through the Eugene-Springfield area, local travelers/commuters using I-5 and local streets for local trips, recreational users of the surrounding areas (including the trails and the Willamette River), and local residents who can see portions of the project area from their residences or neighborhoods.

Public input has indicated that the visual character and quality of the project area are of high importance to residents of the Eugene-Springfield area. The bridge crosses the Willamette River, a defining feature of Eugene-Springfield. The project area also includes an important and highly used park with a designated natural area (the Whilamut Natural Area) and unique cultural features. Further, the bridge is an important symbolic gateway between Eugene and Springfield as well as for the Willamette River valley.

3.13.3 Temporary Effects

3.13.3.1 No Build Alternative

The No Build Alternative would involve activities to demolish the existing, decommissioned I-5 bridges over the Canoe Canal, and over the Willamette River, Franklin Boulevard, and the UPRR. The No Build Alternative would also result in upgrades to the detour bridge for long-term use. The visual quality and character of the project area would be affected by the construction activities and equipment that would likely be used, including construction of temporary work bridges, use of cranes and other

large construction equipment, and staging and storage of construction equipment and materials at locations north and south of the Willamette River. Dust from demolition activity could also affect visual quality of the area. However, this would be minimized by following state and local regulations that require dust suppression activities like applying water or other dust suppressants and washing trucks and equipment. Construction activities would negatively affect the visual quality of all key views, particularly for recreational users of the park and river, users of the local transportation system, and local residents. The construction period would be about two years.

3.13.3.2 Build Alternative

The Build Alternative would involve construction activities to demolish the existing, decommissioned I-5 bridges over the Canoe Canal, Willamette River, Franklin Boulevard, and the UPRR, and construct new I-5 bridges, as well as reconstruct the roadway approaches and on- and off-ramps from Franklin Boulevard. Construction activities would include construction and demolition of temporary work bridges for demolition and bridge construction activities and removal of the detour bridge. Construction would be about four years in duration.

The visual quality and character of the project area would be adversely affected by the construction activities and equipment that would include construction of temporary work bridges, use of cranes and other large construction equipment, and staging and storage of construction equipment and materials at locations north and south of the Willamette River. Demolition, construction, and staging would adversely affect the visual quality and character of the project area during construction. Dust from demolition and construction activity could also affect visual quality of the area. However, this would be minimized by following state and local regulations that require dust suppression activities like applying water or other dust suppressants and washing trucks and equipment. Construction activities would have the greatest effect within the ped landscape unit and would negatively affect the visual quality of all key views, particularly for recreational users of the park and river, users of the local transportation system, and local residents.

3.13.4 Permanent Effects

3.13.4.1 No Build Alternative

The removal of one bridge under the No Build Alternative would result in a long-term, direct, minor beneficial effect on visual quality by reducing some of the existing cluttered appearance of the two bridges that cross the Willamette River and Franklin Boulevard. The remaining, retrofitted bridge would still represent a relatively nonharmonious human element in the landscape seen from the key views. Visual character would remain relatively unchanged. Visual quality was evaluated using the same matrix and criteria as used for the baseline condition, but projecting the conditions under the No Build Alternative. Table 11 presents the visual quality evaluation for the No Build Alternative.

Table 11: Visual Quality No Build Alternative

		Key View		
		View 1	View 2	View 3
Viewer Orientation	Toward or away from project	Toward	Toward	Toward
Viewer Position	Inferior, level, or superior	Inferior	Level/Inferior	Inferior
View Distance	From the project (feet)	500	500	100
	Landform	3	4	3

Table 11: Visual Quality No Build Alternative

		Key View		
		View 1	View 2	View 3
	Vegetative	3	5	4
Vividness	Water	NA	5	4
	Human-made	3	3	3
	Average	3	4.3	3.5
	Development	3	3	3
Intactness	Encroachment	3	3	2
	Average	3	3	2.5
Unity		3	3	3
Total Visual Quality		3	3.4	3.0

Viewer response would be similar to the baseline condition. Viewers would see essentially the same conditions with one less bridge and fewer piers; views of the river would be opened. Table 12 summarizes the overall visual impact determination for the No Build Alternative.

Table 12: Visual Impact Determination – No Build Alternative

Key View	Existing Visual Quality	Projected Visual Quality	Change in Visual Quality	Principle View Groups	Number of Viewers	Viewer Sensitivity	Frequency of Exposure	Duration of Exposure	Visual Impact
View 1	2.9	3.0	+0.1	Local Travelers	High	Medium	High	Medium	Beneficial Low
				Recreational Users	Medium	High	Medium	Medium/Long	Beneficial Low
View 2	3.4	3.4	0	Recreational Users	High	High	High	Long	None
View 3	2.8	3.0	+0.2	Recreational Users	High	High	High	Medium	Beneficial Low

3.13.4.2 Build Alternative

The Build Alternative would have a long-term beneficial effect on the visual quality of the project area by replacing the relatively cluttered appearance of the existing bridges with bridges that are more unified and harmonious. The Build Alternative bridges crossing the Willamette River would have substantially longer spans and fewer piers than the existing decommissioned and detour bridges. For the Willamette River crossing, the Build Alternative would have one set of bridge piers for each bridge near the center of the river (two piers total), replacing nine sets of piers in the river (total) for the existing bridges, which would have the effect of greatly opening the view of the river from surrounding vantage points, such as the view from Alton Baker Park and the river itself. Visibility and vividness of the surrounding landforms and vegetation would be enhanced over the existing conditions. Replacement bridges over the Canoe Canal would be wider than the existing bridges, but would be unified in appearance. Figures 9, 10, and 11 illustrate the appearance of the Build Alternative from the key views (using computer-generated renderings) and allow a comparison with the existing conditions. The Bridge Type Options are illustrated in this figure for comparison purposes. Different pier shapes for each bridge are shown in the renderings for illustrative purposes; pier shape would be determined as part of the final project design. The different effects of the design options are discussed below.

The Build Alternative bridges would present curving or arching shapes for the main bridge components. Public comments have indicated a preference for curving and arching shapes over straighter lines and angles. Pier shape, colors, textures, landscaping, and other aesthetic treatments would be determined during the final design of the project in cooperation with the local community.

Table13 presents the visual quality of the three key views with the Build Alternative.

Table 13: Visual Quality Build Alternative

		Key View		
		View 1	View 2	View 3
Viewer Orientation	Toward or away from project	Toward	Toward	Toward
Viewer Position	Inferior, level, or superior	Inferior	Level/Inferior	Inferior
View Distance	From the project (feet)	500	500	100
	Landform	3	4	4
	Vegetative	3	6	4
Vividness	Water	NA	6	5
	Human-made	3	4	4
	Average	3	5	4.3
	Development	4	4	4
Intactness	Encroachment	4	4	4
	Average	4	4	4
Unity		3	4	3
Total Visual Quality		3.3	4.3	3.8

Existing Conditions

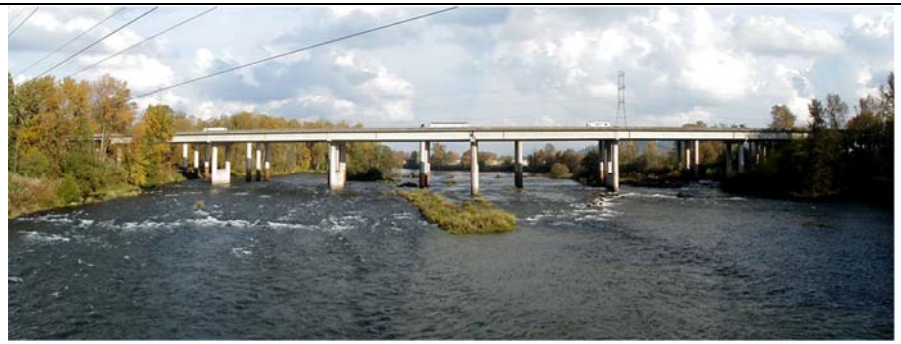
I-Girder Bridge Type

Box Girder Bridge Type

Deck Arch Bridge Type

Through Arch Bridge Type

Figure 9: Key View 1 – Existing Conditions and with Build Alternative Design Options (Bridge Type)



Existing Conditions

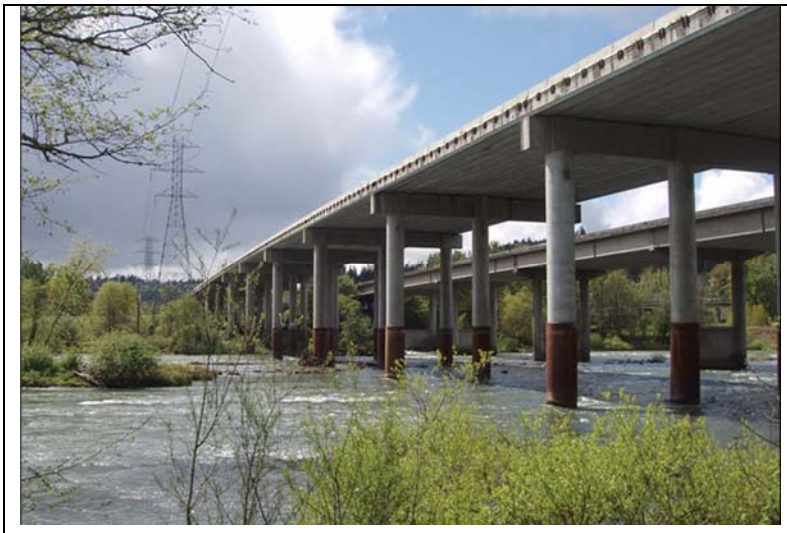
I-Girder Bridge Type

Box Girder Bridge Type

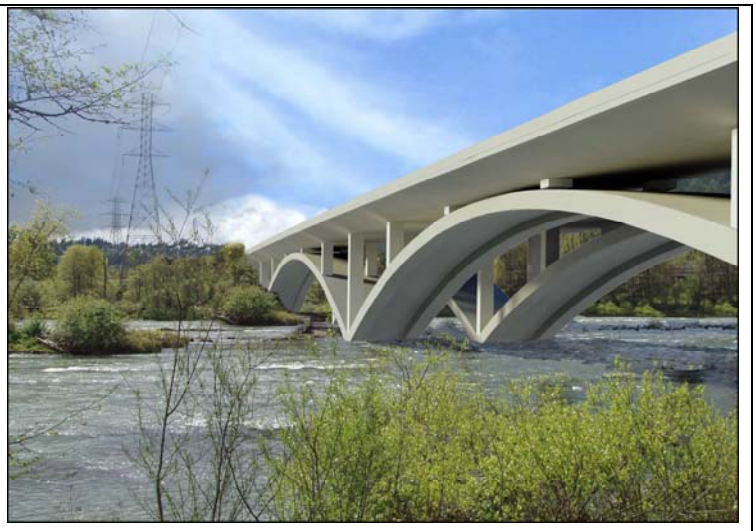
Deck Arch Bridge Type

Through Arch Bridge Type

Figure 10: Key View 2 – Existing Conditions and with Build Alternative Design Options (Bridge Type)



Existing Conditions



Deck Arch Bridge Type

Box Girder Bridge Type

I-Girder Bridge Type

Through Arch Bridge Type

Figure 11: Key View 3 – Existing Conditions and with Build Alternative Design Options (Bridge Type)

The Build Alternative would have a positive effect on viewer response. Viewers for the three key views would primarily be local recreational users of the trails and park. Primary viewers of View 1 would be travelers on Franklin Boulevard. For each of the views, the change in visual quality that is anticipated to result from the Build Alternative was considered in light of the numbers of viewers and their sensitivity, frequency of exposure, and the duration of their exposure to the view. Overall visual impact would be positive and would range from low (for Franklin Boulevard travelers) to high (for park users). Table14 summarizes the visual impact determination for the Build Alternative.

Table14: Visual Impact Determination – Build Alternative

Key View	Existing Visual Quality	Projected Visual Quality	Change in Visual Quality	Principle View Groups	Number of Viewers	Viewer Sensitivity	Frequency of Exposure	Duration of Exposure	Visual Impact
View 1	2.9	3.3	+0.4	Local Travelers	High	Medium	High	Medium	Beneficial Low
				Recreational Users	Medium	High	Medium	Medium/Long	Beneficial Medium
View 2	3.4	4.3	+0.9	Recreational Users	High	High	High	Long	Beneficial High
View 3	2.8	3.8	+1.0	Recreational Users	High	High	High	Medium	Beneficial High

Visual quality of views from I-5 would improve as a result of the Build Alternative. The primary viewer groups for views range from I-5 travelers making long distance trips to local travelers using the highway for commuting purposes. Viewer sensitivity of these viewer groups is generally low. The Build Alternative would provide a wider, modern facility with two separate bridges, but would not substantially change the visual quality of the views from I-5.

Design Options

The design options offer bridge types with differing visual qualities. All design options would provide more openness and arching or curving lines for the bridge over the Willamette River than the existing decommissioned and detour bridges. The options differ with respect to the degree of prominence of arching and curving lines. The deck arch and through arch have the most noticeable arching shape, and the I-girder and box girder types with less noticeable arching shape.

The through arch bridge is the only bridge type that provides a structural component that is visible above the bridge deck. Figure 12 provides a simulation of the view from I-5 for the through arch bridge type and the other bridge types. The other bridge types would allow for non-structural elements above the bridge deck as architectural or artistic treatments for the bridge.

