Allentown Truck Reroute Project

State Environmental Policy Act Draft Environmental Impact Statement

Tukwila, Washington

March 11, 2025

Cover

Cover Letter

City of Tukwila

March 11, 2025

Dear Interested Parties, Jurisdictions, and Agencies,

The City of Tukwila is issuing this Draft Environmental Impact Statement (EIS) for the Proposed Allentown Truck Reroute Project (the Proposed Project). The City of Tukwila (The City) is proposing to reroute the truck traffic that runs through the residential neighborhood of Allentown to improve livability and safety without compromising the operations of the BNSF intermodal facility.

The Draft EIS has been prepared to satisfy the requirements of the Washington State Environmental Policy Act (SEPA). The purpose of this Draft EIS is to evaluate the probable significant environmental impacts from the construction and operation of the Proposed Alternatives and their contribution to cumulative environmental impacts. The Proposed Alternatives evaluated in the Draft EIS are the No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4. The City will select a preferred Alternative at the end of the EIS process after considering the results of the Final EIS.

The following resource areas are evaluated in the Draft EIS:

- Geology and Soils
- Water Resources
- Plants and Animals
- Land Use, Shoreline Use, and Recreation
- Air Quality and Greenhouse Gas
- Transportation
- Health and Safety
- Public Services and Utilities
- Cultural Resources
- Noise
- Environmental Justice
- Visual Resources and Aesthetics

The Draft EIS proposes mitigation to address adverse environmental impacts of the Proposed Project Alternatives identified in the review. In some cases, implementation of mitigation measures would reduce, but not completely eliminate, the significant adverse impacts or the feasibility of mitigation is uncertain. Some alternatives, if selected, have the potential for significant unavoidable impacts. For example, Alternative 2 has the potential to create unavoidable significant impacts to Geology and Soils, Cultural Resources, and Visual Resources and Aesthetics. However, as there is no Preferred Alternative at this time, these adverse impacts could be avoided by selecting a different alternative. The purpose of this Environmental Impact Statement is to assist the community of Allentown to select a Preferred Alternative to the current operating conditions of the traffic related to the BNSF facility.

Comments on this Draft EIS will be accepted during the comment period March 11, 2025, through April 11, 2025. Comments should focus on the substance of the Draft EIS and be as specific as possible. This could include comments on the adequacy of the EIS, alternatives, methodology used, mitigation measures proposed, or additional information that should be considered. Comments may be submitted in the following ways:

By mail to:

SEPA Draft EIS for the Allentown Truck Reroute Project
C/O Mark Hafs
6200 Southcenter Boulevard
Tukwila, WA 98188

Online:

Compete a comment form at https://www.tukwilawa.gov/departments/public-works/construction-projects-and-transportation-impacts/allentown-truck-reroute-project/

In person at a public hearing, verbally, or in writing:

March 25th, 2025
5:30-7:30pm,
Tukwila Community Center 12424 42nd Avenue South
Tukwila, WA 98168

Comments received on the Draft EIS during the comment period will be compiled and reviewed. Substantive comments will be considered by the City in the preparation of a Final EIS. The City anticipates the Final EIS will be published in June 2025. The Final EIS may be used by agencies to inform permit decisions for the Proposed Project.

Questions about the Draft EIS may be directed to: Mark Hafs at mark.hafs@tukwilawa.gov

Sincerely,

Mark Hafs
Project Director
City of Tukwila

Fact Sheet

Proposed Project Title

Allentown Truck Reroute Project

Description of Proposed Project Alternatives

The Applicant's Proposed Project is to develop an alternative route to the BNSF Intermodal Facility in Allentown to improve livability and safety in Allentown without compromising the operations of the intermodal facility.

Location

The Allentown neighborhood is located in the northeast portion of the City of Tukwila, King County, Washington. Allentown's boundaries are formed by the right-of-way for a Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west.

Applicant (Proponent)

The City of Tukwila

Proposed Date of Implementation

To Be Determined

Lead Agency

The City of Tukwila, Washington

Responsible Official

Mark Hafs, Project Director

Lead Agency Contact Person

Mark Hafs
6200 Southcenter Boulevard
Tukwila, WA 98188

Required Permits, Licenses, and Approvals

Federal, Tribal, Washing State, and Local permits licenses and approvals To Be Determined after the selection of a Preferred Alternative.

Authors and Principal Contributors

This document has been prepared under the direction of the City of Tukwila. All sections and appendices have been prepared for and approved by the City of Tukwila. Key authors and principal contributors to the analyses are listed below.

Key Authors and Principal Contributors	Topic(s)
HDR, Inc. 600 University Street, Suite 500 Seattle, WA 98101	Geology and Soils; Water Resources; Plants and Animals; Land Use, Shoreline Use, and Recreation; Air Quality and Green House Gas; Transportation; Health and Safety; Public Services and Utilities; Cultural Resources; Noise; Environmental Justice; Visual Aesthetics; Cumulative Impacts

Date of Draft EIS Issuance

March 11, 2025

Date Comments are Due

April 11, 2025

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ACS	American Community Survey
AI	Area of Impacts
Alt	Alternative
ANSI	American National Standards Institute
AQ	Air Quality
AVE	Area of Visual Effect
BCC	Bird of Conservation Concern
BCR	Bird Conservation Regions
BHC	Benzene Hexachloride
BMP	Best Management Practice
BNSF	BNSF Railway Company
BP	Before Present
CARA	Critical Aquifer Recharge Area
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
City	City of Tukwila
CLI	Commercial Light Industrial
CWA	Clean Water Act
DAHP	Department of Archaeology and Historic Preservation
dB	Decibels
dBA	A-Weighted Decibels
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DNR	Department of Natural Resources
DPM	Diesel Particulate Matter
DPS	Distinct Population Segment
Ecology	Washington State Department of Ecology
EDNA	Environmental Designation for Noise Abatement
EEM	Estuarine Emergent
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ESU	Evolutionary Significant Unit
FEMA	Federal Emergency Management Association
FGDC	Federal Geographic Data Committee
FHWA	Federal Highway Administration

FIRM	Flood Insurance Rate Maps
FTA	Federal Transportation Administration
FWHCA	Fish and Wildlife Habitat Conservation Areas
GHG	Greenhouse Gas
GIS	Geographic Information Systems
GMA	Growth Management Act
GPS	Global Positioning System
HAP	Hazardous Air Pollutant
HASP	Health and Safety Plan
HCM	Highway Capacity Manual
HDR	HDR, Inc.
HDR	High Density Residential
HEAL	Healthy Environment for All
HGM	Hydrogeomorphic
HI	Heavy Industrial
HPA	Hydraulic Project Approval
HTL	High Tide Line
I	Interstate
ICE	Infrastructure Carbon Estimator
KCC	King County Code
KCGWV	King County Groundwater Well Viewer
KCHPP	King County Historic Preservation Program
KCHRI	King County Historic Resource Inventory
KCLR	King County Landmarks Register
KCSPPM	King County Stormwater Pollution Prevention Manual
KOP	Key Observation Point
LDR	Low Density Residential
LEP	Limited English Proficiency
LLC	Limited Liability Company
LOS	Level of Service
LRTP	Long-Range Transportation Plan
MBTA	Migratory Bird Treaty Act
MIC/H	Manufacturing Industrial Center/ Heavy
MIDP	Monitoring and Inadvertent Discovery Plan
MLK	Martain Luther King Junior
MML	Maritime Manufacturing and Logistics
MOVES	Motor Vehicle Emissions Simulator
MPO	Metropolitan Planning Organization
MSAT	Mobile Source Air Toxic Analysis
MUO	Mixed Use Office
MVEB	Motor Vehicle Emissions Budget
N	North
NAA	No Action Alternative
NAAQS	National Ambient Air Quality Standards
NB	Northbound

NETR	National Environmental Title Research
NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Association
NP	Northern Pacific Railroad
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historical Places
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
PCB	Polychlorinated Biphenyls
PCI	Pavement Condition Index
PEM	Palustrine Emergent
PFO	Palustrine Forested
PGIS	Pollution-Generating Impervious Surfaces
PHMSA	Pipeline and Hazardous Materials Safety Administration
PHS	Priority Habitats and Species
PM	Particulate Matter
ppm	Parts per Million
Project	Allentown Truck Reroute Project
PROS	City of Tukwila Parks, Recreation, Open Space Plan
PSCAA	Puget Sound Clean Air Agency
PSD	Prevention of Significant Deterioration
PSI	Pollution Standards Index
PSMFC	Pacific Marine Fisheries Commission
PSRC	Puget Sound Regional Council
PSS	Palustrine Scrub-Shrub
PSS	Puget Sound Shore Railroad Company
R	Residential
RCC	Residential Commercial Center
RCM	Regional Commercial Mixed use
RCW	Revised Code of Washington
RFFA	Reasonably Foreseeable Future Action
RM	Multi-family Residential
ROD	Record of Decision
ROW	Right-of-Way
RS	Single Family Residential
S	South
S&WW	Seattle and Walla Walla Railroad
SB	Southbound
SBCC	State Building Code Council
SEPA	State Environmental Policy Act
SFHA	Special Flood Hazard Areas
SHPO	State Historic Preservation Office

SIP	State Implementation Plan
SLS&E	The Seattle, Lake Shore and Eastern Railway
SMC	Seattle Municipal Code
SMP	Shoreline Master Program
SPAA	Seattle Police Athletic Association
SPCC	Spill Prevention, Control, and Countermeasures
SPDARF	Seattle Police Department Alcoholics Rehabilitation Farm
SPDRP	Seattle Police Department Rehabilitation Program
SR	State Route
SSA	Sole Source Aquifer
STIP	Statewide Transportation Improvement Program
SWPPP	Stormwater Pollution Prevention Plan
TCP	Tukwila Comprehensive Plan
TCP	Traditional Cultural Places
TIP	Transportation Improvement Program
TMC	Tukwila Municipal Code
TMDL	Total Maximum Daily Load
TRB	Transportation Research Board
UP	Union Pacific Railroad
USACE	United States Corps of Engineers
USCB	United States Census Bureau
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WA	Washington
WAC	Washington Administrative Code
WADNR	Washington Department of Natural Resources
WDFW	Washington Department of Fish and Wildlife
WHR	Washington Heritage Register
WISAA	Washington Information System for Architectural and Archeological Records
WOTUS	Waters of the United States
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation
WSSC	Washington Suburban Sanitary Commission

1 Summary

1.1 Introduction

The BNSF Railway Company's (BNSF) South Seattle Intermodal Facility in the Allentown neighborhood of Tukwila, Washington is an important economic link to the Puget Sound Region. It serves as an inland port, providing domestic intermodal transloading between truck and rail. Currently incoming trucks access the BNSF intermodal facility from the South 129th Street Bridge to South 50th Place. Outgoing trucks can use either the South 129th Street Bridge or take South 124th Street to the 42nd Avenue South Bridge. After the planned replacement of the 42nd Avenue South Bridge, truck traffic will also be able to access the BNSF intermodal facility by traveling south on the bridge and reach the facility via South 124th Street. To improve livability and safety in Allentown without compromising the operations of the facility, the City is evaluating potential alternative freight truck access routes to the BNSF intermodal facility.

The City of Tukwila (City) is the lead agency overseeing the preparation of an Environmental Impact Statement (EIS) for the proposed Allentown Truck Reroute Project (Project) under the State Environmental Policy Act (SEPA). Three proposed route alternatives, along with the existing truck route (the No Action Alternative), will be analyzed in the EIS to determine their potential impacts on the built and natural environments. These alternatives, which were developed through the scoping process, are intended to reduce the impacts of truck traffic in residential and recreational areas. The alternatives are described and discussed in detail in Section 3.

1.2 Project Applicant

The City of Tukwila (City) is the lead agency overseeing the preparation of an Environmental Impact Statement (EIS) under the State Environmental Policy Act (SEPA) for the proposed Allentown Truck Reroute Project (Project).

1.3 Project Objective

The purpose and need for the Project are to develop an alternative route to the BNSF Intermodal Facility in Allentown to improve livability and safety in Allentown without compromising the operations of the intermodal facility.

1.4 Project Description

The existing truck route, which is the No Action Alternative, in addition to three proposed route alternatives will be analyzed in the EIS to determine potential impacts on the built and natural environment.

1.4.1 Project Location

The Allentown neighborhood is located in the northeast portion of the City of Tukwila, King County, Washington, see Figure 1.4-1. Allentown's boundaries are formed by the right-of-way for a Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west, see Figure 1.4-2.

Zoned for low-density residential development, land use in Allentown is primarily single-family housing, along with several neighborhood parks, the Tukwila Community Center, and the Green River Trail.

Natural areas include restored native habitat in the Duwamish Hill Reserve and Codiga Park, several small wetlands, and the Duwamish River's riparian corridor. In addition to BNSF's South Seattle facility, nearby land uses include the Gateway Corporate Center, single-family development in Tukwila's Riverton neighborhood, and commercial development along 48th Avenue South. consisting primarily of freight and truck-support services. Several major transportation facilities are in the vicinity of Allentown, including I-5 to the east and south, SR 599, Interurban Avenue and East Marginal Way to the west, and an elevated section of Sound Transit's Link Light Rail line.

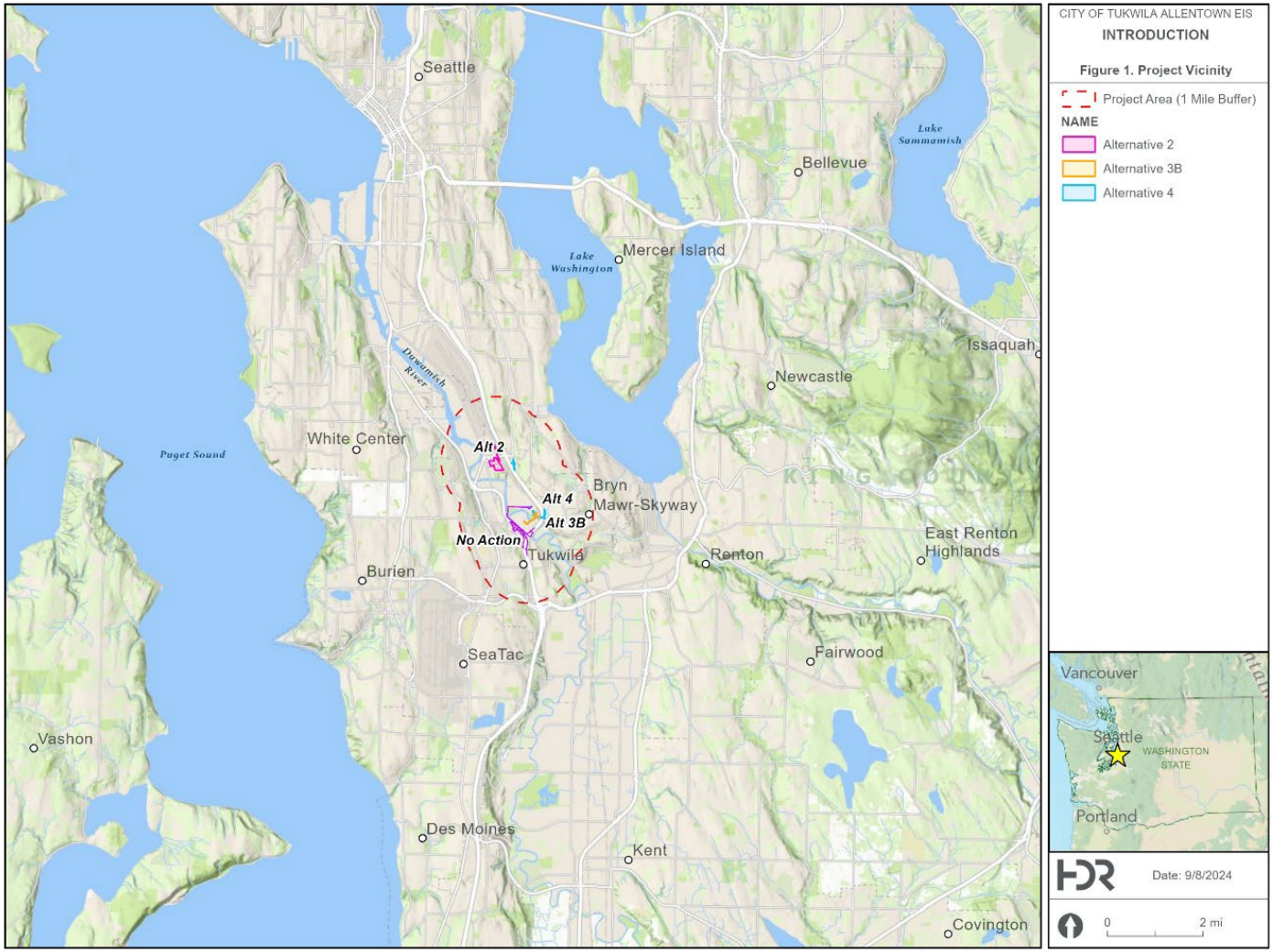

Figure 1.4-1 Allentown Truck Reroute Project Vicinity

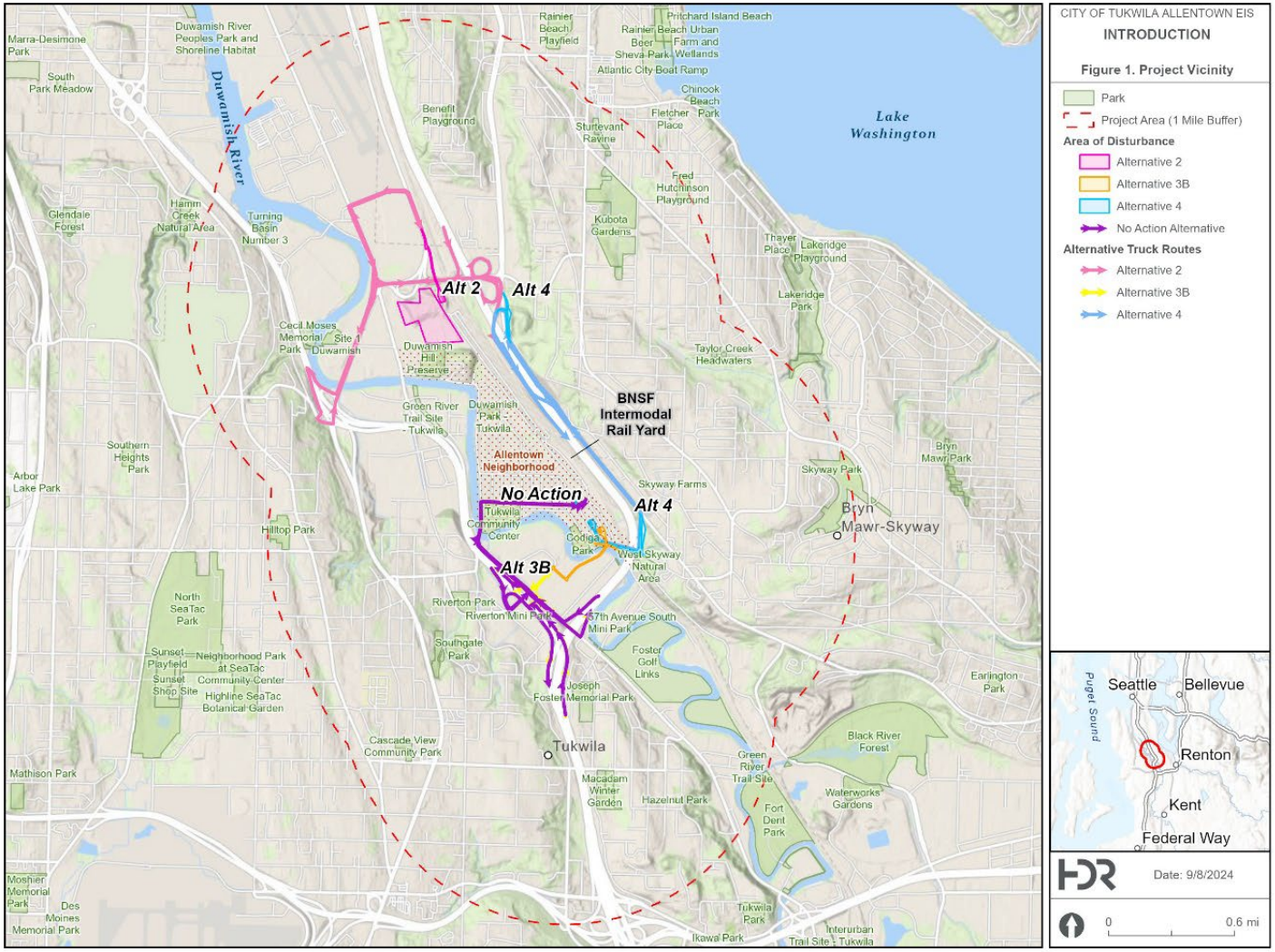

Figure 1.4-2 Allentown and Locations for Proposed Alternatives

1.5 Public Involvement/Scoping Summary

The City held a Phase 1 formal scoping period February 14 through March 15, 2023, during which it presented to the public several proposed truck route alternatives – three new alternatives and two alternatives that were evaluated in the 2016 BNSF study. A Phase 2 scoping period was held May 3 through June 1, 2023, during which the City shared technical information about the proposed truck route alternatives. After considering public comment, the City selected four truck route alternatives for study; they are presented in this EIS.

Legal notices for both phases of scoping were published in the Seattle Times and Washington State Environmental Policy Act (SEPA) Register. Notices of the scoping process were also distributed to select agencies and businesses who might have an interest in the project.

1.6 Summary of Environmental Impacts and Mitigation Measures

The Project is considering four alternatives for the truck reroute design: three new proposed routes and the No Action Alternative. Detailed descriptions of the alternatives are located in Section 3. A summary of the potential environmental impacts and their proposed mitigation measures is presented in Table 1.6-1.

Table 1.6-1 Potential impacts and proposed mitigation measures for each Alternative

Alternative	Affected Resource and Potential Environmental Impact	Proposed Mitigation Measures
No Action Alternative	Noise	Avoid impacts by selecting a different alternative to the current operating conditions
	Health and Safety	
	Visual Resources and Aesthetics	
Alternative 2: Airport Way S	Visual Resources and Aesthetics	Use directional, shaded lighting; privacy/noise wall and landscaping
	Cultural resources	Avoid impacts by selecting a different alternative
	Recreation	Relocate the Seattle Police Athletic Association training facility
	Noise	Construct a noise wall and landscaping
Alternative 3B: Improvements to 48th Pl S	Water Resources	Avoid impacts to the greatest extent possible by employing best management practices; restore create, or enhance additional wetlands for impact compensation
	Visual Resources and Aesthetics	Bridge design, landscaping, directional, shaded lighting
	Noise	Construct a noise wall and increase vegetative cover with landscaping

Alternative	Affected Resource and Potential Environmental Impact	Proposed Mitigation Measures
Alternative 4: New Bridge from SR 900	Land Use	Compensating property owners
	Visual Resources and Aesthetics	Directional, shaded lighting; privacy/noise wall and landscaping
	Transportation	Improve intersection at Martin Luther King Jr Way & South 129th Street
	Water Resources	Avoid impacts to the greatest extent possible by employing best management practices; restore create, or enhance additional wetlands for impact compensation

1.7 Unavoidable Significant Adverse Impacts

The impacts analyzed for each resource section that were determined to be significant would be avoidable by selecting another Alternative. As there is no preferred alternative for this proposed Project, the impacts must be weighed against each other equally rather than in relation to a "standard". Each of the Alternatives presented in this EIS have trade-offs; they affect the resources in different ways and to different degrees. The purpose of this Environmental Impact Statement is to find an alternate solution to the current operating conditions of the traffic related to the BNSF facility- a solution that will reduce truck traffic in residential and recreational areas.

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2 Introduction

2.1 Project Overview

In 2015, the City of Tukwila undertook a study to find a new truck route that would reduce the impacts of trucks in Allentown. This study, the *BNSF Railway Intermodal Facility Access Study* was completed at the end of 2016. The study proposed four new alternative truck routes to the intermodal facility that would not travel through residential streets of Allentown, and one alternative considered the impacts of keeping the current truck route in place (City 2025). The City has held open houses where the public provided input about the needs of their community and commented on the proposed truck route alternatives. As a result of the BNSF access study and the public's input, the City has prepared this Environmental Impact Statement to help the Allentown move forward in determining a solution for this issue.

2.2 Summary of the Environmental Review Process

2.2.1 EIS Scoping Process

As a result of the scoping process discussed in Section 1.5, and through internal scoping, several issues were documented in the scoping report (Tukwila 2023). The issues relevant to the SEPA analysis are identified in Table 2.2-1 with the section where each issue is discussed in the EIS. Public comments and public comment responses are provided in Appendix A.

Table 2.2-1 Issues Identified

Issues Identified During Scoping	Sections Where Issues are Addressed
Air Quality/ Greenhouse Gas	
Air quality as a serious concern for residents due to the amount of exhaust and high levels of CO_2 produced by trucks	Sections 4.5, 4.7, 4.11
Cultural Sites/ Resources	
The current route, and potential route alternatives, could negatively affect resources like the Duwamish Hill Preserve, the Duwamish River, wetlands, trails, and the Chinook Winds mitigation project.	Sections 4.4, 4.9, 4.11
Health and Safety	
Multiple comments specifically cited 6PPD (N-(1,3-dimethylbutyl)-N'-phenyl-p-phenylenediamine) chemicals from truck tires and PAH (polycyclic aromatic hydrocarbon) chemicals as a threat to neighborhood health.	Sections 4.2, 4.3, 4.7
Residents cited personal experiences of poor breathing and headaches due to constant truck fumes in the neighborhood.	Sections 4.5, 4.7
Commenters noted safety concerns for neighborhood children, elderly, and other pedestrians due to the consistent presence of large trucks.	Sections 4.4, 4.6, 4.7, 4.10
Noise	
Commenters noted rumbling, reverse beeps, and general truck noise as an issue with the current truck route and potential routes that pass through the neighborhood.	Section 4.10
Comments expressed difficulty sleeping as a direct consequence of truck noise.	Sections 4.7, 4.10

Issues Identified During Scoping	Sections Where Issues are Addressed
Plants and Animals	
Comments expressed concerns related to the wildlife in the area, specifically Coho Salmon and other fish, birds, seals, otters, beavers, ducks, geese, rabbits, eagles, and raccoons	Section 4.3
Comments noted the possible upheaval of trees for possible route alternatives as having a negative effect on the environment.	Sections 4.3, 4.4, 4.12
A comment from the Duwamish Tribe expressed, "While our focus is on preserving our cultural resources, we also support and recommend the removal of invasive species and noxious weeds and replace any proposed landscaping with only native vegetation to increase habitat for native fish, wildlife, avian life and pollinators."	Sections 4.3, 4.4, 4.9, 4.12
Public Services/ Utilities	
Multiple comments noted poor road conditions and excessive wear and tear to infrastructure due to consistent truck driving on residential roads.	Sections 4.6, 4.8
Social Elements and Environmental Justice	
Commenters mentioned that cost played a large role in decision-making. Comments noted that the potential cost of proposed alternative routes requiring new infrastructure, like an additional bridge, was a negative factor	Sections 4.6, 4.8
Commenters emphasized the diversity of the neighborhood and stated that thorough engagement is needed to communicate with everyone effected by the current, and potentially new, truck route	Section 4.11
Traffic	
Comments expressed frustration with the current use of roads by large trucks, which block traffic in the neighborhood due to size and possible breakdowns.	Sections 4.6, 4.7, 4.8,
Commenters expressed concern that some alternatives may be confusing for truck and residential drivers alike, which could create more traffic.	Section 4.6
A commenter suggested a thorough analysis of traffic impacts. Comment noted that travel time and reliability are important criteria for truck freight performance.	Section 4.6

2.2.2 Draft EIS Preparation, Publication, and Review

This Draft EIS is being prepared with the information and comments generated from the scoping process. Several alternatives were analyzed for their feasibility; a final set of alternatives were determined to be feasible actions, and some alternatives were eliminated from further analysis for reasons of environmental, financial, or logistical unfeasibility. This Draft EIS will discuss the final set of alternatives that were brough forth for analysis. Each alternative will be described, and the environmental and resource impacts for each of the alternatives will be thoroughly discussed. Along with the discussion of the impacts, the impact intensity will be evaluated, and mitigation efforts will be described.

The Draft EIS will be available for public and agency review. Once the review period of the Draft EIS is initiated, the public will have 30 days to comment. Notice of review and comment period will be published on the city website at: https://www.tukwilawa.gov/departments/public-works/construction-projects-and-transportation-impacts/allentown-truck-reroute-project/ . Public meetings will be held to inform the public of the Project, answer questions, and provide information regarding how to comment. Public comments received during the public comment period for the Draft EIS will be reviewed,

compiled, and responded to. Responses to these comments will be provided in an appendix to the Final EIS.

2.2.3 Final EIS Publication

The Final EIS will be available for review for 30 days following the publication of a Notice of Availability for the Final EIS. The City will review all comments received on the Final EIS during the availability period, and if the comments have merit, such as identifying significant new circumstances relevant to environmental concerns from the Proposed Action or Selected Alternative, the City will determine whether to supplement the EIS or if minor changes can be made to the existing EIS. The City will address all comments received on the Final EIS on the ROD (Record of Decision). Following the 30-day availability period and review of comments, a ROD will be issued. The Final EIS/ROD will cite the conclusions regarding the environmental effects and appropriate mitigation measures for the Selected Alternative.

2.3 Document Organization

This Draft EIS is organized into four main components. Sections 1 and 2 present a summary, introduction, and overview of the purpose, objective, issues, and potential impacts of the Project and Alternatives.

Section 3 describes the four alternatives for the Project. Illustrations and descriptions of the three new alternatives and the No Action Alternative are provided first. According to the State of Washing SEPA requirements, EISs need analyze only the reasonable alternatives (WAC 197-11-402). In the development of the alternatives for this proposed Project, several potential alternatives were presented for, or were generated through, the scoping process. The alternatives that were removed from further consideration are also provided in this EIS, along with a rationale as to why these alternatives were rejected. Also in Section 3 is a discussion regarding the benefits or disadvantages of delaying the Allentown Truck Reroute Project.

Section 4 is the largest section of the Draft EIS. This section presents the environmental analysis of each of the affected resources that were identified as present and important for consideration for this Project. Analysis is performed by resource, with a comparison of impacts as it pertains to each alternative. Along with an evaluation of the impacts on each resource per alternative, proposed mitigation measures will also be provided. Section 4 of the Draft EIS will also describe the significant unavoidable adverse impacts that each alternative may have on each resource.

The final analytical section of the EIS, Section 5, will present the cumulative impacts. Impacts will be discussed as they relate to present, past, and reasonably foreseeable future actions within the resource study areas. Impacts will be defined by magnitude, and then can be compared quantitatively and quantitatively (where possible). This comparative analysis of the cumulative impacts will assist in the selection of a Preferred Alternative.

3 Project Objective, Project Alternatives, and No Action Alternative

3.1 Intro

The City has worked with the residents of Allentown for more than 20 years to find a truck access route for the BNSF intermodal facility. The access route to the facility is along the southern edge of the community and truck traffic increases commensurate with rail traffic increases.

3.2 Applicant's Project Objective

The objective of the project is to reroute existing truck traffic accessing the BNSF intermodal facility in the Allentown neighborhood of Tukwila.

3.3 Description of the No Action Alternative

Under the No Action Alternative, the development of an alternate trucking access route for the BNSF South Seattle Hub would not be authorized, and the City would not conduct any construction for the proposed Project. Modifications or improvements to the trucking route and the BNSF hub would not occur, and activities would occur under the current operating conditions and authorizations.

In 2021, the 42nd Avenue South bridge was damaged by an oversized truck striking a bridge span, which made the bridge unsafe for vehicular use (Lindblom 2021). As a result, the truck traffic to the BNSF intermodal facility has been following a long-term detour. The 42nd Avenue South bridge is currently under plan for being rebuilt, and upon its completion, truck traffic to the BNSF intermodal facility will resume using this bridge. Truck traffic will resume travel along Interurban Avenue South, across the 42nd Avenue South bridge, and along 42nd Avenue South and South 124th Street to the BNSF intermodal facility. This resumed route will be the No Action Alternative, see Figure 3.3-1.

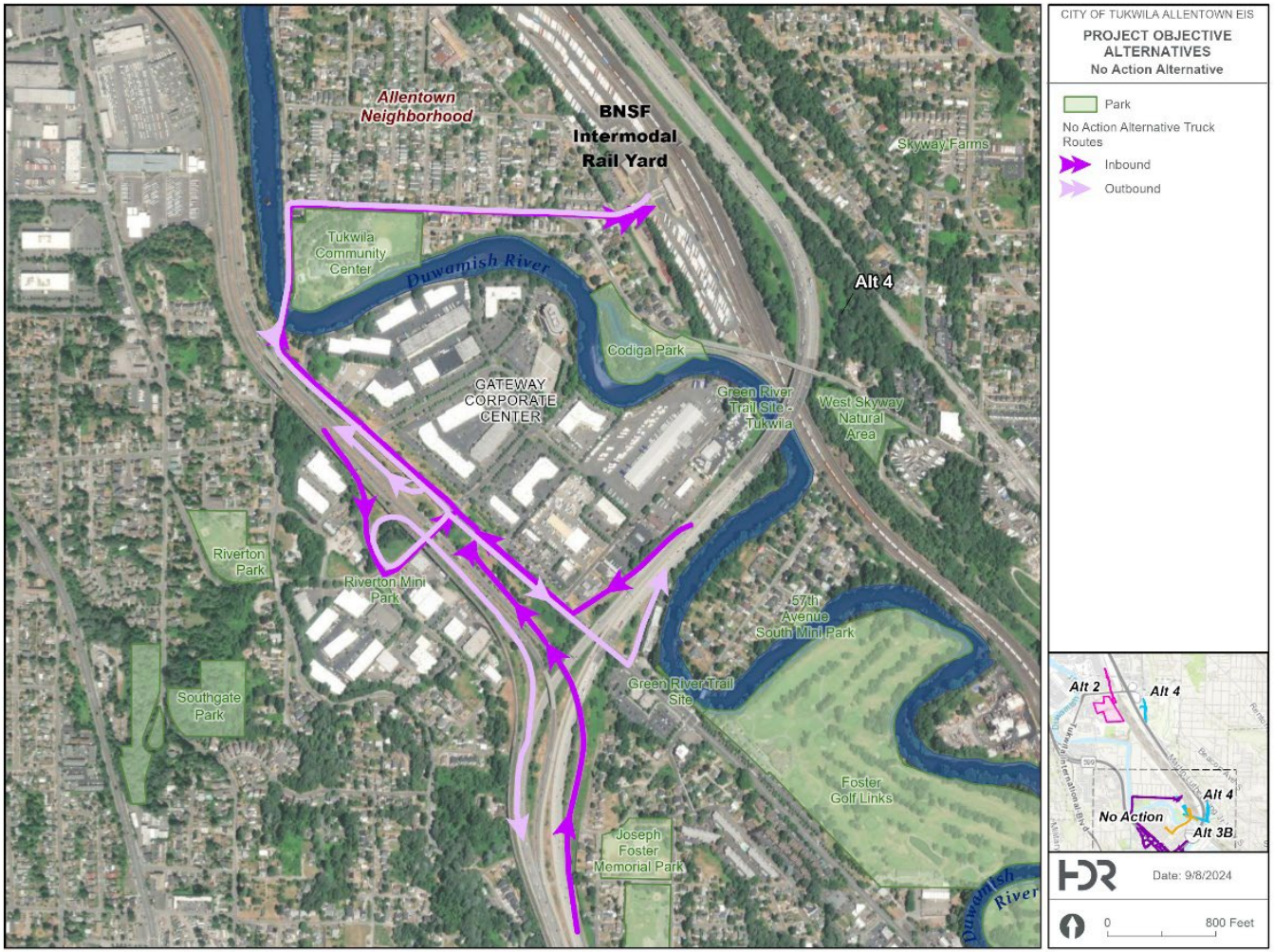


Figure 3.3-1. Overview of the No Action Alternative

3.4 Description of Project Alternatives

3.4.1 Alternative 2: Airport Way South

The City of Tukwila is re-evaluating access to the rail operations yard at the north end of the BNSF Intermodal Facility, see Figure 3.4-1. This alternative access would connect the northern end of the BNSF intermodal facility to Airport Way South. A new, bi-directional two-lane roadway would be constructed parallel to the existing railroad maintenance road that would provide ingress and egress to the BNSF intermodal facility. A new signalized intersection would be constructed at Airport Way South and the access road. To make this this alternative logistically practical, BNSF would need to construct the new railroad facility entrance buildings and entrance security infrastructure at the new entrance location; the existing facilities at the southern end of the facility would be removed. The intermodal site would need to have additional logistical revisions made to best utilize the space and revised traffic flow patterns entering and exiting the site. Plan sheets for this alternative can be found in Appendix B, Sheet 1.

Due to geometric constraints and the alignments of Airport Way South and the new access road, access to the BNSF intermodal facility is only feasible to and from the north at the new intersection on Airport Way. Trucks entering the facility would do so from southbound Airport Way South, and trucks leaving the facility would make a right turn onto northbound Airport Way South. Considering these restrictions, circulation to access I-5 would be via South Norfolk Street, East Marginal Way South, and South Boeing Access Road.

The proposed access road would have a design speed of 35 miles per hour, and would include two 12-foot-wide travel lanes (one northbound, one southbound) and five-foot-wide shoulders. The proposed profile is designed to minimize both the amount of required earthwork and the number of vertical curves. Four-to-one ratio (4:1) side slopes are proposed to tie into the existing ground on the western side of the roadway, and there is a need for a retaining wall on the eastern side to mitigate the impact on existing wetlands and existing BNSF rail tracks.

This alternative would require building a tunnel under the existing bridge on South Boeing Access Road (see Figure 3.4-2); the exact location of tunnel will need to be determined based on further surveys in order to avoid conflict with existing structure and to allow for future track expansion. With further analysis and survey information, there is also a possibility of relocating this roadway to the vacant area in front of the bridge abutment or on Boeing Access Road coupled with modifications to the structural abutment slope. Possible road relocation for Alternative 2 is not yet verifiable at the current level of design.

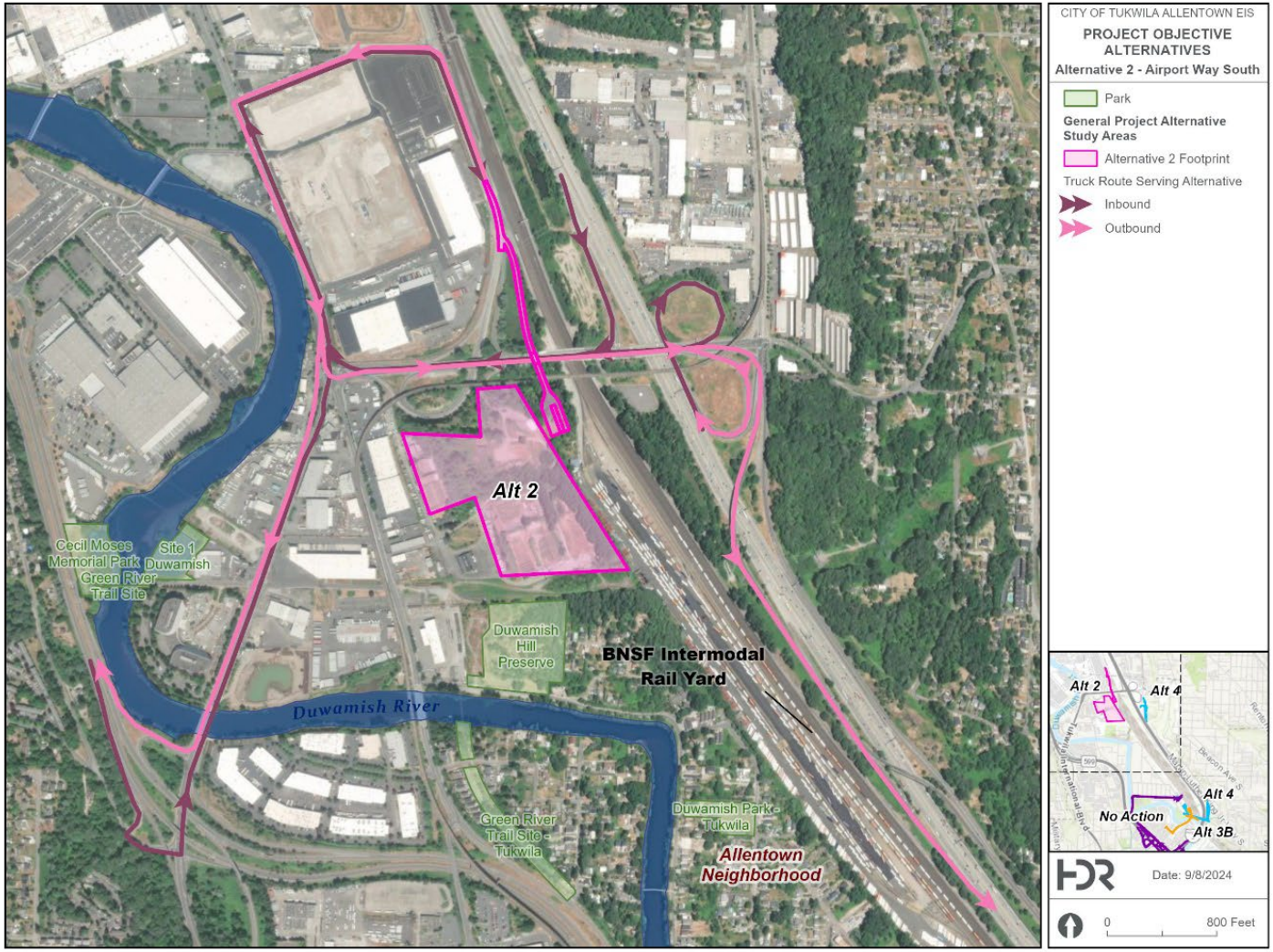


Figure 3.4-1. Overview of Alternative 2

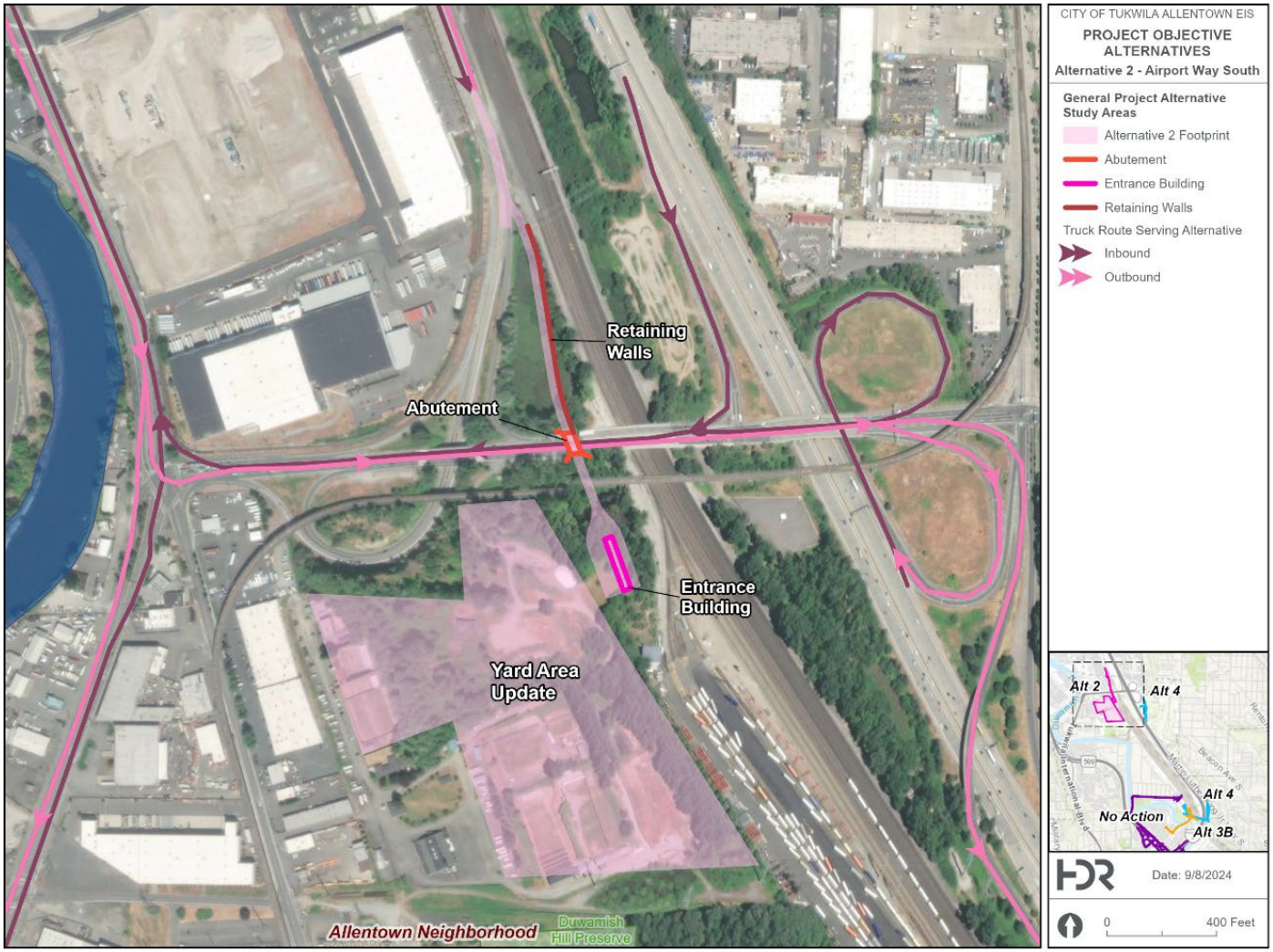


Figure 3.4-2. Feature Details for Alternative 2

This proposed alternative provides many benefits. The proposed alignment would be entirely within an industrial area, which would result in the facility entrance being relocated out of the residential neighborhood of Allentown. Another benefit would be the streamlined access to I-5 for trucks to enter and exit the facility. This option would not require any I-5 on/off ramp realignment, and multiple bridges would not need to be constructed.

The drawbacks of this alternative include the financial investments BNSF would need to make to relocate the check-in/check-out facility, and to construct truck queuing lanes, an operations and administrative building, chassis parking area and a truck storage access road along the western edge of the facility. This new road and relocated facilities cannot be fully built within the existing BNSF parcel, so new rights-of-way would be required to relocate these facilities. The area proposed for the location of these facilities is currently the site of the Seattle Police Athletic Association firearms training facility, a historic and popular location for both law enforcement and civilian members.

Another drawback is the cost associated with building a new tunnel under South Boeing Access Road. Some portions of the widened access road may impact an existing wetland in the vicinity which would also require the construction of retaining walls to mitigate that impact; remaining impacts would need to be mitigated off-site. Further delineation of wetland boundaries would need to be completed before environmental impacts can be confirmed.

3.4.2 Alternative 3B: Improvements to 48th Place South

This alternative would connect to the southern end of the BNSF intermodal facility. A new, bi-directional roadway would be constructed to the east of where 15th Avenue ends, extending along the BNSF property boundary, and would cross the Duwamish River and Green River trail on a new bridge, see Figure 3.4-3. The new roadway would connect at grade to Railroad Avenue South, and would provide ingress and egress to the BNSF intermodal facility under the existing South 129th Street bridge. A new signalized intersection would be constructed at the new roadway and Railroad Avenue. The railroad facility entrance security infrastructure would be constructed at the new entrance location, existing facilities would be removed, and their former areas would be repurposed as part of the new layout. The intermodal site would have additional logistical revisions made to best utilize the space and would have revised traffic flow patterns entering and exiting the site. Plan sheets for this alternative can be found in Appendix B, Sheet 4.

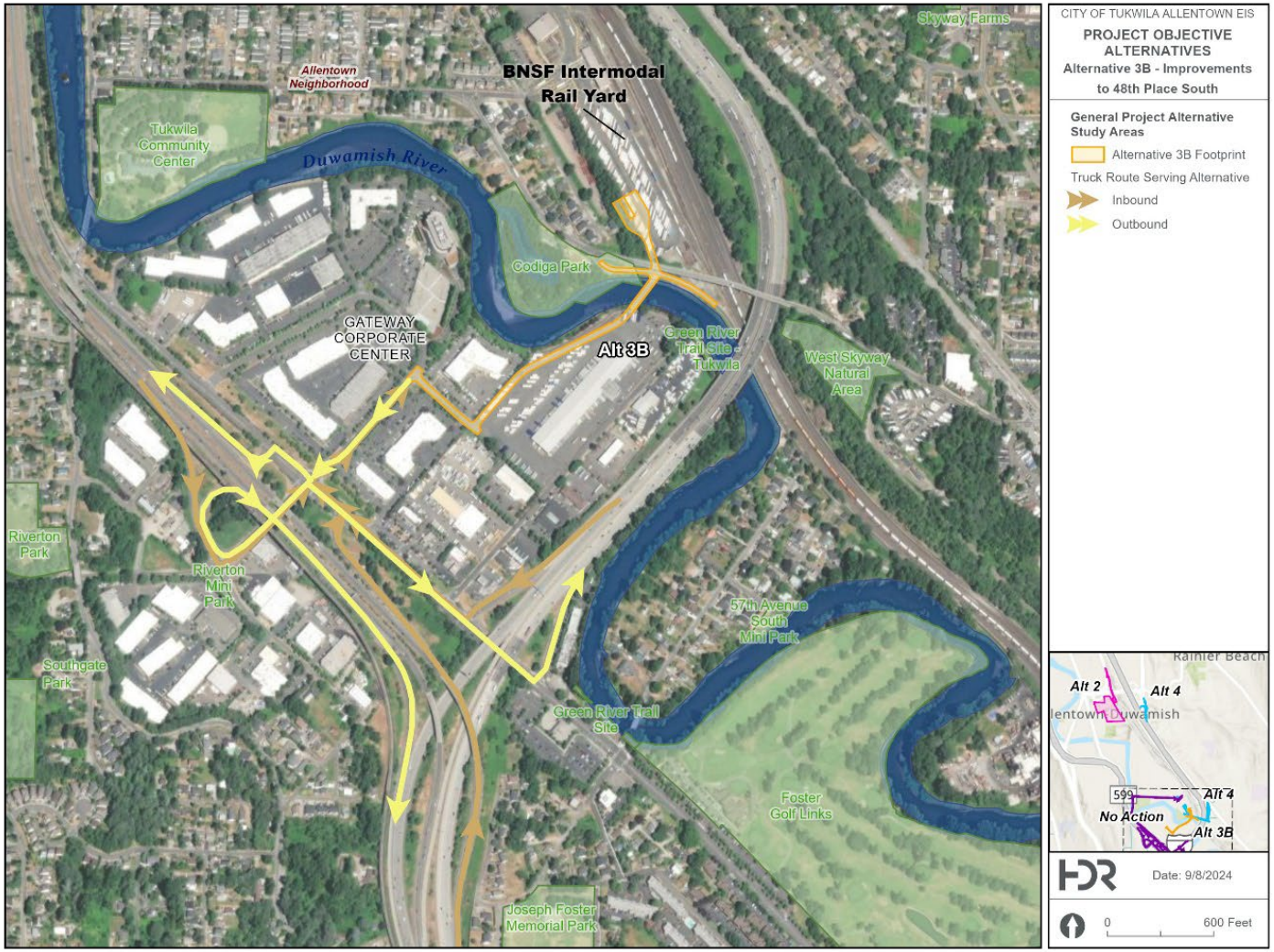


Figure 3.4-3 Overview of Alternative 3B

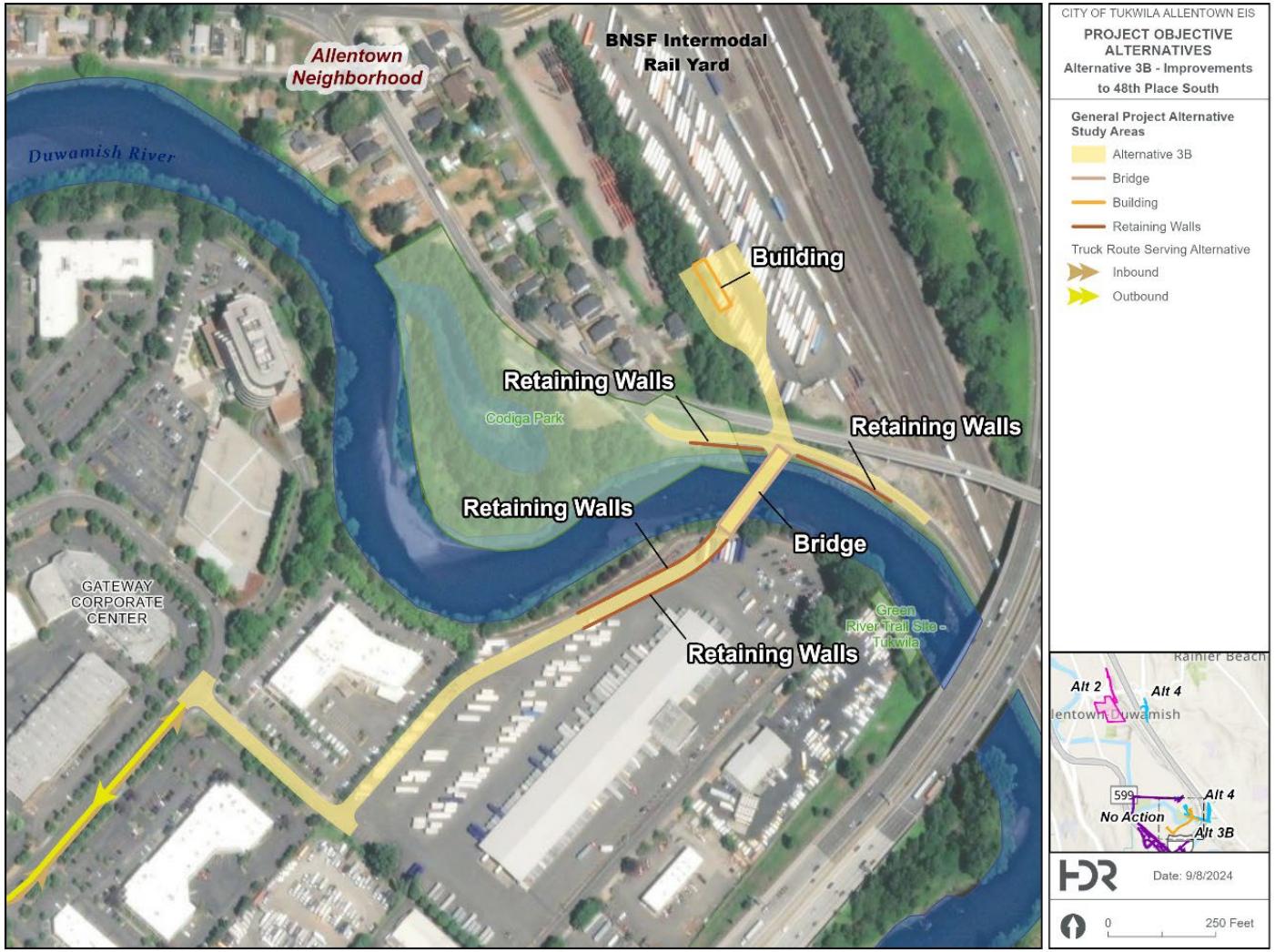


Figure 3.4-4. Feature Details for Alternative 3B

This proposed alternative provides many benefits. The proposed alignment would be completely within an industrial area of Allentown. Truck traffic would not be traveling along residential streets; Alternative 3B would provide streamlined access to I-5 for trucks entering and exiting the facility. Alternative 3B would connect to the southern end of the BNSF intermodal facility which would make the cost associated with relocation of the check in/out facility much lower and logistically more achievable.