The deck arch bridge is the only bridge type option that does not allow the same bridge type over the Willamette River to continue over Franklin Boulevard (see Figure 9). This is due to the horizontal clearance requirements over Franklin Boulevard. Thus, the deck arch bridge type over the Willamette River would not allow the continuity of single bridge type over both the river and Franklin Boulevard.

I-Girder, Box Girder, Deck Arch Bridge Types

Through Arch Bridge Type

Figure 12: View from I-5 Deck (Northbound)

3.13.5 Indirect and Cumulative Effects

3.13.5.1 No Build Alternative

The No Build Alternative would result in a long-term, direct, minor beneficial effect on visual quality by lessening some of the existing cluttered appearance of the two bridges that cross the Willamette River and Franklin Boulevard. The remaining, retrofitted bridge would still represent a relatively nonharmonious human element in the landscape seen from the key views. Key views have been affected by past and ongoing activities. The Regional Transportation Plan for Central Lane County Metropolitan Planning Organization identifies a number of planned roadway improvements in the project area that would upgrade several existing roadways and construct one new collector. Springfield is planning the redevelopment of the Glenwood area (southeast of the Willamette River bridge), from an industrial to a mixed use area; however, this proposal is in early planning and not considered “reasonably foreseeable” for the purpose of this analysis. Reasonably foreseeable future actions would not affect the visual quality and/or character of the key views and the visual environment of the project area.

3.13.5.2 Build Alternative

No indirect visual impacts would occur as a result of the Build Alternative. Cumulative impact analysis considers the effects of the Build Alternative in combination with past, present, and reasonably foreseeable future actions. Key views have been affected by past and ongoing activities. No reasonably foreseeable future actions (as noted above) are anticipated to affect the visual quality and/or character of the key views and the visual environment of the project area.

3.14 Water Resources

3.14.1 Methods and Coordination

Existing water quality conditions data are from the Oregon Department of Environmental Quality's (DEQ) water quality database (David Evans and Associates, 2006). Data from three sampling stations is available in the general project area: the Willamette River at Ferry Street, the Willamette River at Beltline Bridge, and the Willamette River at Greenway Bike Bridge. There are no water quality data available for Canoe Canal.

Impacts on water quality were assessed using FHWA methodology (DOT, 1990). Effects of construction activities and changes in impervious surface area under the Build and No Build alternatives were considered in the analysis. Heavy metals (copper, lead, and zinc) are the primary toxic pollutants in highway stormwater runoff. The alternatives were evaluated and compared to the existing conditions. The FHWA impact analysis addresses the potential toxic effect on aquatic plants and animals by modeling the amount of pollutants in highway runoff and the pollutant concentration of the receiving waters.

3.14.2 Baseline Conditions

The project area is located in the Willamette River basin, which occupies 11,478 square miles (about 180 miles long and 100 miles wide) which is home to 70 percent of Oregon's population. At the project site, the drainage area of the Willamette River is about 2,030 square miles, with a mean monthly low flow in August of about 1,100 cubic feet per second (cfs), a mean monthly high flow of about 10,000 cfs in January, and average annual flow of about 5,500 cfs (USGS, 2007).

The Canoe Canal is a naturally formed side channel of the Willamette River. Subsequent development of Eugene restricted its course. It is a concrete channel through most of the project area. Now the canal is used entirely for aesthetic and recreational purposes. The flow of the canal is not known, but is large enough to accommodate a canoe, kayak, or other small boat (Taylor, 2007).

Figure 13 shows the project site along with affected water bodies, wetlands, and the proposed stormwater treatment system.

This page left intentionally blank.

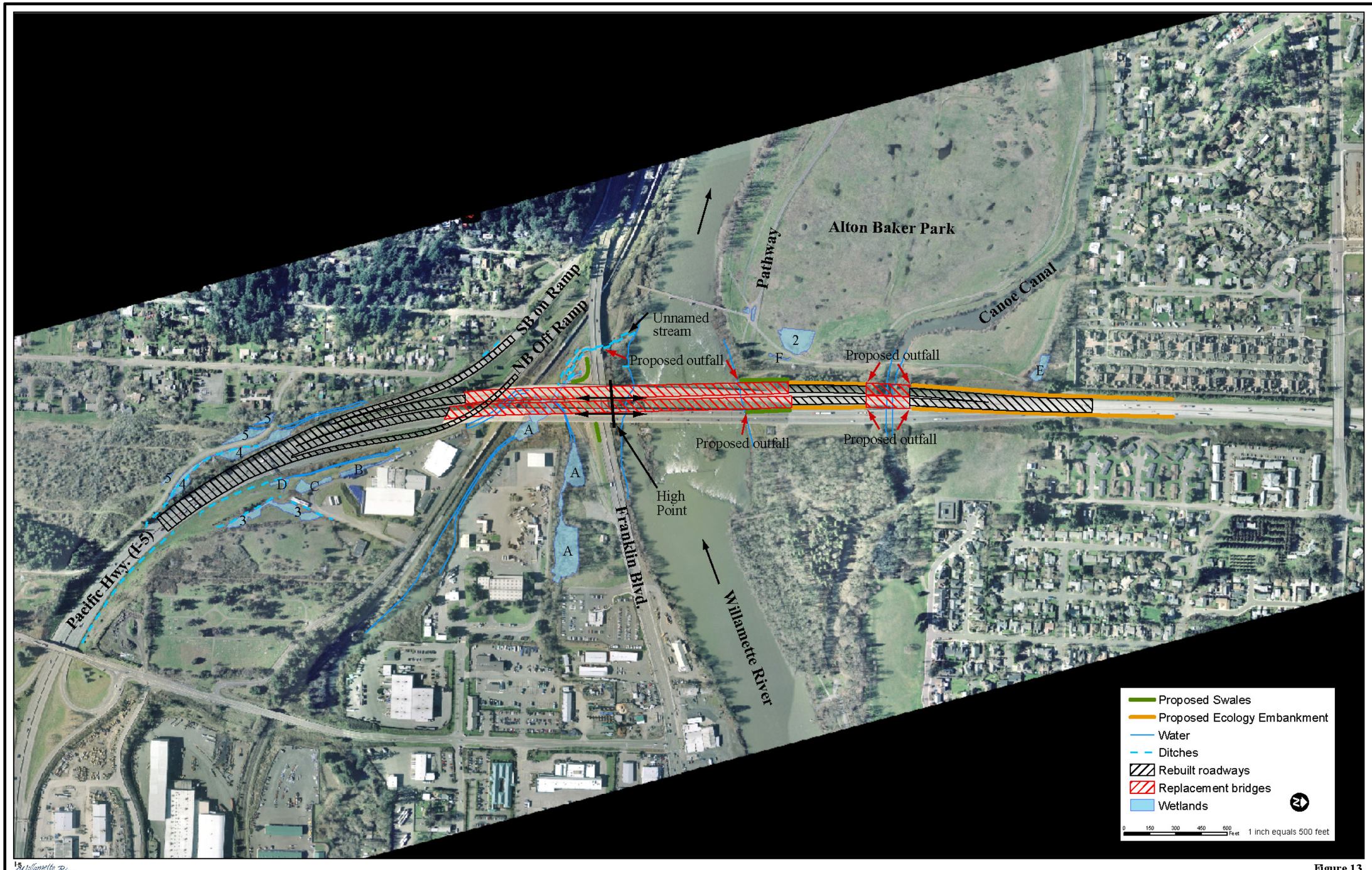


Figure 13
Location of Water Resources and Potential Water Quality Feature
I-5 Willamette River Bridge Project

3.14.2.1 Water Quality

The Willamette River in the vicinity of the project is listed on the DEQ's 303(d) list (Section 303(d) of the Clean Water Act) of water bodies that do not meet water quality standards. The Willamette River does not meet water quality standards for bacteria, mercury, and temperature. The DEQ has developed a plan for managing sources of these pollutants to improve water quality in the river. ODOT is a Designated Management Agency under the plan and is therefore responsible for implementing it with respect to ODOT facilities.

3.14.3 Temporary Effects

3.14.3.1 No Build Alternative

Alterations to the detour bridge and removal of the existing bridge would require one or two in-water work periods in the Willamette River. No in-water work would be needed to remove the existing bridge at Canoe Canal. Direct impacts of the No Build Alternative associated with in-water work include construction or removal of piers, which involve site preparation, dewatering and isolation, and rewatering once work is complete. Heavy equipment may be needed in the stream channel. There is also the potential for materials to drop into the waterway during demolition. In-water work effects would include an increase in turbidity from bridge debris and streambed sediment and temporary alteration of river flow direction.

Removal of the existing bridge piers, including any associated excavation and filling of pier footprints, would be in compliance with the Clean Water Act (CWA) Section 404 Permit, the Department of State Lands (DSL) Removal/Fill Permit, and the CWA Section 401 water quality certification. These permits would include conditions of approval or compliance standards to minimize impacts to water resources.

Staging of construction equipment, inadvertent hazardous material spills from vehicles and construction activities, and vegetation removal resulting in soil compaction and increased runoff and sedimentation, could adversely affect water resources.

The demolition techniques employed in removing the old bridge would determine the extent of impacts to water resources. Techniques and sequence of deconstruction would be determined as part of final design. Concrete blocks, concrete dust, and building materials such as rebar or other metals have the potential of entering the Willamette River and other water bodies in the project area. Whichever removal technique is selected, specific BMPs would be included in permit compliance to limit effects to surface waters. Bridge demolition is typically accomplished using heavy equipment to remove deteriorated bridge segments. Most materials taken from the bridge would be reused or recycled.

3.14.3.2 Build Alternative

Construction activities for the Build Alternative would require four in-water work periods, including in-water work for bridge demolition. Direct impacts associated with in-water work include construction or removal of piers, which involves site preparation, dewatering and isolation, and rewatering once work is complete. There is also the potential for materials to drop into waterway during demolition and construction. Increased turbidity associated with in-water work would occur, but because the permanent piers for the new bridge and temporary piers for the work bridges would be drilled or driven into bedrock, impacts are expected to be small. Rewatering of the

isolation area around the piers following construction could increase turbidity, but the increase would be slight and limited to a very small area.

Removal and/or excavation of the existing bridge piers and construction of the new bridge piers would be in compliance with the CWA Section 404 Fill Permit, the DSL Fill Permit, and the CWA Section 401 water quality certification. These permits include requirements to minimize the impacts to water resources.

Construction activities would include vegetation removal and soil disturbance, leading to erosion and increased sedimentation to wetlands and waterways. There is also the potential for releases of hazardous materials and wastes such as oil, grease, and fuels used for construction equipment or releases of products (concrete, silicates, etc.) which, if entered into wetlands or waterways, would result in effects to water quality downstream of the project area.

There are no expected impacts to the groundwater system from construction activities. Vegetation removal and soil compaction at staging sites could inhibit infiltration of groundwater; however, these areas would be small in size and would not present impacts to the groundwater system.

3.14.4 Permanent Effects

3.14.4.1 No Build Alternative

Permanent effects to water quality from the proposed project come mainly from stormwater runoff from the bridge deck. Currently, there is no stormwater treatment for the existing bridges; stormwater runs off the bridge deck without treatment into the Willamette River either through overland flow or through scuppers on the bridge. The No Build Alternative would continue to allow untreated stormwater to enter the river; however, the estimated pollutant concentrations for copper, lead, and zinc are still below the acute and chronic levels set by EPA's national criteria for fresh water (Table 9) (EPA, 2007). The pollutant load calculations do not factor in the impervious area of the decommissioned bridge since it carries no traffic and therefore does not produce polluted runoff. The No Build Alternative would not affect the 303(d) listing of the Willamette River.

The No Build Alternative would remove the existing bridge and approach roads and reduce the amount of impervious surface in the study area by 11 acres.

3.14.4.2 Build Alternative

Under the Build Alternative, 11 acres of impervious surface from the detour bridge and approaches would be removed, and construction of the new bridges would add 14 acres of impervious surface, for a net increase of about three acres. The impervious area of the decommissioned bridge is not included in the pollutant loading calculations (Table 15) since it does not carry any traffic and therefore does not produce polluted runoff. There would be an increase in pollutant loads but it would be a relatively small increase because the new construction would include stormwater treatment facilities. The projected pollutant loads are provided in Table 15. Stormwater detention would not be required as the volume of stormwater coming off the bridges is not large enough to present alterations to the flow of the Willamette River (Fletcher, 2007).

Table 15: Estimated Pollutant Loads from Existing and Proposed Conditions

				No Build Alternative -11 Acres			Build Alternative -14.2 Acres		
	Exist. Concentration in river (mg/L)[1]	EPA Criteria		Model output (mg/L)	Model Output (lbs/yr)	Mean Storm Event Flow Volume (cubic feet)	Model output (mg/L)[6]	Model output (lbs/year)	Mean Event Flow Volume (cubic feet)
		Acute (mg/L)2	Chronic (mg/L)2						
Copper	0.0005	0.013	0.009	0.00053	7.1858	32405	0.00052	8.3288	37560
Lead	0.001	0.065	0.0025	0.00101	10.3181	32405	0.00101	11.9593	37560
Zinc	0.0085	0.12	0.12	0.00864	29.4802	32405	0.00858	34.1695	37560

NOTES:

1-Dissolved concentrations from DEQ LASAR database, measurements dated 8/21/2006

2- EPA National Criteria for freshwater http://www.epa.gov/waterscience/criteria/wqcriteria.html

3- Concentration in river for existing conditions (11 acres impervious)

6- Concentration in river after installation of proposed bridge with stormwater treatment (14.2 acres)

With the minimal change in stormwater volumes and water treatment prior to discharging to the Willamette River, the Build Alternative is expected to have a negligible effect on water quality.