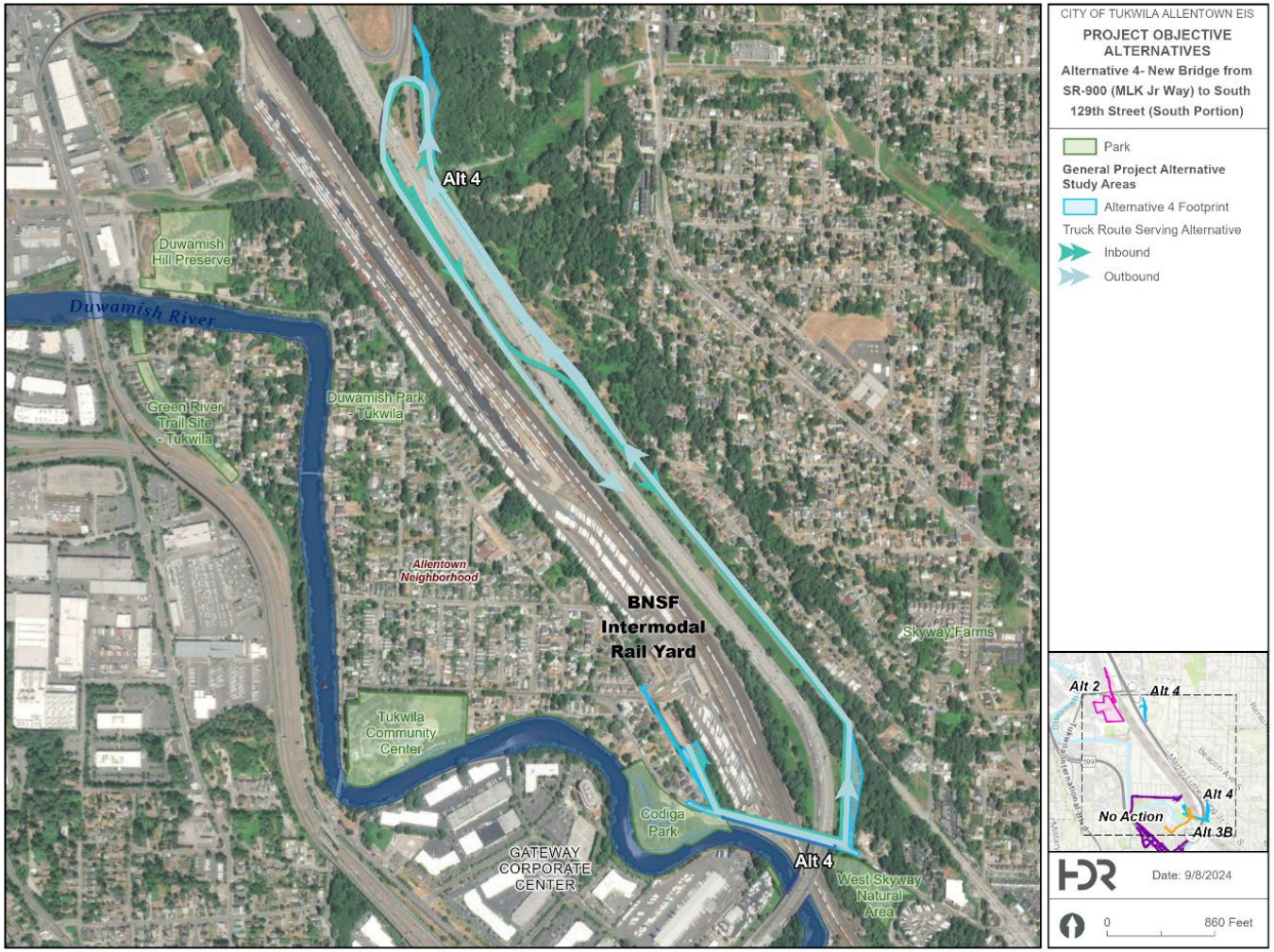
The drawbacks of this alternative include costs associated with relocating the check-in/check-out facility, constructing truck queuing lanes. This new road and the relocated facilities cannot be fully built within the existing city right-of-way, so new rights-of-way would need to be acquired. Another drawback is the cost associated with the structural components needed for this alternative, including building a new bridge and retaining walls. Moreover, this alternative could present an impact to the river by adding a new crossing.

3.4.3 Alternative 4: New Bridge from SR 900 (MLK Jr Way) to South 129th Street

This alternative would widen the South 129th Street bridge over I-5 and would construct a new roadway connecting SR 900 (Martin Luther King Junior Way) to South 129th Street. A new roadway would be constructed on BNSF property to provide direct truck access from South 129th Street to the new check in/check out location that would be moved to the south end of the BNSF intermodal facility. See Figure 3.4-5. To mitigate potential noise pollution, a noise wall would be installed between the new truck access road and 51st Place South. Truck traffic to northbound I-5 from the South 129th Street bridge would use the existing ramp from SR 900 (Martin Luther King Jr Way) to access the interstate. Revisions to the exit from the I-5 northbound/Boeing Access Road off ramp include shifting the roadway east to accommodate a new connection to the existing southbound on ramp from the Boeing Access Road Intersection, allowing for truck traffic to access I-5 in both directions. The shifting of SR 900 east would require a tall retaining wall to be constructed to support the hillside. For a detailed overview of the proposed alternative, refer to Appendix B, Sheet 5.

The 51st Place South roadway would have a design speed of 25 miles per hour, and would include two 12-foot-wide travel lanes and two 5-foot-wide shoulders. The widened South 129th Street bridge would have a design speed of 35 miles per hour, and would include three 12-foot-wide travel lanes (two uphill/southbound, one downhill/northbound), two five-foot-wide sidewalks, and curbing and gutters on both sides of the bridge. The existing bridge profile meets the minimum clearance requirements over I-5 and the BNSF rail lines and runs at a grade of 8% (based on lidar information available). A detail of the southern portion of Alternative 4 is shown in Figure 3.4-6.

The proposed truck ramps from I-5 to Boeing Access Road would have variable design speeds, as it is anticipated that traffic will decelerate to the posted speed limits once vehicles exit the interstate. The roadway would shift toward the east from the existing alignment by using a 713-foot radius curve with a 6% superelevated curve designed for 35 miles per hour. A left exit from the shifted roadway would connect traffic to the existing on ramp from Boeing Access Road to I-5; this exit would use a 134-foot radius curve with an 8% super elevation and would have a design speed of 25 miles per hour. The outer lane would continue towards Boeing Access Road using reverse curves to tie into the existing intersection. Signalized intersections are proposed at the 51st Place South/South 129th Street, South 129th Street/New Bridge, and New Bridge/SR 900 (Martin Luther King Jr Way) intersections. A detail of the northern portion of Alternative 4 is shown in Figure 3.4-7.



CITY OF TUKWILA ALLENTOWN EIS

PROJECT OBJECTIVE ALTERNATIVES

Alternative 4- New Bridge from SR-900 (MLK Jr Way) to South 129th Street (South Portion)

Park

General Project Alternative Study Areas

Alternative 4 Footprint

Truck Route Serving Alternative

Inbound

Outbound

Date: 9/8/2024

0 860 Feet

Figure 3.4-5. Overview of Alternative 4

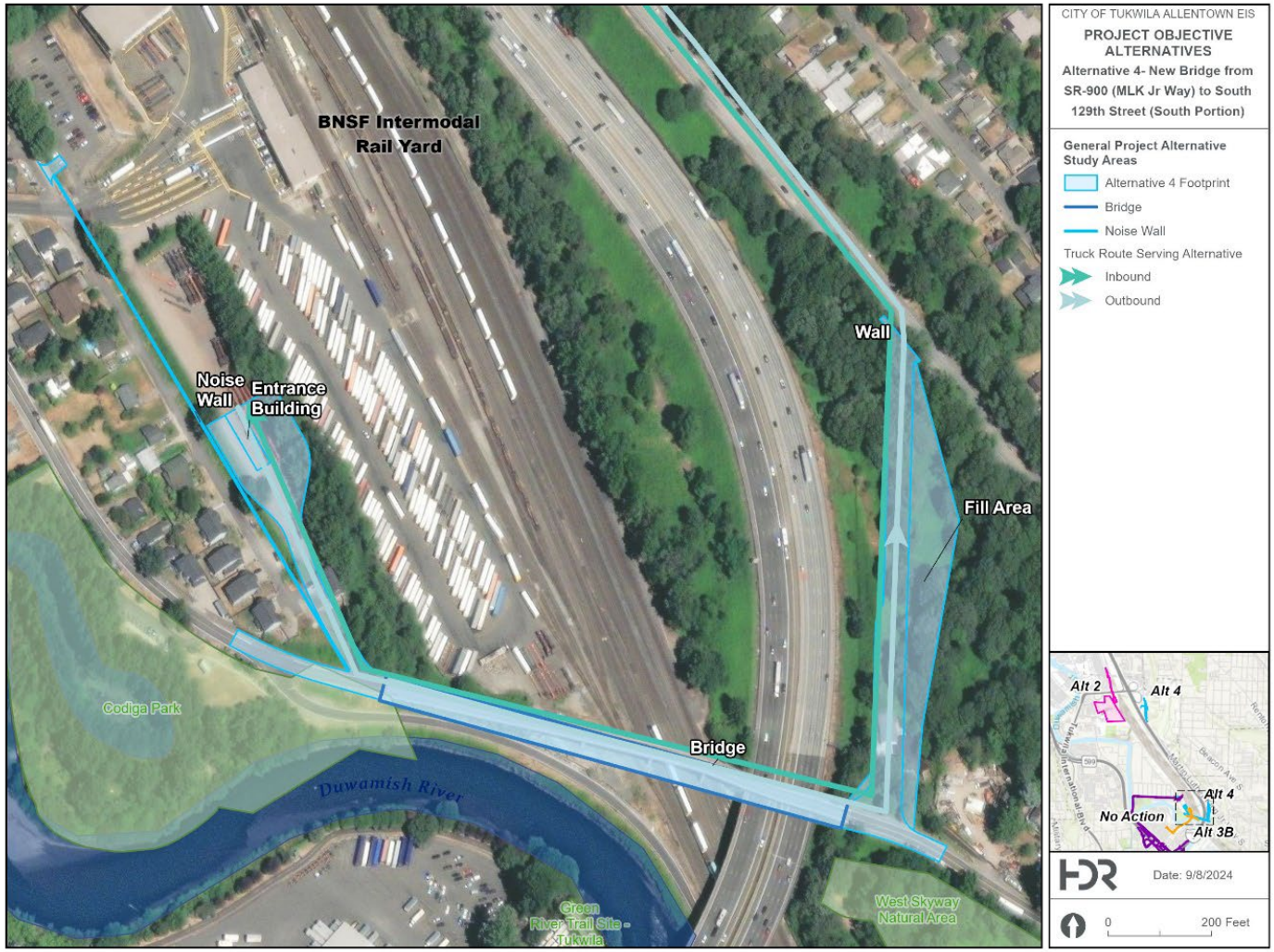


Figure 3.4-6. Feature Details for Alternative 4, Southern Portion

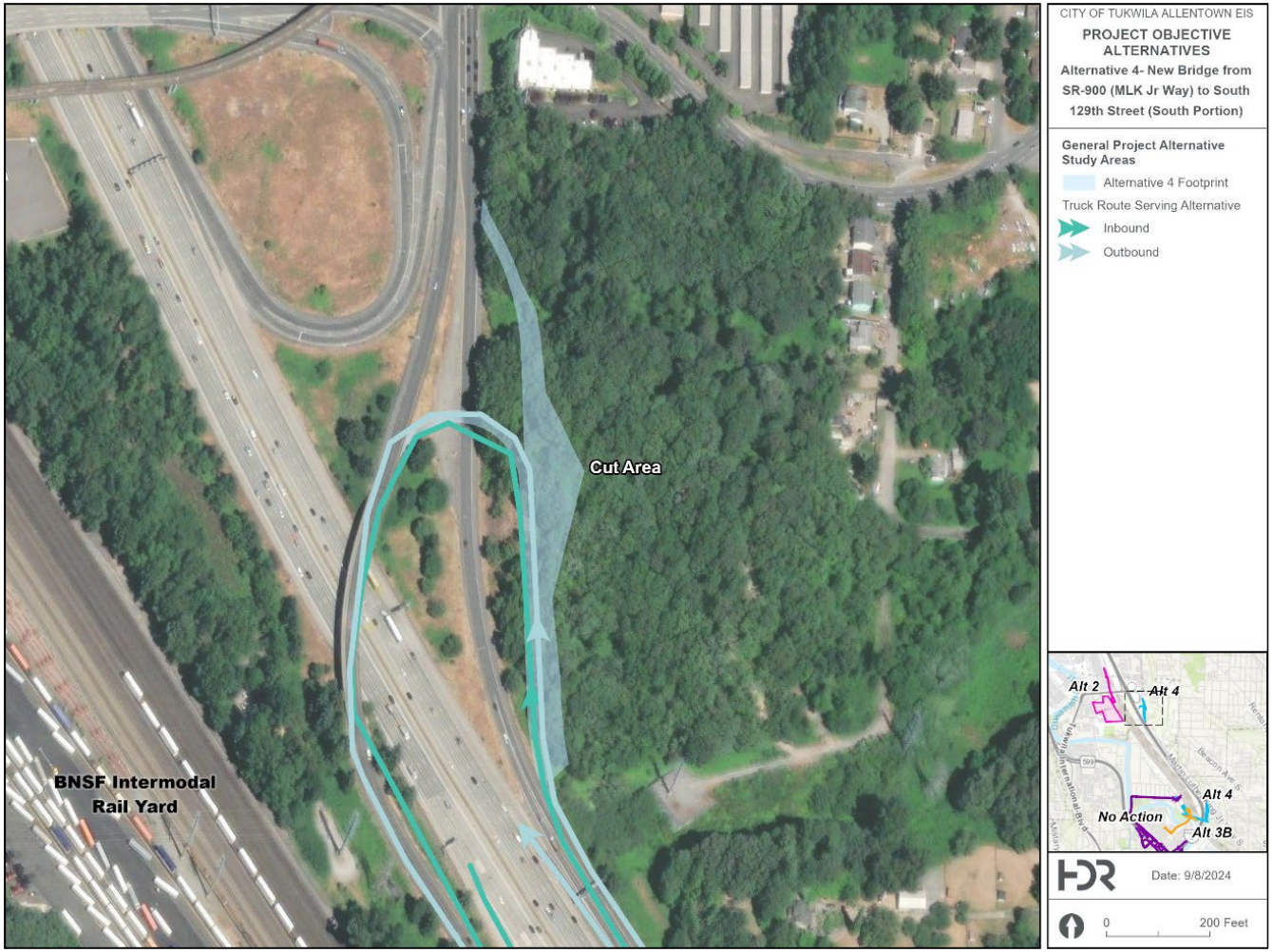


Figure 3.4-7. Feature Details for Alternative 4, Northern Portion

The proposed alternative presents several benefits including structural upgrades to the existing South 129th Street bridge and reconstructing poor condition segments. This resolves a future maintenance /replacement issue that the City and WSDOT would need to address. It improves the connection between SR 900 and South 129th Street, reducing congestion at the existing South 129th Street/MLK Jr Way South intersection. This alternative provides direct on-ramps to I-5 and moves the major truck movements to MLK Jr Way South. The cost associated with relocating the check in/out facility will be less in comparison to Alternative 2 since it relocates it to the southern part of the facility.

The drawbacks of this alternative include the increase of weaving traffic, especially trucks, at the SR 900/I-5 on-ramp and I-5/Boeing Access Road off-ramp. The reduction in design speed to facilitate the on ramp could present safety or operational issues and may require a deviation approval. Construction to replace a section of the existing bridge and widen the bridge over the BNSF yard and rail lines would be disruptive to BNSF operations and would require significant coordination.

3.5 Alternatives Removed from Further Consideration

In accordance with 40 CFR 1502.14(a), agencies are required to describe the alternatives considered but eliminated from detailed study and to provide a brief rationale for eliminating the alternative. Alternatives should be explored and objectively evaluated in the EIS. The Council on Environmental Quality (CEQ) defines reasonable alternatives as 'those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simple desirable from the standpoint of the applicant" (CEQ 1986).

Similarly, the Washington State SEPA handbook and regulations require alternatives to be considered, and as potential alternatives are identified, they should be measures against certain criteria for viability: 1) Do they feasibly attain or approximate the proposal's objectives?; and 2) Do they provide a lower environmental cost or decreased level of environmental degradation than the proposal? Alternatives may be selected or eliminated based on their ability to meet the SEPA criteria.

Potential alternatives were reviewed to determine if they were consistent with the following criteria: 1) Consistent with the Purpose and Need, 2)Technically Practical and Feasible, 3) Economically Practical and Feasible, and 4) Environmentally Reasonable. In addition to the Preferred Alternative, as required by regulation (40 CFR Part 1502.14 (c)), the No Action Alternative is included in the document as an alternative carried through for full analysis. In addition, Alternatives 2, 3B, and 4 have been included as action alternatives and have been analyzed. There were three additional alternatives that were considered but were dismissed from detailed analysis: Alternatives 1, 3A, and 5.

3.5.1 Alternative 1: Extension of South 112th Street, East Marginal Way South to BNSF along Utility Right-of-Way

Under this proposed alternative, South 112th Street would be extended west of East Marginal Way South to the BNSF South Seattle Intermodal Facility. The proposed access route would be approximately one-third of a mile long and would require a new intersection at East Marginal Way South. This route was proposed because truck traffic would avoid driving through areas that are zoned for residential use; traffic would be confined to I-5 and roadways in industrial areas.

This alternative would create new ground disturbance within the right-of-way for Seattle Public Utilities and Seattle City Light. While the proposed route may be short in length, the construction and operation of this route could result in damage, outages, and significant disruptions in service for public utilities.

Utilities such as water, sewer, telecommunications, and electric are both buried and carried overhead through this right-of-way. Daily heavy vehicle traffic could compact soils which could damage pipelines and buried utilities, and oversized or wide-turning vehicles within a limited right-of-way could damage poles, lines, and other infrastructures that support overhead utilities.

Because of the high potential of damage and disruption to essential public utilities, and of the potential physical and health hazards to the community as a result of those damages or outages, this alternative was eliminated from further consideration.

3.5.2 Alternative 3A: Gateway Drive to 48th Place South

Under this proposed alternative, truck traffic would follow a similar route described for Alternative 3B (Section 3.3.2) except that truck traffic routed along 48th Place South, a two-lane road with businesses and a hotel. This route was proposed because there would be a short distance between I-5 and the BNSF facility, and heavy vehicle traffic would travel primarily within a commercially zoned area.

This proposed access route would require the construction of widened and improved roadways, new fencing and noise walls, and a new bridge over the Duwamish River. Large vehicles operating along this route would have a greater presence along the popular recreation areas of Codiga Park and the Green River Trail. The bridge approach for this proposed alternative would need to be 10 feet above the existing grade in order to adequately clear other existing roadways and infrastructures. Large vehicles also require a wide turning radius and would require the acquisition of new or expanded rights-of-way or easements. Furthermore, the short distance between the southbound I-5 off ramp and 48th Place South would also require engineering features to create safe stopping distances for heavy vehicles.

Because of initial impact evaluation to environmental, recreation, and right-of-way resources, this alternative was eliminated from further consideration.

3.5.3 Alternative 5: I-5 Access

Under this proposed alternative, truck traffic would follow a similar route described for Alternative 4 (Section 3.4.3) except that a new bridge connecting South 129th Street and SR 900 would be constructed over I-5 and the BNSF rail yard and lines rather than being built farther to the east and the truck route using the existing South 129th Street overpass. This route was proposed because the route would be located primarily within highway rights-of-way, commercial or industrial-zoned areas, or within BNSF property.

This proposed access route would require the construction of a new noise wall along Codiga Park, a new dedicated truck access bridge connecting South 129th Street and SR 900, and new ramps along I-5, SR 900, and from South 129th Street to the BNSF facility. The new ramps that would tie directly into I-5 would have a sharp turning radius, thereby requiring slow speeds. Trucks entering the flow of traffic on Interstate 5 at slow speeds would result in safety issues and congestion. The construction of ramps for access onto SR 900 would require the acquisition of new or expanded rights-of-way or easements.

Because of initial impact evaluation to highway safety and right-of-way resources, this alternative was eliminated from further consideration.

3.6 Benefits and Disadvantages of Delaying Project Implementation

Washington State SEPA (WAC 197-11-440 5b(vii)) requires environmental documents to include discussion of the benefits and disadvantages of reserving for some future time the implementation of

the proposal, as compared with possible approval at this time. The perspective of the Proponent should be that of a trustee of the environment for succeeding generations, and particular attention should be given to the possibility of foreclosing future options be implementing the Proposed Action.

Delaying the implementation of this project would result in the conditions described under the No Action Alternative (Section 3.4). The benefits and disadvantages of delaying Project implementation are presented in Table 3.6-1.

Table 3.6-1 Benefits and Disadvantages of proposed Project Implementation Delay

Resource	Benefits	Disadvantages
Financial	• The City of Tukwila will not need to allocate expenditures for the proposed Project at this time	• As construction costs rise, waiting until later to implement the proposed Project will result in a greater expense
Noise, Air Quality, Health and Safety	• Commuters and residents will not experience delays and noise from construction until a later time	• The community of Allentown be exposed to heavy truck traffic, noise, and exhaust in residential areas for a longer period of time
Recreation	• Recreational areas such as Codiga Park and the Green River Trail will not be impacted by construction until a later date	• The Tukwila Community Center will continue to experience a high level of heavy vehicle traffic
Plants and Animals	• Plants and animals will not have habitat altered and will not be disturbed by construction or operation.	• Delaying the Project delays the implementation of new stormwater infrastructure which could have a positive impact on plants and animals affected by stormwater runoff, specifically listed fish species.
Water Resources	• Depending on the route selected, water resources in the area will not be impacted by potential pollution or disturbance from construction or operation.	• Delaying the Project delays the implementation of new stormwater infrastructure which could have a positive impact on water resources.

4 Environmental Analysis

4.1 Geology/Soils

This section discusses the existing geology and soils in the study area and potential impacts resulting from the construction and operation of Alternatives 2, 3B, 4, and the No Action Alternative.

The potential for the proposed project to result in long-term operational effects was assessed based on geologic processes and geologic hazards that could affect slope stability, soil structure, and ground motion. The potential for geologic hazards to alter or damage the proposed project was determined based on the proposed project's proximity to the hazard and the existing geologic features that would influence the relative risk.

This section also identifies proposed mitigation measures for potential impacts.

4.1.1 Affected Environment

The study area for geology and soils includes the footprint for Alternatives 2, 3B, and 4. and the general vicinity of the No Action Alternative.

4.1.1.1 Regional Geology and Topography

The proposed Project is located within the Duwamish River valley, situated within the Puget Lowland Geologic Province, which lies between the Cascade Mountain Range to the east and the Olympic Mountains to the west. The area has been affected by episodic glaciation throughout the past 2.4 million years and tectonic deformation associated with the Cascadia Subduction Zone. The landscape has been largely formed by repeated cycles of glacial scouring and deposition as well as tectonic activity. The Puget Lowland Geologic Province has also been modified by landslides, stream erosion and deposition, and human activity. Geologic units in the area generally consist of Quaternary glacial deposits (Washington Department of Natural Resources [WADNR] 2024a).

4.1.1.2 Soils

4.1.1.2.1 No Action Alternative

Per the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey map, soils in the study area for the No Action Alternative are mainly Urban Land. Per the USDA Urban Soils Fact Sheet (2019), the term urban soil refers to soils in areas of high population density in the largely built environment. These soils can be significantly changed human-transported materials, human-altered materials, or minimally altered or intact "native" soils. Soils in urban areas exhibit a wide variety of conditions and properties and may have impervious surfaces, such as buildings and pavement. These soils are not considered prime farmland. Figure 4.1-1 includes the soils mapped within the No Action Alternative.

4.1.1.2.2 Alternative 2

Per the NRCS soil survey map, soils in the study area for Alternative 2 are mainly Urban Land. Figure 4.1-2 includes the soils mapped within the Alternative 2 study area.

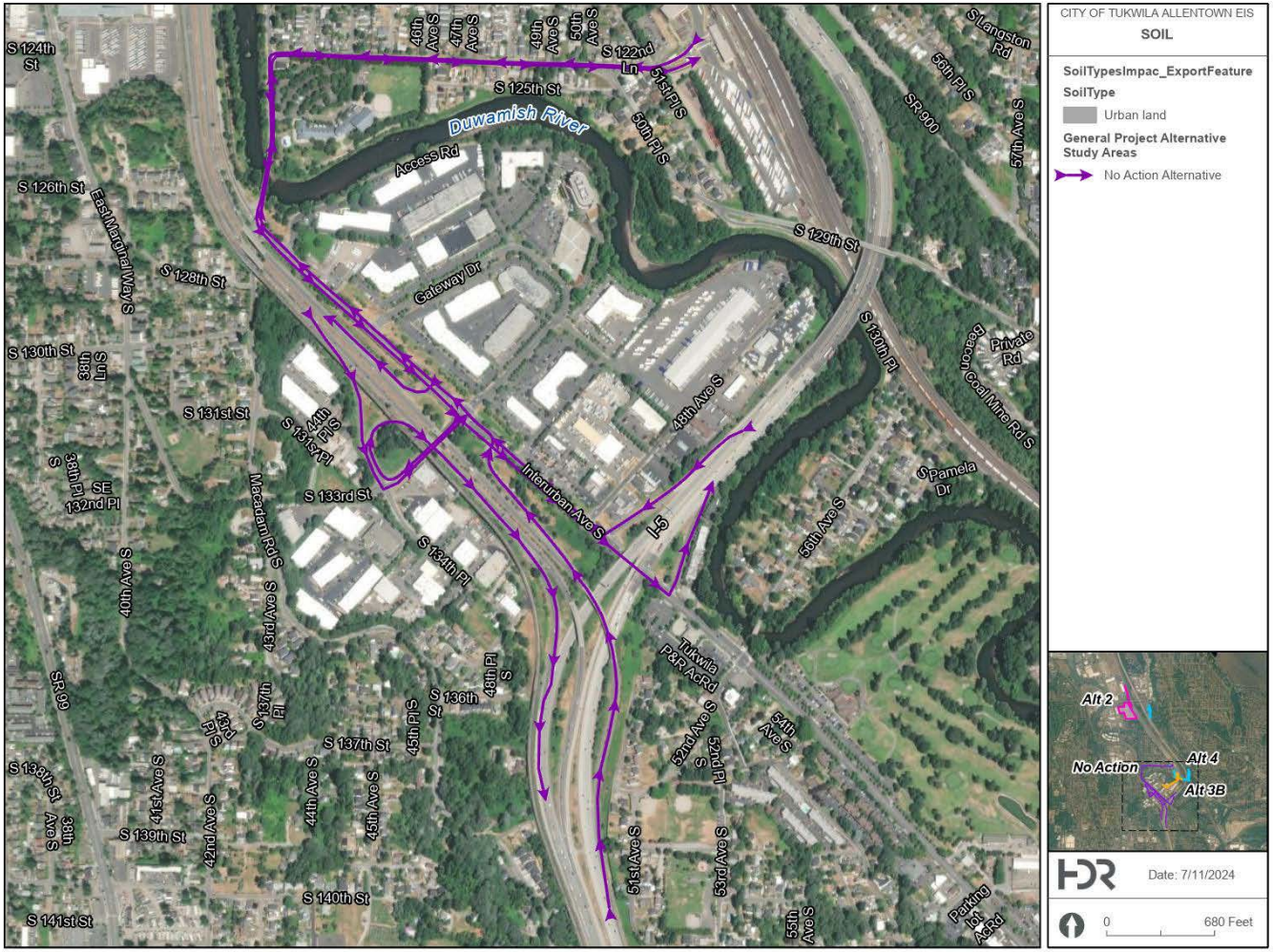


Figure 4.1-1. Soils Mapped in for the No Action Alternative

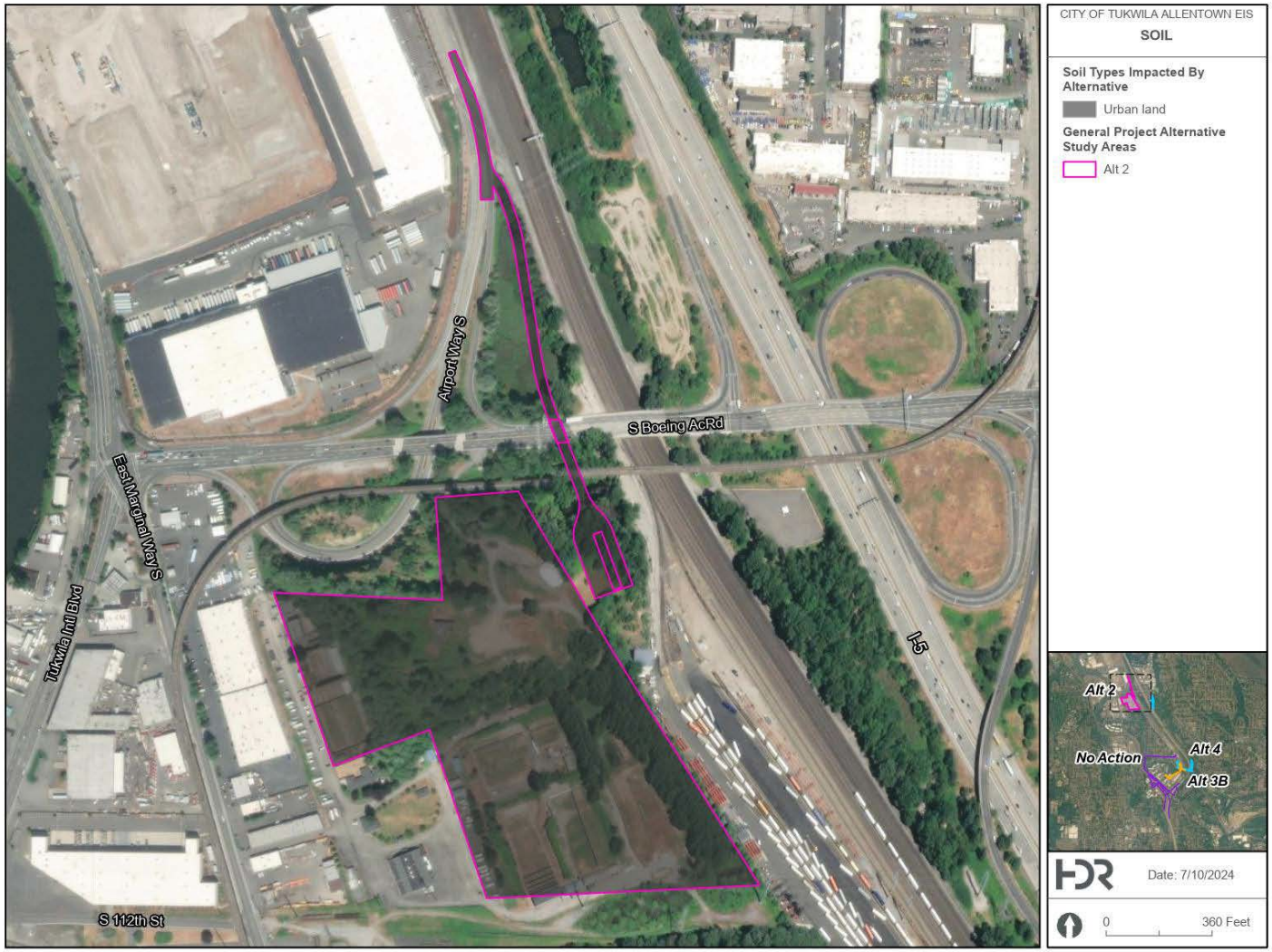


Figure 4.1-2. Soils Mapped in Alternative 2 Study Area

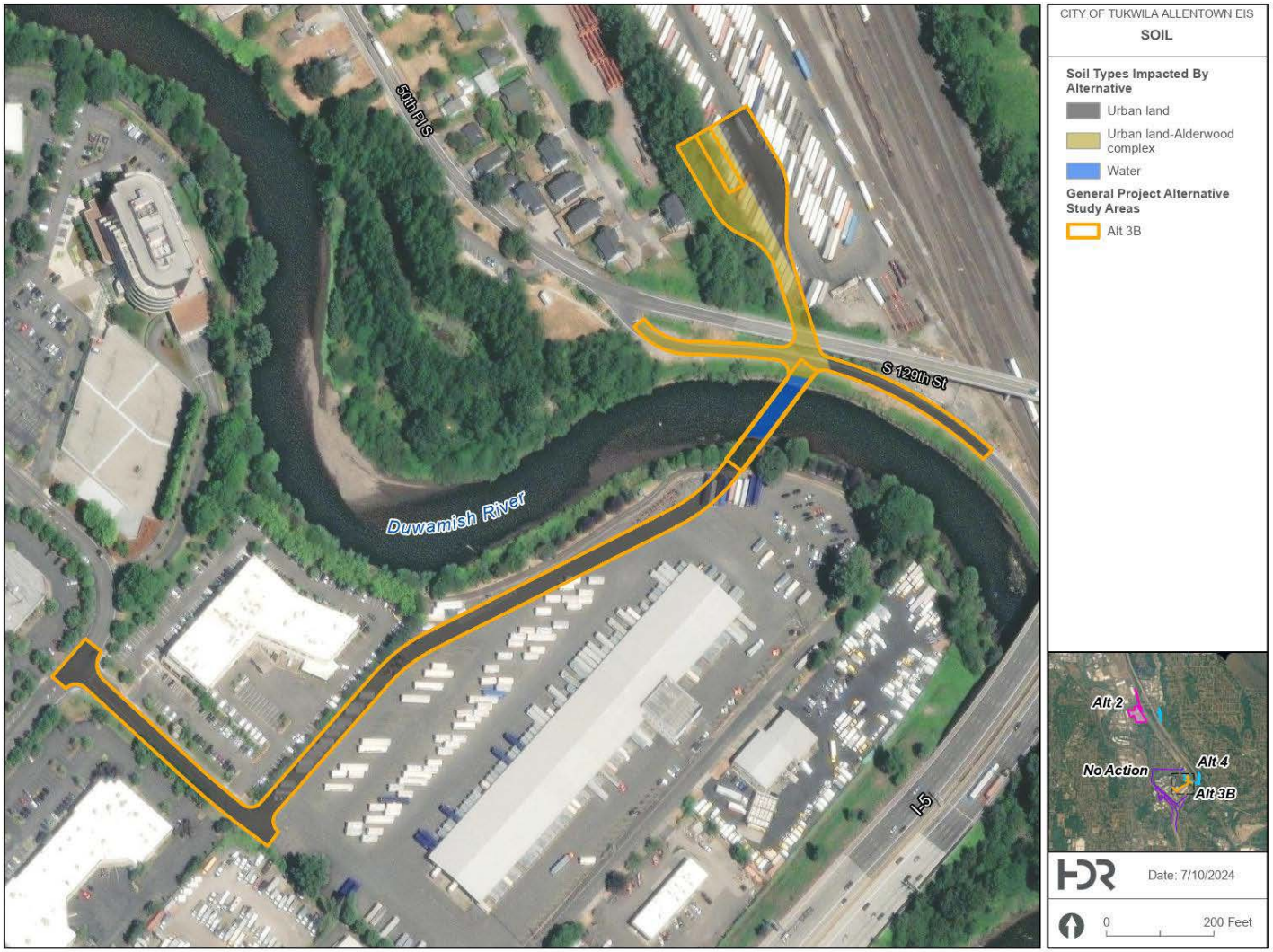


Figure 4.1-3. Soils Mapped in Alternative 3B Study Area

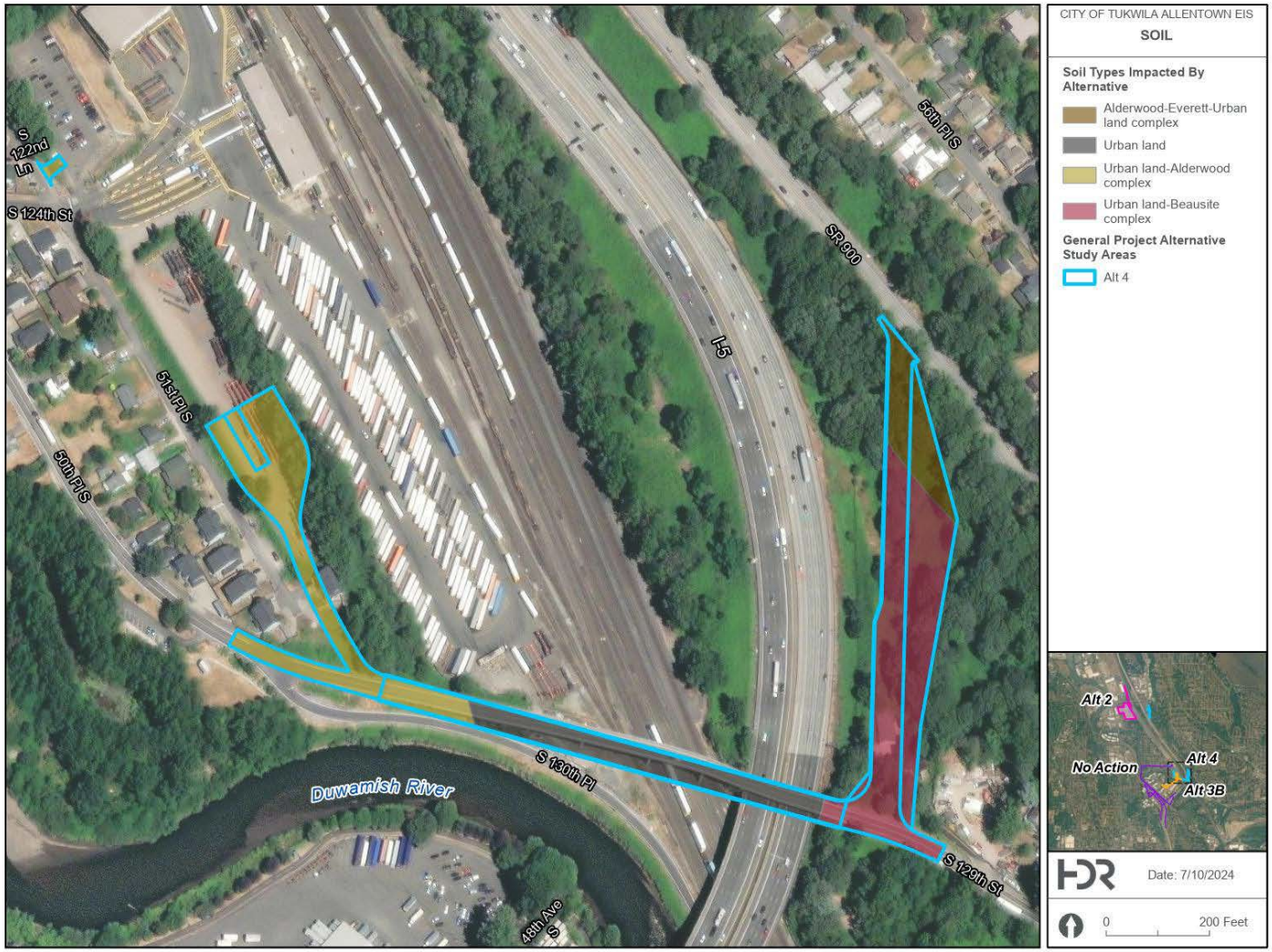


Figure 4.1-4 Soils Mapped in Alternative 4 Study Area Southern Portion

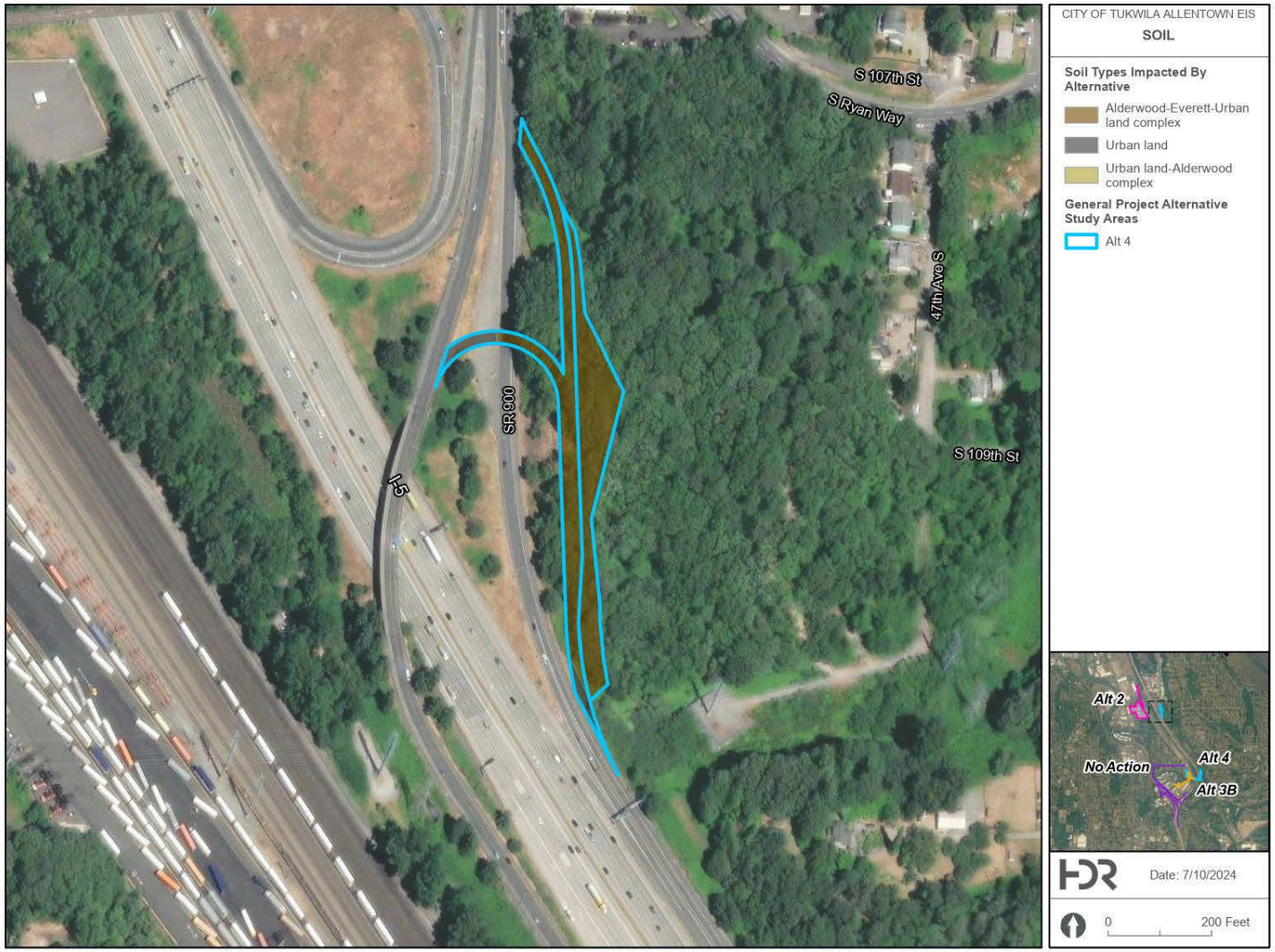


Figure 4.1-5 Soils Mapped in Alternative 4 Study Area Northern Portion

4.1.1.2.3 Alternative 3B

Per the NRCS soil survey map, soils in the study area for Alternative 3B are mapped as Urban Land 0 to 5-percent slopes and Urban Land-Alderwood complex, 12 to 35-percent slopes (Figure 4.1-3). None of these soils are mapped as prime farmland.

4.1.1.2.4 Alternative 4

Per the NRCS soil survey map, soils in the study area for Alternative 4 are mapped as Alderwood-Everett-Urban land complex, Urban land, Urban land-Alderwood complex, and Urban land Beausite complex. None of these soils are mapped as prime farmland. Figure 4.1-4 and Figure 4.1-5 show the soils mapped for the Alternative 4 study area.

4.1.1.3 Geologic Hazards

4.1.1.3.1 Mines

Per City of Tukwila Municipal Code (TMC) 18.06.101, mine hazards are defined as those areas directly underlain by, adjacent to, or affected by mine workings such as adits, tunnels, drifts, or air shafts. King County Code (KCC) defines mine hazards as an area underlain or directly affected by operative or abandoned subsurface coal mine workings (KCC 21A.06.200). Per KCC 21A.24.205, King County utilizes the following three classifications for Coal Mine Hazard Areas:

- Declassified coal mine areas are those areas where the risk of catastrophic collapse is not significant and that the hazard assessment report has determined do not require special engineering or architectural recommendations to prevent significant risks of property damage. Declassified coal mine areas typically include, but are not limited to, areas underlain or directly affected by coal mines at depths of more than three hundred feet as measured from the surface.
- Moderate coal mine hazard areas are those areas that pose significant risks of property damage that can be mitigated by implementing special engineering or architectural recommendations. Moderate coal mine hazard areas typically include, but are not limited to, areas underlain or directly affected by abandoned coal mine workings from a depth of zero, which is the surface of the land, to three hundred feet or with overburden-cover-to-seam thickness ratios of less than ten to one depending on the inclination of the seam.
- Severe coal mine hazard areas are those areas that pose a significant risk of catastrophic ground surface collapse. Severe coal mine hazard areas typically include, but are not limited to, areas characterized by unmitigated openings such as entries, portals, adits, mine shafts, air shafts, timber shafts, sinkholes, improperly filled sinkholes and other areas of past or significant probability for catastrophic ground surface collapse; or areas characterized by , overland surfaces underlain or directly affected by abandoned coal mine workings from a depth of zero, which is the surface of the land, to one hundred fifty feet.

No mines are mapped by the City of Tukwila (2024a), King County (2024a) or DNR (2024b) within the study area for the Project.

4.1.1.3.2 Areas of Potential Geologic Instabilities/Landslide Hazard Areas

Disturbances can cause mass movements of soil, rock, or debris known as landslides when slopes are not stable. The occurrence of a landslide depends on multiple factors, including but not limited to slope steepness, soil profile, slope shape, frequency of extreme weather events or earthquakes, and the density of vegetation in a given area.

The City of Tukwila regulates areas of potential geologic instability. TMC 18.45.120 defines these areas as the following:

- Class 2 are areas that have a slope between 15 percent and 40 percent and are underlain by relatively permeable soils.
- Class 3 areas include areas sloping between 15 percent and 40 percent, which are underlain by relatively impermeable soils or by bedrock and also include all areas sloping more steeply than 40 percent.
- Class 4 areas include sloping areas with mappable zones of groundwater seepage, and which also include existing mappable landslide deposits regardless of slope.

The No Action Alternative transects areas mapped as both Class 2 and Class 3 landslide hazard areas (Figure 4.1-6).

As illustrated in Figure 4.1-7, Alternative 2 transects mapped areas of both Class 2 and 3 potential geologic instabilities near the center of the alignment and the at the southern extent of the alternative.

Alternative 3B transects mapped areas of Class 2 and 3 potential geologic instabilities near South 129th Street and Railroad Avenue as well as where the Alternative crosses the Green River Trail (Figure 4.1-8).

Alternative 4 also transects Class 2 and Class 3 potential geologic instabilities in the portion of the Alternative located within the City of Tukwila (Figure 4.1-9 and Figure 4.1-10).