3.14.5 Indirect and Cumulative Effects

3.14.5.1 No Build Alternative

Indirect effects are caused by the proposed project, but occur later in time and are further removed in distance than direct effects.

The No Build Alternative would not change traffic patterns, ADT rates, or land use, nor would it change the area of pollution-generating impervious surfaces. Because activities of the No Build Alternative are limited to removal of the old bridge and upgrading the detour bridge, there are no indirect effects to water resources expected.

Cumulative impacts include past, present, or other reasonably foreseeable future actions that, when considered together with the No Build Alternative, may have a cumulative effect on the environment.

Because the only effects of the No Build Alternative would result from the demolition of the decommissioned bridge, and because the bridge demolition and upgrades would not contribute to existing water quality problems, no cumulative impacts are expected to occur to water resources.

3.14.5.2 Build Alternative

Indirect effects are caused by the proposed project, but occur later in time and are further removed in distance than direct effects.

The project would result in filling of about 0.25 acre of wetland (OBDP, 2007g); however, because this wetland area does not serve any stormwater treatment functions from the bridge, no indirect effects to water quality are expected to occur from removal of this wetland. Because the build alternative does not change any traffic patterns or result in increased capacity, no indirect effects to water quality are expected.

Cumulative impacts include past, present, or other reasonably foreseeable future actions that, when considered together with the Build Alternative, may have a cumulative effect on the environment.

Because the adverse effects of the Build Alternative would be temporary, and because the project would not contribute to existing water quality problems, no cumulative impacts are expected to occur to water resources.

3.15 Wetlands

3.15.1 Methods and Coordination

Wetlands in the project area are regulated by the U. S. Army Corps of Engineers (USACE) and DSL. The project team reviewed existing information on wetlands and conducted site inspections in April and May 2007. The reviewed included:

- USFWS National Wetland Inventory (NWI) Mapping (USFWS, 2007)
- Local Wetland Inventory (LWI) for the Cities of Eugene and Springfield
- National Resource Conservation Service (NRCS), Soils Survey of Lane County, Oregon (1987) and List of Hydric Soils (2006)
- Review of previously approved wetland delineations
- Draft Wetland Technical Reports (ODOT, 2006)
- Aerial photographs.

Wetlands were determined based on the presence of wetland hydrology, hydric soils, and hydrophytic vegetation. The wetland boundaries and classifications described in this section are based on approved USACE and DSL methods and protocols for conditions observed within the project study area. Final wetland boundaries may vary after review and acceptance by the USACE and DSL.

3.15.2 Baseline Conditions

There are a total of 10 wetlands located within the project area totaling 3.9 acres. Locations of these wetlands are illustrated in Figure 12. Table16 summarizes the wetlands found within the project area.

Table 16: Project Area Wetlands

Wetland	Size (Acres)	Description
A	1.76	Located underneath I-5 bridges, south of Willamette River
B	0.12	Sustained by stormwater runoff from nearby industrial area
C	0.18	Separated from wetland C by existing compacted fill aggregate

Table 16: Project Area Wetlands

Wetland	Size (Acres)	Description
D	0.06	Mainly a roadside ditch that discharges into stream near I-5
E	0.17	Associated with a entrenched stream west of I-5
F	0.03	Adjacent to Whilamut Natural Area, appears to be man-made
2	0.16	Connected to wetland F via plastic pipe
3	0.49	Connected to wetland D and unnamed stream
4	0.66	Supported by stormwater from nearby roadway ditch
5	0.26	Wetland hydrology provided from Augusta/Laurel Valley Creek

All wetlands generally scored low to medium for habitat functions because of the proximity to urbanization and heavy traffic, the degraded nature of most of the vegetation communities, and their small sizes. Anadromous fish habitat in wetlands south of the Willamette River is not applicable because the culvert under Franklin Boulevard, which connects these wetlands to the river, prevents fish passage. The culvert has a drop of about one foot at the outlet onto riprap with no pool. Only Wetland A and Wetland 5 (Augusta Creek/Laurel Valley Creek associated with the wetland) have enough open water for possible resident fish habitat. Anadromous fish habitat north of the Willamette River is present in Canoe Canal (Patterson Slough). Although Canoe Canal is likely to provide no salmonid spawning habitat because of silty substrate, it likely serves as off-channel rearing habitat for steelhead and resident trout as well as Chinook salmon. Canoe Canal also provides some potential Oregon chub habitat (ODOT, 2006a).

3.15.3 Temporary Effects

3.15.3.1 No Build Alternative

The No Build Alternative would result in clearing and temporary fill for construction access, grading activities, and bridge pier upgrades. About 0.49 acre of wetlands would be temporarily disturbed during construction activities. The impacts of removing wetland vegetation would produce 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. Accidental hazardous materials spills or leaks and improperly disposed stormwater could enter wetlands impair water quality and damage wetland plants and wildlife.

Wetlands temporarily affected during construction would be restored to pre-construction conditions following the completion of work.

3.15.3.2 Build Alternative

The Build Alternative would result in the clearing and temporary fill for construction access, grading activities, roadway construction, and bridge construction and demolition. The amount of temporary impacts would be the same as those of the No Build Alternative: about 0.49 acre of wetlands. The effects to wetland functions would be the same as discussed in the No Build Alternative.

Table 17 presents a summary of wetland impacts from the Build Alternative.

Table 17: Summary of Wetland Impacts From Build Alternative

Wetland	Temporary (acres)	Permanent (acres)
2	0.14	0.0
3	0.01	0.0

Table 17: Summary of Wetland Impacts From Build Alternative

Wetland	Temporary (acres)	Permanent (acres)
4	0.0	0.14
5	0.0	0.0
A	0.31	0.1
B	0.0	0.0
C	0.0	0.0
D	0.0	0.01
E	0.03	0.0
F	0.0	0.0
Total	0.49	0.25

3.15.4 Permanent Effects

3.15.4.1 No Build Alternative

Permanent direct impacts would occur from operational activities and would include stormwater runoff from existing impervious surfaces. Pollution-generating impervious surfaces would be the same as the baseline conditions and would not change with the No Build Alternative.

The No Build Alternative would result in a permanent gain of wetlands and waters from the removal of the decommissioned bridge. A total of about 0.02 acre of wetlands would be restored. Permanent vegetation plantings in the wetland would increase the number of plant and tree seed banks. The project would eradicate some of the noxious weeds through vegetation and seed bank removal. Conversely, there is a potential to introduce additional invasive species with proposed improvements.

3.15.4.2 Build Alternative

The Build Alternative would result in the permanent loss of some wetlands and waters within the project area. A total of about 0.25 acre of wetlands would be permanently lost from construction of the new bridges (Options A or B). Impacts to wetland A would be about 0,02 acres more with the through arch bridge design because the footings would be wider. The permanent impact to wetlands would be offset slightly by restoration of about 0.01 acre of wetlands with the removal of the temporary and decommissioned bridge piers.

Shading from the placement of the two new replacement bridges to Wetland A is not expected to cause a shift in species composition. Wetland A is partially shaded under baseline conditions. The new bridges would have enough clearance over Wetland A and adjacent areas, which would allow light to penetrate beneath the bridges, thus providing necessary resources for photosynthesis and growth for wetland plant species.

No direct permanent wetland impacts would occur with the replacement of the Canoe Canal bridges.

3.15.5 Indirect and Cumulative Effects

3.15.5.1 No Build Alternative

No indirect impacts to wetlands would result from the No Build Alternative. Staging areas would be located outside of wetlands. The No Build Alternative would restore a very

small area of wetlands (0.02 acres) and would not contribute to a significant cumulative effect on this resource.

3.15.5.2 Build Alternative

No indirect impacts to wetlands would result from the Build Alternative. Staging areas would be located outside of wetlands. The Build Alternative would result in 0.25 acre of wetlands impacts, and 0.01 acre of wetlands would be restored. These impacts would not contribute to a significant cumulative effect on wetlands.

This page left intentionally blank.

4.0 Mitigation and Conservation Measures

ODOT will take the following measures to avoid environmental impacts, conserve resources, and otherwise minimize environmental impacts as part of the design and construction of the I-5 Willamette River Bridge Project.

4.1 Air Quality

Construction contractors are required to comply with OAR 340-208-0210 and LRAPA 48-015, requiring that reasonable precautions be taken to avoid dust emissions during construction activities.

No long-term operational air quality impacts are anticipated; therefore, no mitigation is required.

4.2 Archaeology

While every effort was made to examine the area of potential effect in a fashion that would reveal buried cultural material, it is possible that some construction activities may affect unknown intact archaeological deposits. In the event that buried cultural resources or deposits are exposed during construction, Oregon State laws (ORS 97.740 – 97.760, 358.905 – 358.955, and 390.235), as well as various federal laws and regulations require that work in the vicinity of such finds immediately be suspended. SHPO and ODOT should be notified, and a professional archaeologist called in to evaluate the significance of the find and recommend a subsequent course of action in consultation with SHPO, ODOT, and the appropriate tribal governments.

4.3 Biology

4.3.1 Species Avoidance

The project does have the potential to impact fish and wildlife species during construction activities. To avoid fish and wildlife species and minimize temporary impacts from construction activities, all applicable OTIA III State Bridge Delivery Program EPS will be implemented to reduce the extent of direct and indirect impacts to fish and wildlife species. These include:

- Fish avoidance, including in-water work timing
- Cessation of work under high flow conditions
- Fish screens for water in-takes or diversions
- Providing for fish passage during and after construction and prepare a Fish Passage Plan for submittal and approval from ODFW
- Hydro-acoustic measures identified in the Noise Attenuation Plan
- Isolation of the work area and release of fish species captured during isolation. .
- Wildlife avoidance to minimize injury and death to wildlife species by incorporating timing restrictions under the MBTA, including no removal of trees being used for nesting during the breeding season.
- Apply exclusionary methods to prevent nesting activities before March 15

- Maintain existing and re-establish connectivity between aquatic and upland habitats for wildlife movement
- Incorporate bat habitat into the design of the new bridges.

4.3.2 Habitat Avoidance and Removal Minimization and Restoration

In addition to affecting fish and wildlife species directly, the project also has the potential to impact fish and wildlife habitat during construction activities. ODOT will coordinate with ODFW through the design process to identify opportunities to minimize habitat disturbance. To avoid and minimize potential impacts to fish and wildlife species habitat during and after construction activities, all applicable OTIA III State Bridge Delivery Program EPS will be implemented to reduce the extent of direct and indirect impacts to habitat. These include:

- Minimize effects to natural stream and floodplain by keeping the work area to the smallest footprint needed.
- Prepare and implement a plan to prevent construction debris from dropping into the Willamette River and to remove materials that may drop with a minimum disturbance to aquatic habitat.
- Prepare site restoration plans for upland, wetland, and streambank areas to include native plant species and noxious weed abatement techniques, and use large wood and rock as components of streambed protection treatments.
- Flag boundaries of clearing limits and sensitive areas to be avoided during construction.
- Coordinate with Willamalane Park and Recreation District and the Eugene Parks and Open Space Division regarding sensitive areas in Alton Baker Park and the Whilamut Natural Area that should be avoided during construction.
- Restore and revegetate disturbed areas.

4.4 Geology

All earthwork will require temporary erosion and sediment control until permanent control is established. Earthwork along the riverbanks should include engineering controls to prevent movement of loose soil into the river. Finished slopes will be constructed under the guidance of an engineer to prevent over-steepening of the slopes and to anchor loose material. In-water work should include construction of cofferdams or similar BMP to control releases of sediment into the river. In-water work will be completed during the in-water work periods agreed to between ODOT and Oregon Department of Fish and Wildlife.

4.5 Hazardous Materials

Construction contractors will remove and properly dispose of hazardous materials, if encountered, such that any remaining material not present a risk to the general public or the environment via subsurface movement away from the source areas. The contractors will also contain demolition waste to prevent potentially hazardous components from entering the environment

4.6 Historic Resources

In accordance with the requirements of Section 106 of the National Historic Preservation Act, ODOT and FHWA consulted with the Oregon State Historic Preservation Office regarding the proposed project's effects of the Mill Race. SHPO concurred with a determination that the project would have no adverse effect on the Eugene Millrace and Dam. ODOT will work with local historical societies to develop and install an interpretive sign in the vicinity of the Eugene Millrace and Dam.

4.7 Land Use

ODOT will acquire all required land use permits and approvals prior to beginning construction.

4.8 Noise

4.8.1 Mitigation of Noise During Construction

The following construction noise abatement measures will 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.
- 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 any rock crushing or screening operations, if 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.

4.8.2 Mitigation of Permanent Noise

The ODOT *Noise Manual* lists a number of noise mitigation measures that can be considered for reduction of noise levels at impacted properties. These include truck restrictions, speed restrictions, alignment changes, and traditional noise barriers. Mitigation of the traffic noise impacts through truck or speed restrictions, or changes in the horizontal or vertical alignment was considered but rejected as inconsistent with the purpose and nature of the project, and because of the importance of I-5 as a freight route.