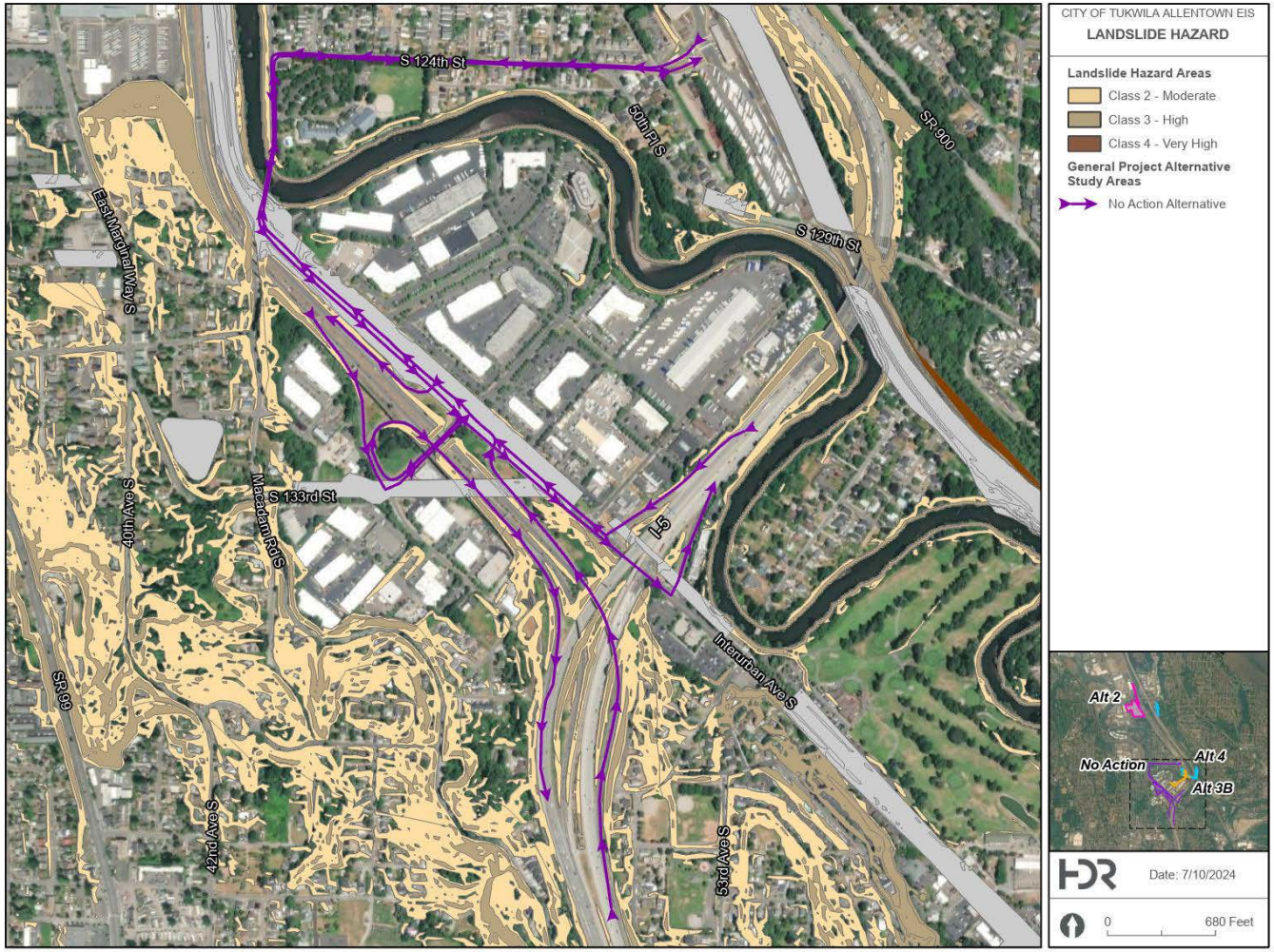


Figure 4.1-6. Potential Geologic Instabilities/Landslide Hazard Areas for the No Action Alternative

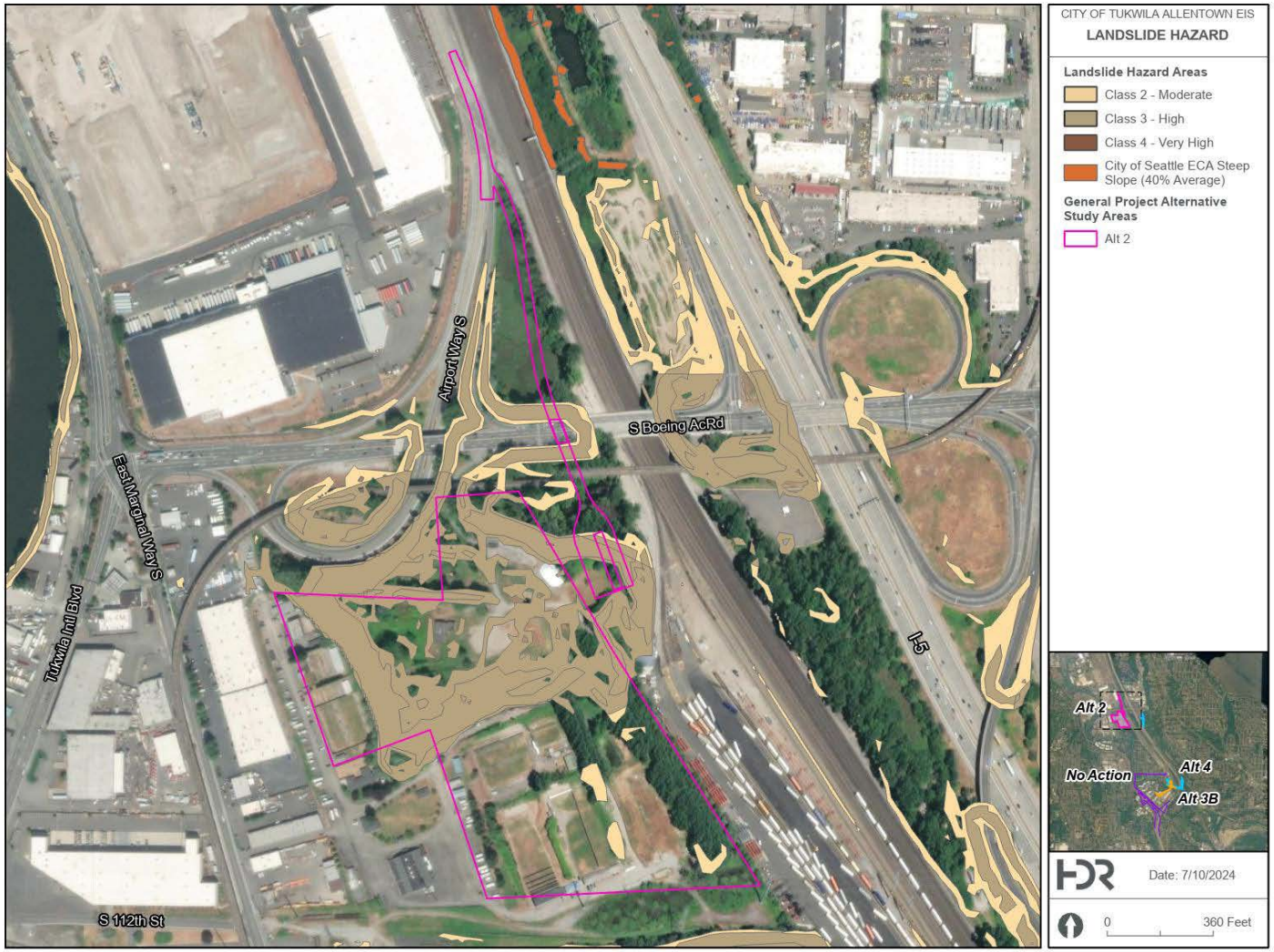


Figure 4.1-7. Potential Geologic Instabilities/Landslide Hazard Areas for Alternative 2

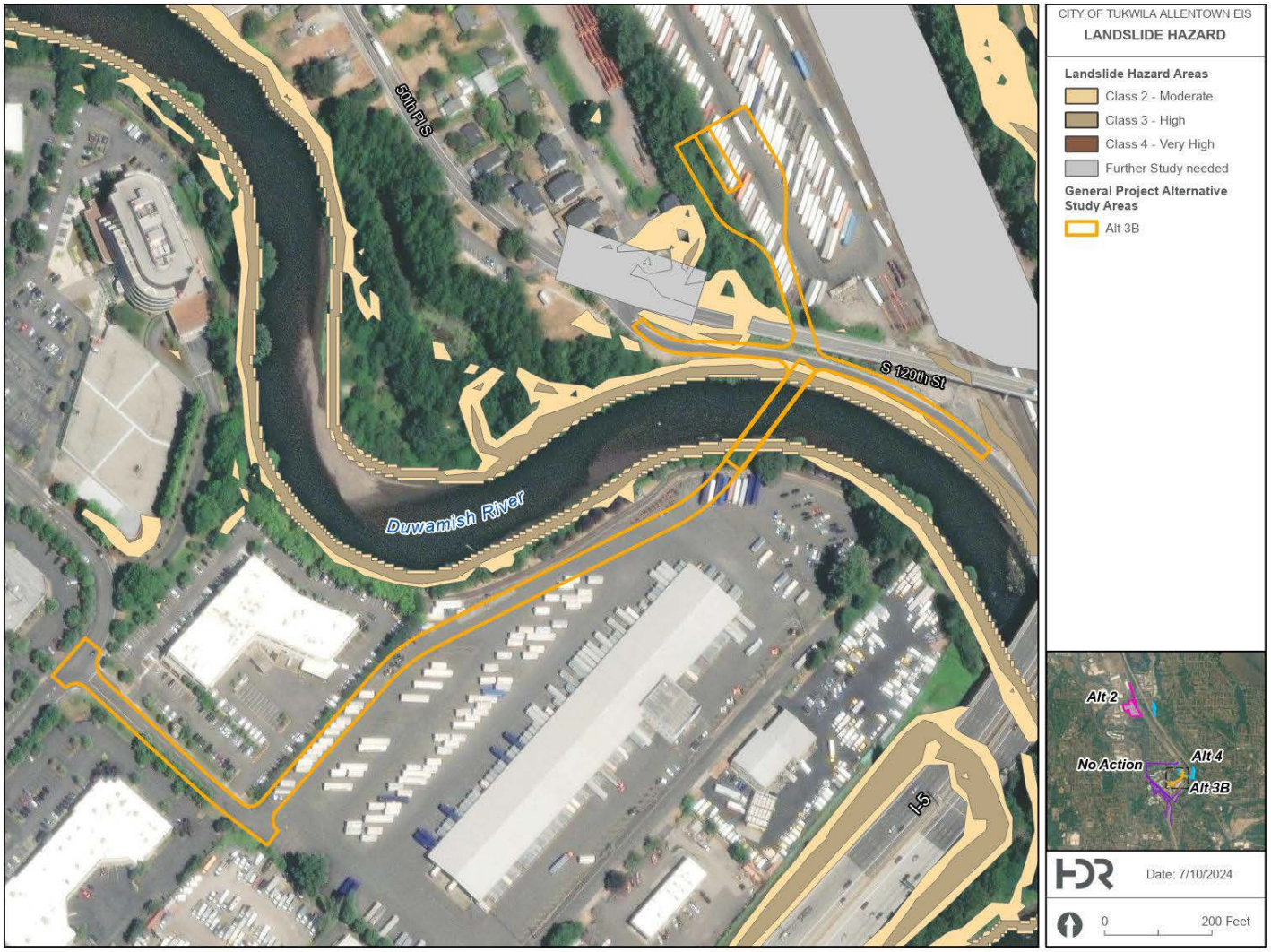


Figure 4.1-8. Potential Geologic Instabilities/Landslide Hazard Areas for Alternative 3B

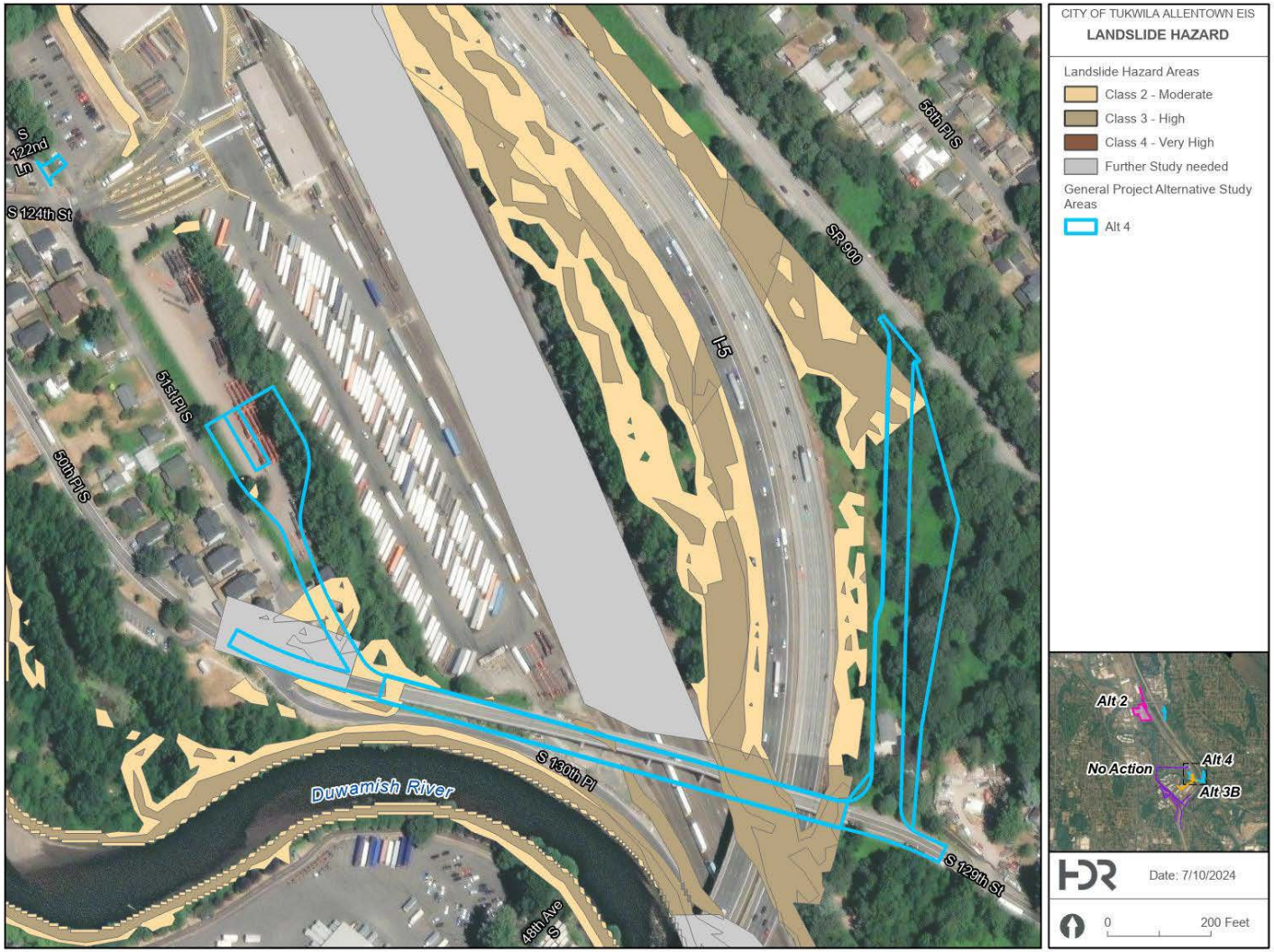


Figure 4.1-9. Potential Geologic Instabilities/Landslide Hazard Areas for Alternative 4, Southern Portion

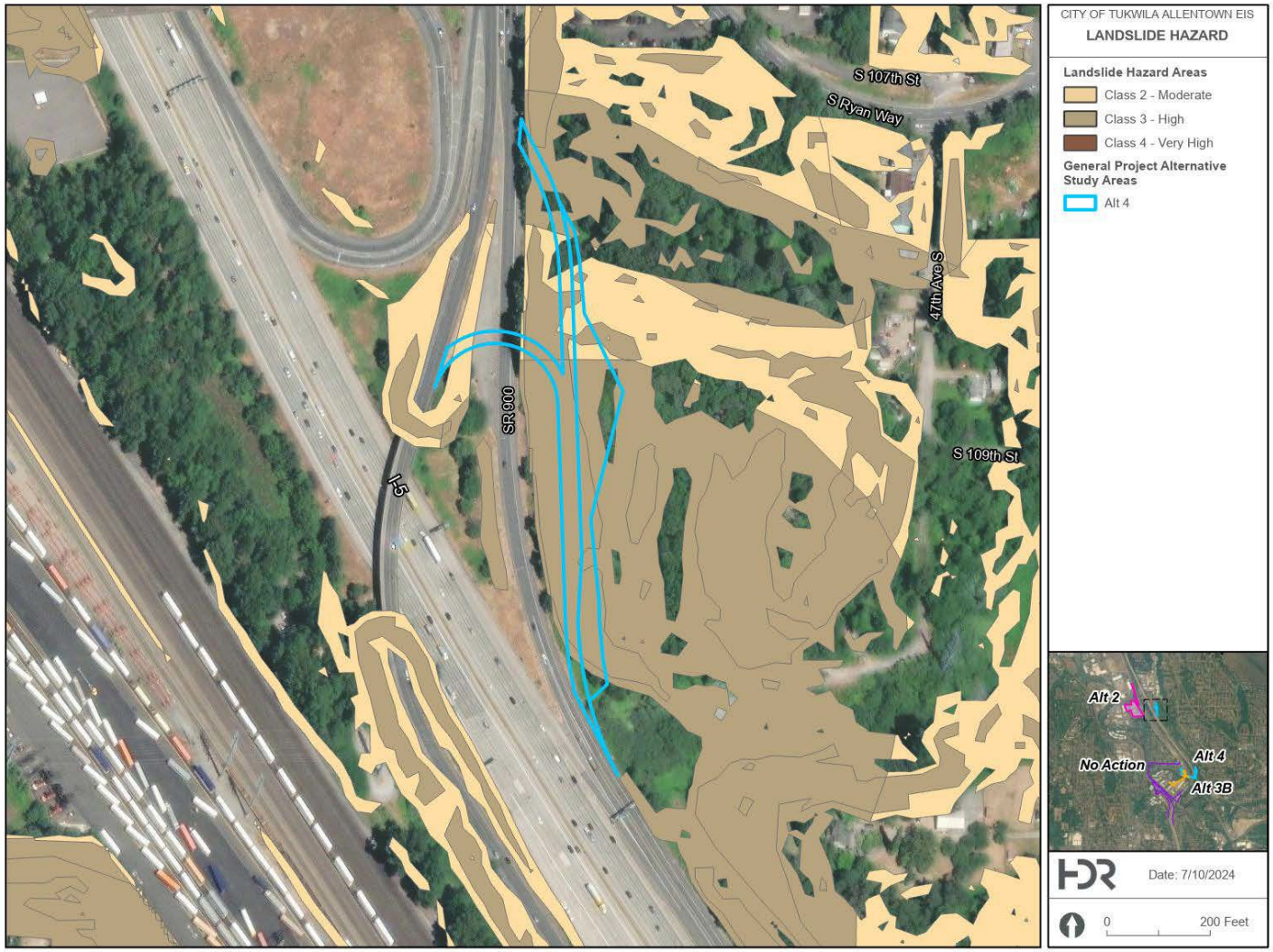


Figure 4.1-10 Potential Geologic Instabilities/Landslide Hazard Areas for Alternative 4, Northern Portion

King County defines Landslide Hazard Areas as those areas at severe risk of landslide. KCC 21A.06.680 defines these areas as the following:

- An area with a combination of:
  - Slopes steeper than fifteen percent of inclination
  - Impermeable soils, such as silt and clay, frequently interbedded with granular soils such as sand and gravel
  - Springs or ground water seepage;
- An area that has shown movement during the Holocene epoch (10,000 years ago to the present) or that is underlain by mass wastage debris from that epoch;
- Any area potentially unstable as a result of rapid stream incision, stream bank erosion, or undercutting by wave action;
- An area that shows evidence of, or is at risk from, snow avalanches;
- An area located on an alluvial fan, presently or potentially subject to inundation by debris flows or deposition of stream-transported sediments.

No landslide hazards are mapped for the portion of Alternative 4, which is the only alternative that includes a portion of the alignment within unincorporated King County (Figure 4.1-9 and Figure 4.1-10).

The City of Seattle defines the following as landslide prone areas under Seattle Municipal Code (SMC 25.09.012 as the following:

- Known landslide areas identified by documented history, or areas that have shown significant movement during the last 10,000 years or are underlain by mass wastage debris deposited during this period;
- Those areas that are described as potential slide areas in "Seattle Landslide Study" (Shannon & Wilson 2000, 2003);
- Areas with indications of past landslide activity, such as landslide headscarps and sidescarps, hummocky terrain, areas with geologic conditions that can promote earth movement, and areas with signs of potential landsliding, such as springs, groundwater seepage, and bowed or backtilted trees;
- Areas with topographic expression of runout zones, such as fans and colluvial deposition at the toes of hillsides;
- Setbacks at the top of very steep slopes or bluffs, depending on soil conditions;
- Slopes with an incline of 40 percent or more within a vertical elevation change of at least 10 feet. For the purpose of this definition, a slope is measured by establishing its toe and top and averaging the inclination over at least 10 feet of elevation difference;

- Areas that would be regulated under one of subsections 25.09.012.A.3.b.2 through 25.09.012.A.3.b.5, but where the topography has been previously modified through the provision of retaining walls or non-engineered cut and fill operations;
- Any slope area potentially unstable as a result of rapid stream incision or stream bank erosion;
- Steep slope erosion hazard areas. Steep slope erosion hazard areas are areas with a slope described in subsection 25.09.012.A.3.b.5;
- Peat settlement-prone areas. Peat settlement-prone areas consist of Category I and Category II peat settlement-prone areas that are delineated on Maps A1 through A26, Peat Settlement-prone Area Boundaries Maps, codified at the end of SMC Chapter 25.09.

The northern portion of Alternative 2, which is the only alternative partially located within the City of Seattle, is not mapped as located within a landslide prone area (Figure 4.1-7).

4.1.1.3.3 Erosion Hazard Areas

Per TMC 18.45, the City of Tukwila does not regulate Erosion Hazard Areas as part of its critical areas ordinance. Per SMC 25.09.12(A)(4), steep slope erosion hazards are areas with an incline of 40 percent or more within a vertical elevation change of at least 10 feet. King County defines erosion hazard areas as those soils in King County that may experience severe to very severe erosion when disturbed per the 1973 USDA Soil Conservation King County Soil Survey (KCC 21A.06.415). These include the following soils when they occur on slopes of 15 percent or more:

- Alderwood gravely sandy loam
- Alderwood and Kitsap soils
- Beausite gravely sandy loam
- Kitsap silt loam
- Ovall gravely loam
- Ragnar fine sandy loam
- Ragnar-Indianola Association.

As shown on Figure 4.1-9 and Figure 4.1-10, soils subject to severe erosion located on slopes of at least 15 percent are not mapped near Alternative 4, which is the only alternative that includes a portion of the alignment within unincorporated King County (King County 2024a). No erosion hazard areas are mapped for the portion of Alternative 2 located within the City of Seattle (Figure 4.1-7).

4.1.1.3.4 Seismic Hazard Areas

The level of seismic hazards in the Pacific Northwest varies from low to high depending on the location within the region, as indicated by historical seismicity, regional geological, geophysical, and tectonic data. A discussion of the types of seismic hazards are detailed below.

4.1.1.3.4.1 Fault Rupture

Faults are features in the Earth's crust where rock periodically breaks and moves, releasing seismic energy and creating an earthquake. The initial motion along a fault (fault rupture) causes compressional seismic waves that release strong jolts of energy on the surface. Fault rupture can lead to structural damage of nearby buildings, bridges, and other infrastructure. If infrastructure is located directly on top of a fault that ruptures, damage can be significant.

Earthquake hazards in the Pacific Northwest are primarily related to the convergence of the North American and Juan de Fuca tectonic plates, which forms the subduction zone known as the Cascadia Subduction Zone, which runs along the Pacific coast shoreline from northern California to British Columbia. This is the largest fault in Washington. Subduction of the Juan de Fuca plate below the North American continent is capable of producing earthquakes affecting all of Washington (and the entire Pacific Northwest). Earthquakes related to the Cascadia Subduction Zone are believed to have a recurrence interval of between 200 and 700 years, with an average time of 535 years between earthquakes. The last the Cascadia Subduction Zone earthquake was recorded in 1700 (DNR 2024c).

The Seattle Fault Zone is a network of shallow faults that transect the Puget Sound's lowlands from east to west and could produce earthquakes in the upper 18 miles of the Earth's crust. As a larger shallow fault, the Seattle Fault could produce earthquakes up to magnitude 7.5 that could last 20 to 60 seconds, with shaking localized to the general area of the fault. The Seattle Fault last ruptured approximately 1,100 years ago. Per DNR, frequency of Seattle Fault ruptures is unknown (DNR 2024d). The Seattle Fault is located approximately 0.53 mile north of Alternative 2.

4.1.1.3.4.2 Ground Motion/Shaking

Following an initial fault rupture, seismic waves cause shaking of the ground surface. The ground shaking that occurs during an earthquake is generally what causes damage to overlying structures, especially when the shaking lasts for more than a minute. Earthquake damage from ground motion at a given location depends on the properties of the arriving seismic waves, properties of the soil at the site, and the structures involved. The amount of ground motion that may occur during an earthquake can be predicted based on the rock and soil properties in a given area.

Some geologic areas are more susceptible to ground shaking than others during a seismic event. The structures of certain soils can amplify shaking and create an increased hazard. Site classes are established and categorized by the National Earthquake Hazards Reduction Program to evaluate this risk. Categories are defined as B through F, where site class "B" represents geologic areas that do not dampen or amplify shaking; site classes "C-E" are areas that amplify shaking; and site class "F" are areas that have unusual soil conditions that need to be evaluated in person. The soils in the study area for Alternatives 2, 3B, and 4 are generally categorized as site class "D-E", suggesting they have a high potential to amplify ground shaking during an earthquake event (DNR 2024b). Locations east of I-5 associated with Alternative 4 are generally categorized as site class B, meaning the geologic area would not dampen or amplify shaking.

4.1.1.3.4.3 Soil Liquefaction

Soil liquefaction can occur from shaking during a seismic event when loose, water-saturated soils, or artificial fills behave like a liquid. Per DNR's Soil Liquefaction Susceptibility Map for King County, Washington most of the study area for each alternative is mapped as having a moderate to high liquefaction susceptibility (DNR 2024b), with some areas mapped as either very low or not susceptible to liquefaction due to bed rock. Figure 4.1-11 through Figure 4.1-15 illustrate the liquefaction susceptibility for the No Action Alternative and Alternatives 2, 3B, and 4.

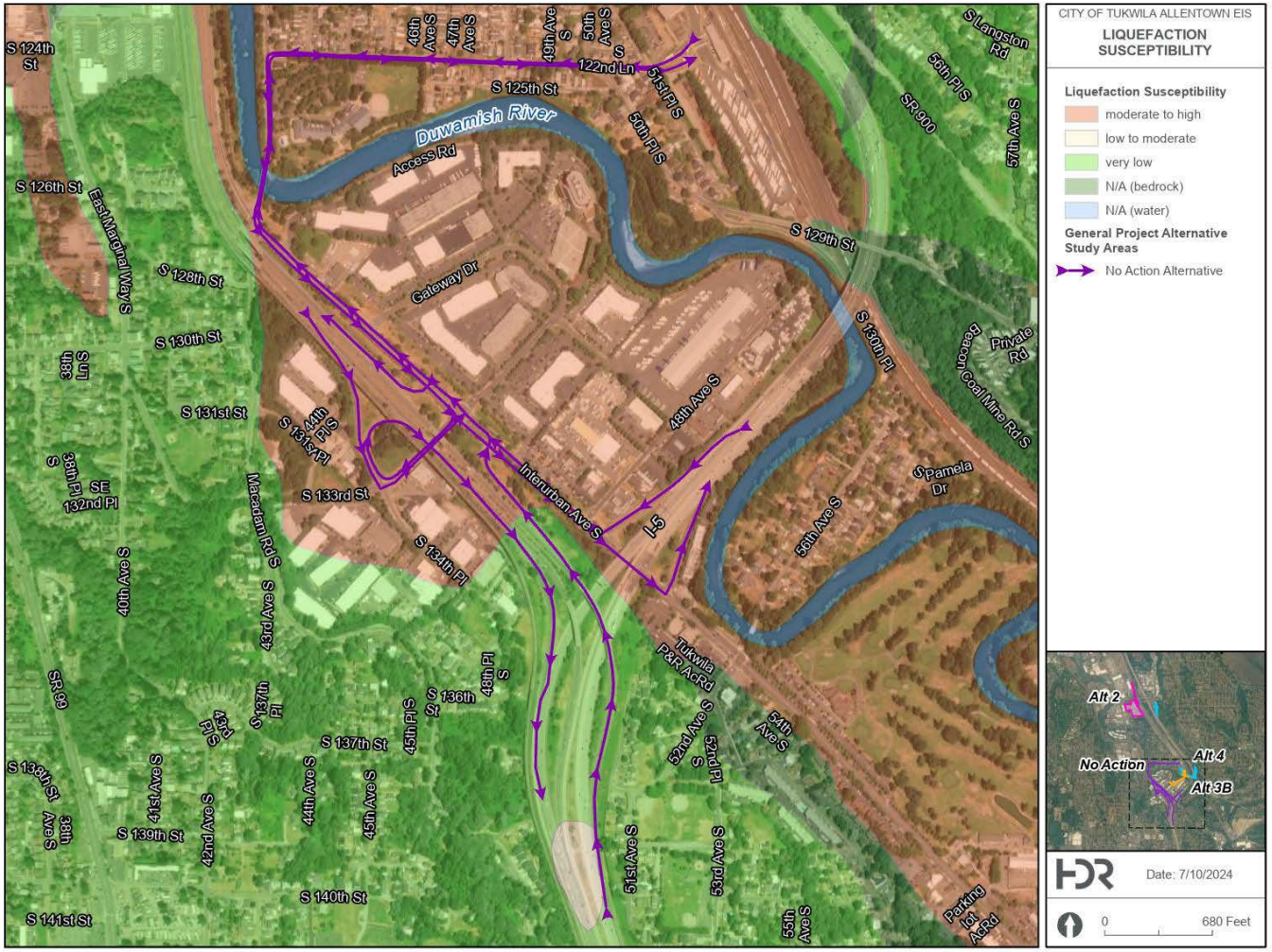


Figure 4.1-11. No Action Alternative Liquefaction Susceptibility

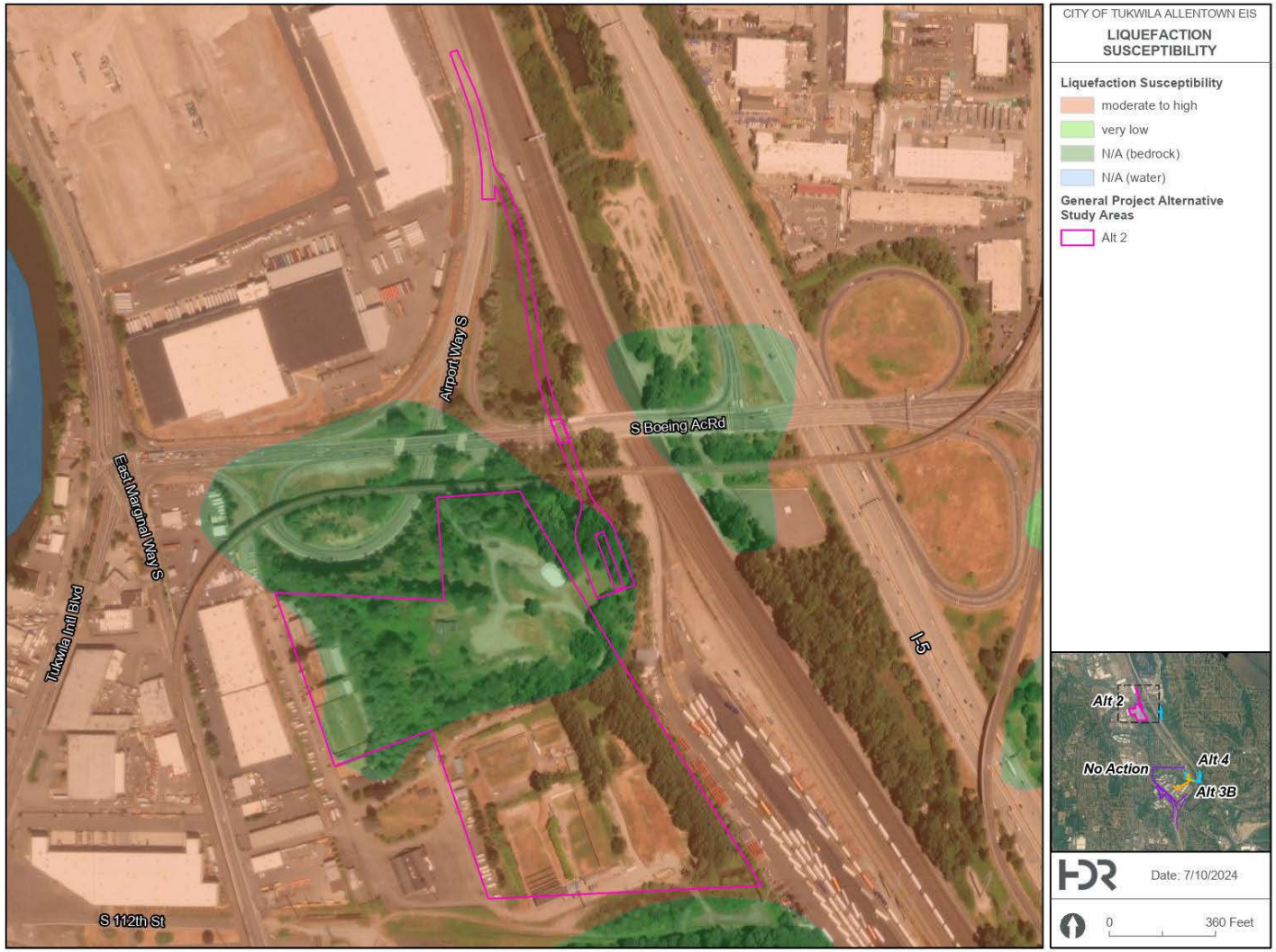


Figure 4.1-12. Alternative 2 Liquefaction Susceptibility

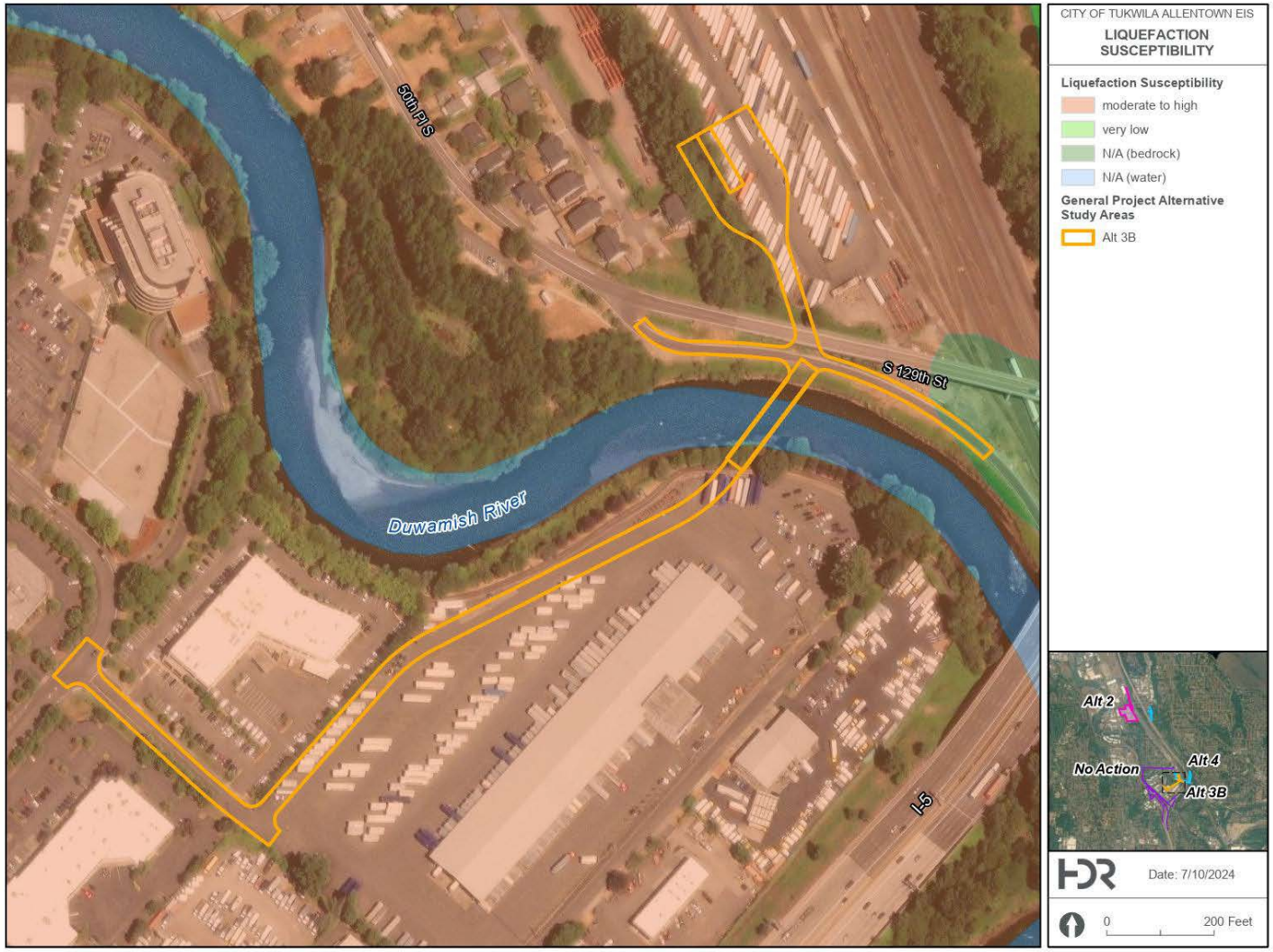


Figure 4.1-13. Alternative 3B Liquefaction Susceptibility

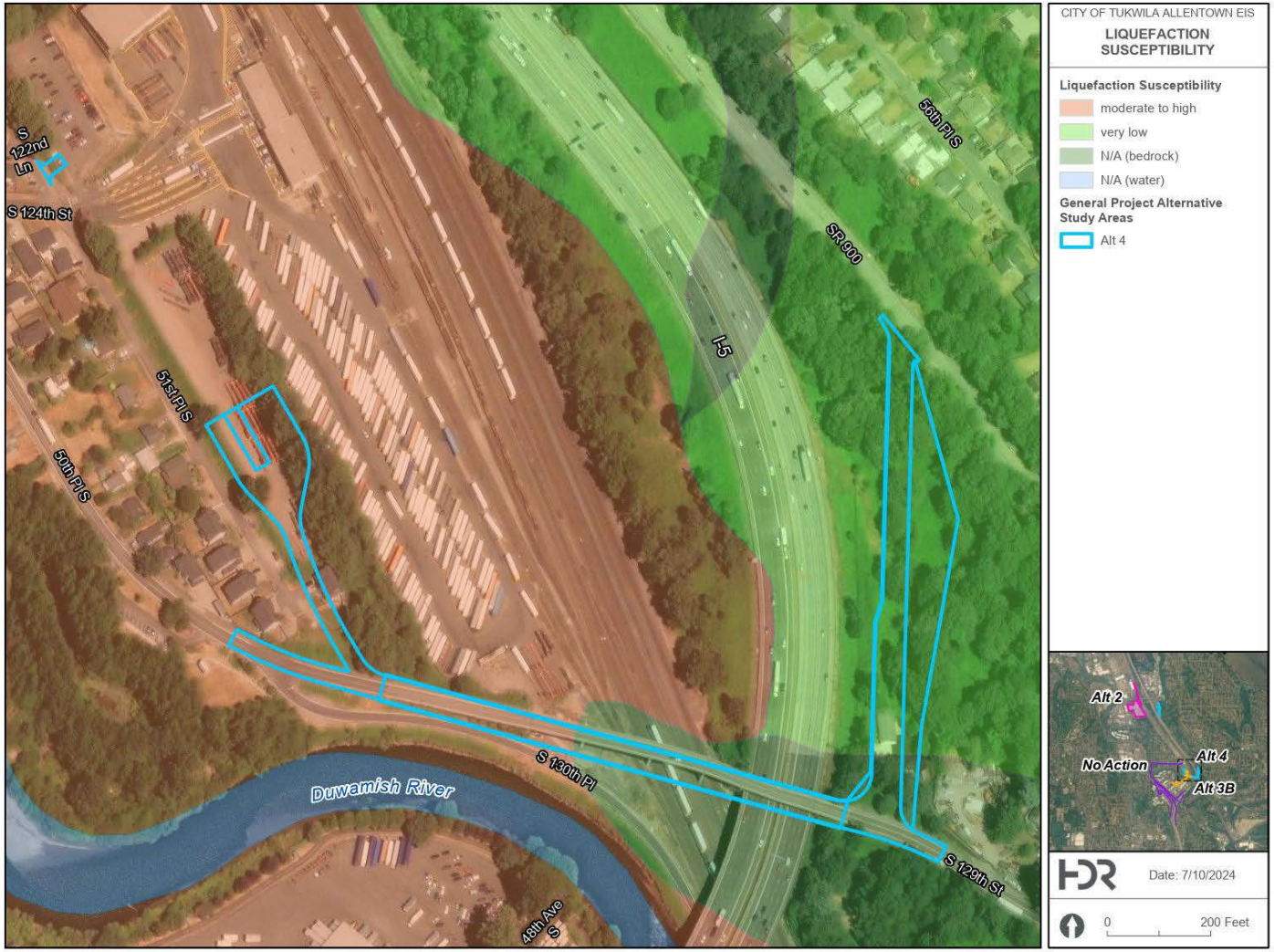


Figure 4.1-14. Alternative 4 (Southern Portion) Liquefaction Susceptibility

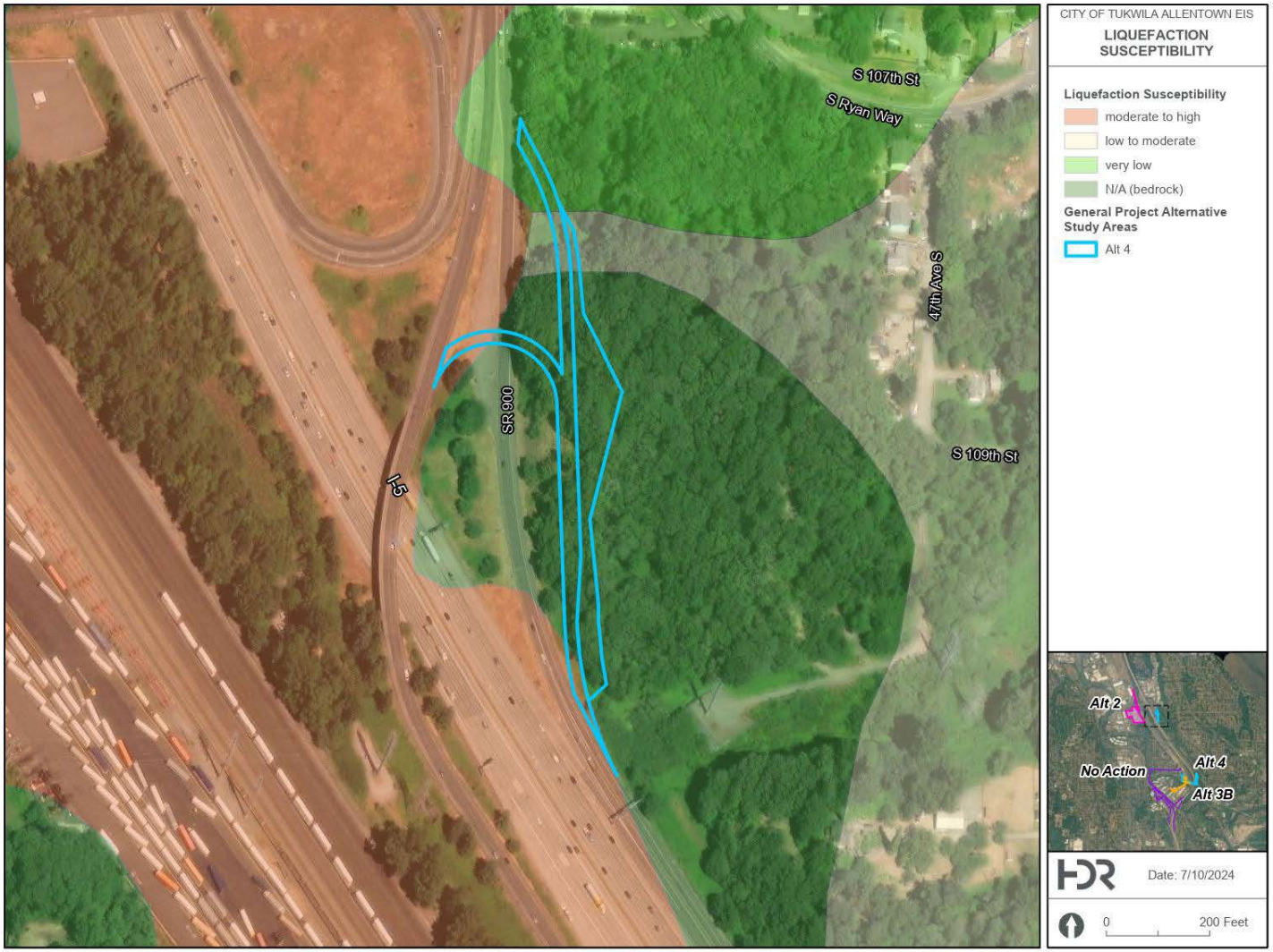


Figure 4.1-15. Alternative 4 (Northern Portion) Liquefaction Susceptibility

4.1.1.3.4.4 Tsunamis and Seiches

During a seismic event, a large amount of water can be displaced triggering a tsunami. None of the Alternatives are mapped as being located within a tsunami inundation zone per modeling conducted for Cascadia Subduction Zone and Seattle Fault Zone (Dolcimascolo et al. 2022a, 2022b).

4.1.1.3.5 Volcanic Hazards

Impacts to any of the Alternatives from volcanic activity could result from ashfall caused by the eruption of Mount Rainier. Impacts from ashfall could include ash accumulation on infrastructure and suspension of fine particles in the air. However, there is between 0.1 and 0.2 percent probability that a damaging eruption would occur in any given year (USGS 2013). Although the impacts could be significant if an eruption did occur, this analysis takes the probability that an impact could occur into account. Therefore, due to the infrequency of eruptions, the probability of an impact from either ashfall or lahars is low. None of the alternatives are mapped within a lahar inundation zone (King County 2010).

4.1.2 Relevant Plans Policies and Regulations

Relevant policies and regulations related to geology and soils are summarized in Table 4.1-1.

Table 4.1-1. Regulations and Policies for Geology and Soils

Law and Regulation	Description
State	
Growth Management Act (GMA)	Requires all cities and counties in Washington to adopt development regulations that protect critical areas, including geologically hazardous areas.
Washington State Building Code Council (SBCC)	The State Building Code Council was created to advise the Legislature on building code issues and to develop the building codes used in Washington state. These codes help to ensure buildings and facilities constructed in the state are safe and healthy
Local	
King County Critical Areas Ordinance (King County Code [KCC] 21A.24)	This ordinance was developed under the directives of the GMA to designate and protect critical areas and to assist in conserving the value of property, safeguarding the public welfare, and providing protection for these areas. Geologic critical areas defined in KCC 21A.24E include volcanic, landslide, seismic, mine, and erosion hazard areas.
City of Tukwila Environmentally Critical Areas TMC 18.45	The purpose of TMC Chapter 18.45 is to protect the environment, human life and property; to designate and classify ecologically critical areas including but not limited to regulated wetlands and watercourses and geologically hazardous areas and to protect these critical areas and their functions while also allowing for reasonable use of public and private property. These regulations are prepared to comply with the Growth Management Act. Geologic critical areas as defined by TMC 18.45 include coal mine hazard areas, areas of potential geologic

Law and Regulation	Description
	instability (areas subject to potential landslide and/or seismic instabilities)
City of Seattle Environmentally Critical Areas SMC 25.09	The purpose of Chapter 25.09 to provide for and promote the health, safety and welfare of the general public, and to not create or otherwise establish or designate any particular person, or class, or group of persons who will or should be especially protected or assisted by the terms or provisions. Geologic and steep slope hazards as defined by SMC 25.09 include landslide-prone areas, peat settlement-prone areas, seismic hazards areas, and volcanic hazard areas
City of Tukwila Grading TMC 16.54	Regulates grading activities including excavation, fill, grading, earthwork construction and structural preloads.
King County Clearing and Grading	Clearing and grading permits regulate clearing and removal of vegetation, excavation, grading and earthwork construction within unincorporated King County.
City of Seattle Grading SMC 22.170	Regulates all grading and other land disturbing activity, including addition and replacement of hard surface, within the City of Seattle; to the maintenance and protection of grades, slopes, and soil stability; and to the correction of hazards related to any of the foregoing.

4.1.3 Methodology

The effects of alternatives on soils and geology were determined based on locations of build alternative footprints, soil types, and topographic features. Potential impacts are discussed in qualitative terms and are evaluated based on the definitions listed in Table 4.1-2.

Table 4.1-2. Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The project would not result in any impacts to earth/ soil resources. Geologic hazards would not impact the project.
Minor	The project would result in short-term impacts to earth/soil resources. Geologic hazards may result in minimal impacts the project.
Moderate	The project either would result in permanent impacts to earth/soil resources or is at risk from a geologic hazard that have been mitigated to be less than significant.
Significant	The proposed Project would result in significant permanent impacts to earth /soil resources or be subject to geologic hazards that could cause severe damage that cannot be mitigated for.

Impacts to the No Action Alternative were determined based on the existing infrastructure's location to geologic hazards.

The potential for alternatives to result in long-term operational effects was assessed based on geologic processes and geologic hazards that could affect slope stability, soil structure, and ground motion. The

potential for geologic hazards to alter or damage alternatives was determined based on the project's proximity to the hazard and the existing geologic features that would influence the relative risk.

An unavoidable significant adverse impact would occur if regulatory requirements, design measures, or mitigation measures would not address the potential impacts.

4.1.4 Impacts Analysis

4.1.4.1.1 Construction Impacts

4.1.4.1.1.1 No Action Alternative

Under the No Action Alternative, the construction of the proposed project would not occur. Existing conditions regarding the potential for geologic hazards including earthquakes, soil liquefaction, and volcanic hazards would continue under the No Action Alternative.

4.1.4.1.1.2 Alternatives 2, 3B, and 4

This section includes the general impacts that would be common to Alternatives 2, 3B, and 4.

Construction would result in **moderate** impacts from alterations to the surface geology, topography, and soils. Soil removal, grading, and clearing necessary to complete construction of the proposed alternatives would cause permanent alterations. Construction impacts would include short-term ground disturbance.

Clearing and excavation during construction could result in short-term **minor** impacts from erosion as bare soils become exposed to wind, rainfall, or vehicle activity within the proposed project site; however, erosion and sediment control measures would be put in place to stabilize slopes and control construction stormwater runoff.

The topography of the proposed project locations would be altered during construction. Because much of the study areas have already been altered by past development, the changes from the proposed site development and soil grading would be **minor** and consistent with surrounding development and would not substantially alter the natural landscape.

Prior to construction, the City of Tukwila would be required to comply with Washington State Department of Ecology (Ecology) Stormwater Quality Regulations by obtaining coverage under the National Pollutant Discharge Elimination System (NPDES) through a Construction Stormwater General Permit to help control runoff and reduce water pollution from the construction site. The City would be required to develop a Stormwater Pollution Prevention Plan (SWPPP) (in conformance with requirements in the City of Tukwila Stormwater Management Program Plan and the Infrastructure Design and Construction Standards, the King County Surface Water Design Manual and City of Seattle Stormwater Manual), implement sediment erosion and pollution prevention control measures, and receive an approved permit under the NPDES program.

Construction of the Project would result in permanent impacts from alterations to the surface geology, topography, and soils. Impacts would be **moderate** with the implementation of mitigation measures listed in Section 4.1.4.

4.1.4.1.2 Operations Impacts

4.1.4.1.2.1 No Action Alternative

Under the No Action Alternative, the BNSF truck route would continue operating under current conditions and **no impacts** to earth or soil resources would occur. Existing conditions regarding the potential for geologic hazards including earthquakes and soil liquefaction would continue under the No Action Alternative, resulting in the potential for **moderate** impacts from a seismic event. Ashfall associated with an eruption of Mount Rainier could result in **minor** impacts to the existing operating conditions.

4.1.4.1.2.2 Alternatives 2, 3B, and 4

Following construction, additional impervious surfaces may increase the amount of stormwater runoff generated in the selected project area, leading to the increased potential of erosion of receiving water bodies. No additional excavation or disturbance of ground surfaces would be required during the operation of the Project. Therefore, no additional impacts to geology or soils are anticipated from the Project.

4.1.4.1.2.3 Impacts from Geologic Hazards

The alternatives would not alter the risk of geologic hazards in the study area, but these hazards could affect construction and operation of the proposed Project. Hazards that could occur during construction and operation include an earthquake resulting in ground motion/shaking or soil liquefaction, and volcanic hazards. These hazards are discussed below.

4.1.4.1.2.3.1 Volcanic Hazards

As discussed in Section 4.1.1.3.5, impacts on the proposed Project from volcanic activity could result from ashfall caused by the eruption of Mount Rainier. None of the alternatives are mapped within the modeled lahar inundation zone associated with Mount Rainier; therefore, no impacts from lahars are anticipated. Therefore, **minor** impacts are anticipated from volcanic hazards.

4.1.4.1.2.3.2 Areas of Potential Geologic Instabilities/Landslides

As noted above, all build alternatives transect mapped areas of City of Tukwila Class 2 and 3 areas of potential geologic instabilities and may requiring slope stabilization. Per TMC 18.45.130, development within a Class 2 or 3 area requires a geotechnical report prepared by a qualified geotechnical engineer showing that either there is no evidence of past instability in vicinity of the proposed development, that areas of potential geologic instability can be modified, or the Project can be designed so that any potential impact to the Project or surrounding properties can be eliminated. The City would implement appropriate slope stabilization measures determined during design, per the requirements of TMC 18.45. In addition, clearing and grading activities would be subject to a stormwater water quality and quantity control plan, including preparation of temporary erosion and sediment control plans, and drainage plans per TMC 18.45.130(C)(4).

Therefore, **minor** impacts from areas of potential geologic instabilities or landslides are anticipated.