The ODOT *Noise Manual* contains criteria for both noise reduction effectiveness and cost-effectiveness to be used in analyzing noise walls. For a residence to be considered to be "benefited" by a noise wall, the proposed wall must achieve at least a 5-dBA noise reduction, with a noise-reduction goal of 7 to 8 dBA. The number of residences benefited and the degree by which they are benefited determines cost-effectiveness. The ODOT *Noise Manual* states that a reasonable cost per residence for noise abatement is a maximum of $25,000. Noise wall costs are calculated using the ODOT standard cost for pre-cast post and panel walls of $20 per square foot. This cost includes a 30% engineering and contingency cost, but does not include additional costs such as right-of-way acquisition.

Noise walls are generally unable to achieve effective noise reductions when interrupted by driveways. Walls for single, isolated residences are not usually able to meet the ODOT minimum noise reduction goals and also meet the cost-effectiveness criteria. In addition, mitigation in the form of noise barriers is typically not recommended for commercial or industrial areas. Commercial properties often rely on visual exposure to the roadway to attract customers and provide convenient access to their facility.

A discussion of noise abatement is included below for those receptors predicted to have noise impacts under the 2030 Build Alternative. (Locations of the receptors are shown in Appendix B, Figures B-1 through B-6).

Receptors 2, 4, 5, 8, 9, 10, and 11

A noise wall was evaluated to reduce noise impacts predicted in the Anderson Lane subdivision on the east side on I-5 at the northern end of the project area. The noise wall was modeled in the ROW between the freeway and the residences.

A wall in this location was designed to provide the required noise reductions at residences behind the wall. The analysis found that the wall needed to be 13-feet high in order to provide the required noise reductions. A 13-foot wall in this location would be able to provide at least a 5-dBA noise reduction to six residential properties. The cost of the wall on a per benefited-residence basis was calculated to be about $31,200. The cost of a noise wall in this location exceeds the maximum allowable cost per benefited residence and is therefore not recommended.

A map of the exact location of the noise wall analyzed is shown in Appendix B, Figure B-7.

Receptors 20, 21 and 22

Receptors 20, 21, and 22 fall within the Alton Baker Park and Eastgate Woodlands on the north bank of the Willamette River. Public use areas in this area are predominantly pedestrian pathways. There are no picnic areas, seating areas, or other use areas where members of the public would be expected to spend significant amounts of time. Noise walls were therefore not recommended for the park areas.

Receptor 24

Receptor 24 represents a single residential property with direct driveway access onto Franklin Boulevard. Noise walls are generally unable to achieve effective noise reductions when interrupted by driveways. In addition, walls for single, isolated residences are not usually able to meet the ODOT minimum noise reduction goals while also meeting the cost-effectiveness criteria.

Noise walls are unlikely to be effective in this location and are therefore not recommended in this case.

Receptors 45 and 67

Receptors 45 and 67 both represent single light industrial/commercial properties. Noise mitigation is not usually recommended for commercial properties.

Receptors 31, 32, 35, 36, 37, 39, 40, 42, 43, 44, 48, 49, 50, 51, 53, 54, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 68, 69, 71, 72, 73, 74, 75, and 76

These receptors are located in the Laurel Hill residential neighborhood on the west side of I-5, south of the southbound on-ramp to I-5 from Franklin Boulevard. A noise wall located on the south edge of the southbound on-ramp to I-5 from Franklin Boulevard was evaluated to reduce noise levels in the Laurel Hill neighborhood. The location of this noise wall is shown in Appendix B, Figures B-8 through B-11.

Noise wall panel heights in this location were optimized to between 12 and 16-feet in height to provide the required noise reductions at residences behind the wall. A 12- to 16-foot wall in this location would be able to provide between 5- and 9-dBA noise reductions to thirty residential properties. The cost of the wall on a per benefited-residence basis was calculated to be about $18,000. A wall in this location meets the ODOT noise reduction effectiveness and cost-effectiveness criteria.

The final decision on noise mitigation will be made after public input and during the final design process. Should the project design significantly change, or should the noise impacted residents be in opposition to the recommended noise mitigation, the proposed noise mitigation may not be incorporated into the project.

Receptors 77 and 79

Receptors 77 and 79 fall within the Laurel Hill Cemetery. There are no defined public use or seating areas within the cemetery grounds, and the property line facing I-5 is about 1,000 feet long. Providing a 1,000 foot noise wall would entail significant cost and is therefore not recommended.

4.9 Right-of-way

To minimize potential temporary impacts from the construction staging on park land to the extent practicable, the contractor should stay within ODOT easement or right-of-way and not encroach into the park or wetland areas.

If construction staging is located in any park, the contractor will be required to develop a traffic management plan for continued use of the trails.

4.10 Section 4(f) and 6(f)

ODOT will consult with and develop a documented agreement with the Willamalane Park and Recreation District and with Eugene Parks and Open Space Division regarding the measures taken to avoid and minimize impacts such that the temporary occupancy of the park areas during construction would not be considered a "use" of the Section 4(f) property. Potential measures to avoid and minimize impacts during construction include:

- The construction contractor will minimize the areas used for material storage and staging to the extent practicable.
- Trails will, to the maximum extent practicable, be kept open, safe, and useable during construction. A continuous route across ODOT right-of-way for the bicycle/pedestrian pathways would be maintained on both the north side and the south side of river during construction. The construction contractor will, in coordination with park officials, prepare a traffic control plan for the park trail system.
- The construction contractor will coordinate with park officials and community groups on any temporary detours of trails.
- Areas disturbed by construction will be restored to their preconstruction conditions, or enhanced where degraded conditions exist prior to disturbance by construction.
- Any reconstruction and/or realignment of trails will be done in accordance with applicable design standards.

In addition, if affected park areas are determined to be encumbered under Section 6(f) of the Land and Water Conservation Act, temporary occupancy of the park areas would be considered a conversion of a 6(f) property to non-recreation use. ODOT will consult with the park agencies and Oregon Parks and Recreation Department and National Park Service to confirm the area's status under Section 6(f) and regarding necessary actions to address any conversion.

4.11 Socioeconomics

To avoid and minimize the potential impacts of the project, measures such as the following will be incorporated into the project and implemented during construction and operation of the project.

4.11.1 Measures during Construction

A Traffic Management Plan (TMP) will be prepared and implemented. If local streets must be temporarily closed during construction, detour routes will be provided and clearly marked with signs. The TMP will include an emergency vehicle routing plan to minimize the risk of increased response times during construction.

- ODOT will coordinate with school districts prior to beginning construction activities.
- ODOT will coordinate with emergency services prior to beginning construction activities.
- ODOT will coordinate with the Lane Transit District to minimize potential effects on bus services.
- Access to businesses will be maintained throughout the construction period through careful planning of construction activities, and through an awareness of the need to provide adjacent properties with reasonable access during business hours. Appropriate signs will be posted communicating to potential customers that businesses are open during construction.
- Daytime street closures will be kept to a minimum to provide access to businesses during regular business hours. Where possible, construction near residences will be restricted to daytime hours. Construction will be restricted on legal holidays (see Section 4.6). Any exception will require approval by the ODOT construction Project Manager.
- Trails, bicycle lanes and sidewalks will, to the maximum extent practicable, be kept open, safe, and useable during construction. A continuous route across ODOT right-of-way for the bicycle/pedestrian pathways would be maintained on both the north side and the south side of river during construction. Where detours of trails, bicycle lanes, or sidewalks may be necessary, signing and/or flagging will be provided to direct users through the detour.
- Removal of mature vegetation will be limited to the minimum area necessary for construction and staging activities.
- OTIA III CS^3 measures regarding regional economic stimulus, diversity, and public involvement will be implemented and measured.

4.11.2 Measures during Operation

To minimize the potential impacts of operation, ODOT may implement the following mitigation measures:

- Place additional lighting only in areas deemed necessary for safety. Use directional lighting when feasible to minimize nighttime glare to surrounding areas.
- Any reconstruction and/or realignment of trails will be done in accordance with applicable design standards.

4.12 Transportation

A Traffic Management Plan (TMP) will be prepared and implemented as described in section 4.9 above.

4.13 Visual Quality

ODOT will continue to work with the community, through the CAG and other outreach, throughout the design process to get input on the bridge type and specific bridge design features, such as architectural treatments, textures, color, illumination and landscaping. Outreach to and involvement of the community in the bridge type selection and other

design issues may include: on-line surveys, public workshops, newsletters, and web-site updates.

4.14 Water Resources

Effects to water resources during construction and operation of the project will be minimized through the implementation of mitigation outlined in the OTIA III State Bridge Delivery Program Environmental Performance Standards.

Potential temporary impacts to water quality during construction will be mitigated through project-implemented measures. Standard BMPs and erosion control practices will be implemented during construction to minimize water quality impacts to water resources. These measures will follow the ODOT Hydraulics Manual, ODOT Special Specifications, and local stormwater requirements. The following measures will be implemented to minimize potential impacts to water resources:

Prepare a Pollution and Erosion Control Plan that contains the elements outlined in Sections 280.00 and 290.30 of ODOT's *Standard Specifications for Construction* (2002) and that meets requirements of all applicable laws and regulations. The Pollution and Erosion Control Plan will include all applicable water quality measures as outlined in the OTIA III State Bridge Delivery Program Environmental Performance Standards.

- Schedule excavation, grading, and paving activities for dry weather periods, if possible.
- Comply with the requirements of the ODOT's Regional DEQ1200CA National Pollutant Discharge Elimination System (NPDES) permit for all construction runoff.
- Limit staging areas to the minimum size necessary to complete the project.
- Follow the terms and conditions of ODOT's most recent drilling programmatic biological opinion.
- Obtain and comply with all required permits and facility approvals for discharges to surface water, storm drains, or sanitary sewers or for land application.
- Prepare and implement a Stormwater Management Plan that slows the entry of water into the soil and improves the long-term water quality conditions associated with pollutant loading from the project.

4.15 Wetlands

4.15.1 Wetland and Water Impacts (Temporary and Permanent)

A Compensatory Mitigation Plan and Site Restoration Plan will be developed so the project meets regulatory requirements of the OTIA III Statewide Bridge Delivery Program as approved by regulatory agency staff.

Compensatory mitigation will be consistent with all program-specific EPS and regulatory requirements, and may include:

- Re-establishment or rehabilitation of natural or historic habitat functions or wetlands functions and values when self-sustaining, natural processes are used to provide the functions.

- Coordination of proposed restoration in Alton Baker Park with local park agencies.
- Participation in ODOT's conservation banks, as approved in writing by the Services (NMFS and USFWS), DSL, and USACE.
- Participation in federally-approved mitigation banks and regulatory or authority-approved ODOT Comprehensive Mitigation/Conservation Strategy (CMCS) mitigation sites.

This page left intentionally blank.

5.0 References

Black, G., Wang, Z., Wiley, T., Wang, Y., and Keefer, D.
2000 Relative Earthquake Hazard Maps of the Eugene-Springfield Metropolitan Area, Lane County, Oregon. State of Oregon Department of Geology and Mineral Industries.

City of Springfield
2006 Springfield Development Code.

Connolly, Thomas J., Helzer, Margaret, and O'Neill, Brian
2003 McKenzie and Willamette River Bridges, I-5 Detour and Repair Sections, Pacific Highway (I-5), Lane County. Report to the Oregon Department of Transportation by the Museum of Natural History, University of Oregon. On file at the Oregon State Historic Preservation Office, Salem.

David Evans and Associates
2006 I-5 Willamette River Bridge Project Draft Water Resources Technical Report

Department of Land Conservation and Development (DLCD)
2006 Oregon Statewide Planning Goals. OAR Chapter 660, Division 015. Latest goal amendment occurred in February 2006. http://www.lcd.state.or.us/LCD/docs/goals/goal_adoption_amendment_dates.pdf.

Department of Transportation (DOT)
1990 Pollutant Loadings and Impacts from Highway Stormwater Runoff. Publication No. FHWA-RD-88-006. April, 1990

Federal Highway Administration (FHWA)
1981 *Visual Impact Assessment for Highway Projects*. Publication No. FHWA-HI-88-054. March 1981.
2000 An Overview of Transportation and Environmental Justice. http://www.fhwa.dot.gov/environment/ej2000.htm.

Fletcher, William
2007 Personal correspondence with William Fletcher, Water Resources Engineer, Oregon Department of Transportation. July 31, 2007.

French, Pat
2007 Personal Communication with Pat French, Park Planner, Willamalane Park and Recreation District, April 17, 2006.

Greenfield, Mark
2007 I-5 Willamette River Bridge Project Land Use Approvals Memorandum. Draft Memorandum prepared for Oregon Bridge Delivery Partners. April 2007.

Lane Council of Governments (LCOG)
2002 Eugene-Springfield Metropolitan Area Transportation System Plan.
2004a Eugene-Springfield Metropolitan Area General Plan.
2004b Environmental Justice Baseline Data Summary. http://www.lcog.org/meetings/mpc/072004/MPC4b-Attachment1-EnvironmentalJusticeDataSummary.pdf.
2005 Lane County Aerial Photographs provided by LCOG.
2006 Regional Trends: Data for Sound Decision Making in Lane County. http://www.lcog.org/PDF/RegionalTrends2006.pdf
2007a Geographic Information Systems Data provided by LCOG.

2007b Draft Central Lane Metropolitan Planning Organization Regional Transportation Plan. Financially Constrained Projects.

Leland Consulting Group
2007 Glenwood Riverfront Development Market Feasibility Analysis. http://www.ci.springfield.or.us/CMO/2007%20SEDA/GlenwoodMarketFeasibilityAnalysisLelandCG2007-06-25Draft.pdf.

National Marine Fisheries Service (NMFS)
2003 Biological Opinion Pursuant to Section 7 of the Endangered Species Act (ESA) prepared on the effects of the proposed I-5: McKenzie River Bridges Northbound Detour and Northbound (Temporary repair) & Willamette River Bridge (Detour) Sections Project, Lane County, Oregon. Issued August 20, 2003.

Natural Resources Conservation Service (NRCS)
1987 Soil Survey for Lane County.
2006 National Hydric Soils for Lane County. http://soils.usda.gov/use/hydric 2007 Personal communication with Tom Burnham, District Conservationist, Lane County NRCS. July 27, 2007.

Oregon Bridge Delivery Partners (OBDP)
2007a Preliminary Bridge Concepts Report. April 2007.
2007b OBDP Webite. http://www.obdp.org/partner/cs3/. Accessed August 2007.
2007c I-5 Willamette River Bridge Project Biology/Threatened and Endangered Species Technical Report. Prepared for ODOT. December 2007.
2007d I-5 Willamette River Bridge Project Hazardous Materials Technical Report. Prepared for ODOT. December 2007.
2007e I-5 Willamette River Bridge Project Environmental Assessment Land Use Technical Report. December 2007.
2007f I-5 Willamette River Bridge Project Environmental Assessment Noise Technical Report. Prepared for ODOT. December 2007.
2007g I-5 Willamette River Bridge Project Environmental Assessment Wetlands Technical Report. Prepared for ODOT. December 2007.

Oregon Department of Transportation (ODOT)
1999 Oregon Highway Plan
2003a Biological Assessment I-5: McKenzie River Bridges SB (Detour) and NB (Temporary Repair) and Willamette River Bridge (Detour) Sections, KN 13164, Pacific Highway, Lane County, Oregon, Chinook Salmon (Oncorhynchus tshawytscha), Bull Trout (Salvelinus confluentus), Oregon Chub (Oregonichthys crameri). May 15, 2003: Prepared by Mason, Bruce & Girard (MB&G). Salem, Oregon: ODOT.
2003b Habitat Protection Plan for the I-5 Willamette River Bridge (Detour) Project. Prepared June, 9, 2003 by Parametix, Inc. Salem, Oregon.
2004 Geotechnical Report, I-5: McKenzie & Willamette Bridges (Detour / Temp. Repair) Section, Pacific Highway, No. 1, Lane County
2005 Alton Baker Park Conversion Request for Approval. July 14, 2005.
2006a I-5 Willamette River Bridge (No. 08329) Project Draft Biology/Threatened and Endangered Species Technical Report. Prepared by David Evans and Associates (DEA). Portland, Oregon
2006b I-5 Willamette River Bridge (No. 08329) Project Draft Historic Resources Technical Report. Prepared by ODOT Technical Services. Salem Oregon.
2007a I-5 Willamette River Bridge Project Bundle 220 Draft Hydraulics Technical Report. Prepared by HDR, Inc. Portland, Oregon.
2007b Personal Communication with Nicholas Testa, ODOT Region Biologist. August 16, 2007.

Oregon Natural Heritage Information Center (ORNHIC)

2006 Data system search for rare, threatened and endangered plant and animals records for the I-5 Willamette River Bridge (No. 08329) Project. Received May 31, 2006.

Oregon Parks and Recreation Department
2004 Oregon Grants Manual & Applications Form. Federal Land and Water Conservation Fund. Oregon Parks and Recreation Department. October 2004.

Oregon Water Resources Department (OWRD) (referenced in 3.4.2)
2006 Online Database. http://apps2.wrd.state.or.us/apps/gw/well_log/Default.aspx. Accessed July 2007.

Taylor, Trevor
2007 Personal Communication with Trevor Taylor, Principal Landscape Architect, City of Eugene Parks and Open Spaces Division. April 17, 2006.

United States Census Bureau
2000 (Census 2000. http://www.census.gov/.

United States Fish and Wildlife Service (USFWS)
2007 NWI Map USGS Quadrangle Eugene East; NWI Mapper: http://wetlandsfws.er.usgs.gov/NWI/index.html

Water Quality Criteria: Current National Recommended Water Quality Criteria. United States Environmentail Protection Agency (USEPA)
Water Quality Criteria: Current National Recommended Water Quality Criteria. http://www.epa.gov/waterscience/criteria/wqcriteria.html. Accessed August 2007

United States Fish and Wildlife Service (USFWS)
2003 Letter of Concurrence for I-5 McKenzie River Bridges SB Detour and NB (Temporary repair) & Willamette River Bridge (Detour) Sections Project, Lane County, Oregon (1-7-03-I-392; USACE No: 200300297/200300338). Issued June 25, 2003.

United States Geological Survey (USGS)
2007 National Water Information System. Site Number 14158000. http://waterdata.usgs.gov/or/nwis/. Accessed August 2007

Winterhoff, Quent and Thomas Connolly
2006 Archaeological Survey of Bridge 08329 (Willamette River, Interstate 5 Northbound at mile point 192), Lane County. University of Oregon Museum of Natural and Cultural History, Research Report No. 2006-105, Eugene, Oregon. Submitted to Oregon Department of Transportation, Salem, Oregon.

This page left intentionally blank.

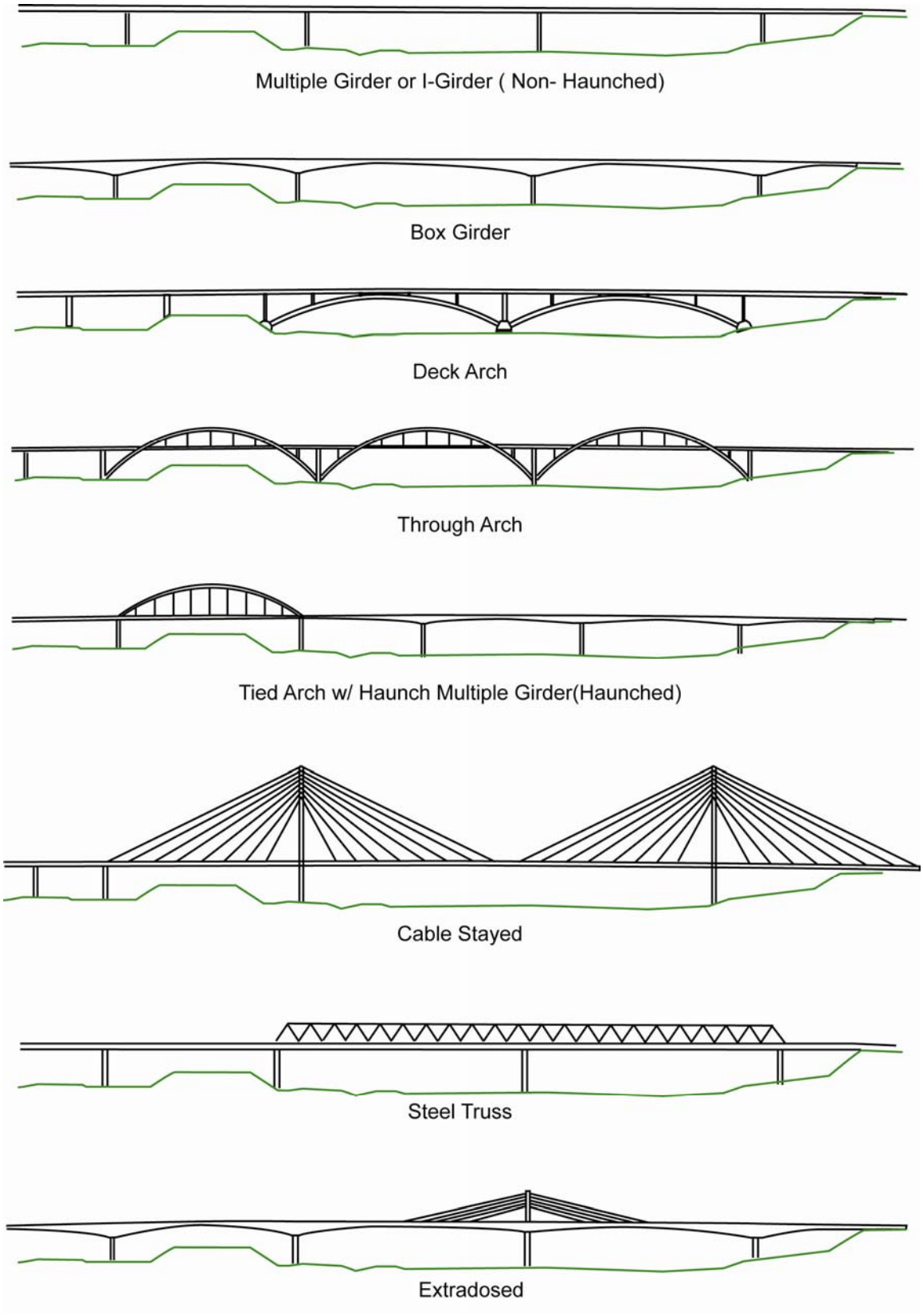
6.0 GLOSSARY

Term	Definition
Anadromous	Fish species that breed in freshwater but mature in the ocean.
Area of potential effect	Area defined for purposes of Section 106 of the National Historic Preservation Act as that area where a project may potentially affect historic properties.
Baseline	Existing conditions for an environmental resource.
Bents	Supporting units of a bridge composed of columns or column-like members connected by a cap that distributes the load (weigh of bridge above) on the unit.
Best management practices	Standard practices, generally used for construction, that avoid or minimize environmental disruption or impact.
Biota	Collective term for living things, including plants, animals, fungi, etc.
Coffer dams	In-water dams that temporarily exclude water from a given area (usually where construction is occurring).
Compensatory mitigation	Environmental restoration (such as wetlands restoration or creation) undertaken to offset project related environmental impacts.
coniferous	Cone-bearing trees, typically evergreen.
Culvert	A pipe carrying a waterway under fill.
Deciduous	Trees that loose their leaves on a seasonal basis; typically broadleaf trees.
Easement	A right held by one party to allow partial use of a given property (such as for access or drainage) granted by the owner of that property.
Emergent wetlands	Wetlands that are characterized by plants growing with their roots underwater and leaves extending above the water.
Ephemeral ponds	Depressions that have standing water during only part of the year.
Environmental Performance Standards	Measures developed specifically for the OTIA III bridge program that define the level of effect that a project may have on the environment so that the project may be covered under programmatic environmental permits.
Evapotranspiration	Movement of water through plants, taken up by plants as liquid water then given off as water vapor.
GIS	Geographic information systems, computerized systems to manage geographic data combining data bases and mapping.
High-flow refuge	Areas where juvenile or migrating fish find refuge during high river flows, such as backwater areas behind large logs or rocks.
Hydric soils	Soil that is saturated or flooded for long parts of the growing season.
Hydrophytic vegetation	Plants that grow in wet conditions, such as hydric soils.
Impervious area	Hard surfaces like roofs, roads, and parking lots that shed the rain that falls on them and do not let it absorb into the ground.
Key views	Views that are representative of the project area and are seen by different viewer groups.
Liquefaction	Conversion of cohesive, unconsolidated soil to a liquid state.
Migration corridors	Linear areas through which wildlife travels – can be on land (terrestrial) or in water (aquatic)
Mitigation	Efforts to offset the adverse environmental impacts of an action (e.g., restoring a habitat or wetland to offset impacts to the same or another habitat or wetland).
Non-attainment	When a region's air quality does not meet the regulatory standards, called the National Ambient Air Quality Standards, for one or more pollutants.
Non-point sources	Sources of pollution that are spatially spread out, such as overland runoff of water that enters a stream.
Off-channel habitat	Fish habitat that is not located in the main channel of a river or stream, such as seasonally flooded areas.
Pier	A structural member that supports a bridge.
Rearing	The feeding and growth of juvenile fish.

Term	Definition
Right-of-way	(1) A right (temporary or permanent) granted by a property owner to another to build, maintain and use a road, utility line or similar improvement over the owner's property, or (2) land owned for the purposes of transportation and related needs.
Riparian	Of, on, or relating to the banks of a river or other natural waterway, generally applied to "riparian ecosystems".
Rookery	A breeding place or colony of birds
Salmonid	Fish of the family Salmonidae, which includes salmon and steelhead
Sedimentation	The movement and settling of sediment particles.
Staging area	Areas used in construction to temporarily store and assemble equipment and materials.
Substrate	The material that forms the base of a river or stream, or in which vegetation grows.
Take (from the Endangered Species Act)	To harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a listed threatened or endangered species, or to attempt to engage in any such conduct.
Upland	Terrestrial ecosystems located away from riparian zones, wetlands, and water bodies.