4.1.4.1.2.3.3 Seismic Hazards

There is the potential for earthquakes to occur in the study area. Prolonged earthquake-related ground shaking has the potential to disrupt construction activities and damage buildings and utilities. The potential for ground motion to damage infrastructure depends on the type and strength of seismic motion and the ground/soil conditions. Some soils in the study area for each alternative are mapped as

having a moderate-to-high susceptibility for liquefaction in the event of an earthquake, and liquefaction-induced settlement may occur during a strong seismic event. Seismic design parameters would be incorporated into the design of the Project to minimize potential damage in conformance with the standards set forth in in the Washington State Building Code, Seattle Building Code, and the King County Building Code. If these design standards are implemented, the risk of severe structural damage or failure of Project infrastructure from shaking as a result of ground motion associated with earthquakes from the Cascadia Subduction Zone or the Seattle fault would be minimized. However, risk is never eliminated, irrespective of design, and is considered a **moderate** impact to the Project.

4.1.4.1.2.3.4 Mines

No impacts are anticipated because no mines are mapped within the study area for any of the build alternatives**.**

4.1.5 Mitigation Measures

Below is a description of the mitigation measures that would be available to minimize or avoid impacts to geology and soils from construction and operations of the proposed Project. Mitigation measures would be common to Alternatives 2, 3B, and 4.

4.1.5.1 Construction Impacts Mitigation

Construction would impact surface geology, topography, and soils. Soil removal, grading, and clearing necessary to complete construction of the project would cause permanent alterations. The mitigation measures described below would minimize the construction-related impacts.

- Soil erosion shall be minimized to the maximum extent possible through implementation/incorporation of all applicable Best Management Practices (BMPs) during construction and may include the following:
    - The City shall implement a Construction Stormwater Pollution Prevention Plan (SWPPP) that will satisfy the requirements of the National Pollutant Discharge Elimination System General Permit for Stormwater Discharges Associated with Construction Activities.
    - The Construction SWPPP will include measures for temporary erosion and sedimentation control and would identify a regular inspection and maintenance schedule for all erosion control structures. The SWPPP shall include descriptions of all BMPs to be implemented during construction to minimize erosion and sediment entering surface waters.
    - Erosion and sedimentation control measures shall be implemented at the beginning of the construction process and maintained throughout all phases of construction. Measures may include, but are not limited to, installation of a stabilized construction entrance, a wheel wash, silt fences, seeding, mulching, and dust control, and all other BMPs as recommended by a licensed civil engineer.
    - Additional erosion control supplies, including sandbags and channel-lining materials, shall be stored on-site for emergency use.
    - The project area shall be monitored for erosion on a weekly basis and after large rainfall events, and corrective action would be taken as needed. Soil stockpiles shall be stabilized

and protected from erosion and soils shall also be stabilized before a holiday or weekend if needed, based on forecasts of precipitation.

- Site planning shall implement low impact development principles to the maximum extent feasible in order to minimize impacts to soils and geological resources.

4.1.5.2 Operational Impacts Mitigation

During operation, no additional excavation or disturbance of ground surfaces would be required. However, additional impervious surfaces would increase the amount of stormwater runoff generated, leading to the increased potential of erosion of receiving water bodies. Additionally, sources of runoff discharged from the site through storm water conveyance systems could cause erosion or earth movement if inappropriately designed or placed. However, all stormwater systems would be designed in accordance with Tukwila Stormwater Management Program Plan and the Infrastructure Design and Construction Standards, as well as the King County Surface Water Design Manual and Seattle Stormwater Manual. Therefore, the impact to soils and geology during operations is considered **moderate**.

4.1.5.3 Mitigation Measures Related to Geologic Hazards

Hazards that could occur during construction and operation include an earthquake resulting in ground motion/shaking or soil liquefaction, erosion and sedimentation hazards, geologic instability, and volcanic hazards. The mitigation measures described below would minimize the impacts related to geologic hazards identified in the impacts analysis. The proposed Project designs shall include all reasonable measures to reduce the risk of damage from geologic hazards present in the proposed Project area. These measures would be in accordance with City of Tukwila, City of Seattle, and King County critical areas ordinance and building code, as well as the specific geologic requirements of the site.

Site planning principles shall acknowledge and account for the risks associated with seismic risks and areas of potential geologic instabilities. During site development permitting, the City shall provide a written geological hazards narrative from a qualified engineer demonstrating to the satisfaction of the City of Tukwila, City of Seattle, and King County, that all efforts are made to avoid, minimize, and reduce geological hazard impacts to the site development and implementation of all BMPs and compliance with mitigation described and outlined herein.

The following BMPs would be instituted to mitigate seismic and geologic instability hazards:

1. An emergency management plan shall be put in place during construction for use in the event of an earthquake.

2. A geotechnical engineer licensed in Washington State shall be retained to review and approve plans prior to construction to assist in reducing liquefaction risks from and to the Project. The licensed engineer of record shall determine the appropriate foundation, footing, and structural design to conform to the International Building Code standards for seismic protection.

3. A geotechnical engineer licensed in Washington State shall be retained to conduct detailed slope stability evaluations for the Project, including the development and use of slope stabilization methods to be utilized and may include retaining walls or slope stabilization.

4.1.6 Significant Unavoidable Adverse Impacts

The construction and operation of the Project would not result in any unavoidable adverse impacts on earth resources. Permanent changes to the geology at the Project site would result from the construction of the proposed project. These changes would be limited to the soil and underlying sediment in the areas of construction where excavation, fill, and soil amendments would be needed to meet design requirements.

If a major earthquake were to occur near the project area, unavoidable adverse impacts could result from the liquefaction of susceptible soils underlying elements of the Project. However, the Project would comply with City of Tukwila, City of Seattle, and King County regulatory requirements (building codes, engineering best practices for temporary sedimentation and erosion control and compliance with Critical Area Ordinances) site-specific geotechnical assessment, implementation of stormwater controls, and design and implementation of site-specific BMPs to minimize and mitigate adverse impacts on earth resources or resulting from geological processes. With the implementation of these mitigation measures, the impacts on earth resources would be reduced to a level of non-significance.

4.2 Water Resources (Floodplains, Wetlands, Water Quality, Surface Water, Groundwater)

Water is a beneficial resource essential to agriculture, industry, recreation, and human and ecological health. Water resources are typically subdivided into two types: surface water and groundwater. Surface water resources area essential to maintaining human health, fish and wildlife habitat, and vegetation. Groundwater resources serve as the underground storage of fresh water that can be used for drinking, irrigation, recharge areas, and general water supply. Floodplains are related water resource areas where surface water inundates low-lying groundwater during flood events. Floodplains provide essential habitat for wildlife, act as sedimentation and filtering areas for improving water quality and groundwater recharge, and protect communities against flooding and erosion.

The objective of the Allentown Truck Reroute Project (Project) is to develop an alternative route to the BNSF Intermodal Facility in the Allentown neighborhood located in Tukwila, Washington. The Project will improve livability and safety in Allentown without compromising the operations of the BNSF intermodal facility. There are four alternatives considered within the Project area (No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4). The existing truck route, which is the No Action Alternative, in addition to three proposed route alternatives will be analyzed in this section to determine potential impacts on water resources (Figure 4.2-1). Additional details regarding the Project description and proposed alternatives can be found in Section 1 and Section 2.

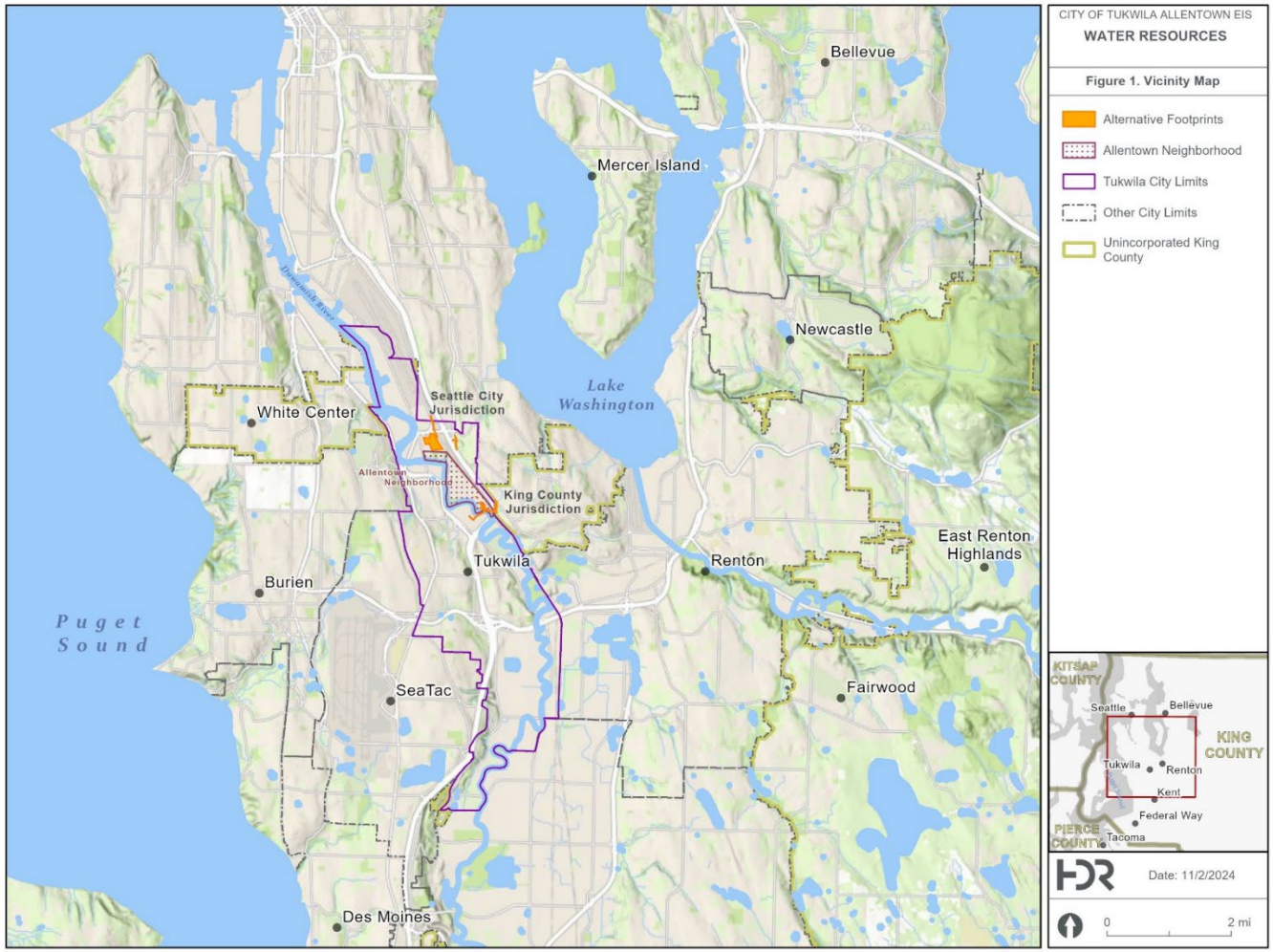


Figure 4.2-1 Map of Water Resources Study Area

4.2.1 Affected Environment

The affected environment section describes the existing water resources in the study areas of the No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4. Water Resources include floodplains, surface waters (wetlands, streams, rivers, lakes, and ponds), water quality, and groundwater.

4.2.1.1 Regional Hydrology

The City of Tukwila is located in the Green-Duwamish Watershed. According to Tukwila Municipal Code (TMC) 14.30.030, a watershed is defined as the "geographic region within which water drains into a particular river, stream, or water body (waterbody defined as a creek, stream, pond, wetland, lake or river) and is numbered by the State of Washington Water Resource Inventory Area (WRIA) as defined in the Washington Administrative Code."

The City of Tukwila is divided into nine drainage basins. The proposed Project area is located within the Green/Duwamish River Mainstem drainage basin. All surface water identified within the proposed Project area drains into the Green-Duwamish River (CHM2Hill 2013).

The Green-Duwamish Watershed is divided into four subwatersheds, with the City of Tukwila straddling two: the Lower Green River subwatershed and the Duwamish Estuary subwatershed. The proposed Project vicinity is located entirely within the Duwamish Estuary subwatershed, and is located near the boundary of the two subwatersheds. All surface and ground water within the Green-Duwamish Watershed comes from either precipitation as rain or snowmelt (Ecology 1995).

The headwaters of the Green-Duwamish River are located in the Cascade Mountains, where the river travels northwest for 93 miles before emptying into Elliot Bay (Herrera 2005; Kerwin and Nelson 2000). The Green-Duwamish River is the largest freshwater component in the WRIA 9 (Ecology 2022a). The river is known as the Green River from river mile (RM) 93 to RM 10, and as the Duwamish River from RM 10 until it reaches Elliot Bay. The Duwamish River flows along the western and southern boundary of the proposed Project area; the general Project vicinity is located between RM 5.6 and RM 9. Historically, three major tributaries fed the Green-Duwamish River: the White River, the Cedar River, and the Black River. These three rivers have been rechanneled out of the Green-Duwamish River over the last 120 years, reducing the normal river flow of the Green-Duwamish River by a third (KCBR 2008).

The Duwamish River valley, which includes the Project area, is less than 20 feet above sea level and is prone to flooding during high tides, extreme rainfall, and high streamflow (WWSC 2023). In a typical year, the proposed Project area receives approximately 32 to 38 inches of precipitation (CHM2Hill 2013), primarily in the form of rainfall in the winter months (Ecology 2022a).

4.2.1.2 Floodplains

The study area for floodplains and water quality includes the Duwamish River and its floodplain. The geography and topography of Tukwila is heavily influenced by the Green-Duwamish River and its associated floodplains (CHM2Hill 2013). The Project vicinity is dominated by steep valley walls along the I-5 corridor and relatively flat and poorly drained floodplains adjacent to the river. Tukwila Municipal Code (TMC) 16.51.030 defines a floodplain as "any land area susceptible to being inundated by water from any source." Flooding is generally considered temporary in condition and may include partial or

complete inundation of normally dry land. Sources of flooding include the overflow of inland or tidal waters, the unusual and rapid accumulation of surface waters, mudslides, the collapse of land into a body of water, and abnormal tidal surges (TMC 16.51.030).

The Project vicinity is located east/northeast of the Duwamish River between RM 5.6 and RM 9 (Figure 4.2-1). The Duwamish River has been extensively channelized and diked. Within the proposed Project vicinity, there are several levees and revetments. Levees prevent flooding to surrounding areas and revetments protect the riverbanks from impact.

The Federal Emergency Management Agency (FEMA) manages flood maps and risk assessments under the National Flood Insurance Program (NFIP). The NFIP prohibits development that encroaches the regulatory floodway unless it can be proven that the 100-year flood level will not increase. A No-Rise Certification must be documented through both hydrologic and hydraulic analyses. Flood Insurance Rate Maps (FIRM) are the official map of a community on which special flood hazard areas (SFHA) have been delineated (TMC 16.51.030). SFHAs are within the 100-year floodplain, meaning there is a 1% chance of a flood event occurring. SFHAs are indicated on FIRMs as zone A, AO, AH, A1-30, AE, A99, AR (V, VO, V1-30, VE). The SFHAs were reviewed to determine the presence of floodplains in the Project vicinity (Figure 4.2-2). The Project area is located within FEMA FIRMs 53033C0645G, 53033C0957G, and 53033C0960G.

The Duwamish River is classified as a regulatory floodway (Zone AE). Development in Zone AE requires a Floodplain Development Permit because projects located in floodplains are at risk for increased frequency and severity of flooding caused by obstruction of flood flows or filled floodplain storage (WSDOT 2024a).

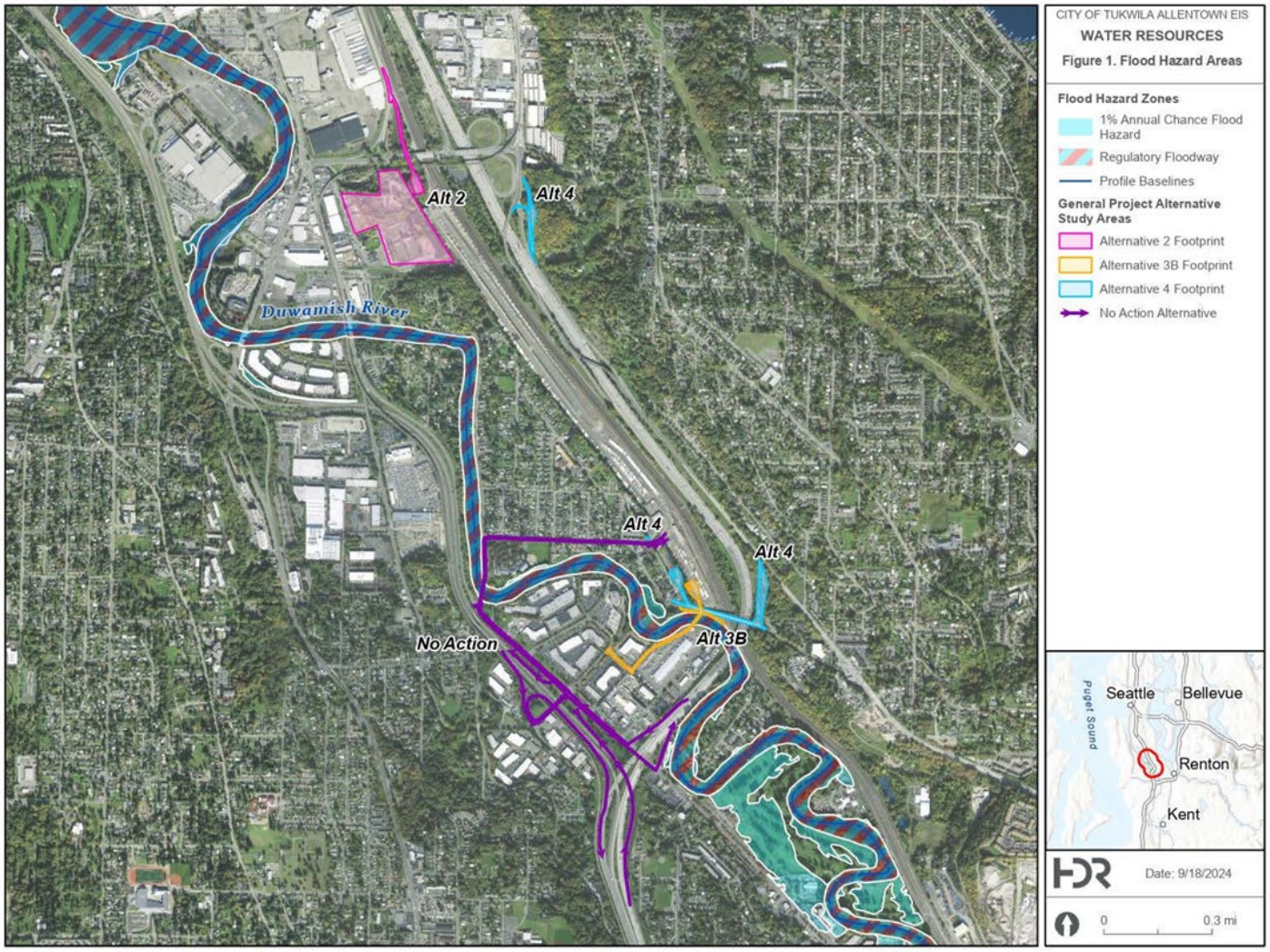


Figure 4.2-2 Flood Hazard Areas in Proximity to the Study Areas

4.2.1.3 Surface Waters

According to TMC 14.30, surface waters are "the portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow channels, or pipes into a natural drainage system, a surface water conveyance system, or into a constructed surface water facility." Tukwila's wetlands have been defined using the Washington State definition [RCW 36.70A.030(48)] and Tukwila's watercourse classifications are consistent with the Washington State Department of Natural Resources (DNR)'s stream typing system.

Surface waters generally include wetlands, streams, rivers, lakes, and ponds. Twelve wetlands (Wetlands 1 to 12; Table 4.2-1) and two streams (Duwamish River and Stream 1; Table 4.2-2) are found within the study area (Figure 4.2-3). There are no lakes or ponds. HDR prepared a technical memorandum, Wetland and Streams Technical Memorandum (Appendix C) that identified and documented existing wetlands and streams along and near the existing truck route, the No Action Alternative, and Alternatives 2, 3B, and 4. The wetland and stream study objectives, study area, methods, regulatory requirements, and findings are included in the Technical Memorandum. Wetland rating forms and site photographs are included in the Technical Memorandum in Attachments A and B, respectively. The following subsection discusses the hydrologic and hydraulic features of wetlands and streams. Additional information regarding wetlands and streams in or near plant and animal habitat can be found in Section 4.3 Plants and Animals.

4.2.1.3.1 Wetlands

The study area for wetlands encompasses the area within 300 feet of the edges of the long-term proposed Project footprint, which is defined as the physical footprint of the truck access routes that would result in permanent impacts on wetlands. This distance was selected to match the typical largest applicable potential buffer width for wetlands within the City of Tukwila, the City of Seattle, and unincorporated King County. Wetlands evaluated in this EIS include wetlands that are wholly or partly within the study area.

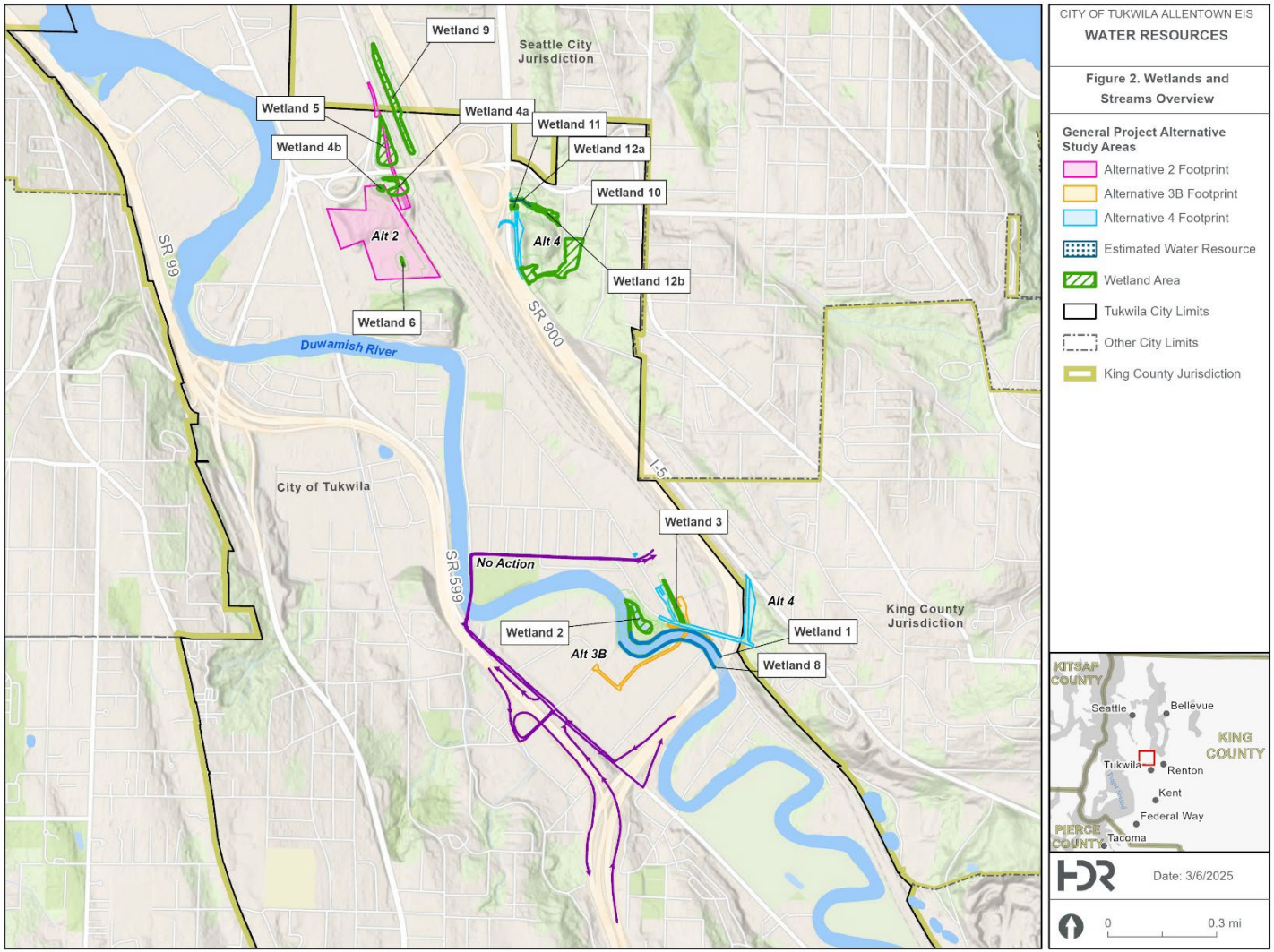


Figure 4.2-3 Overview of aquatic study area for No Action Alternative and Alternatives 2, 3B, and 4

According to TMC 18.06.922, a wetland is an “area that is inundated or saturated by groundwater or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” While wetlands include natural features such as bogs, swamps, marshes, ponds, lakes, and similar areas, they do not include artificial wetlands intentionally created from upland sites including irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, landscape amenities, or wetlands created after July 1, 1990, that were unintentionally created as a result of the construction of a road, street, or highway. Artificial wetlands intentionally created from non-wetland areas as a form of wetland mitigation as permitted by the City shall be considered wetlands (TMC 18.06.922).

Qualified HDR biologists conducted the wetland and stream field reconnaissance for the study area on May 22, 2024. Biologists documented and recorded vegetation, soil, and hydrology conditions as necessary at representative wetland and upland areas using methods outlined in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987 in Appendix C) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region Version 2.0 (USACE 2010 in Appendix C). Each wetland identified in the study area received a unique identifier that was tracked in a geographic information system (GIS) database. Estimated wetland boundaries that were documented at sites accessed during the field reconnaissance were mapped in the field using a global positioning system (GPS). Wetlands that were not accessible during field reconnaissance surveys were mapped based on documentation and surveys from other projects or sources, field observation, aerial imagery, and best professional judgement.

Following the field reconnaissance, all wetlands identified in the study area were rated and the hydrogeomorphic (HGM) (Brinson 1993) classification was determined using the Washington State Wetland Rating System for Western Washington – 2014 Update Version 2.0 (Hruby and Yahnke 2023). Wetland habitats in the study area were classified using the system outlined by the USFWS in Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979; FGDC 2013), typically referred to as the Cowardin system. The Cowardin system classifies wetlands based on the dominant vegetation structure and water regime.

Table 4.2-1 Summary of Wetlands within the Project Study Areas

Wetland Name	HGM Classification	Cowardin Classification	Wetland Rating	Jurisdiction	Buffer width (feet)	Design Alternative with Potential Direct or Buffer Impacts	Accessed During Field Reconnaissance Surveys
1	Tidal Fringe	PSS/EEM	II (based on estuarine special characteristic); habitat score of 6	City of Tukwila	150	3B, 4	Yes
2	Tidal Fringe	PFO/PSS/EEM	I (Based on estuarine special characteristic); habitat score of 6	City of Tukwila	150	3B, 4	Yes
3	Depressional	PFO/PSS	II; habitat score of 5	City of Tukwila	100	3B, 4	No
4a	Depressional	PFO/PSS/PEM	II; habitat score of 5	City of Tukwila	100	2	No
4b	Depressional	PFO/PSS/PEM	III; habitat score of 5	City of Tukwila	80	2	No
5	Depressional	PFO/PSS/PEM	II; habitat score of 5	City of Tukwila	100	2	Yes
6	Depressional	PEM	III; habitat score of 3	City of Tukwila	80	2	No
7	Depressional	PFO/PSS/PEM	II; habitat score of 5	City of Tukwila	100	2	No
8	Tidal Fringe	PSS/EEM	II (Based on estuarine special characteristic); habitat score of 6	City of Tukwila	150	3B, 4	No
9	Depressional	PSS/PEM	II; habitat score of 5	City of Tukwila and City of Seattle	75 / 110	2	No
10	Depressional / Slope / Riverine	PFO / PSS / PEM	III; habitat score of 6	City of Tukwila	150	4	No
11	Slope	PFO / PSS/ PEM	III; habitat score of 6	City of Tukwila	150	4	No
12a	Riverine / Slope	PFO / PSS	II; habitat score of 6	City of Tukwila	150	4	No
12b	Riverine / Slope	PFO	II; Habitat Score of 6	City of Tukwila	150	4	No

Table source: Appendix C

EEM = estuarine emergent; PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub.

4.2.1.3.1.1 Wetlands Descriptions

Wetland 1 is a narrow tidal fringe wetland located on the east bank of the Duwamish River. NWI maps the Duwamish River as a permanently flooded tidal riverine wetland with an unconsolidated bottom (USFWS 2024 in Appendix C). Wetlands 1 and 8 are contiguous on both banks of the Duwamish River and are separated by an unvegetated channel wider than 50 feet, so these wetlands were treated as separate wetland rating units and received unique identifiers. Wetland 1 was determined to be a Category II wetland that met estuarine special characteristics.

Wetland 2 is a tidal fringe wetland located within Codiga Park. This wetland is not mapped by NWI, the City of Tukwila, or King County, but it is a partially-restored wetland that has been improved through channel modification, wetland plantings, riparian habitat plantings, and habitat installations (USFWS 2024; City of Tukwila 2024; and King County 2024 in Appendix C). The City of Tukwila (2024) maps this area as below the OHWM of the Duwamish River. Wetland 2 was determined to be a Category I wetland that met estuarine special characteristics.

Wetland 3 is a depressional wetland that is located in a low spot between two BNSF operations yard storage areas and north of South 129th Street. This wetland is not mapped by NWI, City of Tukwila, or King County, but it was observed from the South 129th Street elevated street surface (City of Tukwila 2024, King County 2024, USFWS 2024 in Appendix C). This wetland is largely supported by high groundwater and surface runoff from the surrounding developments and is located where the City of Tukwila (2024) maps a Type Ns stream. The wetland drains from the north to the south, and a culvert outlet was observed that discharges directly to the Duwamish River approximately 110 feet to the south. Wetland 3 was determined to be a Category II wetland with high water quality and hydrologic functions.

Wetland 4a is a depressional wetland bordered by road and railroad prisms and a steep hillslope. The wetland was observed to be deeply ponded with areas of open water and was assumed to have no outlet. Wetland 4 was determined to be a Category II wetland with high water quality and hydrologic functions.

Wetland 4b is a depressional wetland bordered by road and railroad prisms and a steep hillslope. The wetland was observed to be deeply ponded with areas of open water and was assumed to have no outlet. Wetland 4 was determined to be a Category III wetland with high water quality and hydrologic functions.

Wetland 5 is a depressional wetland that is in a topographic depression bordered by Airport Way South, South Boeing Access Road, and the BNSF operations yard. The wetland was observed to be deeply ponded with areas of open water. No outlet was observed; however, an outlet was assumed based on the stream that was mapped by USGS and DNR which drains this wetland area to the Duwamish River approximately 1,200 feet to the west (DNR 2024a). There was no evidence of a bed or bank within Wetland 5. Wetland 5 was determined to be a Category II wetland with high water quality and hydrologic functions

Wetland 6 is a depressional wetland located on the City of Seattle Finance and Administrative Services property. It was not observed in the field , but based on a previous delineation (Watershed 2023 in Appendix C), it is vegetated by facultative grasses. Wetland 6 was determined to be a Category III wetland with moderate water quality and hydrologic functions.

Wetland 7 is a depressional wetland located on the Seattle City Light transmission ROW. It was not observed in the field, but it was delineated by Watershed (Watershed 2023 in Appendix C) and is mapped by the city of Tukwila. Aerial imagery shows construction activities and the placement of fill material within Wetland 7 in 2013, with potential compensatory mitigation occurring in 2017. Surface water appears to extend off site under mature trees adjacent to the BNSF operations yard. There is no assumed outlet as determined by using available topography. Wetland 7 was determined to be a Category II wetland with high water quality and hydrologic functions.

Wetland 8 is a narrow tidal fringe wetland located on the east bank of the Duwamish River. NWI maps the Duwamish River as a permanently flooded tidal riverine wetland with an unconsolidated bottom (USFWS 2024 in Appendix C). It is similar to, and shares the same description and functions as, Wetland 1. Wetlands 1 and 8 are contiguous on both banks of the Duwamish River and are separated by an unvegetated channel greater than 50 feet. Wetland 8 was determined to be a Category II wetland that met estuarine special characteristics

Wetland 9 is a depressional wetland and is assumed to be hydrologically connected to Wetland 5. Wetland 9 is separated from the Project and Wetland 5 by the approximately 200-foot-wide BNSF operations yard. No outlet was observed; however, an outlet was assumed based on the stream mapped by USGS and DNR that drains this wetland area to Wetland 5 and eventually Duwamish River (DNR 2024a). There was no evidence of a bed or bank within Wetland 9. Wetland 9 was determined to be a Category II wetland with high water quality and hydrologic functions.

Wetland 10 is a large slope and depressional wetland with some riverine components that is located within a drainage that slopes from the northeast to the southwest toward I-5. An overhead utility line and service road is also located within the drainage. This wetland was delineated by Wet.land (2022) and is mapped by the City of Tukwila (City of Tukwila 2024 in Appendix C) but is not mapped by NWI, King County, or WDFW (USFWS 2024, King County 2024; WDFW 2024b in Appendix C). Surface water near the bottom of the drainage was observed adjacent to I-5 road prism. Based on this observation, scientists assume that there is no outlet or hydric soils. Wetland 10 was determined to be a Category III wetland with moderate water quality and hydrologic functions.

Wetland 11 is a small slope wetland that is located to the south of Stream 1 and Wetlands 12a and 12b. This wetland was estimated by Wet.land (2022), but is not mapped by NWI, King County, or WDFW (USFWS 2024, King County 2024, WDFW 2024b in Appendix C). Wetland 11 is hydrologically supported by a high groundwater table. It was determined to be a Category III wetland with moderate water quality and hydrologic functions.

*Wetland 12*a is a riverine wetland associated with Stream 1, a Type Np water. This wetland was delineated by Wet.land, but is not mapped by NWI, King County, or WDFW (USFWS 2024, King County 2024, WDFW 2024b in Appendix C). Wetland 12a is mapped within a ravine that slopes from the east to west. Wetland 12a was determined to be a Category II wetland with high water quality and moderate hydrologic functions.

*Wetland 12*b is a riverine wetland associated with Stream 1, a Type Np water. This wetland was delineated by Wet.land, but is not mapped by NWI, King County, or WDFW (USFWS 2024, King County 2024, WDFW 2024b in Appendix C). Wetland 12b is mapped within a ravine that slopes from the east to

west. Wetland 12b was determined to be a Category II wetland with high water quality and moderate hydrologic functions.

4.2.1.3.2 Streams

Streams are referred to as waterbodies and aquatic areas by the City of Tukwila and the unincorporated County, and as fish and wildlife habitat conservation areas (FWHCAs) by the City of Seattle. The study area of streams encompasses the area within 200 feet of the edges of the long-term Project footprint. This distance was selected to match the largest applicable potential buffer width for streams within the City of Seattle and unincorporated County and to match the buffer for shorelines and streams within the City of Tukwila. Streams evaluated in this EIS include streams that are wholly or partly within the study area.

A stream is defined by the U.S. Army Corps of Engineers (USACE) as, "A body of water flowing in a definite natural or manmade course that has the potential to flood. The term 'stream' refers to rivers, streams, creeks, brooks, etc., and includes intermittent streams that are subject to flooding."

Table 4.2-2 Summary of Streams within the Study Area

Stream Name	Water Type[a]	Jurisdiction	Buffer width (feet)	Design Alternative with Potential Direct or Buffer Impacts
Duwamish River	Type S	City of Tukwila	50[b] (Shoreline Residential)/ 100[b] (Urban Conservancy without Levees)	NAA, 3B, 4
Stream 1	Type F	City of Tukwila	100[c]	4

[a] WAC 222-16-030
[b] TMC 18.44.040
[c] TMC 18.45.100.C

4.2.1.4 Water Quality

Per TMC 14.30, and as outlined in the 2024 Tukwila Stormwater Management Program, the City of Tukwila adopted the Washington Department of Ecology (Ecology) approved 2021 King County Stormwater Pollution Prevention Manual (KCSPPM) in 2022. The KCSPPM complies with the requirements of the Federal Clean Water Act- National Pollutant Discharge Elimination System (NPDES) Program and the State Puget Sound Water Quality Management Plan-Stormwater Program (KCSPPM 2021).

Water quality standards exist to protect surface water and groundwater quality for their designated uses by providing minimum requirements for reducing and controlling the discharge of contaminants (KCC 9.12.005). Water quality criteria may be numeric or narrative and addresses standards for pollutants such as oils, greases, and fuels; metals; sediments; oxygen-demanding substances; nutrients; toxic organic compounds; fecal bacteria levels; and pH (KCSPPM 2021). In 2003, water use-based classification for state surface waters were adopted by Ecology that determined the water quality standards applicable for that water body (RCW 173-201A-600(1)). The Duwamish River was classified as Salmonid Rearing/ Migration Only and Second Contact Recreation.

The Duwamish River is listed as a Clean Water Act (CWA) Section 303(d) Category 5, impaired waterbody (EPA n.d.) for 10 different parameters including temperature, pH, polychlorinated biphenyls (PCBs), and

other industrial pollutants (Table 4.2-3; EPA n.d.; Ecology 2024a). The Duwamish River has an approved Total Maximum Daily Load (TMDL) for Ammonia (Ecology 2024b). In 2001, the U.S. EPA declared the lower five miles of the Duwamish River a Superfund site; however, the Superfund site is located downriver from, and completely outside of, the proposed Project vicinity. Contaminated sites within the Project vicinity are discussed in Section 4.7 Health and Safety.

Table 4.2-3 Duwamish River Section 303(d) Category 5 parameters

Parameter	Testing Medium
Temperature	Water
pH	Water
Bacteria - Fecal coliform	Water
4,4'-DDT	Tissue
4,4'-DDD	Tissue
4,4-DDE	Tissue
Alpha-BHC	Tissue
Polychlorinated biphenyls (PCBs)	Tissue
Bacteria – Escherichia coli	Water
Mercury	Water

The Duwamish River faces nine identified surface water issues involving drainage, water quality, and aquatic habitat (Table 4.2-4; CH2M Hill 2013). The primary cause of drainage issues arises from lack of storm drainage systems, damaged or poorly maintained conveyance systems, and inadequate hydraulic capacity of conveyance systems. Numerous NPDES-permitted outfalls drain into the Duwamish River with close proximity to the Project vicinity (Figure 4.2-3). Water quality issues are caused by untreated runoff from arterial streets with intensive traffic usage, areas of dense commercial development, parking lots in the Tukwila International Boulevard corridor and Westfield Mall area, and Interstates 5 and 405. the primary cause for the reduction in aquatic habitat development and loss of riparian buffer areas is. There are nine identified locations of surface water issues (Figure 4.2-4); however, they issues do not coincide with the footprints of any of the alternatives for this proposed Project.

Table 4.2-4 Surface water issues in Tukwila affecting the Duwamish River

ID	Issue Type	Problem Description	Location
1	Water quality	Outfalls discharge directly to receiving water, no treatment	All outfalls are potential candidates; 48th Ave S and S 122nd are two top candidates
2	Drainage	Ponding in low spot, possible ponding on the east side of road	49th Ave S and S Hazel Street
3	Water quality	Dumping	S 114th St and 49th Ave S
4	Habitat	Lack of off-channel salmon habitat along lower Duwamish	Duwamish River near light rail crossing
5	Drainage	E Marginal Way S Stormwater Outfall	North end of Tukwila, along east shore of Duwamish River; 4 outfalls proximate to S 87th Place
6	Water quality	Duwamish River riverbank at S 104th St is eroding, causing failure of road shoulder and habitat degradation	Duwamish River right (east) bank at S. 104th St

ID	Issue Type	Problem Description	Location
7	Water quality	Duwamish River riverbank at S 115th St is eroding, causing failure of road shoulder and habitat degradation	Duwamish River right (east) bank adjacent to S 115th St between 42nd Ave S and E Marginal Way S and adjacent to 42nd Ave S from S 115 St to Interurban Ave S.
8	Drainage	53rd Ave S storm drain system has inadequate capacity	53rd Ave S near S 139th
9	Drainage	S 143rd St has no drainage system	S 143rd St, east of Interurban Ave; S 144th St, S 143rd Place, S 143rd S, east of Interurban Ave S between Interurban and Duwamish River, W. of Duwamish, near Black River convergence

Source: Appendix D Table D-1 in CH2MHill 2013

Pollution-generating surfaces are considered a significant source of pollutants in stormwater runoff and include both pervious and impervious surfaces. The Washington Administrative Code (WAC) 173-218-030 describes pollution-generating surfaces as including surfaces that involve regular vehicle use or industrial activities like those found in the Project study areas. Pollution generating surfaces that are relevant to the Project include roads, unvegetated road shoulders, bike lanes within the traveled lane of a roadway, driveways, parking lots, and vehicular equipment storage yards.

Stormwater runoff from pollution-generating impervious surfaces (PGIS) has the potential to affect fish species, degrade habitat, and decrease water quality. An increase in PGIS potentially increases stormwater runoff rates, volume, and pollutant loads because PGIS do not absorb stormwater runoff. Trash, chemicals, dirt, sediment, and other harmful pollutants can be transported through stormwater runoff events (EPA n.d.).

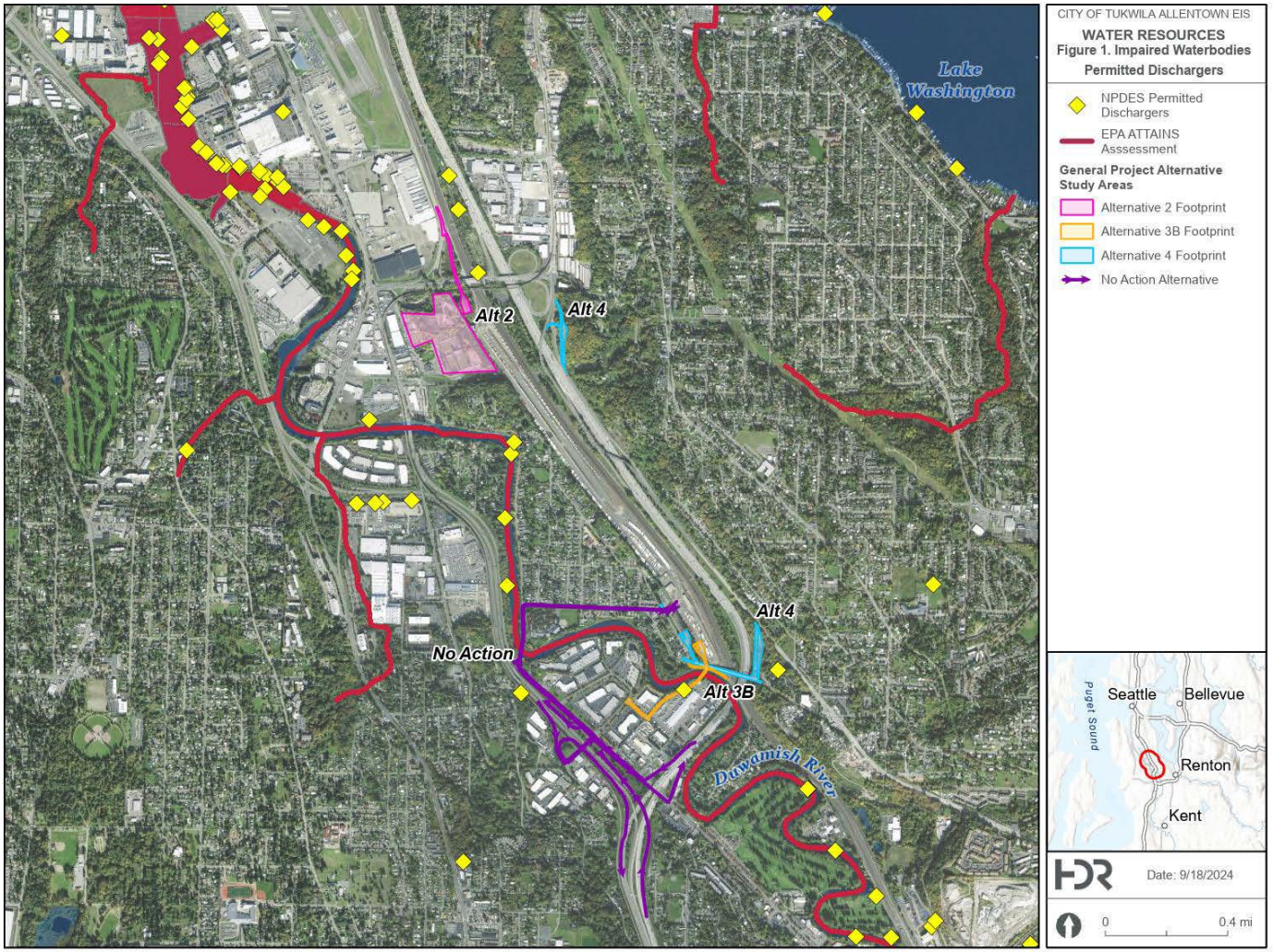


Figure 4.2-4 EPA impaired waterbody and NPDES permitted discharge sites (EPA n.d.)

4.2.1.5 Groundwater

The study area for groundwater includes the footprint for Alternatives 2, 3B, and 4, and the general vicinity of the No Action Alternative. According to KCC 9.04.020, groundwater is defined as "all water found in the soil and stratum beneath the land surface or beneath the bed of any surface water." Susceptibility to ground water contamination occurs where there is a combination of permeable soils, permeable subsurface geology, and ground water close to the ground surface. Groundwater direction and flow are not well understood in the Project vicinity (Senter et al. 2020).

The King County Groundwater Well Viewer database and the Ecology Well Construction and Licensing database were reviewed for potential wells in the Project vicinity. Wells collect various data about groundwater including but not limited to levels and flow conditions. No wells were identified within the Alternative footprints (KCGWV n.d.; Ecology n.d.a).

The EPA Sole Source Aquifer (SSA) and King County Critical Aquifer Recharge Area (CARA) GIS layers were used to determine if there were any SSAs or CARAs near the Project vicinity (SSA n.d.; CARA n.d.). An SSA is designated by the EPA as the sole or principal source of drinking water for an area. According to KCC 21A.06.253C, a CARA is an area that has a high susceptibility to groundwater contamination or an area of medium susceptibility to ground water contamination that is located within an SSA. A CARA may also be considered a wellhead protection area for a municipal or district drinking water system (246-290 WAC). The databases indicated that there were no SSAs or CARAs within the Project vicinity. The Washington State Department of Ecology (Ecology) Groundwater Map Search was used to determine if there were any wellhead protection zones or other areas of importance within the Project vicinity. The Ecology Groundwater Map Search database did not identify any wellhead protection zones or areas of importance (Ecology n.d.b).

4.2.2 Relevant Plans Policies and Regulations

The relevant plans, policies, regulations, and guidance consulted when analyzing the potential impacts of the proposed Alternatives are described in Table 4.2-5.

Table 4.2-5 Relevant Plans, Policies, and Regulations

Law and Regulation	Description
Federal	
Sections 10, 303, 401, 404, and 408 of the Clean Water Act	Required for projects proposing in-water work related to fill and/or water quality impacts in Waters of the United States (WOTUS)
Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP)	Any development in a floodplain, defined as man-made change to improved or unimproved real estate, requires a permit
Flood Control Management Act of 1935, RCW 86.16	Established statewide authority for floodplain management.
Presidential Executive Order 11988, Floodplain Management (FEMA 1977)	Requires executive departments and agencies (agencies) to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid

Law and Regulation	Description
	direct or indirect support of floodplain development wherever there is a practicable alternative.
The National Flood Insurance Act of 1968	Led to creation of the National Flood Insurance Program (NFIP). The NFIP aims to share the risk of flood losses through insurance and reduce flood damages by restricting floodplain development.
Flood Disaster Protection Act of 1973 (FEMA 1997)	Requires individuals, businesses and others buying, building or improving property located in identified areas of special flood hazards within participating communities to purchase flood insurance
State	
Growth Management Act	Requires all cities and counties in Washington to adopt development regulations that protect critical areas
Shoreline Management Act of 1971 Chapter 90.58 RCW	Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water.
Section 401 of the Clean Water Act	The EPA delegated authority to Ecology to review and certify Section 401 permits for projects with in-water work in WOTUS
Water Quality Standards for Surface Waters for the State of Washington Chapter 173-201A WAC	Establishes water quality standards for surface waters of the state of Washington
Chapter 77.55 RCW Construction Projects in State Waters	Requires any hydraulic project in state waters to adequately protect fish and their aquatic habitats.
Chapter 90.44 RCW Regulation of public groundwaters	Regulates and controls groundwaters of the state
Chapter 90.48 RCW Water Pollution Control	Prevents and controls the pollution of the waters of the state. Ecology has been designated as the state water pollution control agency
Chapter 90.54 RCW Water Resources Act of 1971	Protects water resources of the state, while ensuring they are fully utilized.
Washington State Department of Fish and Wildlife (WDFW) Hydraulic Project Approval	Ensures that construction in or near state waters is done in such a way as to protect fish and their aquatic habitats.
Local	
King County Critical Areas Ordinance (King County Code [KCC] 21A.24)	This ordinance was developed under the directives of the GMA to designate and protect critical areas and to assist in conserving the value of property, safeguarding the public welfare, and providing protection for these areas.

Law and Regulation	Description
King County Public Water System Rules and Regulations, Chapter 12 (12.24.010) – King County.	Provides drinking water source protection including protecting drinking water from possible contaminants
Surface Water Runoff Policy in Chapter 9.04 – King County	Stormwater runoff and surface water and erosion control.
City of Tukwila Environmentally Critical Areas TMC 18.45	The purpose of TMC Chapter 18.45 is to protect the environment, human life and property; to designate and classify ecologically critical areas including but not limited to regulated wetlands and watercourses and geologically hazardous areas and to protect these critical areas and their functions while also allowing for reasonable use of public and private property. These regulations are prepared to comply with the Growth Management Act.
City of Tukwila Surface Water Management TMC 14.30	The purpose of TMC Chapter 14.30 is to regulate development activities that could affect stormwater and non-stormwater discharges to the stormwater drainage system to the maximum extent practicable as required by federal and state law
City of Tukwila Flood Plain Management TMC 16.52	This chapter ensures development activities taking place in special flood hazard areas promote the public health, safety, and general welfare of residents.
City of Tukwila Grading TMC 16.54	The purpose of this chapter is to Prevent damage to life, public and private property, surface waters, sensitive areas and associated buffers; regulate grading activities, including excavation, fill, grading, earthwork construction, and structural preloads; and prevent erosion and control sedimentation.

4.2.3 Methodology

Project impacts are discussed as direct or indirect impacts that occur during construction or operation of the proposed Project. Direct impacts are caused by the Project, and occur at the same time and place as the Project. Indirect impacts are caused by the Project, and are later in time or farther removed in distance from the Project, but are still reasonably foreseeable (40 CFR 1508.8). Construction impacts occur during the construction, or building, of the Project, while operation impacts result from the operations, or the utilization and maintenance of the Project, post-construction.

The potential impacts of construction and operation of each alternative on water resources were evaluated based on the applicable federal, state, and local regulatory requirements. Potential impacts to floodplains, surface waters, water quality, and groundwater were evaluated within their respective study areas. Potential impacts were determined by the location of the footprint of the alternative as well as impacts that extend beyond the area of the project footprint (e.g. stormwater pollution).

Where information is available, potential impacts to water resources are discussed quantitatively (e.g. area of impervious surfaces created), and are otherwise discussed qualitatively. Impacts to the No Action Alternative were determined based on the existing infrastructure's location to water resources. The potential impacts to floodplains, surface waters, water quality, and groundwater are evaluated by using the definitions in Table 4.2-6.

Table 4.2-6 Impact magnitude and description

Magnitude of Impact	Description
No Impact	The proposed Project would be fully consistent with the intent of applicable plans and policies for floodplains, surface waters, water quality, and groundwater.
Minor	The proposed Project would result in short-term temporary impacts, or minimal long-term impacts to floodplains, surface waters, water quality, and groundwater.
Moderate	The proposed Project would result in long-term or permanent impacts to floodplains, surface waters, water quality, and groundwater, but mitigation can be applied to reduce the impact to be less than significant.
Significant	The proposed Project would cause long-term, permanent, or irreversible inconsistencies with applicable plans and policies or the zoning codes pertaining to floodplains, surface waters, water quality, and groundwater.

4.2.4 Impacts Analysis

4.2.4.1 No Action Alternative

A detailed description of the No Action Alternative components and routes are provided in Section 3.3. As shown in Figure 4.2-5, no wetlands were identified within the No Action Alternative, and one watercourse, the Duwamish River, was identified within the No Action Alternative. Refer to Figure 4.2-2 for flood hazard zones of all Alternatives.