APPENDIX A

PRELIMINARY BRIDGE TYPES


Multiple Girder or I-Girder (Non- Haunched)
Box Girder
Deck Arch
Through Arch
Tied Arch w/ Haunch Multiple Girder(Haunched)
Cable Stayed
Steel Truss
Extradosed

APPENDIX B

BASELINE NOISE PREDICTION SITES

Figure B-1
Existing Roadway/Bridge Configuration, Noise Monitoring Locations, and Noise Prediction Sites

I-5 Willamette River Bridge Project

• R# Noise Prediction (Receptor) Sites

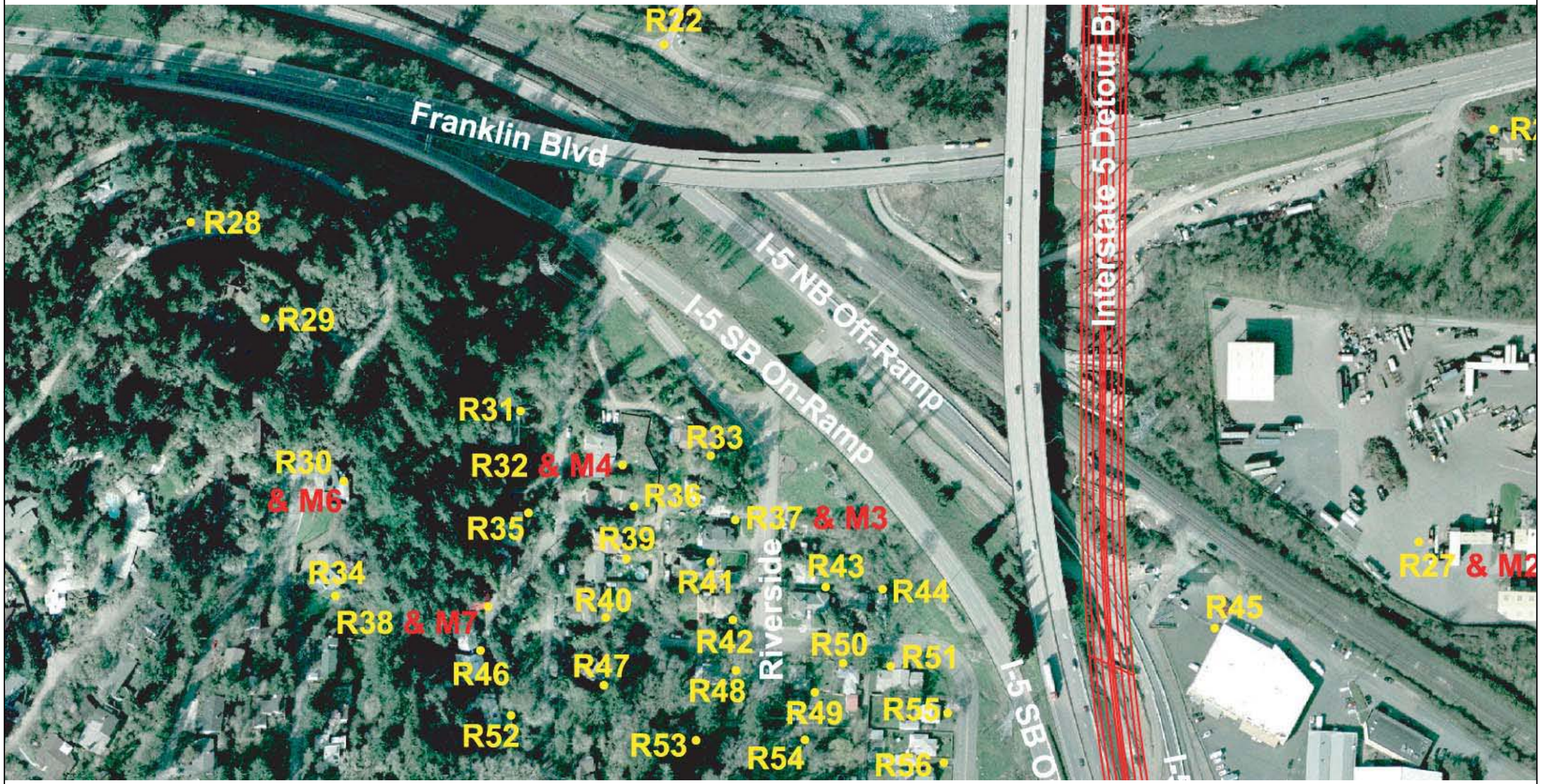
Figure B-2
Existing Roadway/Bridge Configuration, Noise Monitoring Locations, and Noise Prediction Sites

I-5 Willamette River Bridge Project

I-5 Willamette River Bridge

Figure B-3
Existing Roadway/Bridge Configuration, Noise Monitoring Locations, and Noise Prediction Sites

I-5 Willamette River Bridge Project

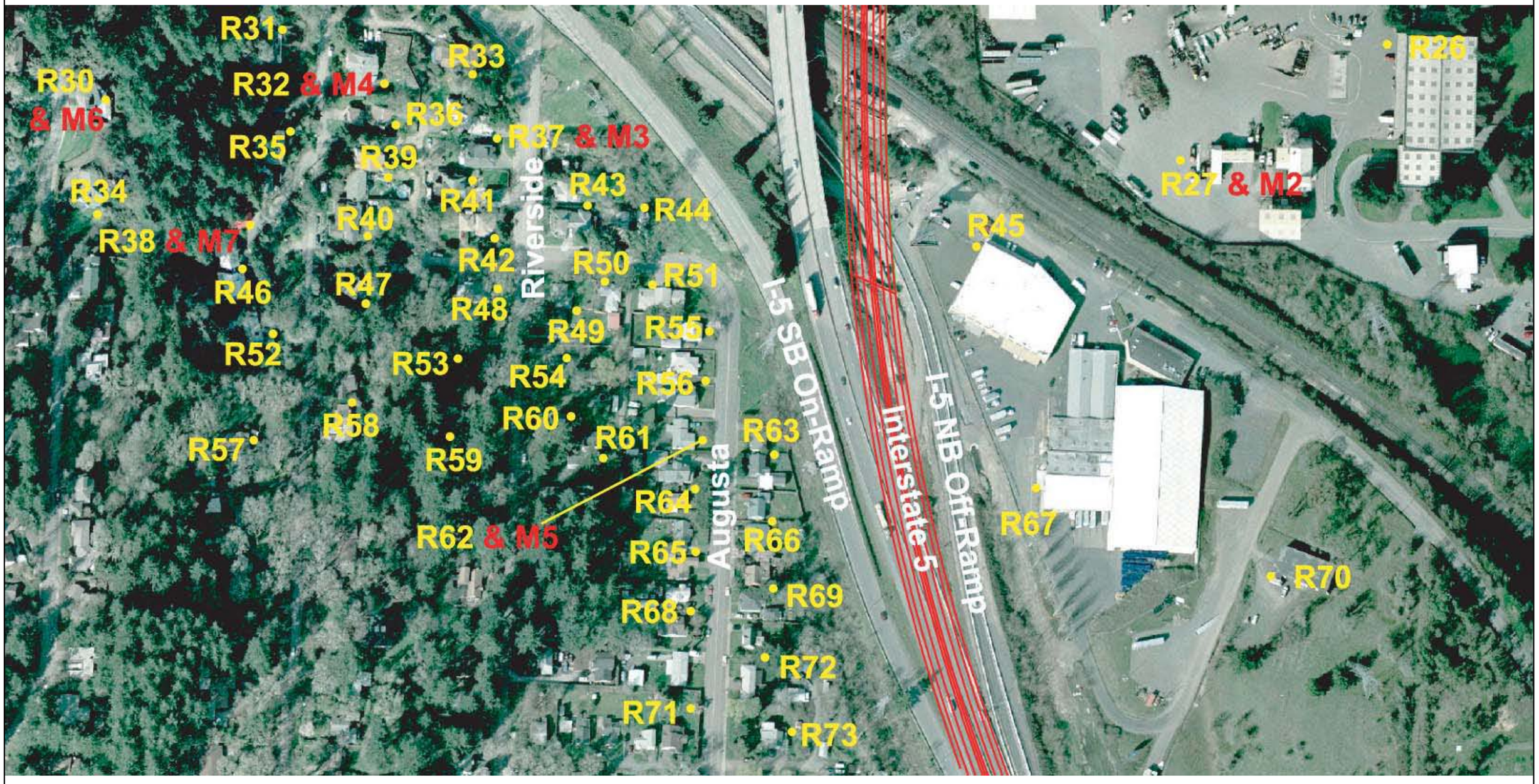


I-5 Willamette River Bridge

OTIA

Figure B-4
Existing Roadway/Bridge Configuration, Noise Monitoring Locations, and Noise Prediction Sites

I-5 Willamette River Bridge Project



• R# Noise Prediction (Receptor) Sites
• M# Noise Monitoring Locations

I-5 Willamette River Bridge

Figure B-5
Existing Roadway/Bridge Configuration, Noise Monitoring Locations, and Noise Prediction Sites

I-5 Willamette River Bridge Project

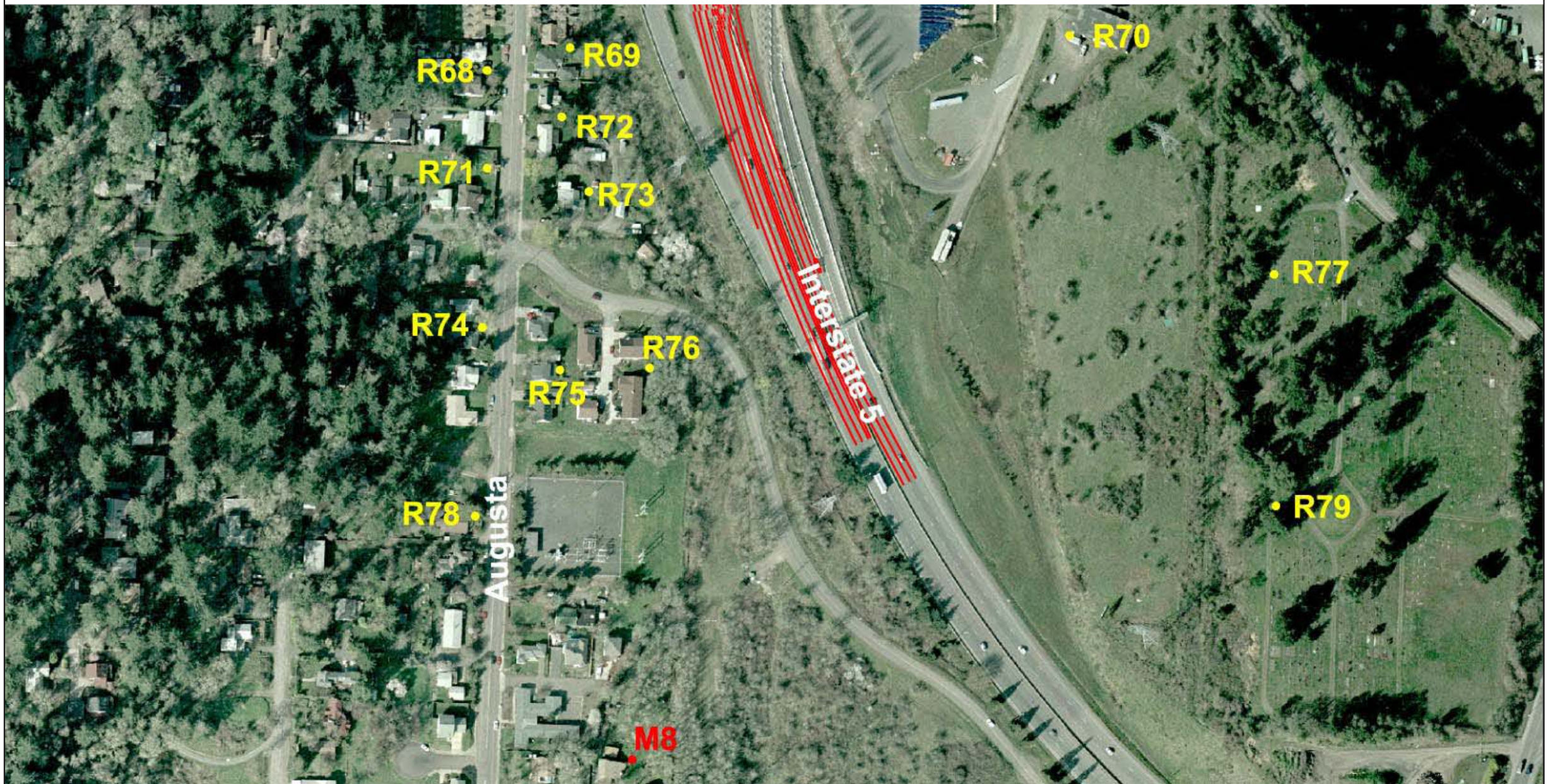


Figure B-6
Existing Roadway/Bridge Configuration, Noise Monitoring Locations, and Noise Prediction Sites

I-5 Willamette River Bridge Project

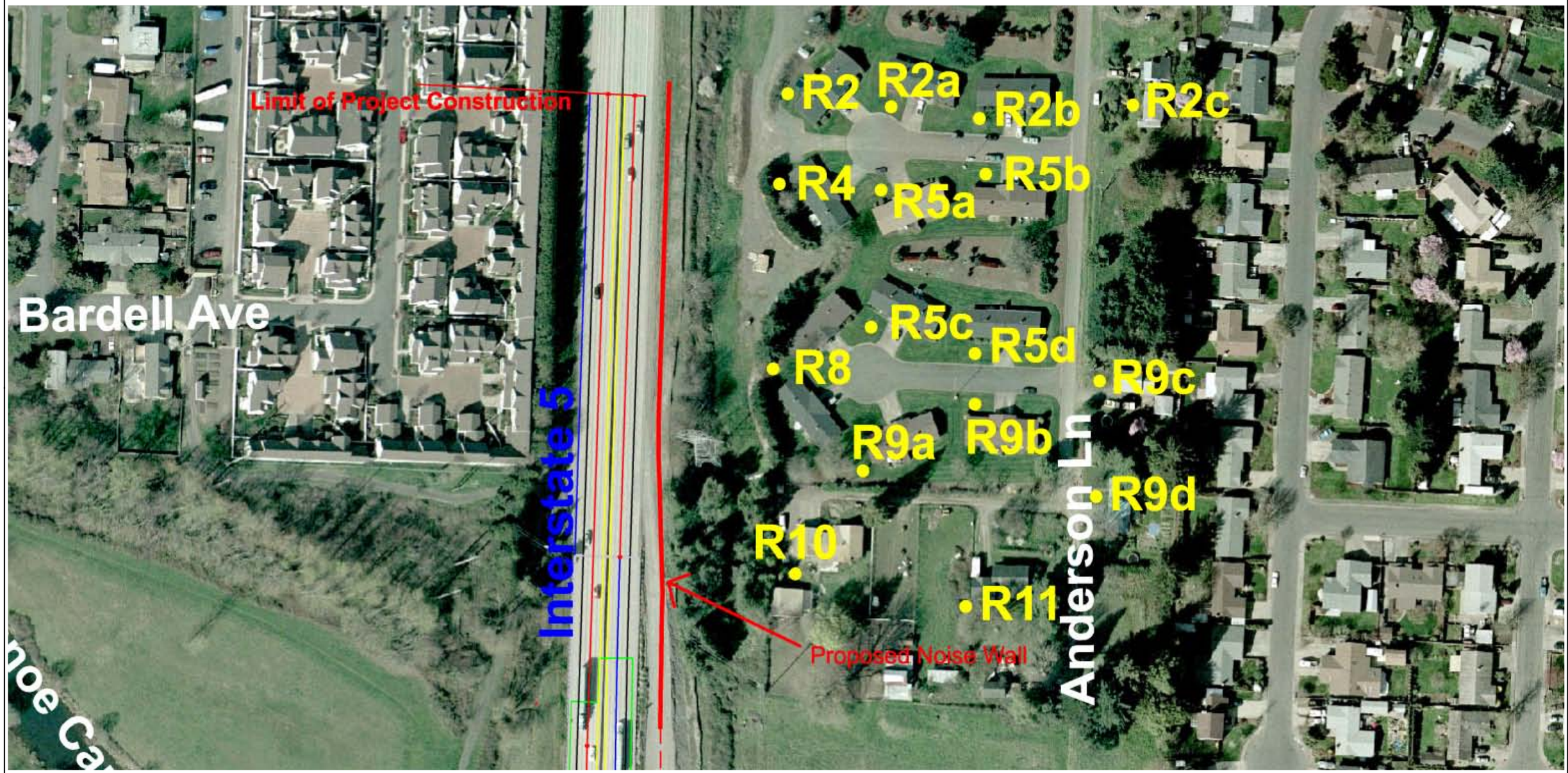
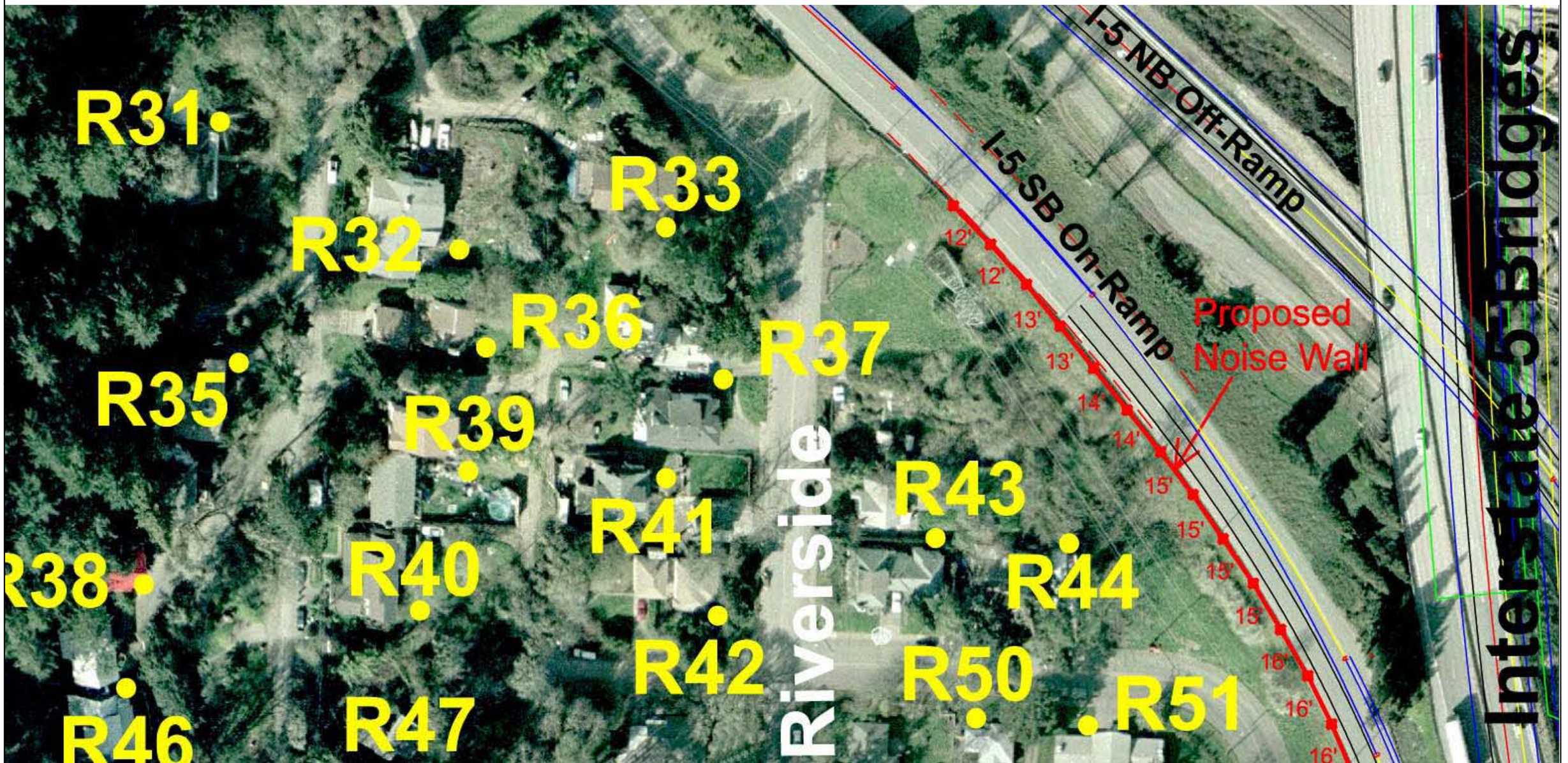