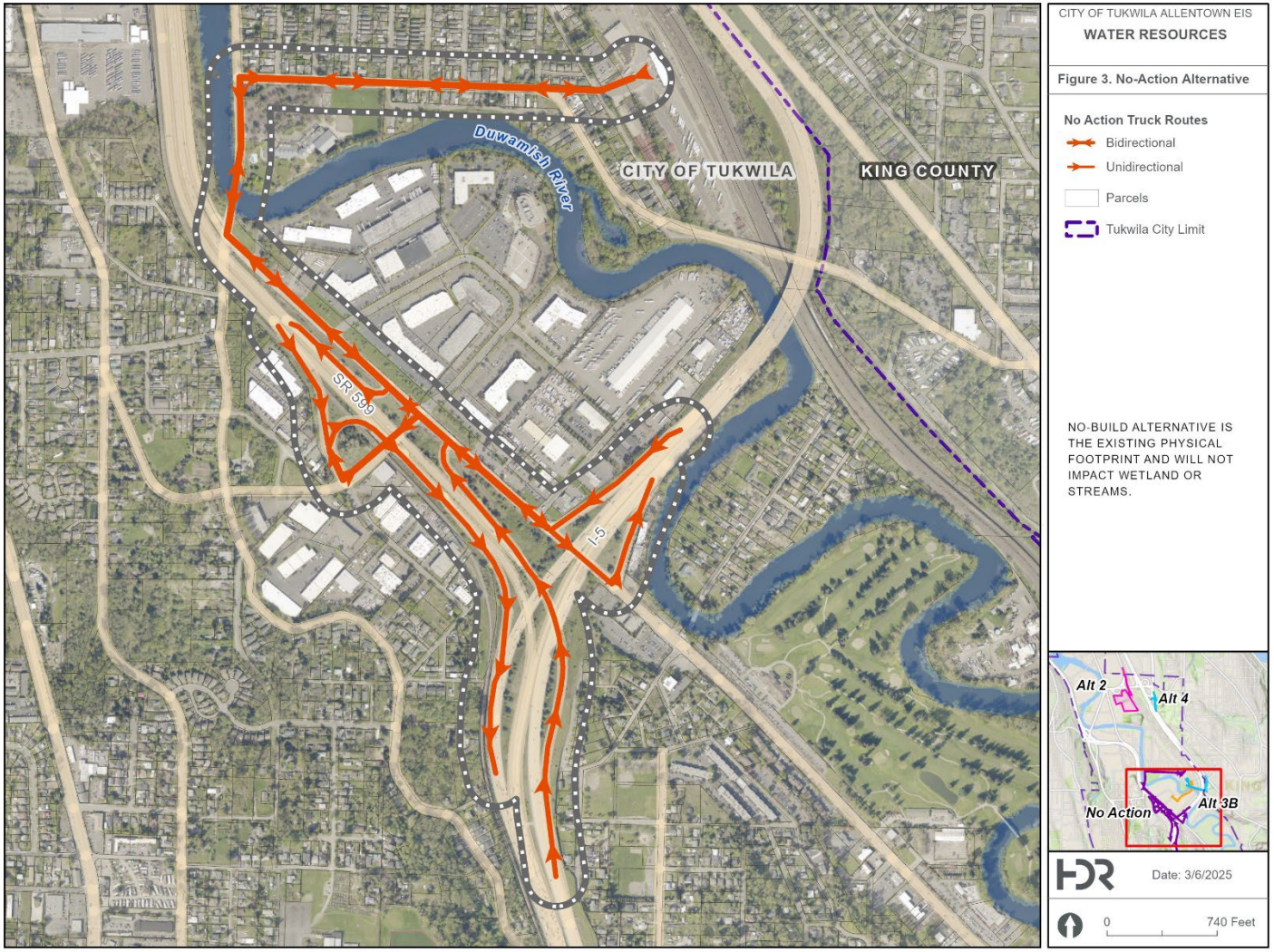


Figure 4.2-5 Wetlands and Surface Waters within the No Action Alternative Study Area

4.2.4.1.1 Construction Impacts Associated with the No Action Alternative

Not Applicable. The No Action Alternative requires no construction, the truck route would remain along its current course. There would be no impacts to floodplains, wetlands, streams, water quality, or groundwater as a result of construction activities.

4.2.4.1.2 Operations Impacts Associated with the No Action Alternative

4.2.4.1.2.1 Floodplains

No impact. The No Action Alternative requires no construction. As such, there will be no impacts to floodplains.

4.2.4.1.2.2 Wetlands

No impact. A buffer was not considered for the No Action Alternative because there is no new construction. Current operating impacts will apply. As such, there will be no new impacts to wetlands because of the No Action Alternative.

4.2.4.1.2.3 Streams

No impact. The current course of the No Action Alternative routes trucks over the Duwamish River via the South 42nd Street Bridge and will not create any additional impact on the waterway that differ from current operational conditions.

4.2.4.1.2.4 Water Quality

Minor impact. Increased truck traffic increases the potential for pollution, especially for contaminants such as 6PPD-quinone. It is unclear what existing stormwater infrastructure is in place for the No Action Alternative. New construction for Alternatives 2, 3B, and 4 will be required to abide by the most current stormwater protections; however, the No Action Alternative will not construct anything new. Any stormwater systems that are not up to date with the most current regulations will remain as-is.

4.2.4.1.2.5 Groundwater

No impact. No Action Alternative requires no construction. As such, groundwater flow will not be affected.

4.2.4.2 Alternative 2: Airport Way South

A detailed description of this proposed Alternative's components and routes are provided in Section 3.4. The Duwamish River is not within the study area of Alternative 2. Figure 4.2-7 shows the five wetlands identified within the Alternative 2 study area: Wetlands 4 (4a and 4b), 5, 6, 7, and 9. The wetlands are described as depressional with moderate levels of habitat functions. Two of these wetlands were identified as Priority Habitat by the PHS viewer (WDFW n.d.c). Habitat scores range from 3 to 5 (Appendix C; Hruby and Yahnke 2023). The description of the wetlands can be found in Section 4.3.1.1.1; refer to Figure 4.2-4 for flood hazard zones.

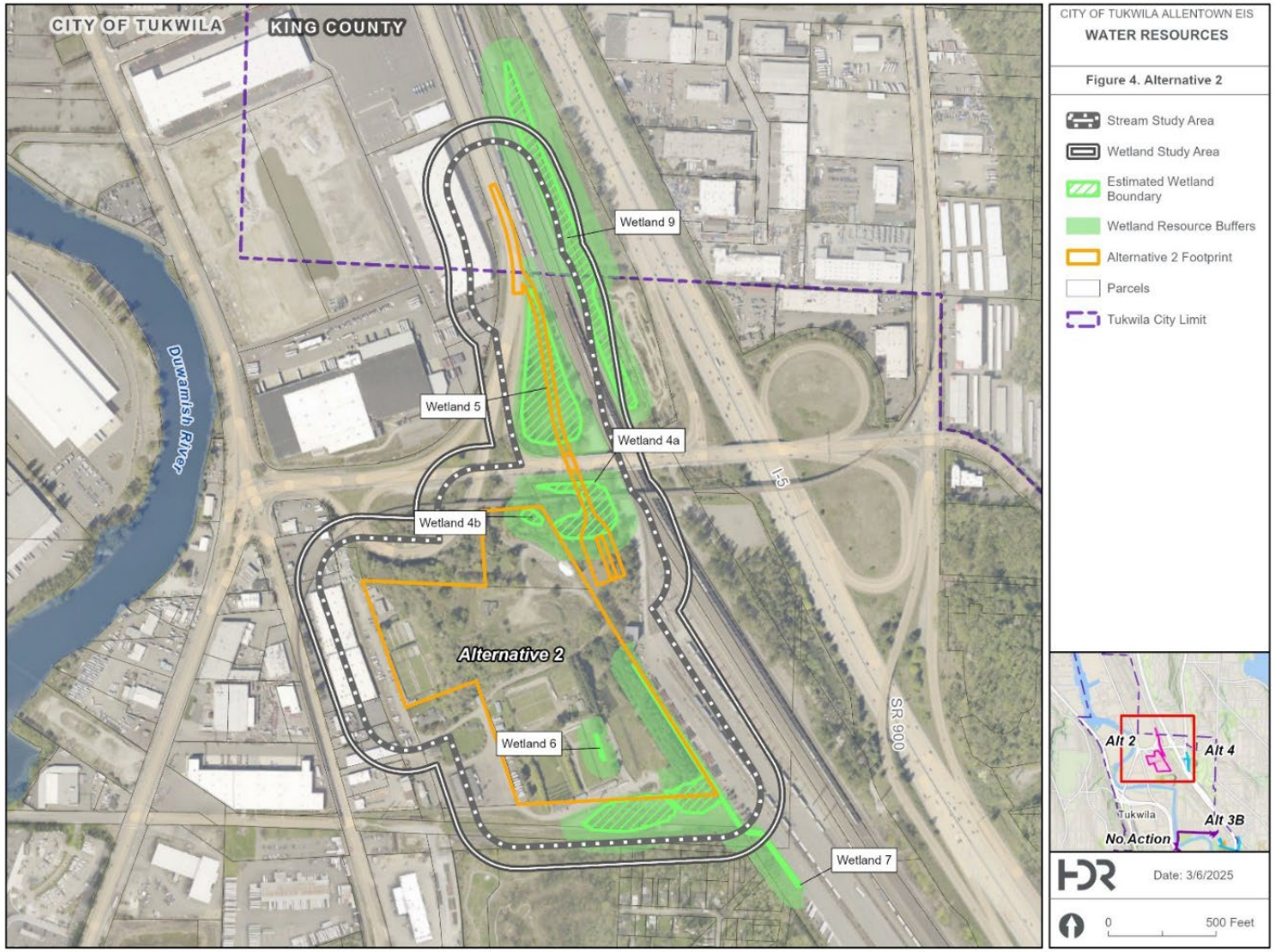


Figure 4.2-6 Wetlands and Surface Waters within the Alternative 2 Study Area

4.2.4.2.1 Construction Impacts Associated with Alternative 2

4.2.4.2.1.1 Floodplains

No Impact. Alternative 2 is not within the 100-year floodplain; therefore, no direct impacts are anticipated from construction.

4.2.4.2.1.2 Wetlands

Moderate impact. Temporary impacts on wetlands, streams, and their respective buffers resulting from construction may result from staging areas, temporary work areas, access roads, stream relocations, cofferdams, clearing, stockpiles, or erosion and sediment controls. Dewatering may temporarily impact groundwater discharge to wetlands. Other temporary impacts to wetlands and wetland buffers include soil compaction, accidental spills of hazardous substances, noise and other disturbances, sedimentation, and the introduction of invasive species.

Due to lack of construction details, it is assumed that a wetland will be filled wherever an alternative footprint intersects with the wetland. Filling or excavating wetlands for means of construction will result in loss of wetland area, alteration of surface or subsurface water flow, and changes in vegetation, degrading the overall wetland functions. Affected wetland functions and values could include the wetland's ability to provide floodway storage, detain stormwater, filter pollutants, protect streambanks, and provide fish and wildlife habitat. Impacts to wetlands that affect plants and animals are discussed in Section 4.3 Plants and Animals.

The type of wetland and vegetation present may affect the length of impact. Wetlands with emergent vegetation are likely to recover faster than wetlands with woody vegetation due to the time it takes for the respective vegetation to achieve pre-construction size and stature. All construction activities would be performed using best management practices (BMPs) to minimize the disturbance that construction may cause to the five wetlands within Alternative 2.

4.2.4.2.1.3 Streams

No Impact. There are no streams within Alternative 2.

4.2.4.2.1.4 Water Quality

Minor impacts. Construction activities of Alternative 2 would result in direct impacts to water quality and would be temporary in duration. Activities such as vegetation clearing, grading, or excavating may erode soil when exposed to wind, rainfall, or vehicle activity. Construction stormwater runoff could carry these soils into waterways, creating water quality issues including turbidity, sedimentation, and the transport of pollutants. Impacts and mitigation measures to soils are discussed in Section 4.1 Geology/Soils. There is potential for hazardous chemicals to spill, leading to surface water or groundwater contamination through runoff. The impacts and mitigation measures for hazardous chemicals are discussed in Section 4.7 Health and Safety.

Any selected alternative of the proposed Project would be developed in accordance with the current stormwater management standards in the King County Surface Water Design Manual, and appropriate mitigation measures and BMPs will be followed minimizing or avoiding most of the impacts of stormwater runoff. With the implementation of mitigation measures and BMPS, temporary impacts to water quality from vegetation clearing, grading, erosion, sedimentation, and pollutants can be avoided.

4.2.4.2.1.5 Groundwater

Minor Impacts. Temporary impacts on groundwater resulting from construction may result from temporary land conversion to impervious surfaces not included within the alternative footprint including staging areas, temporary work areas, clearing, stockpiles, and access roads. Other potential construction activities that could affect local hydrology include stream relocations and dewatering of wetlands which may temporarily impact groundwater discharge.

4.2.4.2.2 Operations Impacts Associated with Alternative 2

4.2.4.2.2.1 Floodplains

Minor Impact. Indirect impacts could result from the addition of impervious surfaces. An increase in impervious surfaces could increase surface water runoff and affect hydrology by altering base or peak flows within the floodplain. Existing conditions within the Alternative 2 footprint are currently covered with grass/low-lying vegetation or tree canopy. Impervious surfaces currently occupy 2.98 acres, or 10.6%, of the Alternative 2 footprint. The completed infrastructure of proposed Alternative 2 would increase the area of impervious surfaces to approximately 28.18 acres, which is an additional 25.2 acres of new impervious surfaces.

Table 4.2-7 Land Cover within Alternative 2

Landcover Class	Area within Project Footprint (acres)
Bare Soil	2.23
Grass/Low-Lying Vegetation	11.84
Impervious Surfaces	2.98
Open Water	0.15
Tree Canopy	10.75
Unclassified (Unincorporated King County)	0.23
Total	**28.18**

Drainage issues were listed as one of the primary surface water problems faced by the Duwamish River (Figure 4.2-4; CH2M Hill 2013). The primary cause of drainage issues arises from lack of storm drainage systems, damaged or poorly maintained conveyance systems, and inadequate hydraulic capacity of conveyance systems. Potential mitigation measures for these issues are discussed in Section 4.1.5.1.

4.2.4.2.2.2 Wetlands and Streams

Mitigated Significant Impact. Alternative 2 does not intersect with a stream or stream buffer. Therefore, there are no impacts to streams or stream buffers. Of the proposed alternatives, Alternative 2 has the greatest extent of direct impact on wetlands and wetland buffers based on acres of area affected. Four wetlands, three with moderate levels of habitat functions and one with low levels of habitat function, totaling 1.42 acres would be permanently impacted by this alternative. The wetland buffers associated with this impact would total 5.7 acres (Table 4.2-8).

Table 4.2-8 Wetland Impacts in the Alternative 2 Study Area

Wetland Name	Wetland Area Impacted by Project footprint (acres)	Wetland Buffer Area Impacted by Project footprint (acres)	Total Area Impacted by Project footprint (acres)
4a	0.32	1.17	1.50
4b	0.11	0.67	0.77
5	0.54	0.67	1.21
6	0.03	0.82	0.85
7	0.42	2.37	2.79
9	0.00	0.00	0.00
Total	**1.42**	**5.7**	**7.12**

Following construction, there would be an increase in the amount of stormwater runoff generated due to the presence of additional impervious surfaces. This additional runoff increases the potential for contamination of receiving waterbodies. Additionally, increased impervious surfaces alter hydrology by decreasing the percolation of surface water. This effect results in lower base flows as well as higher peak flows which can result in scour or deposition downstream. Assuming BMPs and mitigation measures are put in place, those impacts should be minimal. Mitigation measures are discussed in Section 4.1.5.2

4.2.4.2.2.3 Water Quality

Moderate impacts. Potential operation impacts to water quality could result from the permanent loss of wetlands, buffers, and their associated functions, and to changes to hydrologic conditions. Operations impacts to water quality have the potential to be substantial if not effectively mitigated. An increase in stormwater runoff due to an increase in impervious surfaces could result in elevated pollutant loads in local waterways. Mitigation measures for potential impacts to water quality are discussed in Section 4.2.5.3.

4.2.4.2.2.4 Groundwater

Minor impacts. There would be long-term impacts to groundwater within the study area due to the post-construction conditions of proposed Alternative 2. Land cover conversion to impervious surfaces would alter the infiltration and percolation of surface water into the ground potentially affecting groundwater recharge (See Table 4.2-7).

Alternative 2 would have the greatest construction of new impervious surfaces. Impervious surfaces currently comprise 2.98 acres (10.6% of the proposed Alternative 2 footprint). If Alternative 2 is constructed the entire footprint, 28.18 acres, would be converted to impervious ones.

4.2.4.3 Alternative 3B: Improvements to 48th Place South

A detailed description of this proposed Alternative's components and routes are provided in Section 3.3.2. Figure 4.2-8 shows the Duwamish River and four wetlands identified within the Alternative 3B study area: Wetlands 1, 2, 3, and 8. Three of these wetlands were classified as tidal fringe, and one was classified as depressional. Habitat scores range from 5 to 6 (Appendix C; Hruby and Yahnke 2023). The description of the wetlands can be found in Section 4.2.1.3.1.

One waterway, the Duwamish River, is found within the Alternative 3B study area Figure 4.2-7; Table 4.2-2). The Duwamish River is classified as a Type S stream. According to King County Code (K.C.C.)

21A.24.345, Type S waters include all aquatic areas inventoried as “shorelines of the state” under the King County’s Shoreline Master Program. The stretch of Duwamish River adjacent to the Alternative 3B study area is located within the Duwamish Estuary, which includes the extent of tidal influence from the mouth to river mile 12 (King County et.al. 2001). The Duwamish River was historically, and is regularly dredged, to maintain a navigable waterway. This action, paired with the tidally influenced water levels, have resulted in steep and unvegetated banks. Both banks are armored with riprap within the study area and contain patches of unvegetated and subtidal substrates.

Refer to Figure 4.2-2 for flood hazard zones for this alternative.

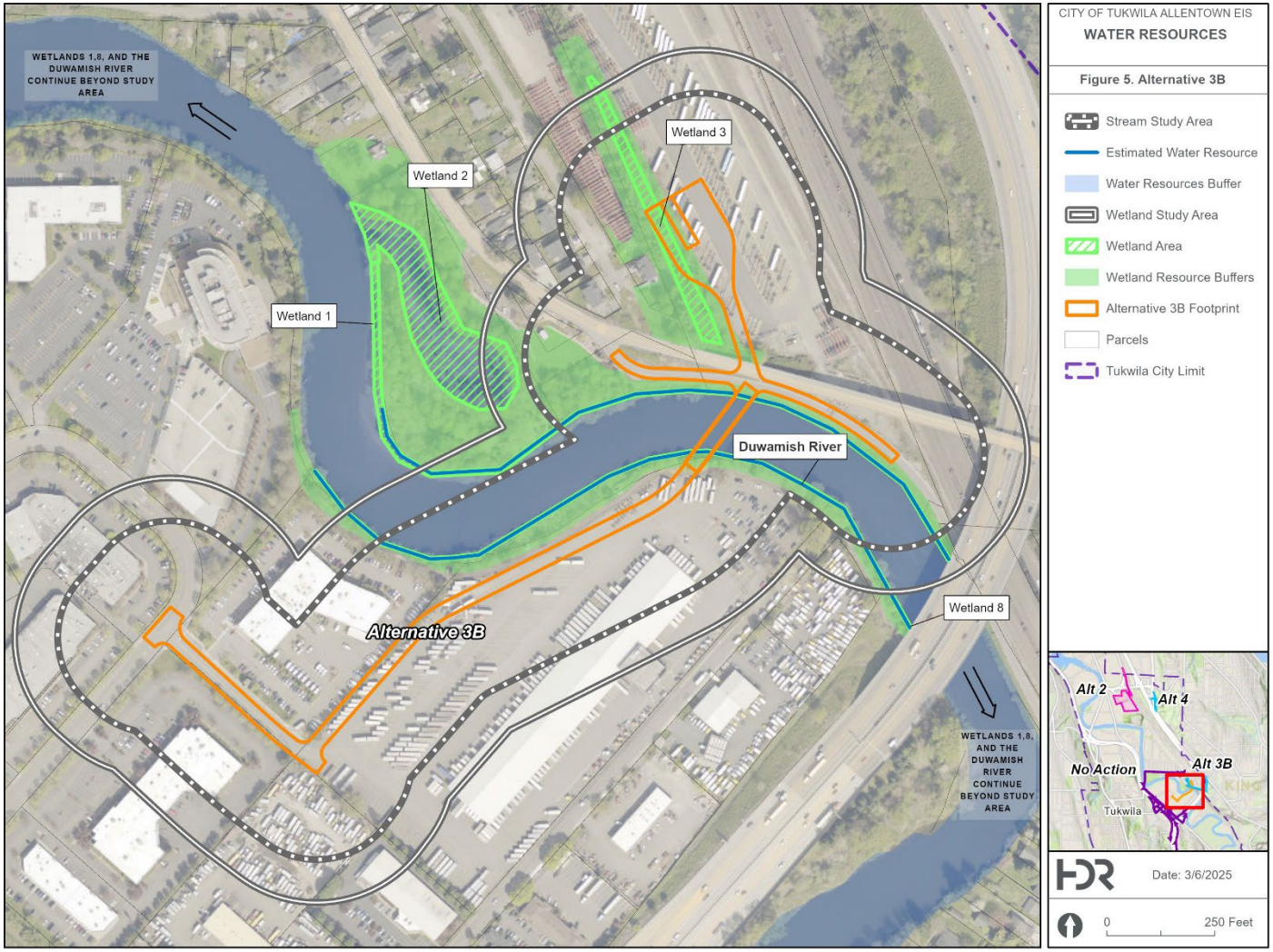


Figure 4.2-7 Wetlands and Surface Waters within the Alternative 3B Study Area

4.2.4.3.1 Construction Impacts Associated with Alternative 3B

4.2.4.3.1.1 Floodplains

No impact or Minor impact. Depending upon the final design of the proposed bridge, Alternative 3B construction element may be within 100-year floodplain. If Alternative 3B occurs within the floodplain, a Special Flood Hazard Area (SFHA) permit will be required. Alternative 3B intersects two revetments where it spans the Duwamish River between RM 8.6 and RM 8.7. Levees are located between RM 7.9 and RM 8.3 to the east of the proposed Alternative 3B footprint. Alternative 3B is approximately 200 feet east of an additional SFHA located in Codiga Park.

This alternative has the potential to impact the Duwamish River and its associated floodplain. Alternative 3B would construct a bridge that would cross the Duwamish and likely include in-water work. Impacts to the floodplain will be mitigated through issuance of the SFHA permit which requires that development in the floodplain will be reasonably safe from flooding.

4.2.4.3.1.2 Wetlands and Streams

Moderate impact. Construction of proposed Alternative 3B may result in temporary impacts on wetlands, streams, and their respective buffers due to staging areas, temporary work areas, access roads, stream relocations, cofferdams, clearing, stockpiles, or erosion and sediment controls. Dewatering may temporarily impact groundwater discharge to wetlands. Other temporary impacts to wetlands and wetland buffers include soil compaction, accidental spills of hazardous substances, noise and other disturbances, sedimentation, and the introduction of invasive species.

Due to lack of construction details, it is assumed that a wetland will be filled wherever an alternative footprint intersects with the wetland. Filling or excavating wetlands for means of construction will result in loss of wetland area, alteration of surface or subsurface water flow, and changes in vegetation, degrading the overall wetland functions. Affected wetland functions and values could include the wetland's ability to floodway storage, detain stormwater, filter pollutants, protect streambanks, and provide fish and wildlife habitat. Impacts to wetlands that affect plants and animals are discussed in Section 4.3 Plants and Animals.

The type of wetland and vegetation present may affect the length of impact. Wetlands with emergent vegetation are likely to recover faster than wetlands with woody vegetation due to the time it takes for the respective vegetation to achieve pre-construction size and stature. Potential mitigation of construction impacts on wetlands is discussed in Section 4.2.5.2.

Moderate Impact. This alternative has the potential to impact the Duwamish River. Construction of Alternative 3B would include a bridge that would cross the Duwamish and in-water work would likely occur. The bridge that would cross the Duwamish River has not yet been designed, so exact impacts are unknown. However, in 2022 Trantech Engineering LLC designed a bridge for a previous alternative that has since been dismissed (Trantech 2022). This design was used to inform assumptions about the bridge that would be constructed for Alternative 3B including:

1. The preferred bridge alignment is a three-span steel plate girder with six feet of freeboard which would be above the 100-year flood zone
2. In-water construction will include a temporary falsework bent for steel erection and would include work platforms near the shoreline that extend into the river below HTL. The bent would require pile driving

3. The piers supporting the bridge would be below HTL

Potential mitigation of construction impacts on streams is discussed in Section 4.2.5.2.

4.2.4.3.1.3 Water Quality

Minor impacts. Construction activities of Alternative 3B would result in direct impacts to water quality and would be temporary in duration. Activities such as vegetation clearing, grading, or excavating may erode soil when exposed to wind, rainfall, or vehicle activity. Construction stormwater runoff could carry these soils into waterways, creating water quality issues including turbidity, sedimentation, and the transport of pollutants. Impacts and mitigation measures to soils are discussed in Section 4.1 Geology/Soils. There is potential for hazardous chemicals to spill, leading to surface water or groundwater contamination through runoff. The impacts and mitigation measures for hazardous chemicals are discussed in Section 4.7 Health and Safety.

Any selected alternative of the proposed Project would be developed in accordance with the current stormwater management standards in the King County Surface Water Design Manual and appropriate mitigation measures and BMPs will be followed minimizing or avoiding most of the impacts of stormwater runoff. With the implementation of mitigation measures and BMPS, temporary impacts to water quality from vegetation clearing, grading, erosion, sedimentation, and pollutants can be avoided.

4.2.4.3.1.4 Groundwater

Minor Impacts. Temporary impacts on groundwater resulting from construction may result from temporary land conversion to impervious surfaces not included within the alternative footprint including staging areas, temporary work areas, clearing, stockpiles, and access roads. Other potential construction activities that could affect local hydrology include stream relocations and dewatering of wetlands which may temporarily impact groundwater discharge.

4.2.4.3.2 Operations Impacts Associated with Alternative 3B

4.2.4.3.2.1 Floodplains

No or Minor Impact. Alternative 3B would be located within the 100-year floodplain due to the construction of the bridge over the Duwamish River, a regulatory floodway. The NFIP prohibits development that encroaches the regulatory floodway unless it can be proven that the 100- year flood level will not increase. A No-Rise Certification must be documented through both hydrologic and hydraulic analyses. The current level of design of the proposed Project precludes a meaningful analysis of the impact Alternative 3B may have on the 100-year floodplain; however, it is assumed the bridge design will follow the NFIP criteria and would not increase the 100-year flood level. Therefore, it is unlikely that Alternative 3B would result in direct impacts to the 100-year floodplain.

Indirect impacts could result from the addition of impervious surfaces. An increase in impervious surfaces could increase surface water runoff and affect hydrology by altering base or peak flows within the floodplain. Existing conditions within the Alternative 3B footprint have very little vegetation. Impervious surfaces currently occupy 2.19 acres, or 73.49%, of the proposed alternative footprint. Alternative 3B would increase the area of impervious surfaces to approximately 2.87 acres which is an additional 0.68 acres of new impervious surfaces.

Table 4.2-9 Landcover of Alternative 3B

Landcover Class	Area within Project Footprint (acres)
Bare Soil	0.02
Grass/Low-Lying Vegetation	0.14
Impervious Surfaces	2.19
Open Water	0.11
Tree Canopy	0.41
Unclassified (Unincorporated King County)	0.00
Total	**2.87**

4.2.4.3.2.2 Wetlands and Streams

Mitigated Significant Impact. Alternative 3B has the least amount of impact on wetlands and wetland buffers based on acres of area affected. Four wetlands totaling 0.11 acres would be permanently impacted by this alternative. The wetland buffers associated with this impact would total 0.65 acres.

This alternative would require a bridge crossing the Duwamish River with five feet of minimum freeboard above the river. In order to achieve the required clearances above the river, Railroad Avenue would need to be raised to align with the new grade changes. This elevation adjustment would require the construction of retaining walls along the eastern edge of Railroad Avenue to support the new grade change. Elevated structures have the potential to impact vegetation; however, the quality and density of existing vegetation is unknown. If this alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on wetlands.

Table 4.2-10 Direct impacts to wetlands in the Alternative 3B study area

Wetland Name	Wetland Area Impacted by Project footprint (acres)	Wetland Buffer Area Impacted by Project footprint (acres)	Total Area Impacted by Project footprint (acres)
1	0.00	0.19	0.20
2	0.00	0.00	0.00
3	0.10	0.27	0.37
8	0.01	0.19	0.19
Total	**0.11**	**0.65**	**0.76**

Following construction, there would be an increase in the amount of stormwater runoff generated due to the addition of impervious surfaces. This additional runoff increases the potential for contamination of receiving waterbodies. Additionally, increased impervious surfaces alter hydrology by decreasing the percolation of surface water. This effect results in lower base flows as well as higher peak flows which can result in scour or deposition downstream. Assuming BMPs and mitigation measures are put in place, those impacts should be minimal. Mitigation measures are discussed in Section 4.2.5.2.

4.2.4.3.2.3 Water Quality

Moderate impacts. Potential operation impacts to water quality could result from the permanent loss of wetlands, buffers, and their associated functions, and to changes to hydrologic conditions. Operations impacts to water quality have the potential to be substantial if not effectively mitigated. An increase in stormwater runoff due to an increase in impervious surfaces could result in elevated pollutant loads in

local waterways. Mitigation measures for potential impacts to water quality are discussed in Section 4.2.5.3.

4.2.4.3.2.4 Groundwater

Minor impacts. There would be long-term impacts to groundwater within the study area due to the post-construction conditions of proposed Alternative 3B. Land cover conversion to impervious surfaces would alter the infiltration and percolation of surface water into the ground potentially affecting groundwater recharge (See Table 4.2-9).

Alternative 3B would increase the area of impervious surfaces to approximately 2.87 acres which is an additional 0.68 acres of new impervious surfaces. If Alternative 3B were constructed, the percentage of impervious surfaces in this footprint area would increase from 73.49%, to 100%.

4.2.4.4 Alternative 4: New Bridge from SR-900 (MLK Jr Way) to South 129th Street

A detailed description of this proposed Alternative's components and routes are provided in Section 3.3.3. Figure 4.2-8 shows the Duwamish River and four wetlands identified within the southern portion of the Alternative 4 study area: Wetlands 1, 2, 3, and 8. Figure 4.2-9 shows Stream 1 and three wetlands identified within the northern portion of the Alternative 4 study area: Wetlands 10, 11, and 12. Wetlands 1, 2, and 8 met special estuarine characteristics. Wetland 3 has high water quality and hydrologic functions. Wetlands 10 and 11 have moderate water quality and hydrologic functions. Wetland 12 has high water quality and moderate hydrologic functions. Habitat scores range from 5 to 6 (Appendix C; Hruby and Yahnke 2023). The description of the wetlands can be found in Section 4.2.1.3.1.

Two waterways, the Duwamish River and Stream 1, are found within the Alternative 4 study area. The Duwamish River is described in detail in Section 4.2.4.3. Stream 1 is mapped by the City of Tukwila (City of Tukwila 2024 in Appendix C) as a Type F stream which is defined as a perennial stream that is known to be used by fish or has the potential to be used by fish. This stream was not accessed during field reconnaissance. The mapped stream flows through a narrow ravine with a mature broadleaf maple canopy before flowing to Martin Luther King Jr Way South. Inlet protection for a potential culvert or pipe was observed from the roadway in this area. Stream 1 has an unknown outlet and is assumed to discharge to the large wetland complex to downslope and in between I-5 and the BNSF operations yard. Stream 1 was assumed to support an associated wetland (Wetland 12). There is no documented fish use (WDFW 2024a, 2024b, 2024c).

Refer to Figure 4.2-2 for flood hazard zones of Alternative 4.

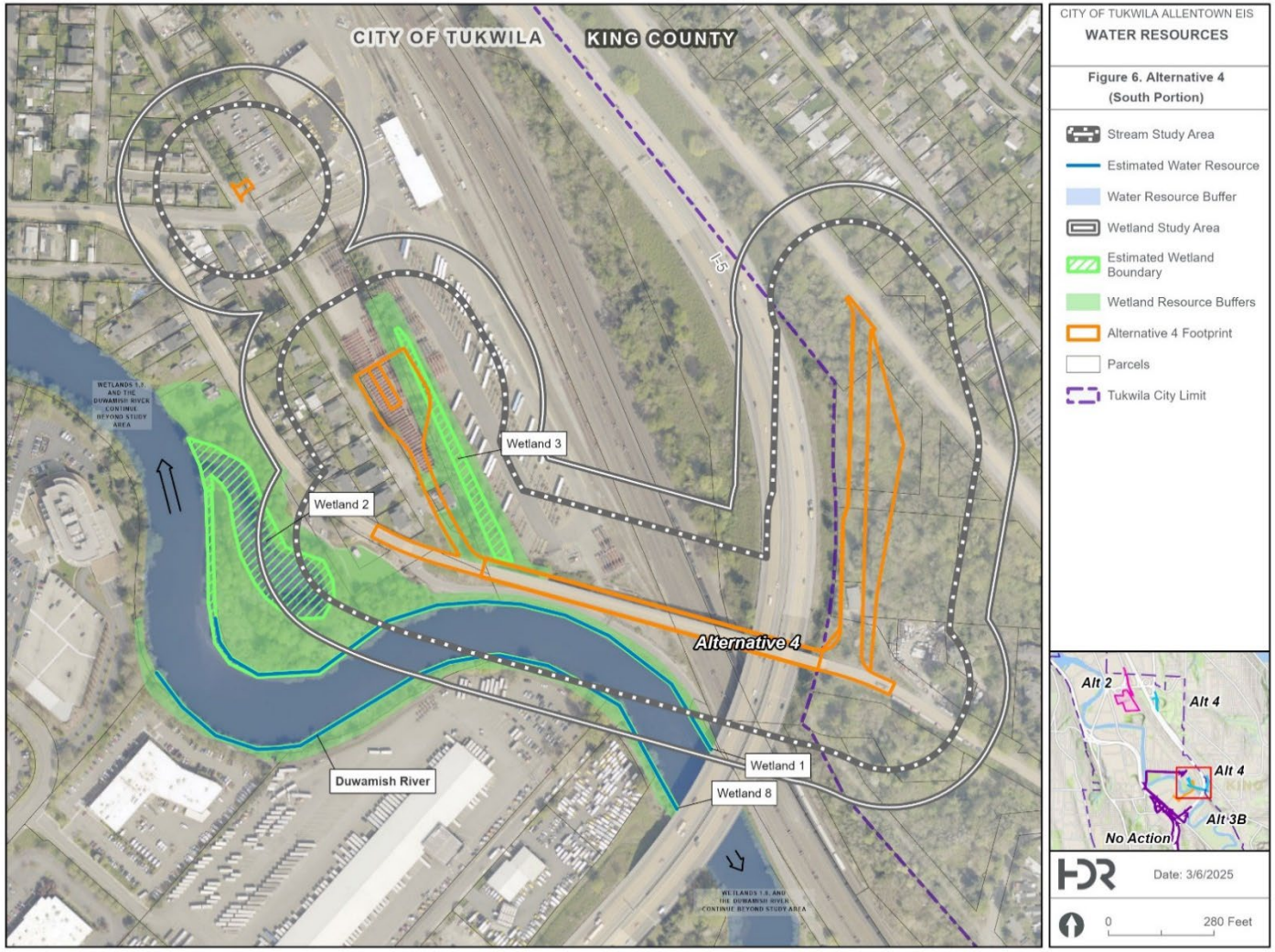


Figure 4.2-8 Wetlands and Surface Waters within the Southern Portion of the Alternative 4 Study Area

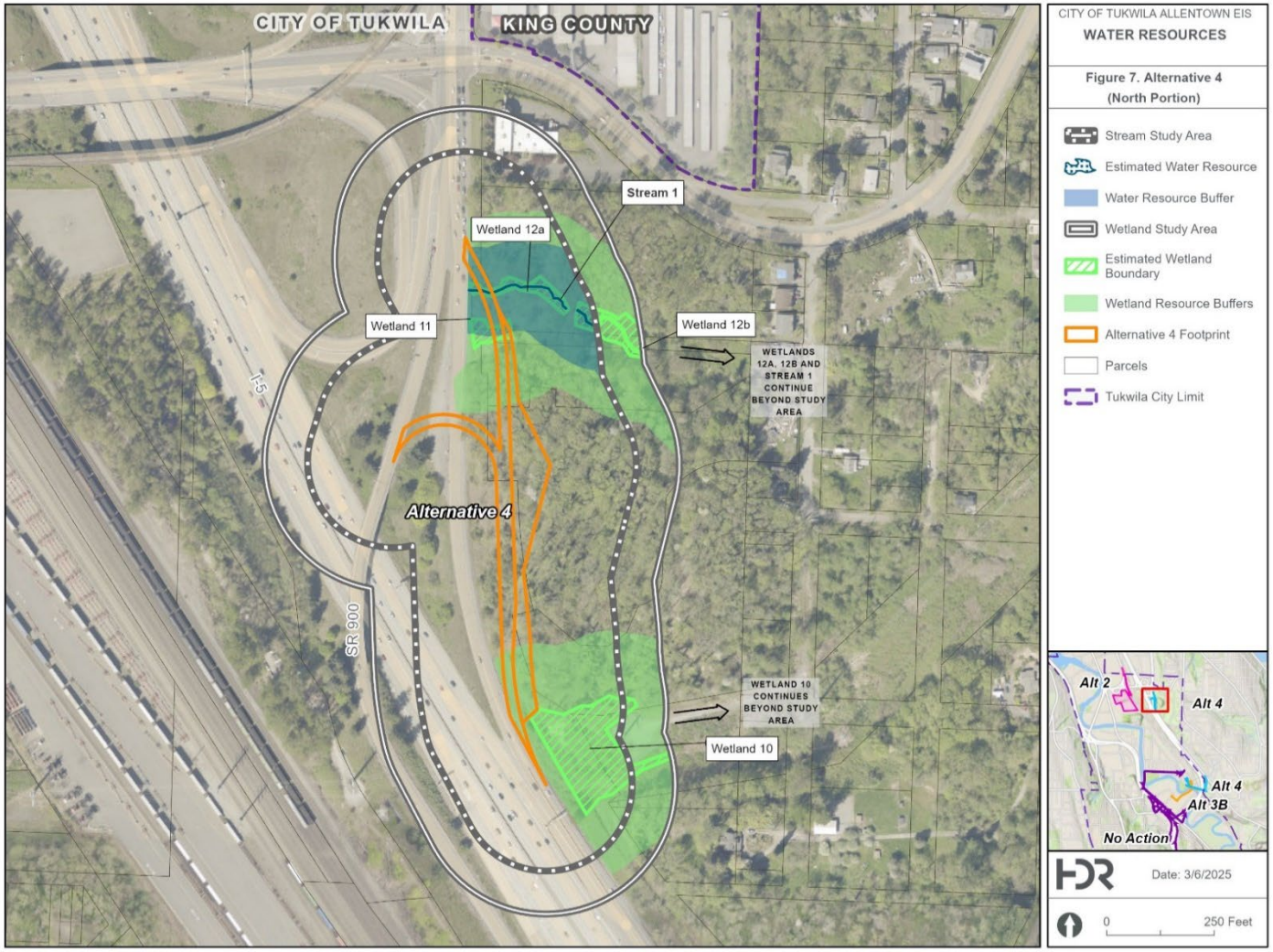


Figure 4.2-9 Wetlands and Surface Waters within the Northern Portion of the Alternative 4 Study Area

4.2.4.4.1 Construction Impacts Associated with Alternative 4

4.2.4.4.1.1 Floodplains

No Impact. Proposed Alternative 4 would not be located within the 100-year floodplain despite its close proximity to the Duwamish River. Alternative 4 is approximately 40-100 feet east of the same revetments as Alternative 3B, and Alternative 4 is approximately 150 feet to the east the SFHA in Codiga Park.

4.2.4.4.1.2 Wetlands and Streams

Moderate impact. Construction of proposed Alternative 4 could result in temporary impacts on wetlands, streams, and their respective buffers from staging areas, temporary work areas, access roads, stream relocations, cofferdams, clearing, stockpiles, or erosion and sediment controls. Dewatering may temporarily impact groundwater discharge to wetlands. Other temporary impacts to wetlands and wetland buffers could include soil compaction, accidental spills of hazardous substances, noise and other disturbances, sedimentation, and the introduction of invasive species.

Due to lack of construction details, it is assumed that a wetland will be filled wherever an alternative footprint intersects with the wetland. Filling or excavating wetlands for means of construction will result in loss of wetland area, alteration of surface or subsurface water flow, and changes in vegetation, degrading the overall wetland functions. Affected wetland functions and values could include the wetland's ability to floodway storage, detain stormwater, filter pollutants, protect streambanks, and provide fish and wildlife habitat. Impacts to wetlands that affect plants and animals are discussed in Section 4.3 Plants and Animals.

The type of wetland and vegetation present may affect the length of impact. Wetlands with emergent vegetation are likely to recover faster than wetlands with woody vegetation due to the time it takes for the respective vegetation to achieve pre-construction size and stature. Potential mitigation of construction impacts on wetlands is discussed in Section 4.2.5.2 Water Quality

4.2.4.4.1.3 Water Quality

Minor impacts. Construction activities of Alternative 4 would result in direct impacts to water quality and would be temporary in duration. Activities such as vegetation clearing, grading, or excavating may erode soil when exposed to wind, rainfall, or vehicle activity. Construction stormwater runoff could carry these soils into waterways, creating water quality issues including turbidity, sedimentation, and the transport of pollutants. Impacts and mitigation measures to soils are discussed in Section 4.1 Geology/Soils. There is potential for hazardous chemicals to spill, leading to surface water or groundwater contamination through runoff. The impacts and mitigation measures for hazardous chemicals are discussed in Section 4.7 Health and Safety.

Any selected alternative of the proposed Project would be developed in accordance with the current stormwater management standards in the King County Surface Water Design Manual and appropriate mitigation measures and BMPs will be followed minimizing or avoiding most of the impacts of stormwater runoff. With the implementation of mitigation measures and BMPS, temporary impacts to water quality from vegetation clearing, grading, erosion, sedimentation, and pollutants can be avoided.

4.2.4.4.1.4 Groundwater

Minor Impacts. Temporary impacts on groundwater resulting from construction may result from temporary land conversion to impervious surfaces not included within the alternative footprint including staging areas, temporary work areas, clearing, stockpiles, and access roads. Other potential construction activities that could affect local hydrology include stream relocations and dewatering of wetlands which may temporarily impact groundwater discharge.

4.2.4.4.2 Operations Impacts Associated with Alternative 4

4.2.4.4.2.1 Floodplains

Minor Impact. Indirect impacts could result from the addition of impervious surfaces. An increase in impervious surfaces could increase surface water runoff and can affect hydrology by altering base or peak flows within the floodplain. Existing conditions within the Alternative 4 footprint are a mix of unclassified land cover, tree canopy, and impervious surfaces. Impervious surfaces currently occupy 1.73 acres, or 26.25%, of the proposed alternative footprint. Alternative 4 would increase the area of impervious surfaces to approximately 6.59 acres which is an additional 4.86 acres of new impervious surfaces (or 100% of the Alternative 4 footprint).

Table 4.2-11 Landcover of Alternative 4

Landcover Class	Area within Project Footprint (acres)
Bare Soil	0.03
Grass/Low-Lying Vegetation	0.53
Impervious Surfaces	1.73
Open Water	0.00
Tree Canopy	1.84
Unclassified (Unincorporated King County)	2.46
Total	**6.59**

4.2.4.4.2.2 Wetlands and Streams

Mitigated Significant Impact Alternative 4 has slightly more impact than Alternative 3B on wetlands and wetland buffers based on affected acreage. Three wetlands with low to moderate levels of habitat functions totaling 0.18 acres would be permanently impacted by Alternative 4. The wetland buffers associated with this impact would total 0.74 acres. The quality of wetlands affected are marginally lower quality than Alternatives 2 and 3B.

This alternative will require a noise wall that would be installed between the new truck access road and 51st Place South, and would require a tall retaining wall to be constructed to support the hillside. Elevated structures have the potential to impact vegetation; however, the quality and density of existing vegetation is unknown at this time. If this Alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on wetlands.

Table 4.2-12 Direct impacts to wetlands in Alternative 4 study area

Wetland Name	Wetland Area Impacted by Project footprint (acres)	Wetland Buffer Area Impacted by Project footprint (acres)	Total Area Impacted by Project footprint (acres)
1	0.00	0.00	0.00
2	0.00	0.00	0.00
3	0.03	0.46	0.49
8	0.00	0.00	0.00
10	0.00	0.26	0.26
11	0.03	0.27	0.30
12a	0.01	0.17	0.18
12b	0.00	0.00	0.00
Total	**0.18**	**0.74**	**0.92**

Following construction, there would be an increase in the amount of stormwater runoff generated due to additional impervious surfaces. This additional runoff would increase the potential for contamination of receiving waterbodies. Additionally, increased impervious surfaces alter hydrology by decreasing the percolation of surface water. This effect results in lower base flows as well as higher peak flows which can result in scour or deposition downstream. Assuming BMPs and mitigation measures are put in place, those impacts should be minimal. Mitigation measures are discussed in Section 4.2.5.

4.2.4.4.2.3 Water Quality

Moderate impacts. Potential operation impacts to water quality could result from the permanent loss of wetlands, buffers, and their associated functions and changes to hydrologic conditions. Operations impacts to water quality have the potential to be substantial if not effectively mitigated. An increase in stormwater runoff due to an increase in impervious surfaces could result in elevated pollutant loads in local waterways. Mitigation measures for potential impacts to water quality are discussed in Section 4.2.5.3.

4.2.4.4.2.4 Groundwater

Minor impacts. There would be long-term impacts to groundwater within the study area due to the post-construction conditions of proposed Alternative 4. Land cover conversion to impervious surfaces would alter the infiltration and percolation of surface water into the ground potentially affecting groundwater recharge (See TableTable 4.2-11)

Alternative 4 would increase the area of impervious surfaces to approximately 6.59 acres which is an additional 4.86 acres of new impervious surfaces. If Alternative 4 were constructed, the percentage of impervious surfaces in this footprint area would increase from 26.3% to 100%.

4.2.5 Mitigation Measures

This section describes mitigation measures that may be implemented to avoid or minimize construction and operation impacts on water resources during the proposed Project.

4.2.5.1 Floodplains

Impacts from the addition of impervious surfaces for Alternatives 2, 3B, and 4 will be mitigated by stormwater infrastructure. The proposed Project design does not currently include stormwater facilities, but when they are integrated into the design of the Project the construction of new or replacement of old stormwater infrastructure will likely provide a long-term minor positive impact on the 100-year floodplain by reducing surface water run-off.

For Alternative 3B, a No-Rise Certification must be documented through both hydrologic and hydraulic analyses which will negate any long-term impacts the Alternative 3B bridge will have on the 100-year floodplain.

4.2.5.2 Wetlands and Streams

Current hydrology sources need to be identified and maintained in order to preserve on-site wetland hydroperiods.

All adverse effects to wetlands must be mitigated in accordance with the State of Washington's Governor's Executive Order (EO) 89-10. State and federal EOs and regulations require mitigation, and the preferred mitigation sequencing requires the applicant to:

1. Avoid impacts to wetlands and other aquatic resources.
2. Minimize unavoidable impacts to the greatest extent feasible.
3. Compensate for unavoidable impacts through required compensatory mitigation.

Guidance for selecting a compensatory mitigation option can be found in the Final Rule on Compensatory Mitigation for Losses of Aquatic Resources (73 FR 19594). Compensatory mitigation would be implemented in accordance with applicable federal, state, and local requirements and guidelines. Mitigation sites would be identified close to impacts and compensate for lost values in-kind to the maximum extent possible.

Mitigation sequencing must be applied prior to developing a compensatory mitigation plan. Once an alternative is selected, the applicant would develop a conceptual mitigation plan and would work with Ecology to refine the plan. Compensatory mitigation options include:

1. Wetland mitigation banking: The wetland mitigation bank is a site where wetlands are restored, created, or enhanced with the intention to sell credits. The permittee would purchase credits from a wetland mitigation bank to offset the unavoidable impacts of the proposed project.
2. In-lieu fee mitigation: The permittee would pay a fee to a third party in lieu of conducting project-specific mitigation or buying credits from a mitigation bank.
3. Advance permittee-responsible mitigation: Prior to the project impacting wetlands, the permittee would implement a compensatory mitigation plan that would generate credits over time.

All construction activities would be performed using best management practices (BMPs) to minimize the disturbance that construction may cause to the wetlands within each alternative.

4.2.5.3 Water Quality

In order to minimize the effects on water quality, prior to construction the applicant would be required to obtain coverage under the National Pollutant Discharge Elimination System (NPDES) through a Construction Stormwater General Permit to help control runoff and reduce water pollution from the construction site. The Stormwater Pollution Prevention Plan (SWPPP) (in conformance with requirements in the City of Tukwila Stormwater Management Program Plan and the Infrastructure Design and Construction Standards, the King County Surface Water Design Manual and City of Seattle Stormwater Manual). The SWPPP would include the following plans:

- Spill prevention, control, and countermeasures (SPCCP) to outline requirements for and implementation of spill prevention, inspection protocols, equipment, material containment measures, and spill response procedures.
- Temporary erosion and sediment plan to identify, reduce, eliminate, or prevent sediment and erosion problems.
- Concrete containment and disposal plan to outline the management, containment, and disposal of concrete debris, slurry, and dust
- Dewatering plan that outlines procedures for pumping groundwater away from the construction area and for storing, testing, treating, and discharging or disposing the water, as necessary.

Stormwater systems, including water quality treatment, are not available for Alternative 2, 3B, or 4, and will not be designed until a Preferred Alternative is selected. All stormwater systems would be designed in accordance with the Tukwila Stormwater Management Program Plan and the Infrastructure Design and Construction Standards, as well as the King County Surface Water Design Manual and Seattle Stormwater Manual.

4.2.5.4 Groundwater

Surface and groundwater hydrology monitoring would be conducted prior to impacts to all onsite wetlands to determine hydroperiods in order to develop effective plans to preserve current hydrology

4.2.6 Significant Unavoidable Adverse Impacts

The construction and operation of the proposed Project would not result in any unavoidable adverse impacts on water resources. Permanent changes to the wetlands in the proposed Project footprint would result from the construction of the proposed project which would alter hydrology within the Project vicinity; however, mitigation is required and would lessen the impact. Additionally, the footprints of the Alternatives and area of water resources impacted are generally small compared to the size of the watershed and would have little impact on a larger scale.

4.3 Plants and Animals

This section provides an analysis of potential impacts to plant and animal communities and their available habitat resulting from the construction and operation of proposed Alternatives 2, 3B, and 4, as well as the No Action Alternative. This section also identifies proposed mitigation measures for potential impacts.

4.3.1 Affected Environment

The Project vicinity, or general area surrounding where the selected alternative of the Project would take place, includes a range of habitats that support both aquatic and terrestrial species. Plants and animals present in the Project vicinity were divided into three study areas: wetlands, aquatic species and habitat, and terrestrial species and habitat. Each study area includes the footprint for the respective alternative (No Action Alternative, Alternative 2, Alternative 3B, or Alternative 4) and for the specified adjacent areas that could be affected by Project activities.

4.3.1.1 Wetlands

The wetland study areas for the proposed Alternatives include wetlands that are within 300 feet of the edges of the long-term proposed Alternative footprints, which are defined as the physical footprint of the existing truck route (Figure 4.3-1) and the areas that would need to be constructed and the truck access routes, of the No Action Alternative, Alternatives 2 (Figure 4.3-2), 3B (Figure 4.3-3), and 4 (Figure 4.3-4 and Figure 4.3-5).

No Action Alternative: No wetlands were identified in the No Action Alternative study area.

Alternative 2: Five depressional wetlands (Wetland 4 through Wetland 7 and Wetland 9) were identified within the Alternative 2 study area with moderate levels of habitat functions, see Figure 4.3-2. Wetlands 4, 5, and 9 were identified as Priority Habitat by the Priority Habitats and Species (PHS) viewer (WDFW n.d.a). Habitat scores range from 3 to 5 (Appendix C).

Alternative 3B: Four wetlands (Wetland 1 through Wetland 3 and Wetland 8) were identified within Alternative 3B with moderate levels of habitat functions, see Figure 4.3-3. Three of these wetlands were classified as tidal fringe, and one was classified as depressional. Habitat scores range from 5 to 6 (Appendix C).