Figure B-7
Northern (Anderson Lane) Noise Wall Location and Configuration

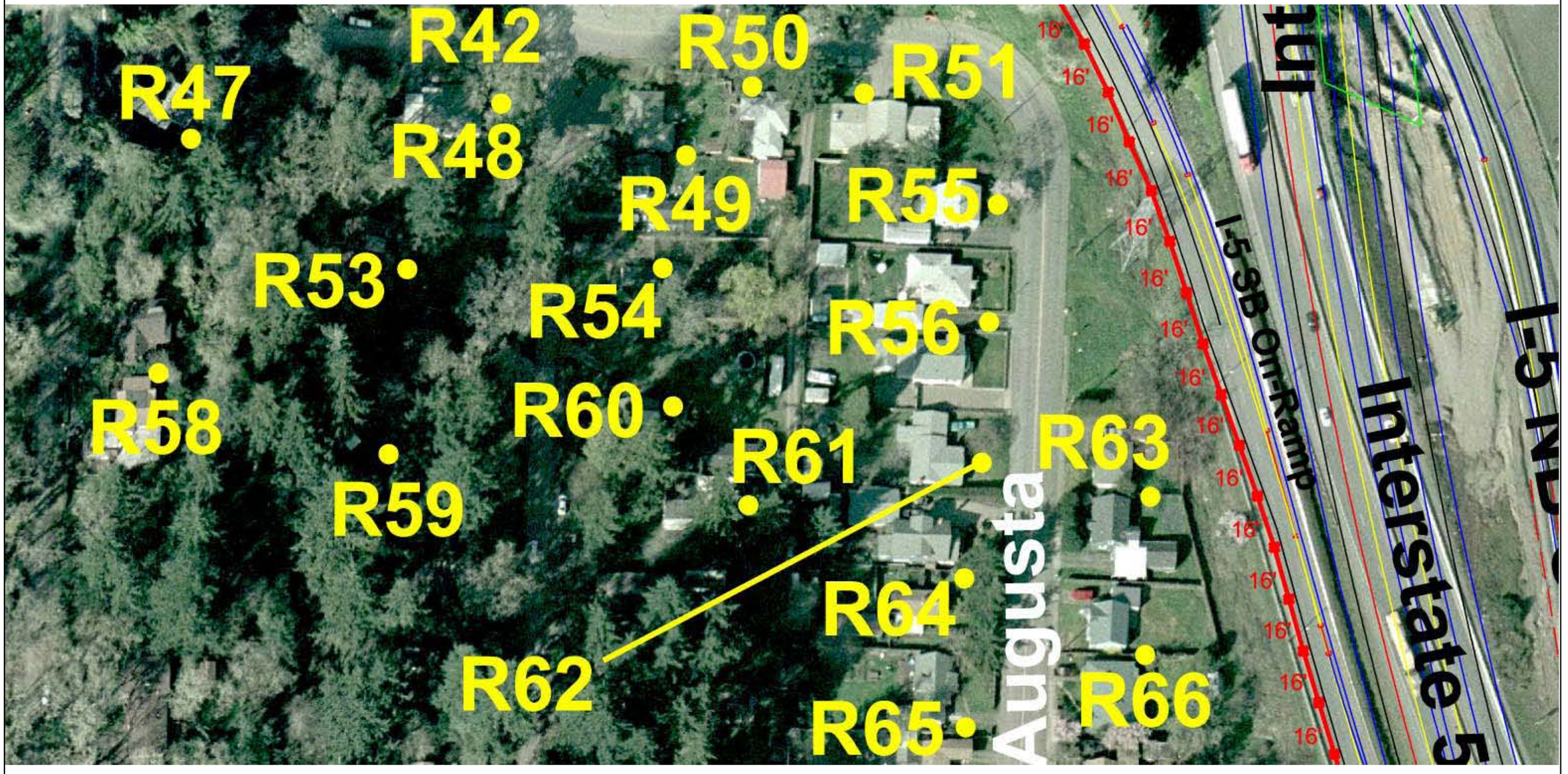
I-5 Willamette River Bridge Project



• R# Noise Prediction (Receptor) Sites

Figure B-8
Southern (Laurel Hill) Noise Wall Location and Configuration

I-5 Willamette River Bridge Project



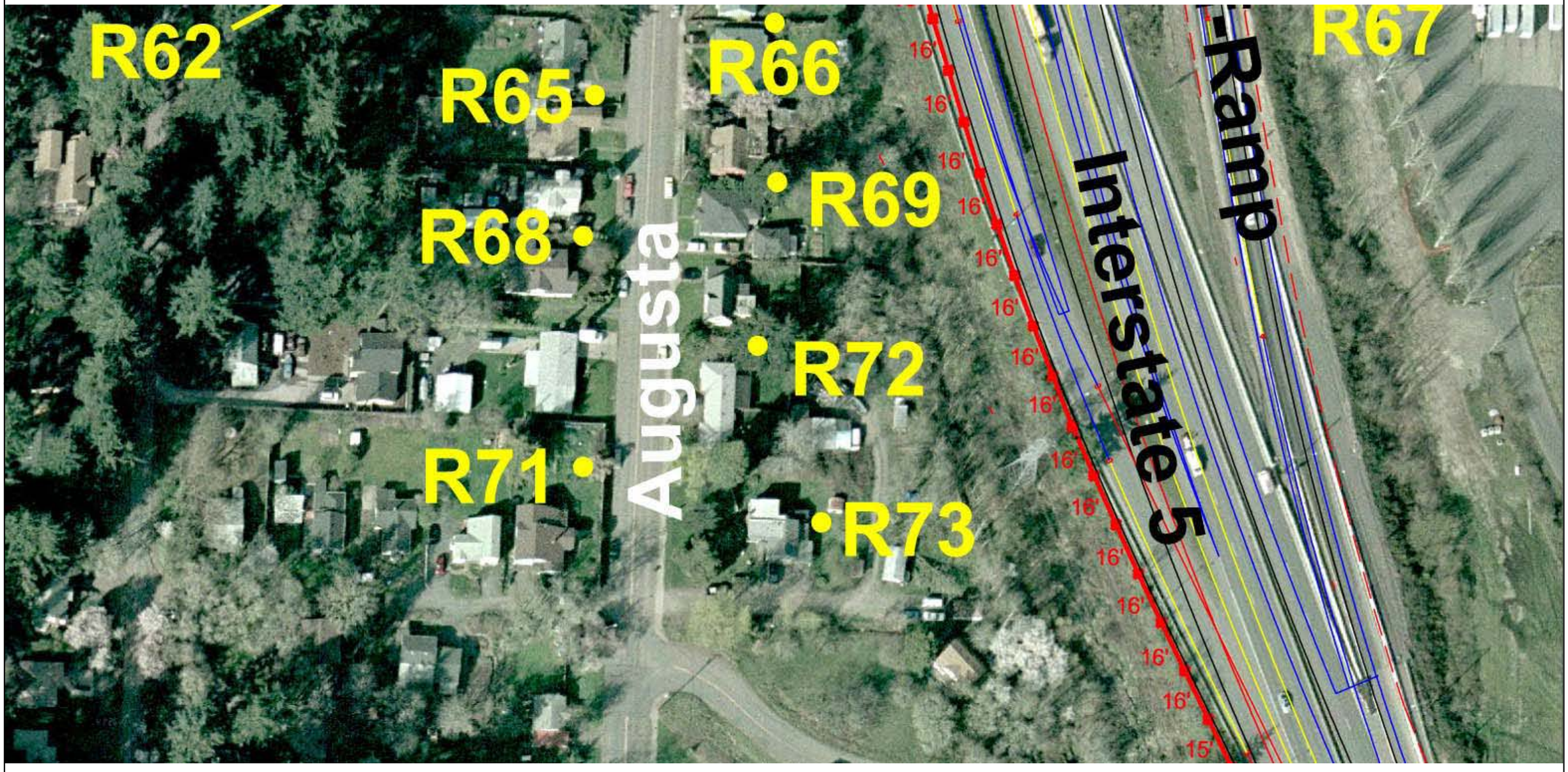
• R# Noise Prediction (Receptor) Sites

I-5 Willamette River Bridge

OTIA

Figure B-9
Southern (Laurel Hill) Noise Wall Location and Configuration

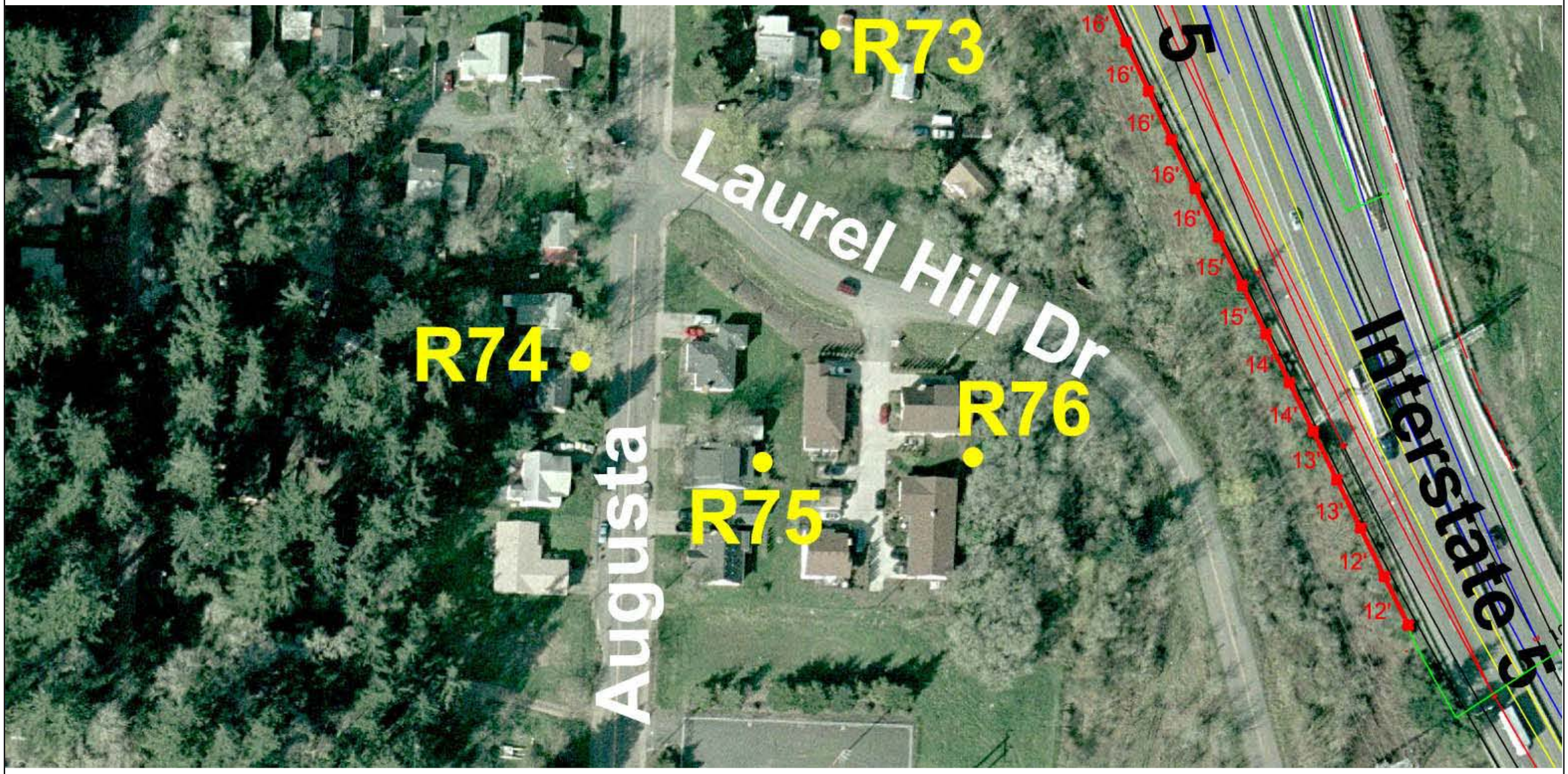
I-5 Willamette River Bridge Project



• R# Noise Prediction (Receptor) Sites

Figure B-10
Southern (Laurel Hill) Noise Wall Location and Configuration

I-5 Willamette River Bridge Project



• R# Noise Prediction (Receptor) Sites

I-5 Willamette River Bridge

Figure B-11
Southern (Laurel Hill) Noise Wall Location and Configuration

I-5 Willamette River Bridge Project

APPENDIX C

LIST OF TECHNICAL REPORTS

The following technical reports and studies were prepared for the I-5 Willamette River Bridge Project. This EA was developed based on the information contained in those reports. The reports and studies are available from the project website (http://www.oregon.gov/ODOT/HWY/REGION2/I-5WRB.shtml), or by contacting ODOT directly.

Technical Reports	
Air Quality	Right of Way
Archaeology	Section 4(f) – Parks
Biology and Threatened and Endangered Species	Section 6(f)
Geological Resources	Socio-Economics
Hazardous Materials	Visual Quality
Historic Resources	Water Resources
Hydraulics	Wetlands
Land Use	

Additional Reports and Studies Supporting the EA
Engineering Concepts Report
Preliminary Bridge Concepts Report
Stormwater Concept Report

APPENDIX D

LIST OF PREPARERS

The following individuals were involved in preparing this EA:

Name Affiliation	Area of EA Responsibility	Education Certification/Licenses	Years and Type of Experience
Document Review - ODOT			
Tim Dodson ODOT	Project Leader	PE, OPMA	25 years Engineering and project management
Jim Cox ODOT	NEPA/Environmental Documentation	B.S. Anthropology	32 Years Environmental Management and Transportation Planning
Kurt Rodel ODOT	Archaeology	M.A. Anthropology	7 Years, Archaeology
Ron Francis ODOT	Biology, Wetlands	B.S. Soil and Crop Science	15 Years Environmental and Transportation Related Studies
William Fletcher ODOT	Water Quality	BSc Geology, Cand. Real. Physical Geography	22 years Environmental experience.
Dave Goodwin ODOT	Noise		38 Years Transportation; 22 Years Acoustical Studies
Marina Orlando ODOT	Air Quality	A.S. Civil-Structural Engineering	24 Years Transportation, Traffic, and Environmental Engineering
Alex McMurry ODOT	Historic Resources	B.A. Architecture; M.S. Historic Preservation	8 Years Historic Resource Analysis and Documentation
Victor Alvarado ODOT	Right-of-Way	A.S. Real Estate, SR/WA	24.5 Years Right of Way Project Management & Property Management
Bart Bretherton ODOT	Hazardous Materials	M.S. Hydrology; Oregon Registered Geologist	18 Years Hazardous Material Cleanups and Assessments
Nick Testa ODOT	Biology	B.S Botany Oregon State C.P.M. Willamette University	20 year botanical and biological
Ron Reisdorf ODOT	Hydraulics	B.S. Civil Engineering; P.E. in Oregon	25 Years Construction, Structural Design and Location Design; 11 Years ODOT Hydraulics Unit Management
Luis Rivas ODOT	Hydraulics	B.S. Civil Engineering; M.S. Natural Resources	30 Years Environmental Engineering
Susan Haupt ODOT	NEPA/Environmental Documentation	B.F.A. Media Art; M.S. Environmental Science	14 Years Environmental Science; 9 Years NEPA
Molly Cary ODOT	NEPA/Environmental Documentation	B.S. Resource Recreation Management	20 Years Environmental Management
Document Review - FHWA			
Philip Taylor FHWA	Operations Engineer	B.S. Political Science; B.S. Civil Engineering	11 Years Transportation and Environmental Reviews
Tim Rogers FHWA	Bridge Engineer	BS Civil Engineering MS Civil Engineering	16 Years Transportation and Structures
Frances Sakaguchi FHWA	Local Programs Environmental	BS Wildlife Biology	15 Years Environmental
Document Preparation and Review - Consultants			
Lou Krug OBDP	Project Manager; Project Description; Conceptual Engineering; Traffic and Transportation	B.S. Civil Engineering; M.S. Civil Engineering; P.E. in CA and ID	35 Years Transportation Engineering and Environmental Studies
James Gregory OBDP	NEPA EA Task Lead, Visual Quality Analysis	B.S. Biology; Masters of Urban and Regional Planning Environmental Planning; American Institute of Certified Planners	20 Years Environmental Management and Planning
Lucie Tisdale OBDP	Archaeology, Section 106	M.A. Anthropology/Archaeology; Register of Professional Archaeologists	10 Years Archaeology and Cultural Resource Management

Name Affiliation	Area of EA Responsibility	Education Certification/Licenses	Years and Type of Experience
Craig Milliken OBDP	Noise, Air Quality	B.A. Geography; M.S. Environmental Sciences	10 Years Air Quality; 6.5 Years Noise
Andrea Heckman OBDP	Biology, Wetlands	B.S. Marine Biology/Chemistry	7.5 Years Environmental Science, Biology, Wetlands, and NEPA
Carol Snead OBDP	Geology and Soils, Hazardous Materials	B.S. Geology; M.S. Geology	20 Years NEPA and Environmental Planning
Kathryn Toepel Heritage Research Associates, Inc.	Historic and Archaeological Resources	M.A. Anthropology; PhD Anthropology; Register of Professional Archaeologists	32 Years Archaeology and Historic Preservation
Rick Minor Heritage Research Associates, Inc.	Historic and Archaeological Resources	M.A. Anthropology; PhD Anthropology, Register of Professional Archaeologists	37 years, prehistoric and historical archaeology
George Kramer Heritage Research Associates, Inc.	Historic Resources	B.S. History; M.S. Historic Preservation	20 years, NRHP/Section 106 inventory, historic resource evaluation and documentation
Shane Cline OBDP	Hydraulics, Hydrology	B.S. Civil Engineering; M.S. Civil Engineering; P.E. in OR and WA	15 Years Hydrology, Hydraulics Analysis, and Design
Corrinne Humphrey OBDP	Land Use	B.S. Business/Environmental Science; MCRP Master of Community and Regional Planning; American Institute of Certified Planners	20 Years Environmental Science; 12 Years NEPA
Donette Miranda OBDP	Land Use, Socioeconomics	B.S. Environmental Science/Biology; Courses in Master of Urban and Regional Planning Program	7.5 Years Environmental Science and Biology; 2.5 Years NEPA, Land Use, Socioeconomics, and Environmental Justice
Karissa Kawamoto OBDP	Right-of-Way	B.A. Urban and Regional Planning; American Institute of Certified Planners	14 Years Urban Planning and Environmental Planning; 7 Years NEPA, Land Use, Socioeconomics, Energy, and Right-of-Way
Joe Miller OBDP	Water Resources	B.S. Geography; Master of Urban and Regional Planning	5 Years Water Resources Planning
Martha Wiley OBDP	Quality Program Leader, Discipline Report and EA QC	B.A. Geography; M.A. Geography; Courses in Business Administration	28 Years NEPA and State Environmental Documentation
Jamie Damon Jeanne Lawson Associates, Inc.	Public Involvement	B.A. Communication; M.A. Conflict Transformation	8 Years Community Mediation; 13 Years Public Involvement/Facilitation/Planning

APPENDIX E

DISTRIBUTION LIST

A copy of this EA has been provided to the following agencies:

Federal Agencies	
U.S. Army Corps of Engineers	U.S. Department of Commerce
Environmental Protection Agency	U.S. Department of Health and Human Services
National Marine Fisheries Service	U.S. Department of Housing and Urban Development
National Park Service	U.S. Fish and Wildlife Service
U.S. Department of Agriculture	

State Agencies	
Department of Agriculture	Economic Development Department
Department of Energy	Parks and Recreation Department
Department of Environmental Quality	Public Utilities Commission
Department of Fish and Wildlife	State Historic Preservation Office
Department of Forestry	State Library
Department of Geology and Mineral Industries	State Police
Department of Land Conservation and Development	Traffic Safety Commission
Department of State Lands	Water Resources Department

City, County, and Regional Agencies	
City of Eugene	Lane Council of Government
City of Springfield	Willamalane Park and Recreation District
Lane County	Citizen Planning Committee of the Whilamut Natural Area

Other Interested Parties

Copies of the EA were made available to other interested parties including citizens, elected officials, businesses, and non-profit organizations that were on the mailing list developed for this project. The EA was made available for review at libraries in Eugene and Springfield, the city halls of Eugene and Springfield, and the Lane County Public Service Building/Courthouse, and ODOT Area Office in Springfield, as well as on the project website.