Alternative 4: Seven wetlands (Wetland 1 through Wetland 3, Wetland 8, and Wetland 10 through Wetland 12) were identified within Alternative 4 (Figure 4.3-4 and Figure 4.3-5) with moderate levels of habitat functions. Habitat scores range from 5 to 6 (Appendix C).

Twelve existing wetlands were identified and documented along or near the existing truck route (the No Action Alternative) and Alternatives 2, 3B, and 4, see Table 4.3-1. Three wetlands were accessed during field reconnaissance surveys to collect wetland hydrology, soils, and vegetation data. This section briefly describes each of the wetlands and their habitat functions, and Section 4.2Water Resources describes their water quality and hydrologic features. Detailed descriptions of the wetlands are available in the report prepared by HDR (Appendix C). Detailed wetland determination data forms and wetland rating forms are provided in Appendix C.

Figure 4.3-1 Wetland study area for No Action Alternative

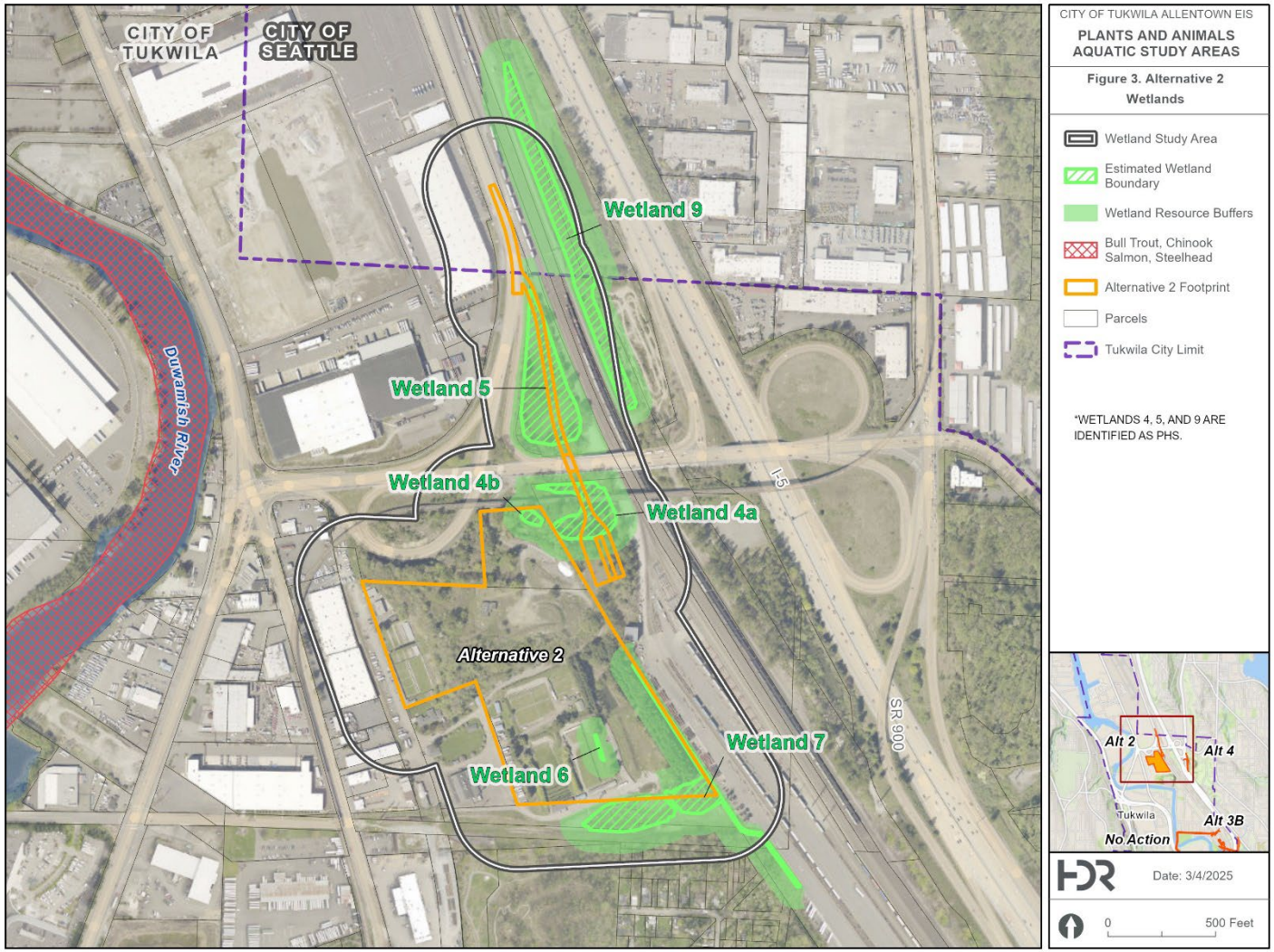


Figure 4.3-2 Wetland study area for Alternative 2

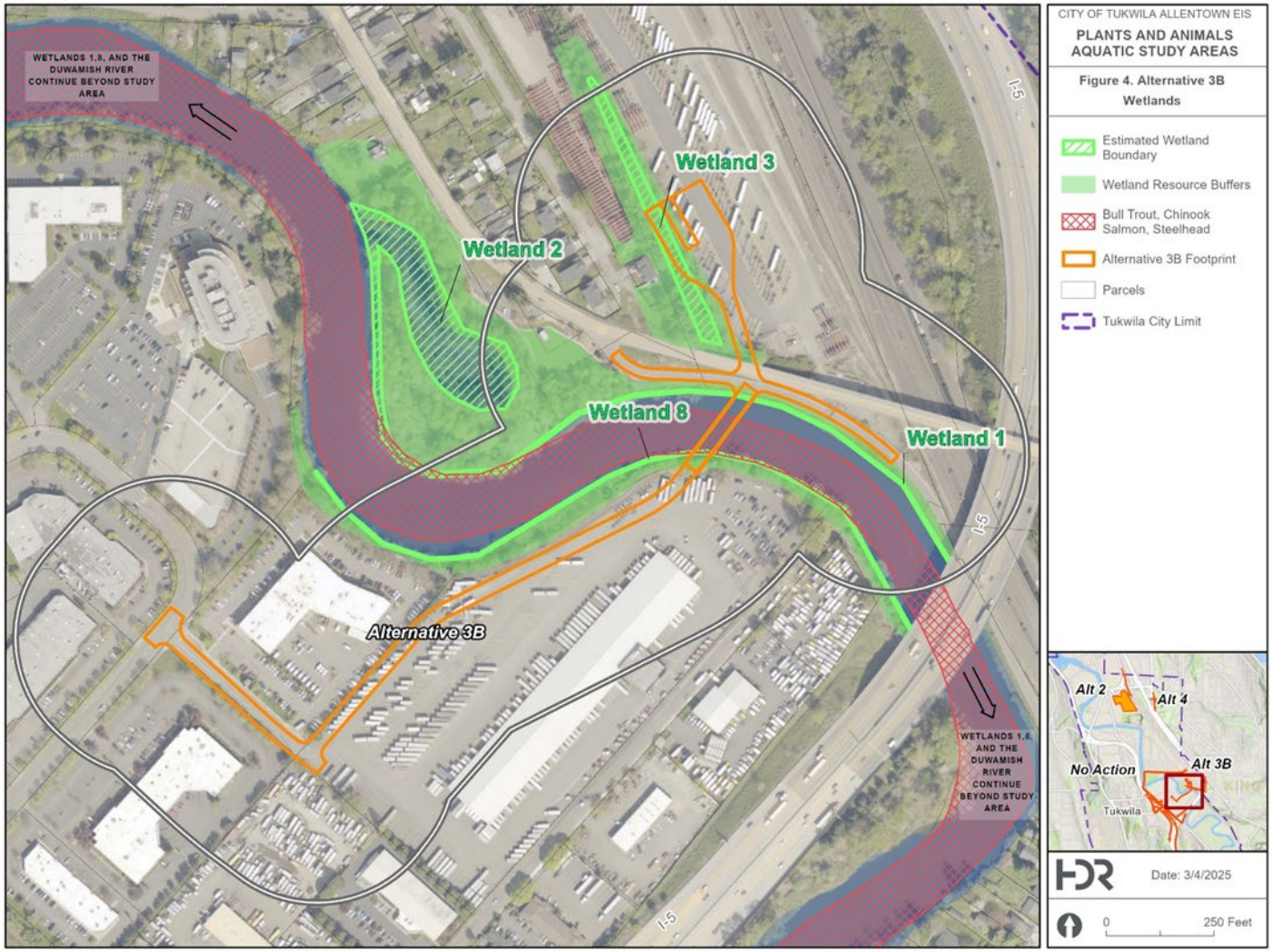


Figure 4.3-3 Wetland study area for Alternative 3B

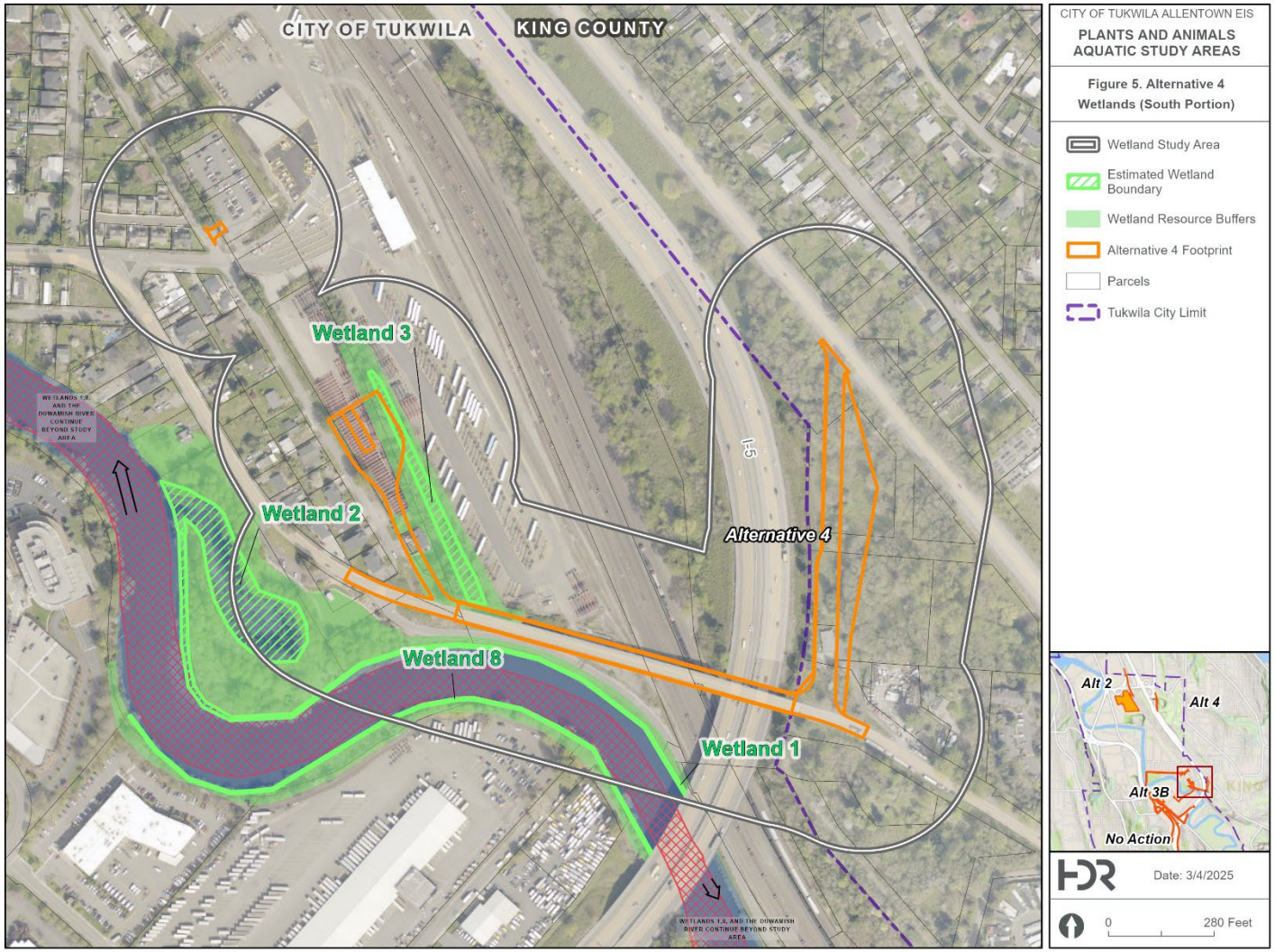


Figure 4.3-4 Wetland study area for southern section of Alternative 4

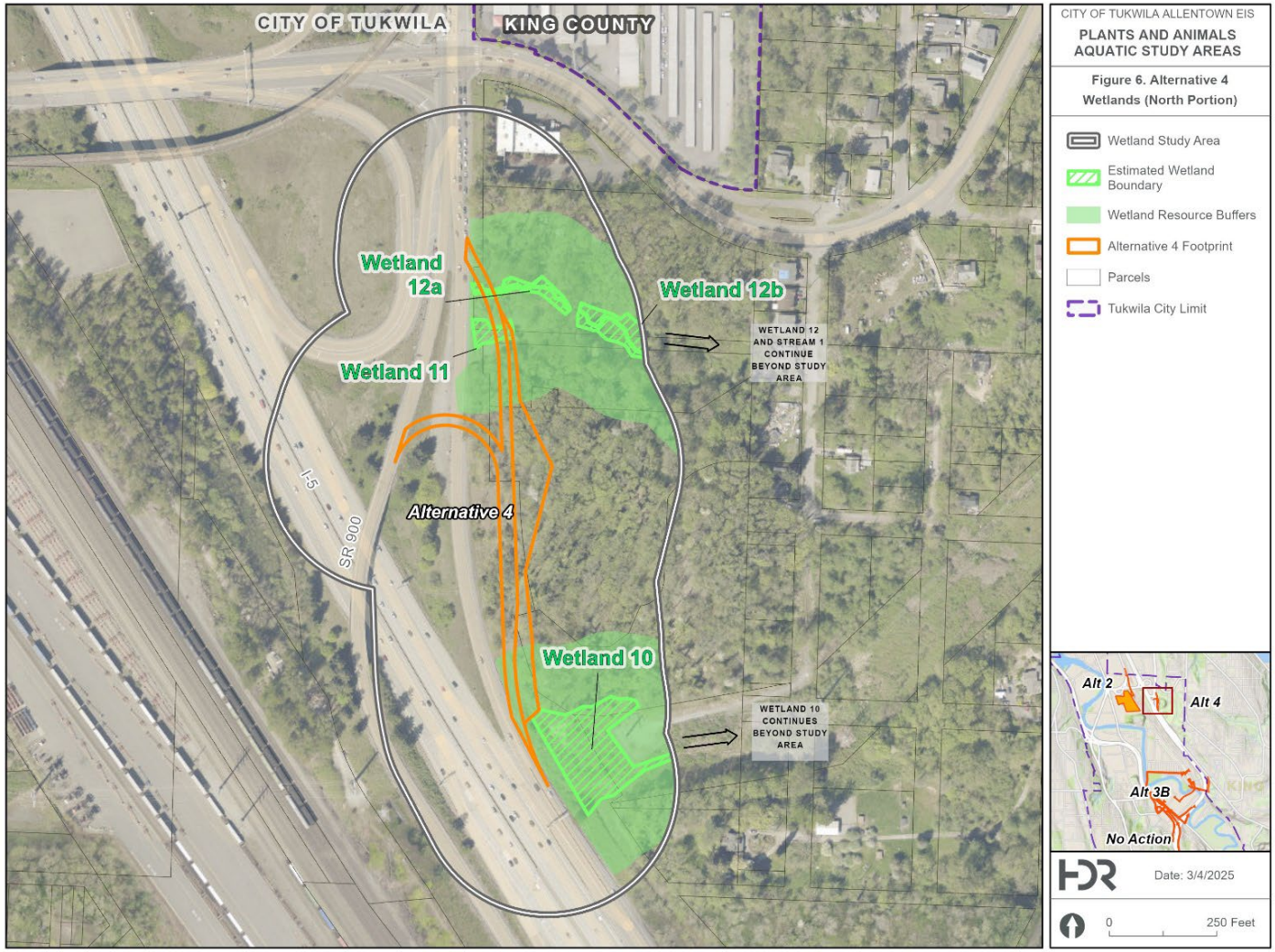


Figure 4.3-5 Wetland study area for northern section of Alternative 4

4.3.1.1.1 Wetland Descriptions

Wetland 1 is a narrow tidal fringe wetland located on the east bank of the Duwamish River. It was observed from Railroad Avenue and was observed to contain palustrine scrub-shrub and estuarine intertidal emergent habitats. The palustrine scrub-shrub was densely vegetated by Himalayan blackberry (*Rubus armeniacus*) and willow. The herbaceous stratum was vegetated by reed canarygrass (*Phalaris* arundinacea), and the high tide during the field reconnaissance covered other potential herbaceous species.

Wetland 2 is a tidal fringe wetland located within Codiga Park. It was observed to contain palustrine forested and scrub-shrub habitats, and estuarine intertidal emergent habitats were observed from Codiga Park's public trail. The palustrine forested habitat was vegetated by black cottonwood (*Populus balsamifera*) and red alder (*Alnus rubra*), with the scrub-shrub habitat consisting of willow species. The estuarine intertidal emergent habitat included Lyngbye's sedge (Carex lyngbyei) and slough sedge (C. obnupta).

Wetland 3 is a depressional wetland that is located in a low spot between two BNSF operations yard storage areas and north of South 129th Street. Wetland 3 was observed to have palustrine forested and scrub-shrub habitats comprised of black cottonwood, red alder, and Himalayan blackberry. The wetland drains from the north to the south, and a culvert outlet was observed that discharges directly to the Duwamish River approximately 110 feet to the south.

Wetland 4a is a depressional wetland bordered by road and railroad prisms and a steep hillslope. It was observed to have palustrine forested, scrub-shrub, and emergent habitats. The forested habitat was dominated by black cottonwood and willow (Salix sp.). The scrub-shrub habitat included red osier dogwood (*Cornus sericea*), salmonberry (*Rubus spectabilis*), and willow species. The herbaceous stratum included reed canarygrass, other unidentified grasses, and climbing nightshade (*Solanum dulcamara*) occurring as woody vines.

Wetland 4b is a depressional wetland bordered by road and railroad prisms and a steep hillslope. It was observed to have palustrine forested, scrub-shrub, and emergent habitats. The forested habitat was dominated by black cottonwood and red alder. The scrub-shrub habitat included red osier dogwood and Himalayan blackberry. The herbaceous stratum included climbing nightshade occurring as woody vines.

Wetland 5 is a depressional wetland that is in a topographic depression bordered by Airport Way South, South Boeing Access Road, and the BNSF operations yard. The wetland was observed to have palustrine forested, scrub-shrub, and emergent habitats. The forested habitat was dominated by black cottonwood, willow, and red alder. The scrub-shrub habitat included red osier dogwood, rose spirea (*Spiraea douglasii*), and willow species. The herbaceous stratum included broadleaf cattail (*Typha latifolia*), reed canarygrass, and other unidentified grasses.

Table 4.3-1 Summary of Wetlands within the Project Study Areas

Wetland Name	HGM Classification	Cowardin Classification	Wetland Rating	Jurisdiction	Buffer width (feet)	Design Alternative with Potential Direct or Buffer Impacts	Accessed During Field Reconnaissance Surveys
1	Tidal Fringe	PSS/EEM	II (based on estuarine special characteristic); habitat score of 6	City of Tukwila	150d	3B, 4	Yes
2	Tidal Fringe	PFO/PSS/EEM	I (Based on estuarine special characteristic); habitat score of 6	City of Tukwila	150d	3B, 4	Yes
3	Depressional	PFO/PSS	II; habitat score of 5	City of Tukwila	100d	3B, 4	No
4a	Depressional	PFO/PSS/PEM	II; habitat score of 5	City of Tukwila	100d	2	No
4b	Depressional	PFO/PSS/PEM	III; habitat score of 5	City of Tukwila	80d	2	No
5	Depressional	PFO/PSS/PEM	II; habitat score of 5	City of Tukwila	100d	2	Yes
6	Depressional	PEM	III; habitat score of 3	City of Tukwila	80d	2	No
7	Depressional	PFO/PSS/PEM	II; habitat score of 5	City of Tukwila	100d	2	No
8	Tidal Fringe	PSS/EEM	II (Based on estuarine special characteristic); habitat score of 6	City of Tukwila	150d	3B, 4	No
9	Depressional	PSS/PEM	II; habitat score of 5	City of Tukwila and City of Seattle	75d / 110e	2	No
10	Depressional / Slope / Riverine	PFO / PSS / PEM	III; habitat score of 6	City of Tukwila	150d	4	No
11	Slope	PFO / PSS/ PEM	III; habitat score of 6	City of Tukwila	150d	4	No
12a	Riverine / Slope	PFO / PSS	II; habitat score of 6	City of Tukwila	150d	4	No
12b	Riverine / Slope	PFO	II; Habitat Score of 6	City of Tukwila	150[d]	4	No

Table Source: Appendix C;

EEM = estuarine emergent; PEM = palustrine emergent; PFO = palustrine forested; PSS = palustrine scrub-shrub.

Wetland 6 is a depressional wetland located on the SPAA property within the shooting range bordered by a sand embankment. The wetland could not be viewed from public ROW. Based on the delineation (Watershed 2023 in Appendix C) the wetland is a palustrine emergent wetland vegetated by reed canarygrass, creeping buttercup (*Ranunculus repens*), and other facultative grasses. The wetland is supported by seasonally high-water table and saturation.

Wetland 7 is a depressional wetland located on the Seattle City Light transmission ROW and was not observed in the field. This wetland includes palustrine scrub-shrub and emergent habitats within the Project study area and off-site palustrine forested habitat. 2013 aerial imagery shows construction activities and the placement of fill material within Wetland 7, with potential compensatory mitigation occurring in 2017. The potential compensatory mitigation is evidenced by the installation of microtopography, large wood material, and sapling plantings. Surface water appears to extend off site under mature trees adjacent to the BNSF operations yard.

Wetland 8 is a narrow tidal fringe wetland located on the right bank of the Duwamish River. It is similar to, and shares the same description and functions as, Wetland 1. Wetlands 1 and 8 are contiguous on both banks of the Duwamish River and are separated by an unvegetated channel greater than 50 feet.

Wetland 9 is a depressional wetland and assumed to be hydrologically connected to Wetland 5. Wetland 9 is separated from the Project and Wetland 5 by the approximately 200-foot-wide BNSF operations yard. The east, west, and southern boundaries of Wetland 9 are marked by the steep fill prisms associated with the operations yard, South Boeing Access Road, and uplands associated with I-5. Wetland 9 could extend offsite to the north. The wetland was observed to have palustrine forested, scrub-shrub, and emergent habitats with vegetation similar to that of Wetland 5. The forested habitat was dominated by willow and red alder. The scrub-shrub habitat included red osier dogwood, rose spirea, and willow species. The herbaceous stratum included broadleaf cattail and reed canarygrass.

Wetland 10 is a depressional wetland that is located within a drainage that slopes from the northeast to the southwest toward I-5. Observed wetland vegetation includes willow, black cottonwood, and Himalayan blackberry. This wetland was partially delineated (Wet.land 2022 in Appendix C) and was described as having Oregon ash, English hawthorn (*Crataegus monogyna*), salmonberry, and English Ivy. Surface water near the bottom of the drainage was observed adjacent to the I-5 road prism.

Wetland 11 is a small slope wetland that is located to the south of Stream 1 and Wetlands 12a and 12b. Wetland 11 is described as having palustrine forested, scrub-shrub, and emergent habitats vegetated by black cottonwood, Pacific willow (*Salix lucida*), cascara (*Frangula purshiana*), English hawthorn, salmonberry, rose spiraea, lady fern, and stinging nettle (*Urtica dioica*) (Wet.land 2022, in Appendix C).

Wetlands 12a and 12b are riverine wetlands associated with Stream 1, a Type F water. Wetland 12 is mapped within a ravine that slopes from the east to west beneath a mature broadleaf maple (*Acer macrophyllum*) canopy. Wet.land (2022, in Appendix C) describes the vegetation of Wetlands 12a and 12b as being dominated by black cottonwood, red osier dogwood, vine maple (*Acer circinatum*), salmonberry, lady fern (*Athyrium cyclosorum*), and piggyback plant (*Tolmiea menziesii*).

4.3.1.2 Aquatic Species and Habitat

The aquatic study area (Figure 4.3-6):

- Extends 100 feet upstream and 300 feet downstream of each stream where the stream crosses the footprint of the No Action Alternative, Alternatives 2, 3B, or 4.
- Includes the entire stretch of any stream paralleling the footprint of No Action Alternative, Alternative 2, 3B, or 4 or stream habitat features within 200 feet of the edge of the footprint.
- Includes the segment of stream in which sound could travel in water (i.e. to the first bend in the channel) for streams with habitat for ESA-listed species.

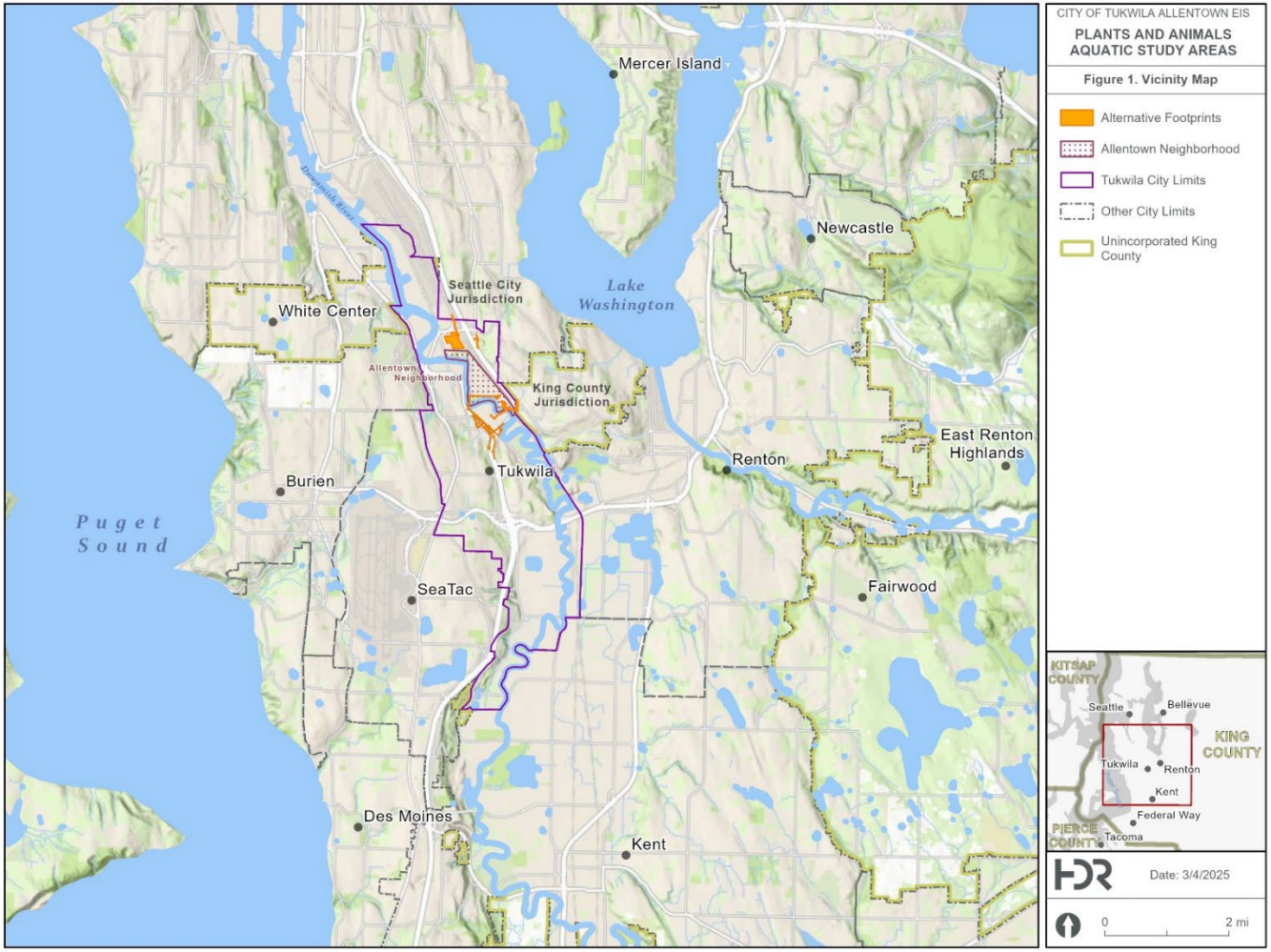


Figure 4.3-6 Overview of aquatic study area for No Action Alternative and Alternatives 2, 3B, and 4

Alternative 3B is the only alternative with proposed in-water work. The aquatic study area for Alternative 3B extends approximately 900 feet downstream and 670 feet upstream from where the Alternative 3B Project footprint would cross the Duwamish River.

Sedimentation, turbidity, and pollution are additional impacts in the aquatic environment that would extend out of the immediate project footprint. The aquatic study area for the No Action Alternative (Figure 4.3-7) and for Alternatives 2 (Figure 4.3-8), 3B (Figure 4.3-9), and 4 (Figure 4.3-10 and Figure 4.3-11) do not account for pollutants such as 6PPD, microplastics, PBTs, and PAHs, among others, that persist in the water column past anticipated distances for sediments to settle out.

A field reconnaissance survey was conducted to identify, map, and describe streams within the study area. Two streams were identified within the 300-foot study areas of the Project design alternatives, see Table 4.3-2.

Table 4.3-2 Summary of Streams within the Study Area

Stream Name	Water Type[a]	Jurisdiction	Buffer width (feet)	Design Alternative with Potential Direct or Buffer Impacts
Duwamish River	Type S	City of Tukwila	50[b] (Shoreline Residential)/ 100[b] (Urban Conservancy without Levees)	NAA, 3B, 4
Stream 1	Type F	City of Tukwila	80[c]	4

[a] WAC 222-16-030
[b] TMC 18.44.040
[c] TMC 18.45.100.C

No Action Alternative: The No Action Alternative includes the Duwamish River.

Alternative 2: Alternative 2 would not include any streams or the Duwamish River, see Figure 4.3-8.

Alternative 3B: The Duwamish River intersects the Project vicinity at Alternative 3B (Appendix C; WDFW n.d.a). The aquatic study area for Alternative 3B extends approximately 900 feet downstream and 670 feet upstream from where the Alternative 3B Project footprint would cross the Duwamish River (Figure 4.3-9).

Alternative 4: Alternative 4 would intersect Stream 1 and the 200-foot buffer of the Duwamish River (Figure 4.3-10 and Figure 4.3-11). Alternative 4 parallels the Duwamish River, but would not include in-water work. The aquatic study area for Alternative 4 includes the section of the Duwamish River within 200 feet of the Alternative 4 footprint.

4.3.1.2.1 Stream and River Descriptions

Stream 1 is mapped by the City of Tukwila (City of Tukwila 2024 in Appendix C) as a Type F stream which is defined as a perennial, fish bearing or a potentially fish bearing stream. This stream was not accessed during field reconnaissance. The mapped stream flows through a narrow ravine with a mature broadleaf maple canopy before flowing to Martin Luther King Jr Way South.

The Duwamish River is a Type S stream. Type S waters include all aquatic areas inventoried as "shorelines of the state" under the County's Shoreline Master Program. The stretch of Duwamish River adjacent to the Alternative 3B study area is located within the Duwamish Estuary, which includes the extent of tidal influence from the mouth to river mile 12 (King County et.al. 2001). The Duwamish River was historically, and is regularly, dredged to maintain a navigable waterway. This action, paired with the tidally influenced water levels, have resulted in steep and unvegetated banks. Both banks are armored with riprap within the study area and contain patches of unvegetated and subtidal substrates.

The Duwamish River is categorized as "Salmonid Rearing and Migration Only Habitat". Fourteen Priority Species of fish are documented as occurring within the Duwamish River (WDFW n.d.a). Eight species of anadromous salmonids have been noted in the Duwamish Estuary: Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), chum salmon (*O. keta*), and steelhead (*O. mykiss*) are common; pink salmon (*O. gorbuscha*), sockeye salmon (*O. nerka*), sea-run cutthroat trout (*O. clarkii clarkii*), and bull trout (*Salvelinus confluentus*) are rare (Williams et al. 2001). Bull trout, steelhead, and chinook are federally threatened (WDFW n.d.a).

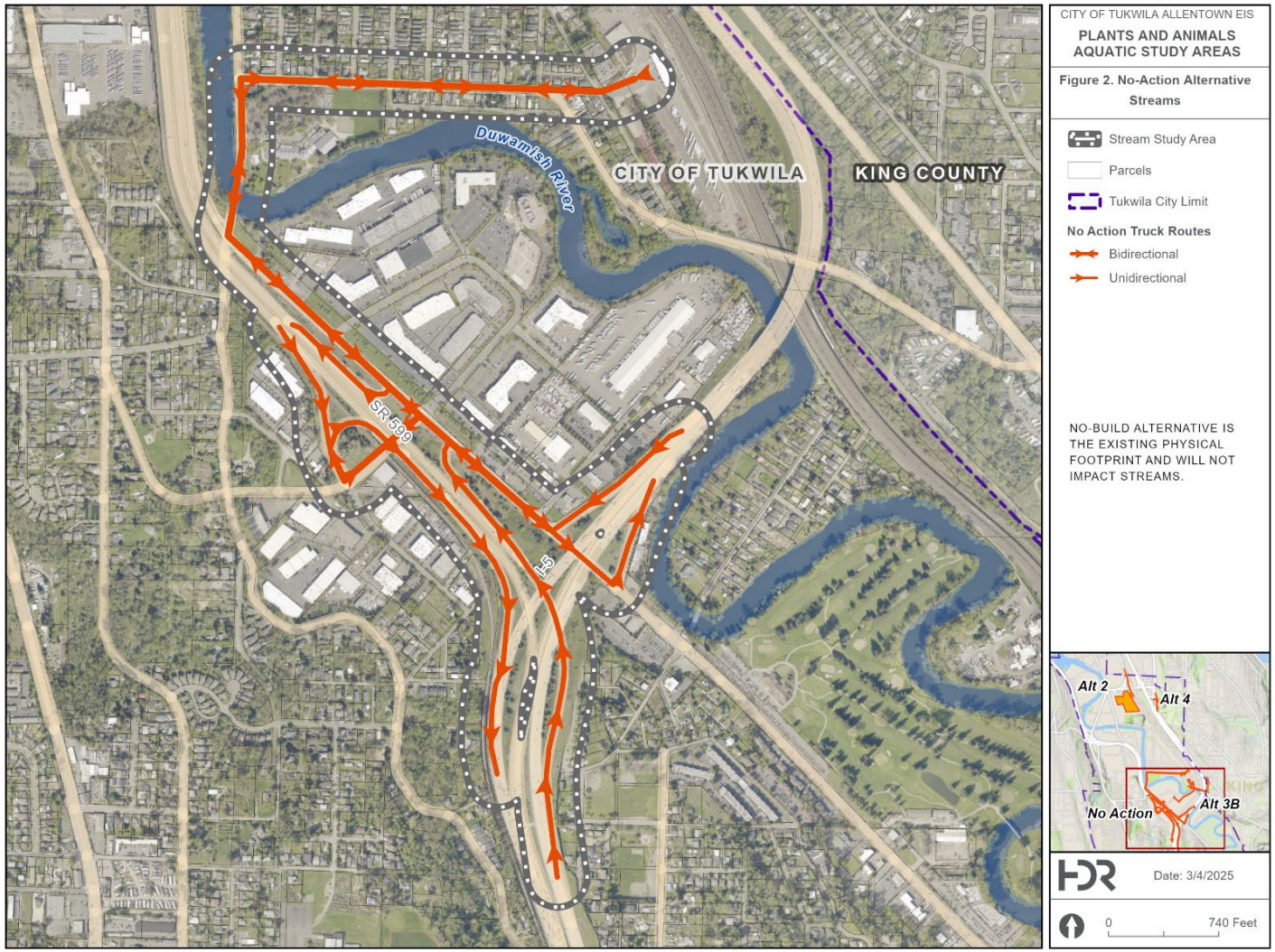


Figure 4.3-7 Aquatic study area for the No Action Alternative

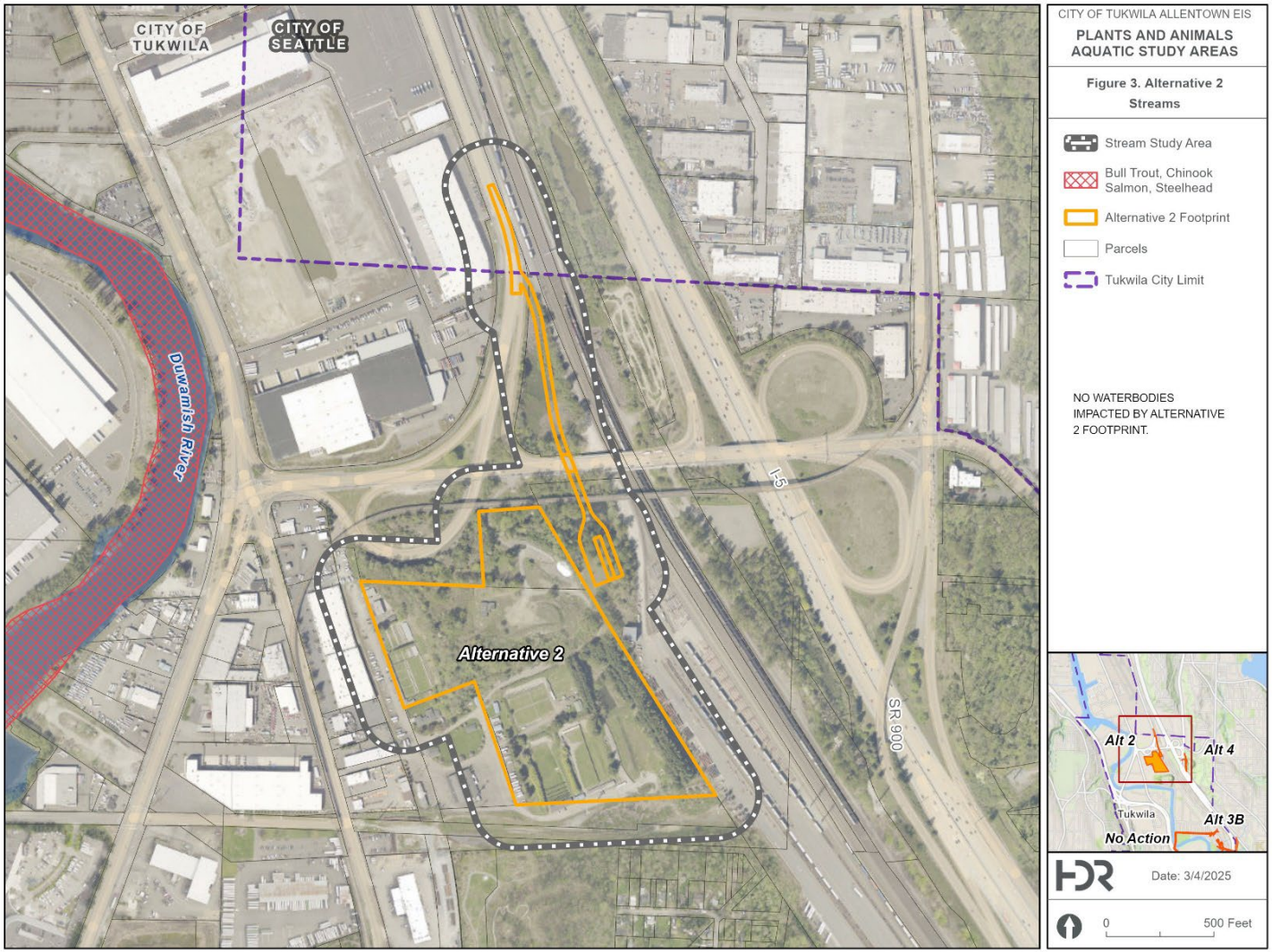


Figure 4.3-8 Aquatic study area for Alternative 2

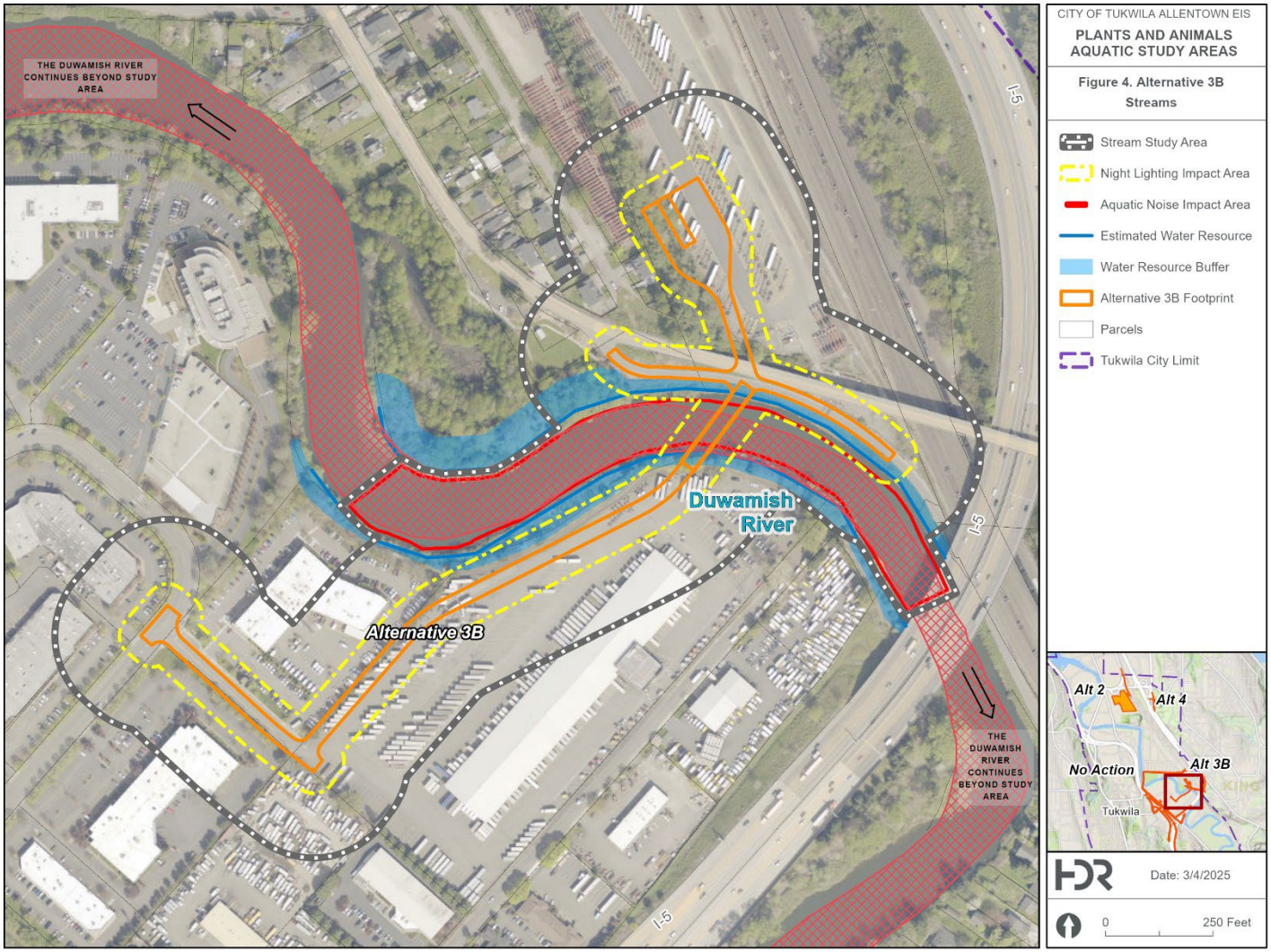


Figure 4.3-9 Aquatic study area for Alternative 3B

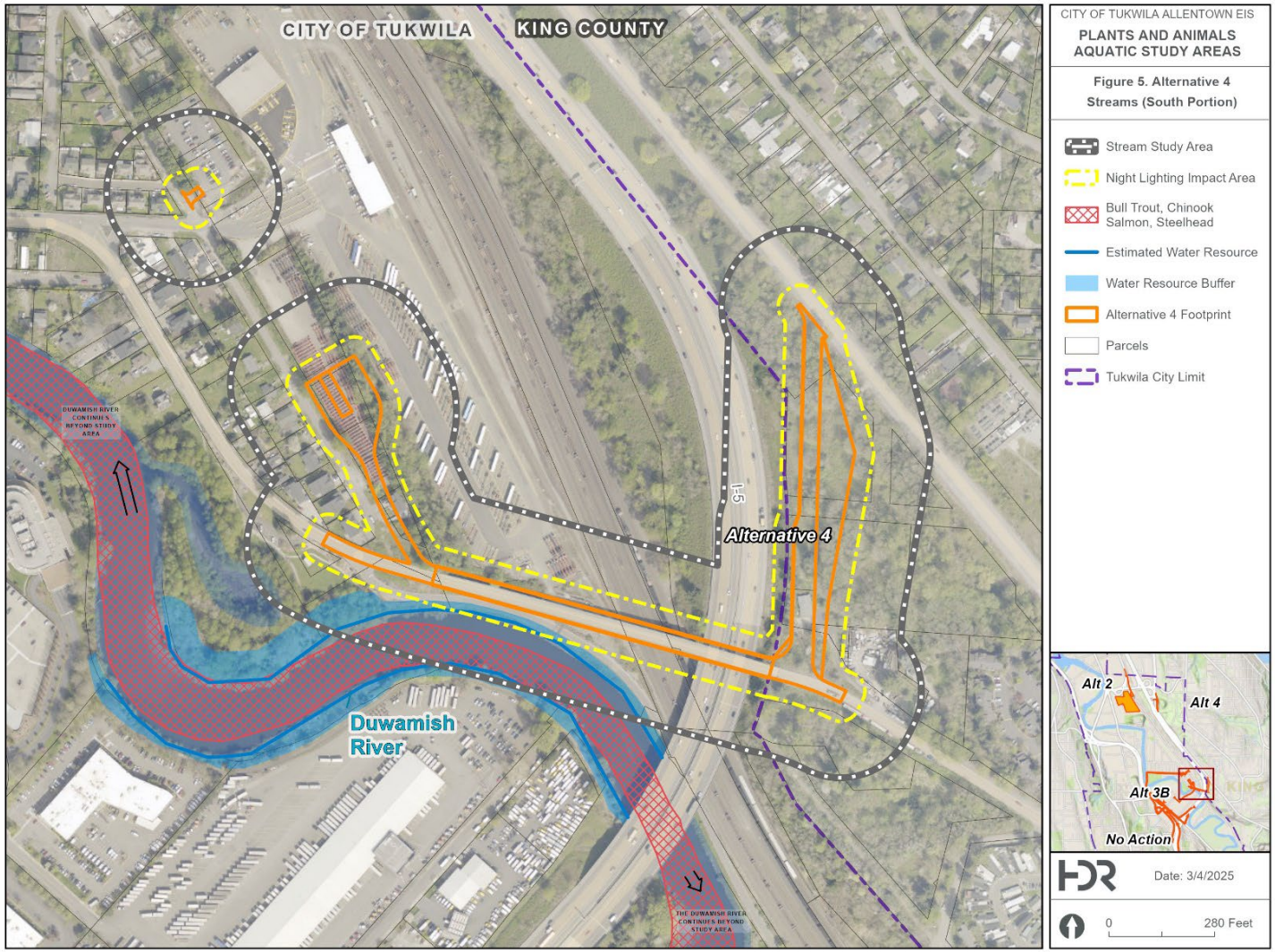


Figure 4.3-10 Aquatic study area for southern section of Alternative 4

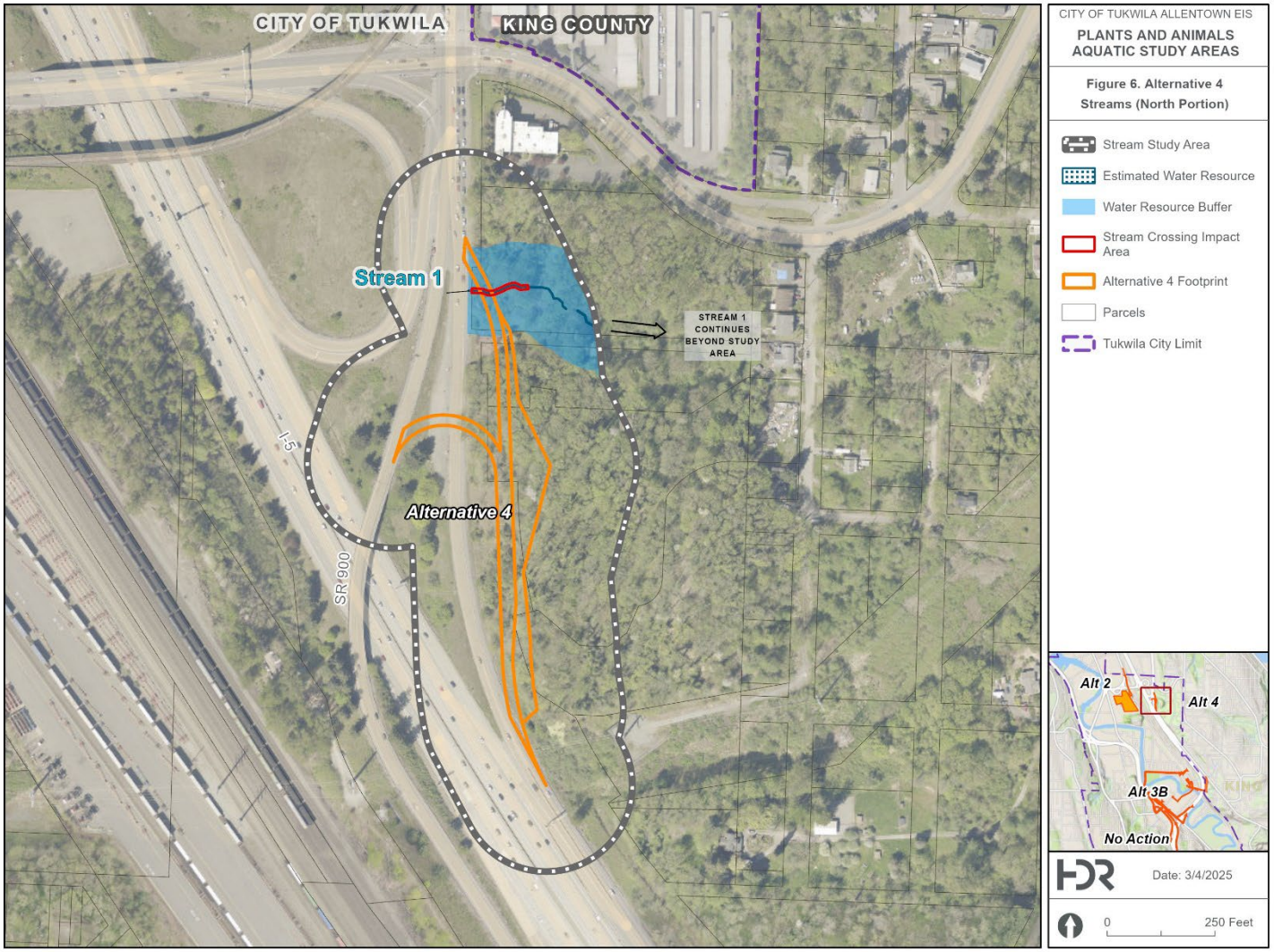


Figure 4.3-11 Aquatic study area for northern section of Alternative 4

4.3.1.2.2 Riparian Vegetation

The Natural Resource Conservation Service (NRCS) Ecological Site Characterization identified the Project vicinity and surrounding areas as Puget Lowlands Forest or Puget Lowlands Wet Forest. Characteristic riparian vegetation of Puget Sound Lowlands includes western hemlock (*Tsuga heterophylla*), Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), cottonwood (*Populus balsamifera*), willow (*Salix spp*.), Pacific madrone (*Arbutus menziesii*), ocean spray (*Holodiscus discolor*), Oregon grape (*Mahonia spp*.), Indian plum (*Oemleria cerasiformis*), and sword ferns (*Polystichum munitum*). In areas with disturbance, minimal soil development, and a local seed source, red alder, big leaf maple (*Acer macrophylla*), and vine maple (*Acer circinatum*) are present (Brennan 2007; USACE 2016).

Invasive species such as Himalayan blackberry, butterfly bush (*Buddleja davidii*), reed canarygrass, and Japanese knotweed (*Polygonum spp*.) are common in disturbed areas (USACE 2016).

4.3.1.2.3 Aquatic Species

King County is home to approximately 50 species of freshwater fish (20 introduced), 12 species of amphibians (one introduced), and eight reptiles (two introduced) (KCBR 2008). Of these species, 10 receive some type of federal or state protection due to being endangered, threatened, sensitive, a candidate species, or some other official designation (USFWS 2024a; WDFW 2024d). Of the 10 species listed under federal and/ or state protection (USFWS 2024b; WDFW 2024d), only the bull trout, chinook salmon, and Puget Sound steelhead (*Oncorhynchus mykiss*) have designated critical habitat in the Project vicinity (Figure 4.3-6; USFWS 2024a; NOAA 2024). Additionally, under the Magnuson Stevens Act, the Duwamish River is Essential Fish Habitat (EFH) for groundfish, chinook, coho, and pink salmon (NOAA 2024).

Table 4.3-3 Animal species of concern with potential to be in or near the action area

Species	ESA Designation	Critical Habitat in Project vicinity (Y/N)	State Status	Other Designation
Reptiles				
Northwestern pond turtle (*Actinemys marmorata*)	Proposed Threatened	No	Endangered	None
Amphibians				
Larch mountain salamander (Plethodon larselli)	None	No	Sensitive	None
Oregon spotted frog (*Rana pretiosa*)	Threatened	No	Endangered	None
Western toad (*Anaxyrus boreas*)	None	No	Candidate	None
Fishes				
Bull trout (*Salvelinus confluentus*)	Threatened	Yes	None	None
Puget Sound chinook salmon (*Oncorhynchus tshawytscha*)	Threatened	Yes	None	None

Species	ESA Designation	Critical Habitat in Project vicinity (Y/N)	State Status	Other Designation
Puget Sound steelhead (*Oncorhynchus mykiss*)	Threatened	Yes	None	None
River lamprey (*Lampetra ayresii*)	None	No	Candidate	None
Olympic mudminnow (*Novumbra hubbsi*)	None	No	Sensitive	None
Pygmy whitefish (*Prosopium coulteri*)	None	No	Sensitive	None

4.3.1.2.3.1 Bull Trout

Bull trout (*Salvelinus confluentus*) in the conterminous United States were listed as threatened under the ESA (64 FR 58910) in 1999. A final rule establishing critical habitat for bull trout was published in 2010 (75 FR 63898) and includes the Duwamish River in the proposed Project vicinity (Figure 4.3-6). Historically, bull trout are known to occur in the Duwamish River; however, recent recorded observations are limited (USFWS 2004).

Bull trout have multiple life history strategies and complex habitat requirements compared to other salmonids (Rieman and McIntyre 1993). Their life history strategies include stream resident populations (lives life in small headwater streams), fluvial populations (lives adult life in large rivers and spawns in small tributary streams), lacustrine-adfluvial populations (lives adult life in lakes and spawns in small tributary streams), and anadromous populations (lives adult life in marine waters and spawns in freshwater) (McPhail and Baxter 1996). The Puget Sound Region supports a mix of all four life history forms with the anadromous life history form being unique to the region (USFWS 2015).

StreamNet identifies the portion of the Duwamish within the aquatic study area as “migration only” habitat for bull trout (PSMFC 2024). Bull trout have been identified in the Green River as far upriver as RM 41, and it is presumed they utilize the river up to RM 61 before reaching a barrier that blocks further passage. They have also been documented in the Duwamish River in recent decades (three occurrences in April-May and two occurrences in August-September) as far downriver as RM 1 (USFWS 2004). Despite these occurrences, it is likely the Duwamish does not provide suitable habitat for bull trout.

Lack of complex habitat and elevated temperatures are likely to limit bull trout presence in the study area. Bull trout require habitats with cold water temperatures and tributary connectivity and complexity. Bull trout spawn from August through November, often in waters below 9°C (48.2°F) (McPhail and Baxter 1996). Bull trout require complex forms of cover such as large woody debris, undercut banks, boulders and pools, for all life history stages (USFWS 2004). Habitat degradation has affected not only bull trout, but also important prey species such as juvenile salmon, surf smelt (*Hypomesus pretiosus*), sandlance (*Ammodytes hexapterus*), and herring (*Clupea pallasii*). Puget Sound’s shoreline has been grossly altered, and nearly 100% of the Duwamish estuary has been modified by some type of armoring (USFWS 2015). The U.S. Geological Survey Duwamish River gage at the Golf Course in Tukwila (Station ID: 12113390), approximately 1.7 miles upstream of Alternative 3B, has recorded temperatures from as low as 3.6ºC (38.48ºF) to as high as 18.7ºC (65.66ºF) between August 2016 and June 2017 (USGS 2024).

4.3.1.2.3.2 Steelhead

The Puget Sound Distinct Population Segment (DPS) of steelhead (*Oncorhynchus mykiss*) was listed as threatened under the ESA in 2007 (72 FR 26722) and includes the population that inhabits the Duwamish River. Critical habitat was designated for Puget Sound steelhead in 2016 (81 FR 9251) and includes the section of the Duwamish River in the Project vicinity.

The Green/Duwamish River supports both winter and summer run types of steelhead. StreamNet identifies the portion of the Duwamish within the aquatic study area as "migration only" habitat for both winter and summer steelhead (PSMFC 2024). Winter run steelhead, also known as ocean-maturing steelhead, are naturally produced. Summer run steelhead, also known as stream maturing steelhead, are of hatchery origin (Kerwin and Nelson 2000). While winter steelhead can remain in freshwater as a resident rainbow trout or migrate to sea, the majority of juvenile winter steelhead migrate to saltwater. Steelhead in the Duwamish/Green River typically spend two years in freshwater, but may spend one to three years (Kerwin and Nelson 2000).

The key difference between winter and summer run steelhead is their level of sexual maturation prior to entering freshwater entry (Burgner et al. 1992, Smith 1969). Winter steelhead typically enter the river in December in a mature reproductive state and spawn from February through May. Summer steelhead enter freshwater at an earlier stage of maturation. They generally run May through October and spawn February through April, although exact timing is unknown (Kerwin and Nelson 2000).

4.3.1.2.3.3 Chinook

The Puget Sound Evolutionary Significant Unit (ESU) of Chinook salmon (*Oncorhynchus tshawytscha*) was listed as threatened under the ESA in 1999 (64 FR 14308) for the first time and reaffirmed in 2005 (70 FR 37160). Critical habitat was designated in 2005 (70 FR 52629) and includes the Duwamish River in the Project vicinity (Figure 4.3-6). Historically, spring Chinook and summer/fall Chinook inhabited the Duwamish/Green River. Spring Chinook either return in numbers so low they are not detectable, or they have been extirpated from the site (Kerwin and Nelson 2000). Therefore, summer/fall Chinook are the only run-type currently found in the Duwamish/Green River.

While some Chinook salmon may reside in freshwater for an entire year after emerging, Puget Sound Chinook typically leave the freshwater environment within the first year, favoring the protected estuary and nearshore habitats (Kerwin and Nelson 2000). It is unknown how long the outmigration of Chinook salmon fry takes, but they may inhabit the shallow side margins, side channels, and side sloughs for up to two months. Chinook from the Duwamish/Green River commonly spend two to four years at sea; however, they may spend anywhere from one to six years at sea (Kerwin and Nelson 2000).

Summer/fall Chinook spawn September through December primarily between RM 24.0 and RM 61.0 of the Green River. It is estimated they migrate through the Duwamish River from mid-June through October. Like all salmonid species, Chinook salmon need adequate flow and water quality, spawning riffles and pools, a functional riparian zone, and stable upland conditions (Kerwin and Nelson 2000). Chinook typically spawn in higher velocity areas with larger gravels than areas used by other salmon species.

StreamNet identifies the portion of the Duwamish within the aquatic study area as "rearing and migration" habitat for fall chinook (PSMFC 2024). This reach of the Duwamish is tidally influenced and is brackish. Additionally, from RM 11 to RM 5.2 of the Duwamish, which includes this study area, the

shoreline is heavily modified and hardened, consisting of bulkheads, riprap, and docks, thereby making it unsuitable habitat for spawning chinook.

4.3.1.3 Terrestrial species and Habitat

The terrestrial study area includes the Project footprint of each alternative plus a 200-foot buffer of the Project footprint (Figure 4.3-12, Figure 4.3-13, Figure 4.3-14, Figure 4.3-15, and Figure 4.3-16). The buffer accounts for Project activities that could affect vegetation cover and habitat quality for terrestrial wildlife outside of the Project footprint. Most impacts to terrestrial species and habitat would take place within the 200-foot buffer. However, the farthest-reaching impact of the Project to terrestrial wildlife is the in-air noise caused by construction of the selected Alternative. Because the Project is still in early planning stages, it is unknown what methods of construction will occur or what equipment will be used. To be conservative, the area of in- air noise impact was calculated for a range of construction equipment (Table 4.3-11). In-air noise impacts in the terrestrial environment were considered outward 2.38 miles from the Project vicinity (Figure 4.3-17).

Terrestrial habitat is limited within the proposed Project vicinity due to the effects of development. The Project vicinity is surrounded by industrial, commercial, and residential buildings and is in the vicinity of Interstate 5 and SR 599. Most terrestrial habitat within the Project vicinity is located in fragmented segments adjoining roads and rivers or in public open spaces. In 2017, the landscape of the city of Tukwila was comprised of 23% tree canopy (20% overhanging impervious surfaces), 20% non-canopy vegetation, 5% soil/dry vegetation, 48% impervious surfaces, and 5% water (City 2018). Based on the 2020 US Census, the city of Tukwila has an estimated population of 21,135 people with an average population density of 2,373 people per square mile (USCB 2023a) making the average daytime background noise levels exclusive of traffic equal to 50 dBA. The average background noise for the city ranges between 57-67 dB (Noise Map 2024). The area surrounding the proposed Project vicinity consists of primarily impervious surfaces making it a “hard site”, meaning it does not provide noise attenuation (WSDOT 2023).

4.3.1.3.1 No Action Alternative

There are no Priority Habitats or species (WDFW n.d.a) or Environmentally Critical Areas (TMC 18.45) located within this alternative. Existing conditions within the Alternative 2 footprint are currently primarily covered with grass/low-lying vegetation and trees. Impervious surfaces occupy 74.37 acres, or 52.42%, of the Project footprint. The No Action Alternative would not increase the coverage of impervious surfaces because there is no new construction for this alternative.

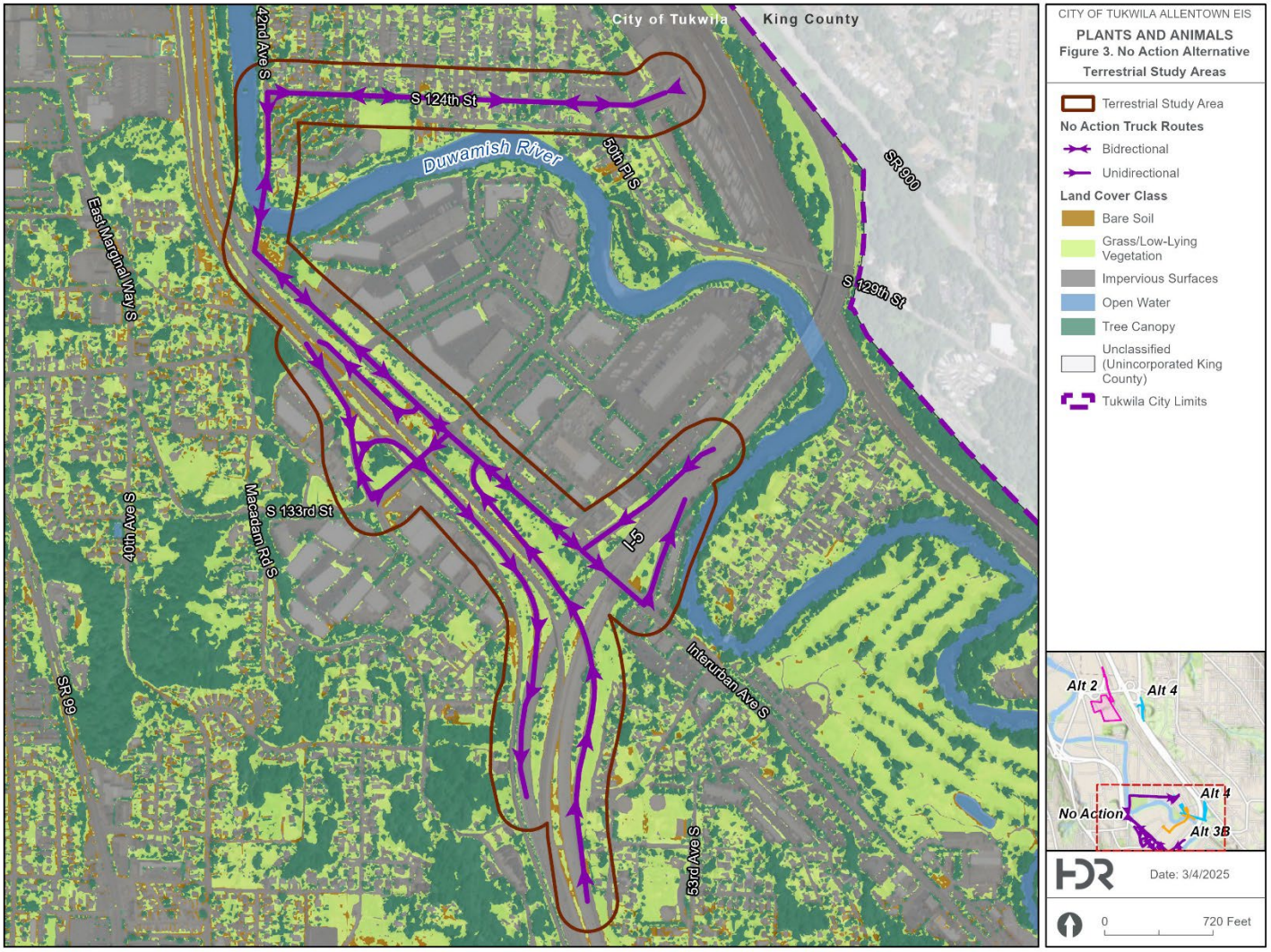


Figure 4.3-12 No Action Alternative land cover and terrestrial study area including 200-foot buffer.

The 200-foot buffer surrounding the No Action Alternative footprint is comprised of primarily impervious surfaces (74.37 acres) followed by a combination of grass/low-lying vegetation (34.56 acres) and trees (22.24 acres) (Table 4.3-4). The No Action Alternative does not have a project area footprint because it is already constructed.

Table 4.3-4 Landcover classification of the No Action Alternative

Landcover Class	**Area within Project Footprint (acres)**	**Area within 200' buffer (acres)**	**Total Area (acres)**
Bare Soil	-	6.31	6.31
Grass/Low-Lying Vegetation	-	34.56	34.56
Impervious Surfaces	-	74.37	74.37
Open Water	-	4.38	4.38
Tree Canopy	-	22.24	22.24
Unclassified (Unincorporated King County)	-	-	-
Total	**-**	**141.86**	**141.86**

4.3.1.3.2 Alternative 2

Aside from the wetlands mentioned in Section 4.3.1.1, there are no Priority Habitats and Species (WDFW n.d.a) or Environmentally Critical Areas (TMC 18.45) located within this alternative. Existing conditions within the Alternative 2 footprint are currently primarily covered with grass/low-lying vegetation and trees. Impervious surfaces occupy 2.98 acres, or 10.6%, of the Project footprint. Alternative 2 would increase the coverage of impervious surfaces to approximately 28.18 acres, which is an additional 25.2 acres of new impervious surfaces.

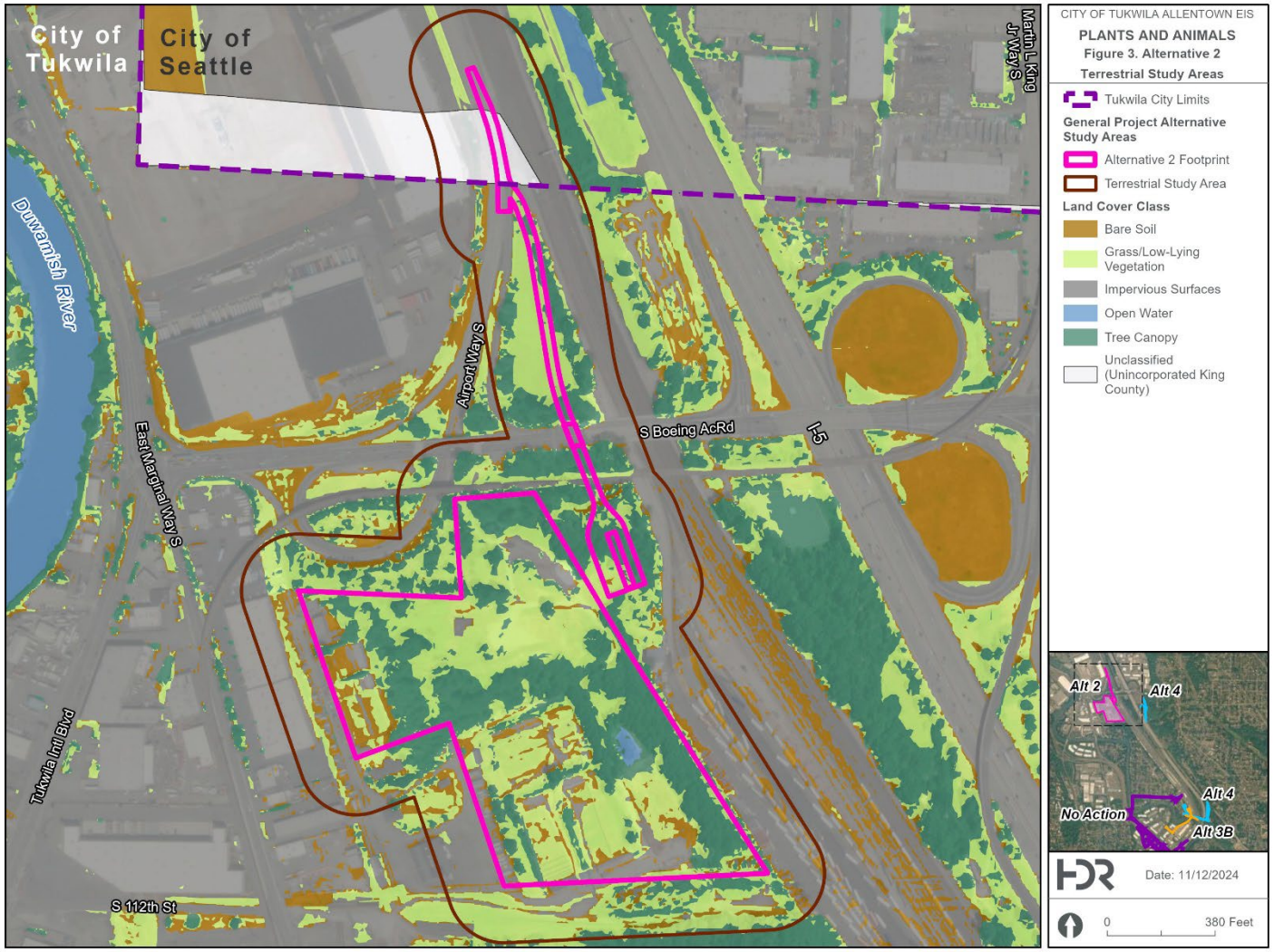


Figure 4.3-13 Alternative 2 land cover and terrestrial study area including 200-foot buffer.

The 200-foot buffer surrounding the Alternative 2 footprint is primarily impervious surfaces (20.21 acres) followed by a combination of grass/low-lying vegetation (9.79 acres) and trees (8.13 acres) (Table 4.3-5). The buffer surrounding the alternative footprint is not expected to be converted to impervious surfaces based on current Project details; however, it could be impacted during construction activities.

Table 4.3-5 Landcover classification of Alternative 2

Landcover Class	Area within Project Footprint (acres)	Area within 200' buffer (acres)	Total Area (acres)
Bare Soil	2.23	3.19	5.42
Grass/Low-Lying Vegetation	11.84	9.79	21.64
Impervious Surfaces	2.98	20.21	23.20
Open Water	0.15	0.00	0.15
Tree Canopy	10.75	8.13	18.88
Unclassified (Unincorporated King County)	0.23	1.55	1.78
Total	**28.18**	**42.88**	**71.06**

4.3.1.3.3 Alternative 3B

There are no Priority Habitats and Species (WDFW n.d.a) or Environmentally Critical Areas (TMC 18.45) located within this alternative. Existing conditions within the Alternative 3B footprint have very little vegetation. Impervious surfaces occupy 2.19 acres, or 73.49%, of the Project footprint. Alternative 3B would increase the coverage of impervious surfaces to approximately 2.87 acres which is an additional 0.68 acres of new impervious surfaces.

The 200-foot buffer surrounding the Alternative 3B footprint is primarily impervious surfaces (18.64 acres) followed by a combination of trees (4.73 acres) and open water (3.59 acres) (Table 4.3-6). The buffer surrounding the alternative footprint is not expected to be converted to impervious surfaces based on current Project details; however, it could be impacted during construction activities.

Table 4.3-6 Landcover classification of Alternative 3B

Landcover Class	Area within Project Footprint (acres)	Area within 200' buffer (acres)	Total Area (acres)
Bare Soil	0.02	0.10	0.12
Grass/Low-Lying Vegetation	0.14	2.96	3.10
Impervious Surfaces	2.19	18.64	20.83
Open Water	0.11	3.59	3.71
Tree Canopy	0.41	4.73	5.14
Unclassified (Unincorporated King County)	0.00	0.00	0.00
Total	**2.87**	**30.03**	**32.89**

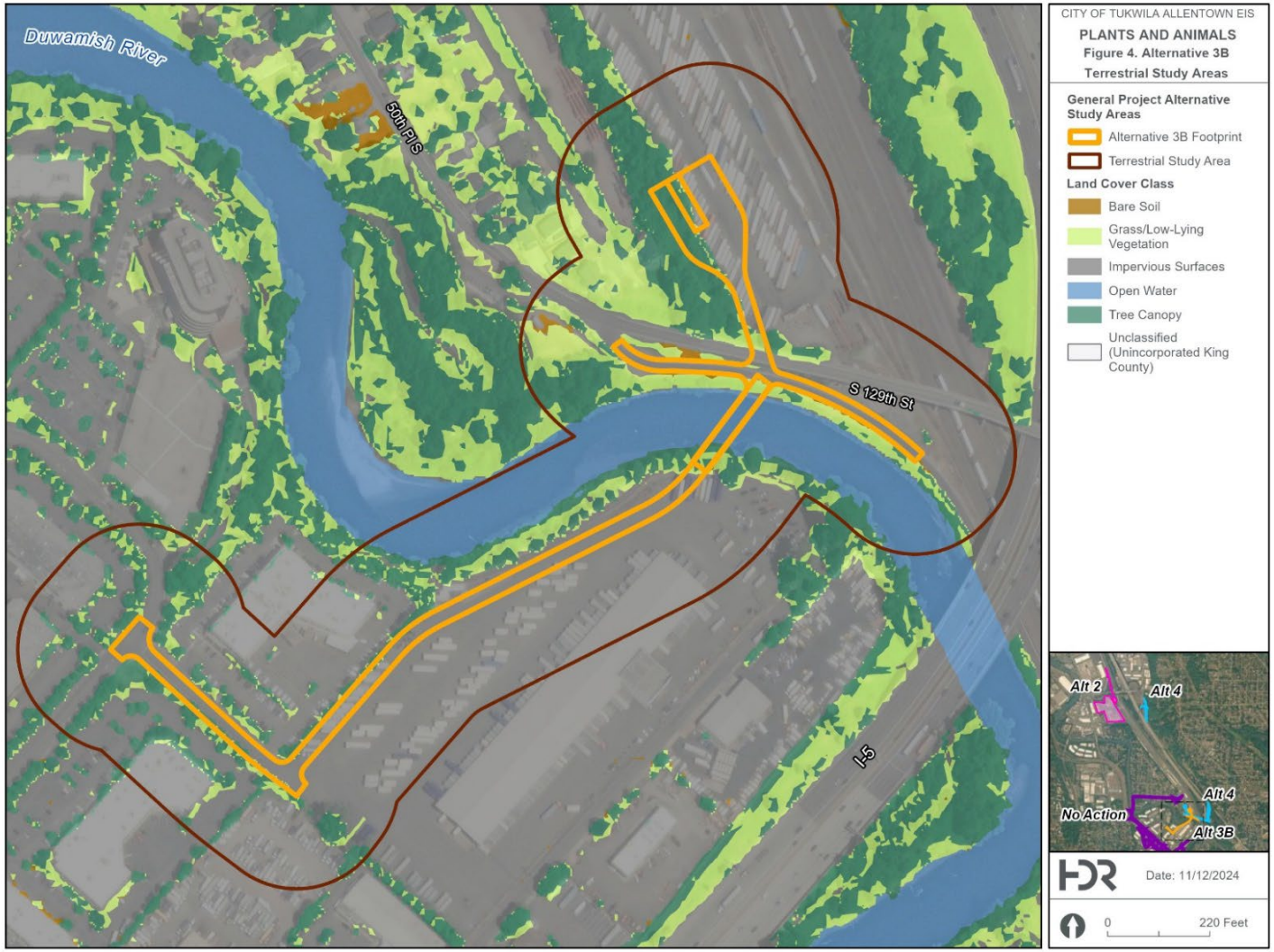


Figure 4.3-14 Alternative 3B land cover and terrestrial study area including 200-foot buffer.

4.3.1.3.4 Alternative 4

The PHS web mapper identified a biodiversity area and corridor that intersects with the proposed alternative vicinity. The East Duwamish Greenbelt-Seattle would intersect the northern section of Alternative 4. The greenbelt offers steep, west facing slopes and is composed of stands of deciduous and mixed conifer-deciduous trees with diameters ranging from five to 20 inches. Wetlands, seeps, snags, downed logs, talus, and shrubs are also present. Osprey have been observed nesting in the area near Martin Luther King Way (WDFW n.d.a).

Existing conditions within the Alternative 4 footprint are a mix of unclassified land cover, tree canopy, and impervious surfaces. Impervious surfaces occupy 1.73 acres, or 26.25%, of the Project footprint (Table 4.3-7). Alternative 4 would increase the coverage of impervious surfaces to approximately 6.59 acres which is an additional 4.86 acres of new impervious surfaces.

The 200-foot buffer surrounding the Alternative 4 footprint is primarily impervious surfaces (18.37 acres) followed by a combination of trees (11.89 acres), grass/low-lying vegetation (7.63 acres), and unclassified land (9.58 acres). The buffer surrounding the alternative footprint is not expected to be converted to impervious surfaces based on current Project details; however, it could be impacted during construction activities.

Table 4.3-7 Landcover classification of Alternative 4

Landcover Class	**Area within Project Footprint (acres)**	**Area within 200' buffer (acres)**	**Total Area (acres)**
Bare Soil	0.03	1.00	1.03
Grass/Low-Lying Vegetation	0.53	7.63	8.15
Impervious Surfaces	1.73	18.37	20.10
Open Water	0.00	1.79	1.79
Tree Canopy	1.84	11.89	13.72
Unclassified (Unincorporated King County)	2.46	9.58	12.05
Total	**6.59**	**50.25**	**56.84**

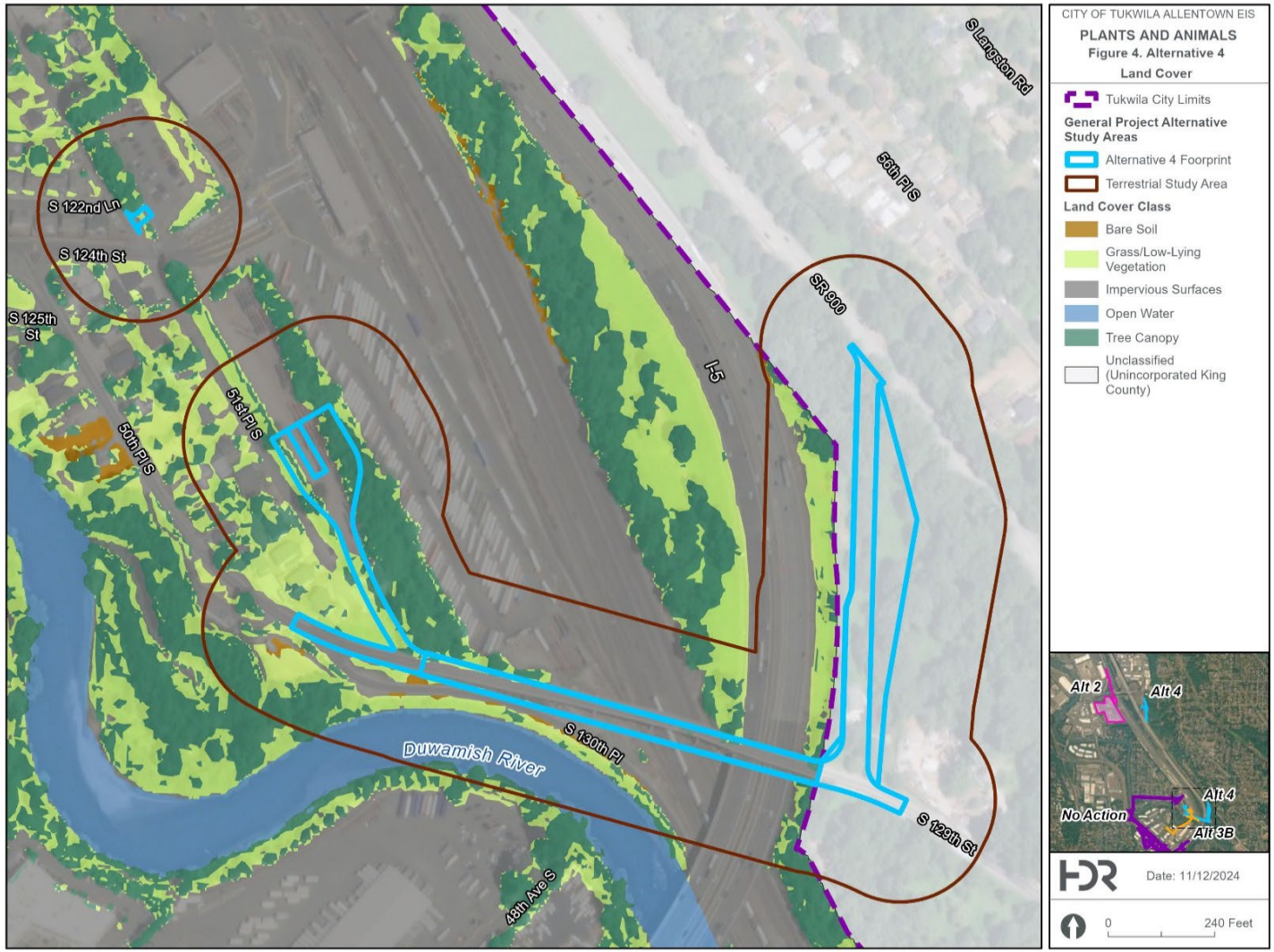


Figure 4.3-15 Southern section of Alternative 4 land cover and terrestrial study area including 200-foot buffer.

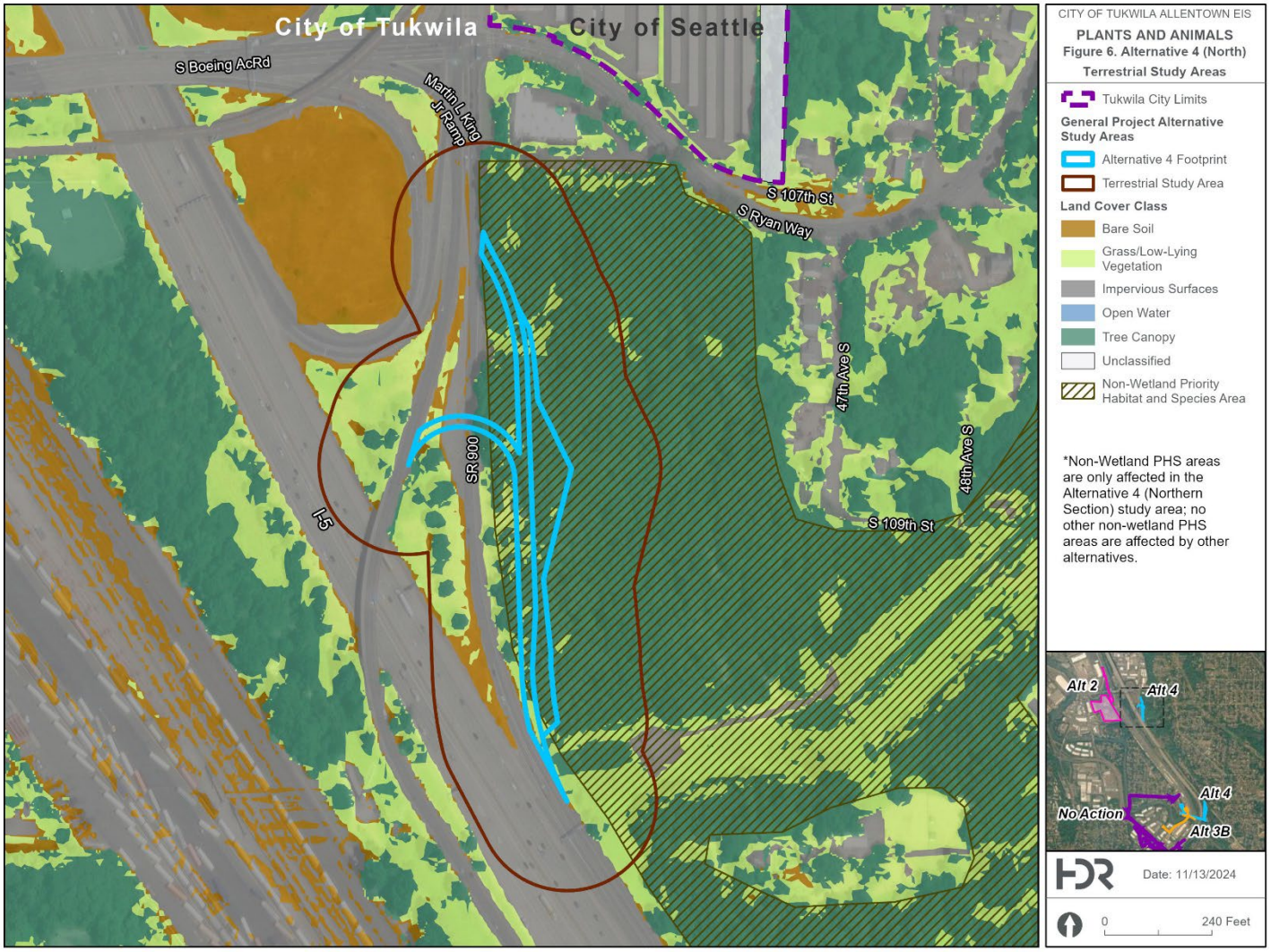


Figure 4.3-16 Northern section of Alternative 4 land cover and terrestrial study area including 200-foot buffer.

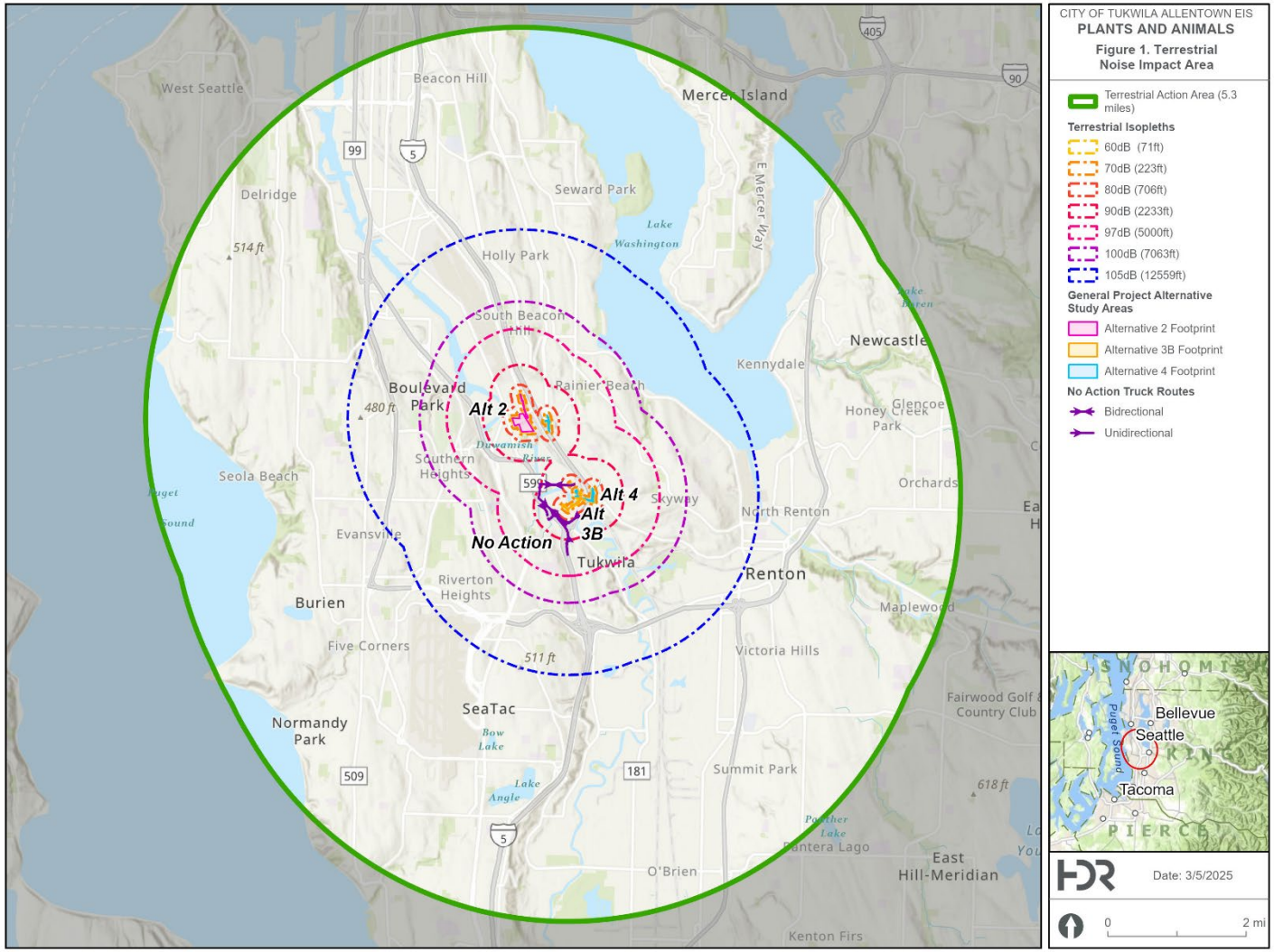


Figure 4.3-17 Project Alternative footprints and potential terrestrial noise impact areas

4.3.1.3.5 Terrestrial Fauna

In addition to abundant plant life, King County is also home to approximately 221 species of birds (five introduced), and 69 species of mammals (eight introduced) (KCBR 2008). Of these species, 35 receive some type of federal or state protection due to being endangered, threatened, sensitive, a candidate species, or some other official designation (USFWS 2024a; WDFW 2024d). Of the 34 terrestrial species listed under federal and/ or state protection (USFWS 2024a; WDFW 2024d), none have designated critical habitat in the Project vicinity (USFWS 2024a).

Table 4.3-8 Animal species of concern with potential to be in or near the action area

Species	ESA Designation	Critical Habitat in Project vicinity (Y/N)	State Status	Other Designation
Mammals				
Wolverine (*Gulo gulo luscus*)	Threatened	No	Candidate	None
Townsend's Big-eared Bat (*Corynorhinus townsendii*)	None	No	Candidate	None
Cascade Red Fox (*Vulpes vulpes cascadensis*)	None	No	Endangered	None
Fisher (*Pekania pennanti*)	None	No	Endangered	None
Birds				
Marbled Murrelet (*Brachyramphus marmoratus*)	Threatened	No	Endangered	None
Yellow-billed Cuckoo (*Coccyzus americanus*)	Threatened	No	Endangered	None
Bald Eagle (*Haliaeetus leucaocephalus*)	None	No	None	Eagle Act; Migratory
Golden Eagle (*Aquila chrysaetos*)	None	No	None	Eagle Act; Migratory
Ancient Murrelet (*Synthliboramphus antiquus*)	None	No	None	BCC; Migratory
Black Swift (*Cypseloides niger*)	None	No	None	BCC; Migratory
Black Turnstone (*Arenaria melanocephala*)	None	No	None	BCC; Migratory
California Gull (*Larus californicus*)	None	No	None	BCC; Migratory
Clark's Grebe (*Aechmophorus clarkia*)	None	No	None	BCC; Migratory

Species	ESA Designation	Critical Habitat in Project vicinity (Y/N)	State Status	Other Designation
Evening Grosbeak (*Coccothraustes vespertinus*)	None	No	None	BCC; Migratory
Lesser Yellowlegs (*Tringa flavipes*)	None	No	None	BCC; Migratory
Marbled Godwit (*Limosa fedoa*)	None	No	None	BCC; Migratory
Olive-sided Flycatcher (*Contopus cooperi*)	None	No	None	BCC; Migratory
Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)	None	No	None	BCC-BCR; Migratory
Chestnut-backed Chickadee *(Poecile rufescens rufescens)*	None	No	None	BCC-BCR; Migratory
Rufous Hummingbird (*Selasphorus rufus*)	None	No	None	BCC; Migratory
Short-billed Dowitcher (*Limnodromus griseus*)	None	No	None	BCC; Migratory
Western Grebe (*Aechmophorus occidentalis*)	None	No	Candidate	BCC; Migratory
Common Loon (*Gavia immer*)	None	No	Sensitive	None
Northern Goshawk (*Accipiter gentilis*)	None	No	Candidate	None
Northern Spotted Owl (*Strix occidentalis caurina*)	Threatened	No	Endangered	None
Black-backed Woodpecker (*Picoides arcticus*)	None	No	Candidate	None
Invertebrates				
Blue-gray Taildropper (*Prophysaon coeruleum*)	None	No	Candidate	None
Monarch Butterfly (Danaus plexippus)	Candidate	No	None	None
Pacific Clubtail (*Phanogomphus kurilis*)	None	No	Candidate	None
Beller's Ground Beetle (*Agonum belleri*)	None	No	Candidate	None
Hatch's Click Beetle (*Eanus hatchii*)	None	No	Candidate	None
Western Bumble Bee (*Bombus occidentalis*)	Candidate	No	Candidate	None

Species	ESA Designation	Critical Habitat in Project vicinity (Y/N)	State Status	Other Designation
Johnson's Hairstreak (*Callophrys johnsonii*)	None	No	Candidate	None
Valley Silverspot (*Argynnis zerene bremnerii*)	None	No	Candidate	None

BCC: Bird of Conservation Concern throughout its range
BCC-BCR: Bird of Conservation Concern in particular Bird Conservation Regions

The amount of development and human interaction in and around the Project vicinity has decreased the likelihood of many federally and state-protected species residing in the area. The species listed in Table 4.3-8 have been identified as occurring or potentially occurring in King County. However, review of state agency databases (WDFW n.d.a) indicate the following species do not occur and/or suitable habitat does not occur in the Project vicinity: wolverine (*Gulo gulo luscus*), fisher (*Pekania pennanti*), Cascade red fox (*Vulpes vulpes cascadensis*), northwestern pond turtle (*Actinemys marmorata*), Oregon spotted frog (*Rana pretiosa*), and northern spotted owl (*Strix occidentalis caurina*).

Federal and state endangered and threatened species that are most likely to occur in the project study area will be discussed further in this document; however, candidate and sensitive species will not be discussed further.

4.3.1.3.5.1 Oregon Vesper Sparrow

The Oregon vesper sparrow (*Pooecetes gramineus affinis*) was listed as endangered in the state of Washington in February 2021 (Altman et.al. 2020). This species is located in Washington primarily from April through late September. In the winter, they migrate to central and southern California. The Washington population of the Oregon vesper sparrow is estimated to be 300 birds with 90% of those birds residing in the Puget lowlands, mostly on Joint Base Lewis McCord (JBLM). Outside of JBLM there are small populations located on Tenalquot Prairie Preserve, private pastureland between Tenalquot Prairie and JBLM, San Juan Island, Sanderson Field/Shelton Airport, Mima Mounds Natural Area Preserve, and on islands in the Columbia River (Altman et.al. 2020).

Vesper sparrows are a large, ground nesting sparrow that breed in herbaceous-dominated, open upland landscapes. Common breeding areas include prairie, savannahs, pastures, airfields, Christmas tree farms, and vegetated dredged-material sites (Altman et.al. 2020). Vesper sparrows tend to avoid wet areas and sites with tall, dense herbaceous vegetation. They eat a wide variety of insects supplemented with seeds and prefer to forage on a mix of bare ground and in short vegetation (WDFW n.d.b).

The Project vicinity, which encompasses each of the Project alternative footprints and the surrounding area, largely consists of unforested, developed land, and there are no records of Oregon vesper sparrows in the area (WDFW n.d.b). The remaining breeding population is primarily found in Thurston and Pierce counties in prairies and around airports, especially on Joint-Base Lewis McChord.

It is unlikely the Oregon vesper sparrow is present in the Project vicinity. Alternative 2 is the alternative that would most likely contain suitable habitat for the Oregon vesper sparrow. It contains 11.84 acres of low-lying vegetation and/or grass that could provide suitable habitat for the Oregon vesper sparrow; however, there is an active gun range within the proposed Alternative 2 footprint, and the footprint abuts the current BNSF intermodal facility. The amount of human disturbance in Alternative 2 would

make the area unsuitable habitat. Alternative 3B and Alternative 4 do not contain suitable habitat for the Oregon vesper sparrow. There is very little contiguous open space or vegetation. The existing vegetation is primarily comprised of tall trees, which are not preferred by the Oregon vesper sparrow. Because none of the alternatives meet the habitat requirements for this species and the species is not known to occur in King County, it will not be considered further in this document.

4.3.1.3.5.2 Marbled Murrelet

The marbled murrelet (*Brachyramphus marmoratus*) was listed as threatened under the ESA in 1992 (57 FR 45328) and by the Washington Fish and Wildlife Commission in 1993 (Desimone 2016). Critical habitat was designated for the marbled murrelet in 1996 (FR 26256) and revised in 2011 (76 FR 61599). The Project vicinity is not located within designated critical habitat; however, designated critical habitat occurs within King County approximately 30 miles east of the Project vicinity in the forested areas of the central Cascade Mountain range and Olympic Mountains. Marbled murrelets are not a common species in Washington, but Puget Sound and Strait of Juan de Fuca are home to the greatest number of marbled murrelets in the state (WDFW n.d.c).

Marbled murrelets are a small, diving seabird that forage in marine waters and nest in old growth forests. The marbled murrelet spends approximately 90% of its time on the ocean in waters less than 100 feet deep resting and feeding on a variety of marine prey such as crustaceans and small schooling fish (USFWS 2024a). Marbled murrelets typically nest in old growth forests, preferring large unfragmented stands with large trees such as western hemlock, Sitka spruce, Douglas fir, and western redcedar trees. During breeding season, from April to mid-September, marbled murrelets in Washington commute an average of 32 miles (range 10.4-90.2 miles) between their nests and foraging habitat (Lorenz et al. 2016).

The Project vicinity largely consists of unforested, developed land and there are no records of marbled murrelets in the area (WDFW n.d.c). The Project vicinity does not contain suitable nesting habitat for the marbled murrelet and is approximately five miles east of marine habitat that is suitable for foraging. Marbled murrelets are not known to occur in the Project vicinity; however, a marbled murrelet could fly through the area due to their tendency to transit long distances between their nesting sites and foraging grounds.

4.3.1.3.6 Terrestrial Vegetation

There are approximately 1,249 (383 introduced) vascular plants in King County (KCBR 2008). Of these species, 34 are listed as a species of concern at either the state or federal level (Table 4.3-9).

Table 4.3-9 Vascular plant species of concern with potential to be in the action area

Species	Common Name	State Status	Federal Status
Actaea elata var. elata	Tall bugbane	Sensitive	None
Arenaria paludicola	Swamp sandwort	Extirpated	Endangered
Botrychium ascendens	Triangular-lobed moonwort	Sensitive	None
Botrychium hesperium	Western moonwort	Sensitive	None
Botrychium pedunculosum	Stalked moonwort	Threatened	None
Brodiaea rosea ssp. rosea	Harvest brodiaea	Sensitive	None
Campanula lasiocarpa	Alaska harebell	Sensitive	None

Species	Common Name	State Status	Federal Status
Carex pauciflora	Few-flowered sedge	Sensitive	None
Carex rostrata (sensu stricto)	Northern beaked sedge	Sensitive	None
Carex stylosa	Long-styled sedge	Sensitive	None
Cassiope lycopodioides	Clubmoss mountain-heather	Sensitive	None
Castilleja levisecta	Golden paintbrush	Threatened	Threatened (Proposed Delisting)
Chrysolepis chrysophylla var. chrysophylla	Golden chinquapin	Sensitive	None
Cirsium remotifolium var. remotifolium	Weak thistle	Endangered	None
Coptis asplenifolia	Spleenwort-leaved goldthread	Sensitive	None
Dendrolycopodium dendroideum	Tree clubmoss	Sensitive	None
Eutrochium maculatum var. bruneri	Spotted Joe-pye weed	Sensitive	None
Fritillaria camschatcensis	Kamchatka fritillary	Sensitive	None
Gentiana douglasiana	Swamp gentian	Sensitive	None
Heterotheca oregona	Oregon goldenweed	Sensitive	None
Hypericum majus	Large St. Johns'-wort	Sensitive	None
Lathyrus vestitus var. ochropetalus	Pacific peavine	Endangered	None
Lobelia dortmanna	Water lobelia	Sensitive	None
Lycopodiella inundata	Northern bog clubmoss	Sensitive	None
Lycopodium lagopus	One-cone clubmoss	Sensitive	None
Meconella oregana	White meconella	Endangered	None
Montia diffusa	Branched montia	Sensitive	None
Nuttallanthus canadensis	Old field blue toadflax	Sensitive	None
Nuttallanthus texanus	Texas blue toadflax	Sensitive	None
Pellaea breweri	Brewer's cliffbrake	Sensitive	None
Pinus albicaulis	Whitebark pine	Sensitive	Proposed Threatened
Platanthera chorisiana	Choriso's bog-orchid	Sensitive	None
Sericocarpus rigidus	Columbia white-topped aster	Sensitive	None
Utricularia intermedia	Flat-leaved bladderwort	Sensitive	None

The amount of development and human interaction in and around the Project vicinity has decreased the likelihood of many federally and state-protected plant species residing in the area. Endangered and threatened species will be discussed further in this document; however, candidate and sensitive species will not be discussed further.

4.3.1.3.6.1 Swamp sandwort

The last record of swamp sandwort (*Arenaria paludicola*) in Washington state was in Tacoma at “Flett’s Creek” in 1896 (Fertig 2024). Development and competition with invasive plants, such as reed canary

grass , have significantly reduced the amount of available habitat (Fertig 2024). Due to its status as "extirpated", this plant will not be considered further.

4.3.1.3.6.2 Stalked moonwort

Stalked moonwort (*Botrychium pedunculosum*) is typically found in moist or dry meadows, springs, coniferous forests, and forest edges at elevations between 500-1325 m (1640-4340 ft). It is commonly found in association with lodgepole pine (*Pinus contorta*), Engelmann spruce (*Picea engelmannii*), red cedar (*Thuja plicata*), mosses, and other moonworts (*Botrychium spp*.). The Project vicinity does not meet the habitat requirements for this plant, so it will not be considered further in this document (Fertig 2021).

4.3.1.3.6.3 Golden paintbrush

Golden paintbrush (*Castilleja levisecta*) populations are found in open, undulating remnant prairies dominated by Roemer's fescue (*Festuca roemeri*) and Red fescue (*F. rubra*) on gravelly or clayey outwash (Fertig 2021). While extant populations exist in Washington, it is considered extirpated in King County (Fertig 2021). Therefore, it will not be considered further in this document.

4.3.1.3.6.4 Weak Thistle

Weak Thistle (*Cirsium remotifolium var. remotifolium*) can be found in moist meadows, streamsides, rock outcrops, prairies, and transition zones between forests and meadows. It is typically found at elevations between 15-915 m (50-3000 ft). Historical populations were found in the Puget Trough Ecoregion in King County, but it is likely those populations are now extirpated (Fertig 2021). Therefore, it will not be considered further in this document.

4.3.1.3.6.5 Pacific peavine

Pacific peavine (*Lathyrus vestitus var. ochropetalus*) is known to occur in King County. It is typically found in dry, open to wooded areas, forest edges, and roadsides, or near or within historical prairies at elevations between 75-170 m (250-565 ft). It is commonly found with young Douglas-fir (*Pseudotsuga menziesii*), black raspberry (*Rubus leucodermis*), and garden vetch (*Vicia sativa*) (Fertig 2021).

4.3.1.3.6.6 White meconella

White meconella (*Meconella oregana*) is typically found in open grassland, but is sometimes found within a mosaic of forest and grassland. It can be found on gradual to 100% slopes at elevations that range between 20-90 meters (60-620 feet). There has not been a documented occurrence in King County in over 40 years (Fertig 2021).

4.3.1.3.6.7 Whitebark pine

Whitebark pine (*Pinus albicaulis*) is rarely found at lower elevations. In Washington, it is primarily found in subalpine areas of higher mountains at elevations between 1280-2430 meters (4200-7975 feet). It is often associated with Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*). The Project vicinity does not meet the habitat requirements for this plant, so it will not be considered further in this document (Fertig 2021).

4.3.2 Relevant Plans Policies and Regulations

The relevant plans, policies, regulations, and guidance consulted when analyzing the potential impacts of the proposed Alternatives are described in Table 4.3-10.

Table 4.3-10 Relevant Plans, Policies, and Regulations

Laws and Regulations	Description
Federal	
Endangered Species Act (ESA, 16 USC 1531 et seq.)	Ensures that the proposed action is not likely to jeopardize existence of any listed threatened or endangered animal species or result in adverse modification of designated critical habitat.
Magnuson-Stevens Fishery Conservation and Management Act, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267)	The primary law that governs marine fisheries management in U.S. federal waters.
Migratory Bird Treaty Act (MBTA)	Ensures sustainability of populations of all protected migratory bird species. Prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service.
Bald and Golden Eagle Protection Act (BGEPA)	Ensures the protection of bald and golden eagles including their parts (feathers), nests, and eggs.
Clean Water Act	The principal statute for water quality protection. Provides standards for the propagation and protection of fish, shellfish, and wildlife.
State	
Washington State Growth Management Act (RCW 36.70A)	Requires all cities and counties to designate natural resources lands and critical areas and identify steps to preserve them, including fish and wildlife habitat conservation areas.
Washington State Shoreline Management Act (RCW 90.58)	Requires all counties and most towns and cities with shorelines to develop and implement Shoreline Master Programs. One intention of the Act is to protect shoreline natural resources against adverse environmental impacts, including wildlife and aquatic habitats.
Washington State Water Pollution Control Act (90.48 RCW)	Ensures the purity of all waters of the state is consistent with public health and public enjoyment including the propagation and protection of wild life, birds, game, fish and other aquatic life.
Washington State Department of Fish and Wildlife Hydraulic Permit Approval (WAC 220-660)	The Hydraulic Permit Approval (HPA) is intended to ensure construction of work that uses, diverts, obstructs, or changes the natural flow or bed of any salt or fresh waters of the state is done in a manner that protects fish life.
Washington State Department of Ecology NPDES Permit Program	Covers discharge to surface waters.
Salmon Recovery Act (RCW 77.85)	Provides a planning and implementation process that is focused on fish habitat.

Laws and Regulations	Description
RCW 77.55 Construction Projects in State Waters	Requires a Hydraulic Project Approval (HPA) Permit to ensure fish protection during hydraulic projects.
Local	
City of Tukwila Comprehensive Plan	Tukwila's Comprehensive Plan is a long-term guiding document or "blueprint" that explains the community's values and priorities to guide growth and development.
Tukwila Municipal Code (TMC) Chapter 18.45	The purpose of TMC Chapter 18.45 is to protect the environment, human life and property; to designate and classify ecologically critical areas including but not limited to regulated wetlands and watercourses and geologically hazardous areas and to protect these critical areas and their functions while also allowing for reasonable use of public and private property
King County Critical Areas Ordinance (King County Code [KCC] 21A.24)	This ordinance was developed under the directives of the GMA to designate and protect critical areas and to assist in conserving the value of property, safeguarding the public welfare, and providing protection for these areas.

4.3.3 Methodology

A desktop review was conducted using available information on existing and historic plant and animal species and their habitat in the Project vicinity and surrounding area. Impacts to plants and animals from the proposed Project development have been evaluated and weighed to determine whether the proposed Project would have significant impacts affecting on-site wildlife habitat, native plant communities, priority species, designated locally important species, or listed species (federal and state).

Critical areas and their buffers, defined by T.M.C 18.06.182 were given special consideration and identified using the Tukwila iMap tool. Critical areas defined as "wetlands, watercourses, areas of potential geologic instability (other than Class I areas), abandoned coal mine areas, fish, and wildlife habitat conservation areas, and special flood hazard areas" and their buffers, defined as "an area lying adjacent to, but outside a critical area whose function is to protect, critical areas from the potential adverse impacts of development, land use, or other activities. A wetland or watercourse critical area buffer also provides critical habitat value, bank stabilization, or water overflow area functions."

HDR conducted field reconnaissance and prepared a technical memorandum*, Wetland and Streams Technical Memorandum* (Appendix C) that identified and documented existing wetlands and streams along and near the No Action Alternative, and Alternatives 2, 3B, and 4. This report informs the wetland section of this chapter.

The Washington Department of Fish and Wildlife (WDFW) manages the Priority Habitats and Species Program (PHS)(WDFW n.d.a) which is a tool to inform landowners, local governments and other stakeholders of important fish and wildlife information from resource experts. The PHS Web Application

was also used to determine which priority habitat and species are likely to be found in the Project vicinity (WDFW n.d.a).

The PHS Statewide List and Distribution by County and the Washington Natural Heritage Program list of vascular plant species of conservation concern were used to determine plant and animal state-listed species of concern in King County that may have potential to be in the study area (Table 4.3-8 and Table 4.3-9; WDFW n.d.d; DNR 2024e).

The US Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) tool and the National Oceanic Atmospheric administration (NOAA) Fisheries Species and Habitat App were used to determine which species and habitat in the Project vicinity receive federal protection (Table 4.3-8; USFWS 2024b; NOAA 2024).

4.3.3.1 Noise Assessment Methodology

The effects of noise were also considered for their potential impacts to aquatic and terrestrial species. Due to the uncertainty of equipment used, terrestrial action areas were calculated for a range of construction equipment that could potentially be used for the Project. Values for specific equipment can be found in the Washington Department of Transportation Biological Assessment Preparation Manual Chapter 7, Table 7-4. To determine the distance the noise generated by construction equipment attenuates, the following equation is used:

Equation 4.3-1

$$D = Do \times 10^{\left(\frac{Construction\ Noise - Background\ Noise\ in\ dBA}{\alpha}\right)}$$

Where D = the distance from the noise source

Do = the reference measurement difference (50 feet)

Construction Noise = varies between 60-105 dB

Background noise = 57 (range of 57-67 dB)

α = 20 for hard sites. For point source noise, a spherical spreading loss model is used. These alpha (α) values assume a 6.0 dBA reduction per doubling distance over hard ground.

If multiple pieces of equipment are used simultaneously, these values need to be re-evaluated. Additionally, if a nest site or other special site is discovered, the values will be to be adjusted based on distance to the special site.

Table 4.3-11 Terrestrial action area for a range of sound produced by construction equipment

Construction Equipment (dB)	Action Area (feet)	Action Area (miles)
60	71	0.01
70	223	0.04
80	706	0.13
90	2233	0.42
97	5000	0.95

Construction Equipment (dB)	Action Area (feet)	Action Area (miles)
100	7063	1.34
105	12559	2.38

Potential noise impacts affect both the aquatic and terrestrial environment. Noise impacts have the potential to affect threatened and endangered species including the marbled murrelet. They could also impact other sensitive species that may be found in the area including eagles and migratory birds. If a bald eagle nest is observed, USFWS will review construction activities within a 660-foot buffer management zone.

4.3.3.2 Impact Descriptions

The impacts of each alternative on plants and animals were determined by the location of the permanent footprint of the alternative as well as impacts that extended beyond the project footprint including noise, turbidity, and pollution. Potential impacts to plants and animals are discussed quantitatively where information is available (e.g. acreage of wetlands affected or area of new impervious surfaces), but are otherwise discussed qualitatively. The potential impacts to Wetlands, Aquatic Species and Habitat, and Terrestrial Species and Habitat are evaluated by using the definitions in Table 4.3-12.

Table 4.3-12 Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The proposed Project would be fully consistent with the intent of applicable plans and policies for wetlands, aquatic species and habitat, or terrestrial species and habitat plans.
Minor	The proposed Project would result in short-term temporary impacts, or minimal long-term impacts to wetlands, aquatic species and habitat, or terrestrial species and habitat.
Moderate	The proposed Project would result in long-term or permanent impacts to wetlands, aquatic species and habitat, or terrestrial species and habitat, but mitigation can be applied to reduce the impact to be less than significant.
Significant	The proposed Project would cause long-term, permanent, or irreversible inconsistencies with applicable plans and policies or the zoning codes pertaining to wetlands, aquatic species and habitat, or terrestrial species and habitat.

An unavoidable significant adverse impact would occur if regulatory requirements, design measures, or mitigation measures would not address the potential impacts. The temporary and long-term construction impacts and operation impacts are analyzed in the following subsections.

4.3.4 Impacts Analysis

This subsection addresses temporary and long-term impacts from construction and operation of each alternative on wetlands and wetland buffers, aquatic species and habitats, and terrestrial species and habitats. The location and final design of the preferred alternative, construction footprint and methods, and Best Management Practices (BMPs) utilized during construction will determine the actual impacts to resources and their buffers.

Wetlands

Construction impacts to wetlands will occur where features such as roads overlap with wetlands or wetland buffers. Construction activities that fill, excavate, or clear vegetation in wetlands or wetland buffers diminish wetland functions through loss of area, hydrologic changes, or long-term vegetation changes. Elevated structures may limit the amount of sunlight and precipitation reaching vegetation which has the potential to affect the long-term composition and density of vegetation. The replacement of vegetation with pollution generating impervious surfaces (PGIS) also has the potential to permanently impact wetland hydrology.

Because construction details, including means and methods, have not been determined for this analysis, it is assumed that wherever the Project Alternative footprint intersects a wetland, that area will be filled. It is unclear what mitigation strategy will take place for the Project Alternatives, but it is assumed that the impacts will be mitigated according to local, state, and federal regulations regarding wetlands and wetland buffers.

Aquatic Species and Habitats

The location and final design of the preferred alternative, construction footprint and methods and BMPs utilized during construction will determine the actual impacts to aquatic species and aquatic habitat. At this time, construction and design details are unavailable. Following the selection of a Preferred Alternative, compliance with the ESA would be assessed and documented through a no-effect memorandum, Biological Assessment, or other ESA documentation. The assessment would also include a review of potential effects on essential fish habitat, as required by the Magnuson-Stevens Fishery Conservation and Management Act.

Potential impacts to aquatic species and habitat include in-stream habitat alteration and changes to fish passage through vegetation removal, the addition of nighttime lighting and daytime shading, and changes to water quality and quantity.

Temporary construction-related impacts on aquatic species and habitat would occur where in-water work produces noise, sedimentation, and turbidity and where vegetation is cleared within the stream buffer. Temporary impacts will also occur where streams are rerouted to accommodate Project features.

Noise resulting from in-water construction activities has the potential to cause adverse physiological effects on fish including hearing loss, tissue damage, and behavioral responses. Noise can also temporarily degrade critical habitat. Primary avoidance and minimization measures include an underwater sound control and abatement plan and operating during a designated work window that avoids the timing of aggregated fish use, such as migration. If the appropriate avoidance and mitigation measures are put in place, impacts to aquatic species and habitat are expected to be temporary.

In-water construction activities have the potential to mobilize disturbed sediments and could increase turbidity downstream. A Construction Stormwater General Permit will be acquired before construction begins. A site-specific SWPPP with temporary erosion and sediment controls will be implemented before construction begins and will be maintained during the duration of the Project. Mitigation and minimization measures are discussed in detail in Section 4.3.5.

Vegetation clearing within the stream buffer will have differing levels of impact depending on the existing vegetation in the area. Removal of vegetation that is woody in nature, such as a tree or shrub, would result in a longer-term impact than if an herbaceous plant, such as a grass, was removed due to the amount of time it would take for each respective plant to achieve the size and stature of pre-construction conditions. If invasive vegetation is removed and replaced with native vegetation, the impact on riparian function might improve. Currently only the area of riparian vegetation is known for each alternative. Once a Preferred Alternative is selected, additional measures will be taken to establish what the existing vegetation is and how it can be restored or improved upon post-construction.

The main distinction between operational impacts for the respective alternatives is due to the differing areas of land conversion, especially to impervious surfaces. Following construction, there will be an increase in the amount of stormwater runoff generated due to additional impervious surfaces. This additional runoff increases the potential for contamination of receiving waterbodies. Additionally, increased impervious surfaces alter hydrology by decreasing the percolation of surface water. This effect results in lower base flows as well as higher peak flows which can result in scour or deposition downstream. Impacts to surface water runoff are further discussed in Section 4.2 Water Resources. Assuming BMPs and mitigation measures are put in place, the impacts resulting from the addition of impervious surfaces should be minimal.

Terrestrial Species and Habitats

The Project alternatives exist in highly developed areas with relatively disturbed habitats compared to less developed, rural areas. Despite the lack of contiguous, undisturbed habitat, there are still fragmented patches of natural vegetation that may provide suitable habitat or travel corridors for some wildlife populations. The location and final design of the preferred alternative, footprint, methods, and BMPs utilized during construction will determine the actual impacts to terrestrial species and terrestrial habitat. At this time, construction and design details are unavailable.

The marbled murrelet and Pacific peavine are the only ESA-listed terrestrial species with potential to be in the Project vicinity. Following the selection of a Preferred Alternative, compliance with the ESA would be assessed and documented through a no-effect memorandum, Biological Assessment, or other ESA documentation.

The only priority habitats known or expected to be in the study area are a biological corridor, riparian areas, and wetlands. Potential direct long-term impacts to terrestrial species and terrestrial habitat could occur where project construction converts vegetation or other wildlife features to roads or bridges.

Existing vegetation in the Project footprint would be removed and replaced with PGIS. General impacts associated with vegetation removal or clearing activities include: removal of trees or other vegetation which provide suitable habitat, introduction of noxious weeds or exotic species, ground or soil disturbance or compaction, increased bank or soil erosion, sedimentation, noise impacts, human presence or activity impacts, or impacts on prey species. Elevated structures may limit the amount of sunlight and precipitation reaching vegetation which has the potential to affect the long-term composition and density of vegetation.

No plant surveys have been conducted in the Project vicinity. The only protected plant species with potential to be in the action area is Pacific pea vine. If vegetation is cleared during the construction phase of the project and Pacific pea vine is located on the site, there would be potential impact to the plant. Alternatives with the most land conversion from vegetated to non-vegetated have the greatest potential to impact Pacific pea vine.

The severity of impact for each study area is largely determined by the affected landcover type. In much of the study areas, replacement of existing PGIS would have minor impact on ecological functions. The greatest impacts would occur where native vegetation or structurally complex vegetative communities are replaced by PGIS.

Clearing of trees, snags, and understory vegetation could impact sensitive species located in the Project vicinity. Vegetation clearing could destroy suitable foraging or nesting habitat for bird species. Under the Migratory Bird Treaty Act (MBTA), it is illegal to remove an active nest, but nest activity is defined as being actively used (e.g. eggs or young in the nests). If construction activities occur outside of the nesting period, this impact will be mitigated. Vegetation clearing can also eliminate potential roosting sites for bats as well as cover for small mammals. Mitigation and minimization measures are further discussed in Section 4.3.5.

4.3.4.1 No Action Alternative

A detailed description of the No Action Alternative components and routes are provided in Section 3.3. Figure 4.3-1 shows the wetland study area, Figure 4.3-7 shows the aquatic study area, and Figure 4.3-12 shows the landcover and terrestrial study area for the No Action Alternative.

4.3.4.1.1 Construction Impacts for the No Action Alternative

Not applicable Construction is not required for the No Action Alternative; therefore, construction impacts are not applicable for this alternative.

4.3.4.1.2 Operations Impacts for the No Action Alternative

4.3.4.1.2.1 Wetlands

No Impact Under the No Action Alternative, existing conditions for wetlands would continue. No wetlands are identified in the wetland study area because the No Action Alternative is already constructed and will not have additional impacts on the existing wetlands. The landcover types within the No Action Alternative are detailed in Table 4.3-13.

Table 4.3-13 Landcover for the No Action Alternative

Landcover Class	Area within NAA Footprint	Area within 200' buffer	Total Area
Bare Soil	2.23	3.19	5.42
Grass/Low-Lying Vegetation	11.84	9.79	21.64
Impervious Surfaces	2.98	20.21	23.20
Open Water	0.15	0.00	0.15
Tree Canopy	10.75	8.13	18.88
Unclassified (Unincorporated King County)	0.23	1.55	1.78
Total	**28.18**	**42.88**	**71.06**

Aquatic Species and Habitat

No Impact Under the No Action Alternative, existing conditions for aquatic species and habitat would continue. The No Action Alternative crosses the Duwamish River, but would not create additional impacts based on current operating conditions.

4.3.4.1.2.2 Terrestrial Species and Habitat

No to Minor Impact Potential operational impacts to terrestrial species and terrestrial habitat could occur where operational-related noise, light, and human activity exceeds existing conditions.

The Project vicinity is bordered by Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west. Generally speaking, this alternative is within an area with high levels of development and human disturbance. Wildlife that uses habitat in or near the project alternatives are regularly exposed to human activity, noise, and light.

Noise from human activity has the potential to disrupt wildlife behavior (e.g. foraging activities and calling). It is not expected that operational noise resulting from the No Action Alternative will noticeably exceed current sound levels in the Project vicinity. Artificial lighting at night has the potential to affect foraging, circadian rhythms, and dispersal movements. Effects from artificial lighting should be minimized by compliance with applicable local lighting standards and BMPs. The land conversion of suitable habitat is limited in area. As such, it is not expected that the continued operation of this alternative will have an effect on regional populations of wildlife.

4.3.4.2 Alternative 2: Airport Way South

A detailed description of this proposed Alternative's components and routes are provided in Section 3.4.1. Figure 4.3-2 shows the wetland study area, Figure 4.3-8 shows the aquatic study area, and Figure 4.3-13 shows the landcover and terrestrial study area for Alternative 2.

4.3.4.2.1 Construction Impacts

4.3.4.2.1.1 Wetlands

Temporary impacts on wetlands and wetland buffers resulting from construction of Alternative 2 may result from staging areas, temporary work areas, access roads, clearing, stockpiles, or erosion and

sediment controls. Dewatering may temporarily impact groundwater discharge to wetlands. Other temporary impacts to wetlands and wetland buffers include soil compaction, accidental spills of hazardous substances, noise and other disturbances, sedimentation, and the introduction of invasive species.

The type of wetland and vegetation present may affect the length of impact. Wetlands with emergent vegetation are likely to recover faster than wetlands with woody vegetation due to the time it takes for the respective vegetation to achieve pre-construction size and stature.

Minor to Moderate Impact for Alternative 2 is expected depending on construction means and methods.

4.3.4.2.1.2 Aquatic Species and Habitat

No Impact There are no anticipated construction impacts to aquatic species and habitat under Alternative 2 because the construction of the proposed project would not occur in or near aquatic habitat. Existing conditions for aquatic species and habitat would continue under Alternative 2.

4.3.4.2.1.3 Terrestrial Species and Habitat

Minor Impact The loudest noise generating activities in the terrestrial environment for Alternative 2 is likely to be vegetation clearing and the creation and/or replacement of concrete and pavement (concrete grinder= 97 dB). Based on the results of Equation 4.3-1, the action area for terrestrial noise-related effects extending spherically in all directions from the Project vicinity is estimated to be 5,000 feet (0.95 miles) for Alternative 2.

There are no known nesting birds in the area, and Alternative 2 would be located in an area currently used as a firearms training facility. Alternative 2 should be surveyed for active nests prior to construction. This alternative will require extensive vegetation removal; however, the quality and density of existing vegetation is unknown at this time. If this Alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on terrestrial species and habitat. Table 4.3-13 details the area of land converted from vegetation to impervious surfaces.

4.3.4.2.2 Operations Impacts

4.3.4.2.2.1 Wetlands

4.3.4.2.2.1.1 Wetlands- Direct Impacts

Mitigated Significant Impact Alternative 2 has the greatest extent of impact on wetlands and wetland buffers based on acres of area affected. Four wetlands with moderate levels of habitat functions totaling 1.42 acres would be permanently impacted by this alternative. The wetland buffers associated with this impact would total 5.7 acres.

The quality of wetlands affected In Alternative 2 are similar to Alternative 3B and marginally higher quality than Alternative 4.

Table 4.3-14 Direct long-term impacts to wetlands in Alternative 2 study area

Wetland Name	HGM Classification	Cowardin Classification	Wetland Rating	Wetland Area Impacted by Alternative 2 footprint (acres)	Wetland Buffer Area Impacted by Alternative 2 footprint (acres)	Total Area Impacted by Alternative 2 footprint (acres)
4a	Depressional	PFO/PSS/PEM	I; habitat score of 6	0.32	1.17	1.50
4b	Depressional	PFO/PSS/PEM	III; habitat score of 5	0.11	0.67	0.77
5	Depressional	PFO/PSS/PEM	II; habitat score of 6	0.54	0.67	1.21
6	Depressional	PEM	II; habitat score of 4	0.03	0.82	0.85
7	Depressional	PFO/PSS/PEM	II; habitat score of 4	0.42	2.37	2.79
9	Depressional	PSS/PEM	II; habitat score of 5	0.00	0.00	0.00
			Total	**1.42**	**5.7**	**7.12**

4.3.4.2.2.1.2 Wetlands- Indirect Impact

Moderate Impact Indirect operational impacts could result from the addition of impervious surfaces. Existing conditions within the Alternative 2 footprint are currently covered with primarily grass/low-lying vegetation or tree canopy. Impervious surfaces occupy 2.98 acres, or 10.6%, of the Project footprint. Alternative 2 would increase the area of impervious surfaces to approximately 28.18 acres which is an additional 25.2 acres of new impervious surfaces (Table 4.3-15). Alternative 2 would create more new impervious surfaces than Alternative 3B or 4, resulting in altered surface water hydrology. Stormwater systems are expected to mitigate the impacts of surface water runoff, as discussed in Section 4.3.5.

The increase in impervious surfaces, removal of vegetation, and increase in truck traffic will elevate noise levels in the area. Increased noise levels have the potential to disturb wildlife that utilize wetland habitat. The quality of wetlands affected are similar to Alternative 3B and marginally higher quality than Alternative 4. Because Alternative 2 has the greatest amount of land conversion, it is also likely to have the greatest change in baseline noise levels.

Table 4.3-15 Land cover of Alternative 2

Landcover Class	Area within Alt 2 Footprint	Area within Alt 2 200' buffer	Total Area
Bare Soil	2.23	3.19	5.42
Grass/Low-Lying Vegetation	11.84	9.79	21.64
Impervious Surfaces	2.98	20.21	23.20
Open Water	0.15	0.00	0.15
Tree Canopy	10.75	8.13	18.88

Landcover Class	Area within Alt 2 Footprint	Area within Alt 2 200' buffer	Total Area
Unclassified (Unincorporated King County)	0.23	1.55	1.78
Total	**28.18**	**42.88**	**71.06**

4.3.4.2.2.2 Aquatic Species and Habitat

4.3.4.2.2.2.1 Aquatic Species and Habitat- Direct Impact

No Impact Alternative 2 does not intersect with a stream or stream buffer. Therefore, in-stream habitat alteration, changes to fish passage, vegetation removal, nighttime lighting, and shading for Alternative 2 for expected to result in no impact.

4.3.4.2.2.2.2 Aquatic Species and Habitat- Indirect Impacts

Minor Impact The conversion of land to PGIS (discussed under wetlands impacts) will impact aquatic species and habitat if not properly mitigated by altering water quality and quantity. Increased stormwater runoff would increase pollutants such as 6PPD-q which would potentially have lethal impacts on aquatic species in receiving waterbodies. Impacts to water quality and quantity are discussed in Section 4.2 Water Resources.

4.3.4.2.2.3 Terrestrial Species and Habitat

Minor Impact Potential operational impacts to terrestrial species and terrestrial habitat could occur where operational-related noise, light, and human activity exceeds existing conditions.

Proposed Alternative 2 is bordered by Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west. Generally speaking, this alternative is within an area with high levels of development and human disturbance. Wildlife that uses habitat in or near the project alternatives are regularly exposed to human activity, noise, and light.

Alternative 2 would require extensive ground clearing; however, the quality and density of existing vegetation is unknown at this time. If this alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to fully assess the impact on wetlands

Noise from human activity has the potential to disrupt wildlife behavior (e.g. foraging activities and calling). It is not expected that operational noise resulting from Alternative 2 would noticeably exceed current sound levels in the Project vicinity. Artificial lighting at night has the potential to affect foraging, circadian rhythms, and dispersal movements. Effects from artificial lighting should be minimized by compliance with applicable local lighting standards and BMPs. The land conversion of suitable habitat is limited in area. As such, it is not expected that operation of Alternative 2 would have an effect on regional populations of wildlife.

4.3.4.3 Alternative 3B: Improvements to 48th Place South

A detailed description of this proposed Alternative's components and routes are provided in Section 3.4.2. Figure 4.3-3 shows the wetland study area, Figure 4.3-9 shows the aquatic study area, and Figure 4.3-14 shows the landcover and terrestrial study area for Alternative 3B.

4.3.4.3.1 Construction Impacts

4.3.4.3.1.1 Wetlands

Temporary impacts on wetlands and wetland buffers resulting from construction of Alternative 3B may result from staging areas, temporary work areas, access roads, stream relocations, cofferdams, clearing, stockpiles, or erosion and sediment controls. Dewatering may temporarily impact groundwater discharge to wetlands. Other temporary impacts to wetlands and wetland buffers include soil compaction, accidental spills of hazardous substances, noise and other disturbances, sedimentation, and the introduction of invasive species.

The type of wetland and vegetation present may affect the length of impact. Wetlands with emergent vegetation are likely to recover faster than wetlands with woody vegetation due to the time it takes for the respective vegetation to achieve pre-construction size and stature.

Minor to Moderate Impact for Alternative 3B is expected depending on construction means and methods.

4.3.4.3.1.2 Aquatic Species and Habitat

Moderate Impact There would be temporary impacts to aquatic species and habitat in the Duwamish River during construction for Alternative 3B; however, the extent of impacts will not be made clear until construction means and methods are decided. Mitigation measures, including fish exclusion, would minimize the impact.

Potential temporary construction impacts from Alternative 3B include:

- Temporary degradation of habitat from sedimentation, removal of riparian vegetation, and disturbance to stream banks
- Physical modifications to migration and rearing habitat during in-water work including temporary loss of physical habitat from dewatering
- Temporary degradation of water quality (increased temperature and turbidity) due to vegetation removal and in-water construction

Alternative 3B is the only alternative that may include in-water work. The noise generated for this work could potentially affect aquatic species, including three federally listed fish. The extent of noise propagation in a river system is determined with a line-of-sight rule meaning the noise may propagate into any area that is within the line-of-sight of the noise source (WSDOT 2023). The sinuosity of rivers limits the propagation of noise, and it is unlikely that noise will propagate where a river bends (WSDOT 2023). Based on this methodology, the aquatic action area for Alternative 3B extends approximately 1,110 upriver and 900 downriver. While mitigation measures and BMPs will be followed for noise and vibration impacts, it is not likely that all impacts will be avoided. Mitigation and minimization measures are discussed in Section 4.3.5.

4.3.4.3.1.3 Terrestrial Species and Habitat

Minor Impact It is assumed vibratory, or impact, hammers (105dB) would be used for building the bridge for proposed Alternative 3B, which will likely be the loudest construction equipment used for that alternative. Based on Equation 4.3-1, the action area for terrestrial noise-related effects extending spherically in all directions from the Project vicinity is estimated to be 12,559 feet (2.38 miles) for Alternative 3B.

There are no known nesting birds in the area. Alternative 3B should be surveyed for active nests prior to construction. Table 4.3-17 details the area of land converted from vegetation to impervious surfaces.

This alternative would require a bridge crossing the Duwamish River with five feet of minimum freeboard above the river. In order to achieve the required clearances above the river, Railroad Avenue would need to be raised to align with the new grade changes. This elevation adjustment would require the construction of retaining walls along the eastern edge of Railroad Avenue to support the new grade change. Elevated structures have the potential to impact vegetation; however, the quality and density of existing vegetation is unknown at this time. If this Alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on terrestrial habitat.

4.3.4.3.2 Operations Impacts

4.3.4.3.2.1 Wetlands

4.3.4.3.2.1.1 Wetlands- Direct Impact

Mitigated Significant Impact Alternative 3B would have the least amount of impact on wetlands and wetland buffers after the No Action Alternative based on acres of area affected. Three wetlands with moderate levels of habitat functions totaling 0.14 acres would be permanently impacted by this alternative. The wetland buffers associated with this impact would total 0.65 acres (Table 4.3-16). The quality of wetlands affected are similar to Alternative 2 and marginally higher quality than Alternative 4.

Alternative 3B would require a bridge crossing the Duwamish River with five feet of minimum freeboard above the river. Elevated structures have the potential to impact vegetation by casting shade; however, the quality and density of existing vegetation is unknown. If this alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on wetlands.

Table 4.3-16 Direct long-term impacts to wetlands in the Alternative 3B study area

Wetland Name	HGM Classification	Cowardin Classification	Wetland Rating	Wetland Area Impacted by Alt 3B footprint (acres)	Wetland Buffer Area Impacted by Alt 3B footprint (acres)	Total Area Impacted by Alt 3B footprint (acres)
1	Tidal Fringe	PSS/PEM	II (based on estuarine special characteristic); habitat score of 6	0.00	0.19	0.20
2	Tidal Fringe	PFO/PSS/EEM	I (Based on estuarine special characteristic); habitat score of 6	0.00	0.00	0.00
3	Depressional	PFO/PSS	II; habitat score of 5	0.10	0.27	0.37
8	Depressional	PSS/PEM	II (Based on estuarine special characteristic); habitat score of 6	0.01	0.19	0.19
			Total	**0.11**	**0.65**	**0.76**

Note: Numbers may not sum due to rounding

4.3.4.3.2.1.2 Wetlands- Indirect Impact

Moderate Impact Indirect operational impacts could result from the addition of impervious surfaces. Existing conditions within the Alternative 3B footprint have very little vegetation. Impervious surfaces

occupy 2.19 acres, or 73.49%, of the Project footprint. Alternative 3B would increase the coverage of impervious surfaces to approximately 2.87 acres which is an additional 0.68 acres of new impervious surfaces (Table 4.3-17). Alternative 3B will create the least amount of new, impervious surfaces compared to the other build alternatives (Alternatives 2 and 4), resulting in altered surface water hydrology. Stormwater systems are expected to mitigate the impacts of surface water runoff. Mitigation measures are further discussed in Section 4.3.5.

The increase in impervious surfaces, removal of vegetation, and increase in truck traffic will elevate noise levels in the area. Increased noise levels have the potential to disturb wildlife that utilize wetland habitat. The quality of wetlands affected are similar to Alternative 2 and are marginally higher in quality than Alternative 4. Alternative 3B involves building a bridge that will cross the Duwamish River, elevating noise levels in the area to an unknown extent.

Table 4.3-17 Land cover of Alternative 3B

Landcover Class	Area within Alt 3B Footprint	Area within Alt 3B 200' buffer	Total Area
Bare Soil	0.02	0.10	0.12
Grass/Low-Lying Vegetation	0.14	2.96	3.10
Impervious Surfaces	2.19	18.64	20.83
Open Water	0.11	3.59	3.71
Tree Canopy	0.41	4.73	5.14
Unclassified (Unincorporated King County)	0.00	0.00	0.00
Total	**2.87**	**30.03**	**32.89**

4.3.4.3.2.2 Aquatic Species and Habitat

4.3.4.3.2.2.1 Aquatic Species and Habitat- Direct Impacts

Avoidable Significant Impact

In-stream habitat alteration: This alternative has the potential to impact the Duwamish River. Alternative 3B would construct a bridge that would cross the Duwamish River and would likely include in-water work. The bridge that would cross the Duwamish River has not yet been designed, so exact impacts are unknown. However, in 2022 Trantech Engineering LLC designed a bridge for a previous alternative that has since been dismissed (Trantech 2022). This design was used to inform assumptions about the bridge that would be constructed for Alternative 3B including:

1. The preferred bridge alignment is a three-span steel plate girder with five to six feet of freeboard, which is above the 100-year flood zone.
2. In-water construction will include a temporary falsework bent for steel erection and work platforms near the shoreline that extend into the river below High Tide Line (HTL). The bent will require pile driving.
3. The piers supporting the bridge will be below HTL.

Due to in-water work below the HTL, fourteen Priority Species including three federally threatened fish species, and federally designated Critical Habitat would be impacted by this alternative. Any work below the HTL in the study area would be conducted in accordance with the terms of the Hydraulic Project Approval (HPA) and other applicable permits obtained for this project. Any in-water work would be required to occur during preferred "work windows," which are periods of the year when fish would be minimally impacted.

Fish passage: The Duwamish River is classified as "migration only" habitat for bull trout and steelhead, and as "migration and rearing" habitat for fall-run chinook (PSMFC 2024). Spawning habitat has not been identified in or near the Alternative 3B study area. This section of the Duwamish River is heavily modified, and the water is tidally influenced and brackish, making it unsuitable for spawning fish. Therefore, Alternative 3B will not affect spawning. Physical modifications to migration and rearing habitat will occur permanently where the piers supporting the bridge reach below HTL. Mitigation measures, including fish exclusion, would minimize the impact; mitigation measures are discussed in greater detail in Section 4.3.5.

Vegetation removal and habitat alteration: The ecological functions of a stream's riparian buffer are diminished where the project footprint intersects with the buffer. Elevated structures with a clearance of less than 15 feet could preclude vegetation regrowth due to shading effects. Replacing riparian vegetation with impervious surfaces (road or bridge) or vegetation lacking similar structural or compositional diversity increases the level of impact. Riparian vegetation provides numerous ecosystem functions including fish and wildlife habitat; food chain support; water temperature maintenance; infiltration; groundwater recharge and discharge; sediment delivery, transport, and storage; organic matter input; nutrient and pathogen removal; and stream channel formation and maintenance. The majority of riparian functions, including water quality protection, channel maintenance, detrital input (Fischer and Fischenich 2000) and large woody debris recruitment (Murphy and Koski 1989; McDade et.al. 1990; McKinley 1997; Martin et al. 1998), occurs within the first 100 feet of a stream's buffer.

Vegetation clearing near the Duwamish River would increase the risk of erosion and decrease the available shade in the river. Decreased shading can contribute to increased water temperatures which could have a negative impact on fish species, including three federally protected species. Approximately 0.10 acres of riparian vegetation would be removed for proposed Alternative 3B; however, it is unclear what the composition of is the vegetation communities are.

Nighttime Lighting: Bridge luminaries would be within 50 feet of the Duwamish River which will increase nighttime illumination of the river. Nighttime illumination of surface waters has the potential to increase predation on juvenile salmonids. This impact can be avoided or mitigated by selecting a luminary that is shielded and directs light away from the water's surface. Alternative 3B would construct a bridge that crosses the Duwamish River that is approximately 150 feet in length. The bridge would be illuminated; however, it is unknown what type of illumination would be included.

Shading: Elevated segments of roadway or bridges over or near surface flowing streams have the potential to increase shade in surface flowing waters affecting the behavior of fish. One study found out-migrating juvenile salmonids paused upstream of shaded surface water, moved upstream to avoid shaded water, and moved more slowly through dark water than light water, resulting in an increased predation risk (Kemp and Williams 2008). Additionally, artificial shade can reduce foraging success of salmonids by decreasing underwater visibility (Munsch et al. 2015) and by inhibiting the success of

invertebrate prey species (Cordell et.al. 2017). Affected in-stream habitat includes the length of the surface-flowing stream within the project area. Approximately 0.17 acres of stream area would be shaded by the footprint of the bridge for Alternative 3B.

4.3.4.3.2.2.2 Aquatic Species and Habitat- Indirect Impacts

Moderate Impact The conversion of land to PGIS, discussed under wetlands impacts, would impact aquatic species and habitat by altering water quality and quantity if not properly mitigated. Increased stormwater runoff would alter hydrology and increase pollutants such as 6PPD-q which would potentially have lethal impacts on aquatic species in receiving waterbodies.

4.3.4.3.2.3 Terrestrial Species and Habitat

Minor Impact Potential operational impacts to terrestrial species and terrestrial habitat could occur where operational-related noise, light, and human activity exceeds existing conditions.

Alternative 3B is bordered by Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west. Generally speaking, this alternative is within an area with high levels of development and human disturbance. Wildlife that uses habitat in or near the proposed alternative are regularly exposed to human activity, noise, and light.

Noise from human activity has the potential to disrupt wildlife behavior (e.g. foraging activities and calling). It is not expected that operational noise resulting from the Project will noticeably exceed current sound levels in the Project vicinity. Artificial lighting at night has the potential to affect foraging, circadian rhythms, and dispersal movements. Effects from artificial lighting should be minimized by compliance with applicable local lighting standards and BMPs. The land conversion of suitable habitat is limited in area. As such, it is not expected that operation of Alternative 3B would have an effect on regional populations of wildlife.

4.3.4.4 Alternative 4: New Bridge from SR-900 to South 129th Street

A detailed description of this proposed Alternative's components and routes are provided in Section 3.4.3. Figure 4.3-4 and Figure 4.3-5 show the wetland study areas, Figure 4.3-10 and Figure 4.3-11 show the aquatic study areas, and Figure 4.3-15 and Figure 4.3-16 show the landcover and terrestrial study areas for Alternative 4.

4.3.4.4.1 Construction Impacts

4.3.4.4.1.1 Wetlands

Temporary impacts on wetlands and wetland buffers resulting from construction of Alternative 4 may result from staging areas, temporary work areas, access roads, stream relocations, cofferdams, clearing, stockpiles, or erosion and sediment controls. Dewatering may temporarily impact groundwater discharge to wetlands. Other temporary impacts to wetlands and wetland buffers include soil compaction, accidental spills of hazardous substances, noise and other disturbances, sedimentation, and the introduction of invasive species.

The type of wetland and vegetation present may affect the length of impact. Wetlands with emergent vegetation are likely to recover faster than wetlands with woody vegetation due to the time it takes for the respective vegetation to achieve pre-construction size and stature.

Minor to Moderate Impact for Alternative 4 is expected depending on construction means and methods.

4.3.4.4.1.2 Aquatic Species and Habitat

Minor to Moderate Impact There would be temporary impacts to aquatic species and habitat in Stream 1 during construction for Alternative 4; however, the extent of impacts will not be made clear until construction means and methods are decided. Stream 1 is a potentially fish-bearing stream that has an unknown outlet. It is assumed to discharge to a large wetland complex downslope.

Potential temporary construction impacts from Alternative 4 include:

- Temporary degradation of habitat from sedimentation, removal of riparian vegetation, and disturbance to stream banks
- Temporary degradation of water quality (increased temperature and turbidity) due to vegetation removal and near-by construction
- Temporary loss of physical habitat from dewatering or rerouting

There would potentially be noise related impacts in the aquatic environment for Alternative 4. Stream 1 is a non-fish-bearing stream; however, other species that utilize it as aquatic habitat may be affected by in-water noise. Due to its proximity to the Duwamish River, if an impact or vibratory hammers are used during construction, aquatic noise impacts will need to be reevaluated.

4.3.4.4.1.3 Terrestrial Species and Habitat

Minor Impact The loudest noise generating activities in the terrestrial environment for Alternative 4 would likely be vegetation clearing and the creation and/or replacement of concrete and pavement (concrete grinder= 97 dB). Based on the results of Equation 4.3-1, the action area for terrestrial noise-related effects extending spherically in all directions from the Project vicinity is estimated to be 5,000 feet (0.95 miles) for Alternative 4.

An osprey nest found was found near Alternative 4. This nest would be impacted if construction occurs within the nesting window. Alternative 4 should be surveyed for active nests prior to construction, if this is selected as the Preferred Alternative. The East Duwamish Greenbelt-Seattle area, a biodiversity area and corridor identified as PHS, intersects the northern section of Alternative 4. Terrestrial species that utilize the biodiversity area and corridor may avoid the area during construction or may be displaced by the conversion of habitat.

This alternative would require a noise wall that would be installed between the new truck access road and 51st Place South, and a tall retaining wall would be constructed to support the hillside. Elevated structures have the potential to impact vegetation; however, the quality and density of existing vegetation is unknown at this time. Table 4.3-19 details the area of land that would be converted from vegetation to impervious surfaces for Alternative 4. Vegetation clearing near the Duwamish River would increase the risk of erosion and would decrease the available shade in the river. If this Alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on terrestrial habitat.

4.3.4.4.2 Operations Impacts

4.3.4.4.2.1 Wetlands

4.3.4.4.2.1.1 Wetlands- Direct Impact

Mitigated Significant Impact Alternative 4 would have slightly more impact than Alternative 3B on wetlands and wetland buffers based on acres of area affected. Three wetlands with low to moderate levels of habitat functions, totaling 0.18 acres, would be permanently impacted by this alternative. The wetland buffers associated with this impact would total 0.74 acres (Table 4.3-18). The quality of wetlands affected are marginally lower quality than the other build alternatives (Alternatives 2 and 3B).

Alternative 4 would require a noise wall that would be installed between the new truck access road and 51st Place South and would need a tall retaining wall to be constructed to support the hillside. Elevated structures have the potential to impact vegetation; however, the quality and density of existing vegetation is unknown at this time. If this Alternative is chosen as the Preferred Alternative, vegetation surveys would need to be conducted to assess the impact on wetlands.

Table 4.3-18 Direct long-term impacts to wetlands in Alternative 4 study area

Wetland Name	HGM Classification	Cowardin Classification	Wetland Rating	Wetland Area Impacted by Alt 4 footprint (acres)	Wetland Buffer Area Impacted by Alt 4 footprint (acres)	Total Area Impacted by Alt 4 footprint (acres)
1	Tidal Fringe	PSS/PEM	II (based on estuarine special characteristic); habitat score of 6	0.00	0.00	0.00
2	Tidal Fringe	PFO/PSS/EEM	I (Based on estuarine special characteristic); habitat score of 6	0.00	0.00	0.00
3	Depressional	PFO/PSS	II; habitat score of 5	0.03	0.46	0.49
8	Depressional	PSS/PEM	II (Based on estuarine special characteristic); habitat score of 6	0.00	0.00	0.00
10	Depressional	PFO / PSS / PEM	III; habitat score of 6	0.00	0.26	0.26
11	Slope	PSS	III; habitat score of 6	0.03	0.27	0.30
12a	Riverine/ Slope	PFO/PSS	II; habitat score of 6	0.01	0.17	0.18
12b	Riverine/ Slope	PFO	II; Habitat Score of 6	0.00	0.00	0.00
			Total	**0.18**	**0.74**	**0.92**

4.3.4.4.2.1.2 Wetlands- Indirect Impact

Minor Impact Indirect operational impacts could result from the addition of impervious surfaces. Existing conditions within the Alternative 4 footprint are a mix of unclassified land cover, tree canopy, and impervious surfaces. Impervious surfaces occupy 1.73 acres, or 26.25%, of the proposed Alternative footprint. Alternative 4 would increase the coverage of impervious surfaces to approximately 6.59 acres, which is an additional 4.86 acres of new impervious surfaces (Table 4.3-19). Alternative 4 would create more new, impervious surfaces than Alternative 3B, but less than Alternative 2, resulting in altered surface water hydrology. Stormwater systems are expected to mitigate the impacts of surface water runoff.

The increase in impervious surfaces, removal of vegetation, and increase in truck traffic would elevate noise levels in the area. Increased noise levels have the potential to disturb wildlife that utilize wetland habitat. The quality of wetlands that would be affected in Alternative 4 are marginally lower quality than for Alternatives 2 and 3B. This alternative would require a noise wall that would be installed between the new truck access road and 51st Place South, and would require a tall retaining wall to be constructed to support the hillside, resulting in lower noise impacts than Alternatives 2 and 3B.

Table 4.3-19 Land cover of Alternative 4

Landcover Class	Area within Alt 4 Footprint	Area within Alt 4 200' buffer	Total Area
Bare Soil	0.03	1.00	1.03
Grass/Low-Lying Vegetation	0.53	7.63	8.15
Impervious Surfaces	1.73	18.37	20.10
Open Water	0.00	1.79	1.79
Tree Canopy	1.84	11.89	13.72
Unclassified (Unincorporated King County)	2.46	9.58	12.05
Total	**6.59**	**50.25**	**56.84**

4.3.4.4.2.2 Aquatic Species and Habitat

4.3.4.4.2.2.1 Aquatic Species and Habitat- Direct Impacts

Avoidable Significant Impact Alternative 4 would intersect Stream 1 which has the potential for anadromous fish. Therefore, in-stream habitat alteration and fish passage are not expected to be impacted for this alternative.

Vegetation removal: Approximately 0.003 acres of riparian vegetation around Stream 1 would be removed for Alternative 4; however, it is unclear what the composition of this vegetation is.

Nighttime lighting: Alternative 4 would be within 50 feet of the Duwamish River for a segment of approximately 180 feet, which is in close enough proximity to illuminate the river at night.

Shading: Approximately 0.004 acres of stream area would be potentially shaded by the footprint of Alternative 4, depending on how it is constructed. Potential construction activities that would require

further analysis include, but are not limited to, stream relocation, dewatering, or enclosing the stream in a pipe.

Water Quality and Quantity: The conversion of land to PGIS, discussed under the wetlands impacts would impact aquatic species and habitat. If not properly mitigated, the increase in PGIS could have a significant impact on aquatic species and habitat.

4.3.4.4.2.2.2 Aquatic Species and Habitat- Indirect Impacts

Moderate Impact The conversion of land to PGIS, discussed under wetlands impacts, would impact aquatic species and habitat by altering water quality and quantity if not properly mitigated. Increased stormwater runoff would alter hydrology and increase pollutants such as 6PPD-q which would potentially have lethal impacts on aquatic species in receiving waterbodies.

4.3.4.4.2.3 Terrestrial Species and Habitat

Minor Impact Potential operational impacts to terrestrial species and terrestrial habitat could occur where operational-related noise, light, and human activity exceeds existing conditions.

The Alternative 4 vicinity is bordered by Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west. Generally speaking, this alternative is within an area with high levels of development and human disturbance. Wildlife that uses habitat in or near proposed Alternative 4 are regularly exposed to human activity, noise, and light.

Noise from human activity has the potential to disrupt wildlife behavior (e.g. foraging activities and calling). It is not expected that operational noise resulting from Alternative 4 would noticeably exceed current sound levels in the Project vicinity. Artificial lighting at night has the potential to affect foraging, circadian rhythms, and dispersal movements. Effects from artificial lighting should be minimized by compliance with applicable local lighting standards and BMPs. The land conversion of suitable habitat is limited in area. As such, it is not expected that operation of Alternative 4 would have an effect on regional populations of wildlife.

4.3.5 Mitigation Measures

The mitigation measures identified in this section are common measures for the construction activities identified within the scope of the project. Once an alternative is selected as the preferred alternative, specific mitigation measures and best management practices will be determined.

4.3.5.1 Stormwater

The City's stormwater permitting process involves review of all stormwater site plans for proposed development activities. Tukwila administers and reviews site engineering plans and permits to address clearing, grading, paving, stormwater management system, roadway, and right-of-way activities. Tukwila adopted the 2021 King County surface water Design Manual (KCSWDM) which achieves equivalency with Ecology's Stormwater Management Manual for Western Washington. Per the Tukwila Stormwater Management Plan, the following local regulations, rules, and standards must be followed:

- TMC 14.30: Tukwila Surface and Stormwater Management Code, including adoption of the most current KCSWDM.
- TMC 8.45: Code Enforcement
- TMC 18.45: Zoning Environmentally Sensitive Areas

- Tukwila Infrastructure Design and Construction Standards

4.3.5.2 Aquatic area buffers

- Contractor staging areas should not be within 200 feet of potentially suitable wetland, stream, estuarine, river or marine drainage, unless site specific review completed indicates that no impacts to the sensitive resource areas will occur due to topography or other factors.
- Temporary material storage piles consisting of erosive materials should be placed outside the 100-year floodplain during the rainy season (October 1 through June 1). Such temporary storage piles should be stabilized with plastic sheeting, straw bales, or other BMPs, to prevent sediment delivery to these waterbodies.
- All excavated materials should be removed to an upland location where they cannot enter the water body.

4.3.5.3 Vegetation removal

- Where riparian vegetation has been removed from aquatic resources, disturbed areas will be isolated using erosion control features (such as silt fencing or hay bales) until disturbed areas are stabilized or revegetated
- Disturbed areas should be replanted with native vegetation or hydroseeded to prevent soil erosion
- Vegetation should be cut at the ground surface rather than grubbed, which removes the roots. Vegetation should only be grubbed from areas undergoing permanent alteration. No grubbing should occur in areas slated for temporary impacts.
- Removal of riparian vegetation should be minimized and replanted where feasible. Replanting may not be possible in permanent impact areas, the roadway clear zone, or adjacent to or under bridges. However, potential replanting of riparian vegetation near the site should be evaluated.
- Disturbance to riparian vegetation from the operation of heavy equipment should be minimized as practicable by straddling it with heavy equipment or by pruning it without damaging the roots. Existing riparian vegetation outside of the work area should not be removed or disturbed.

4.3.5.4 In-water work

- All work below the HTL level should be conducted during the approved work windows for fish species that may occur in the Project vicinity (Error! Reference source not found.).
- Streamflow should be diverted during in-water work to minimize turbidity.
- Work should be performed during low flow or dry conditions, or during dry weather.
- The area of in-water work should be isolated from the water body to minimize sediment impacts (using cofferdams, silt fencing, hay bales, or water sausages), and sediment-laden waters should be pumped to an infiltration or treatment site.
- The work area should be isolated to avoid impacts on listed fish species, and fish should be removed from the area if necessary (using seining, netting, and as a last resort, electrofishing).
- Debris or sediments should be disposed of outside the floodplain.
- The activity site should be cleaned after construction to prevent an influx of sediments to streams after the first large storm event.
- Impacts should be minimized on stream banks and riparian vegetation
- Seasonal restrictions should be applied to work conducted within or below the HTL, should follow requirements within the HPA issued by the Washington Department of Fish and Wildlife,

and Water Quality Standards for Surface Waters of the State of Washington (Chapter 173-201A WAC). In-water work duration should be minimized as practicable.

- Construction equipment should not enter any water body without authorization from the USACE, USFWS, NMFS, Ecology, and Washington Department of Fish and Wildlife. Equipment should be operated as far from the water's edge as possible.
- Listed fish species, including their forage fish, should be removed from the work area prior to any in-water work activities, unless removal would affect the individuals more than leaving them on-site. Fish exclusion activities should follow the most recent WSDOT protocol that has been approved by the NMFS and USFWS.
- Water pumped out of the isolated Project vicinity should be discharged to a temporary storage and treatment site or to upland areas and filtered through vegetation prior to reentering the stream channel.
- All intake pumps within fish bearing streams should have a fish screen installed, operated and maintained. Screening techniques must utilize the specifications in the HPA and be in compliance with RCW 77.55.010, RCW 77.57.040 and RCW 77.57.070 or the specifications in the NMFS Anadromous Salmonid Passage Facility Design manual (2011) and NMFS Fish Screening Criteria for Anadromous Salmonids (1997), whichever is more restrictive.
- Temporary diversion structures should be non-erosive (e.g., sandbags filled with clean gravel and covered with plastic sheeting, portable bladder dam).
- Temporary bypass systems should utilize non-erosive techniques, such as pipe or a plastic lined channel that will accommodate the predicted peak flow rate during construction.
- Temporary bypass structures should have energy dissipaters at the outflow to prevent erosion.
- WSDOT Fish Exclusion Protocols and Standards should be followed to conduct work area isolation, fish capture and removal, and dewatering/rewatering. Flows shall be gradually reintroduced to the isolated work area, to prevent channel bed or bank instability, excessive scour, or turbidity and sedimentation.
- Upon completion of all in-water work, all stream diversion devices, equipment, pipe, and conduits should be removed and disturbed soil should be restored after diversions are removed. Streambank plantings may occur at a later date during the planting season.
- Projects will not inhibit passage of any listed fish species life stage following completion. When feasible, a bypass system will be installed during construction to permit both upstream and downstream passage of listed fish and their prey.

4.3.5.5 Revegetation and slope stability

- Erodible earth not being worked, whether at final grade or not, should be covered. From October 1 through April 30 erodible earth may be exposed without cover for a 2-day maximum and from May 1 to September 30 for a 7-day maximum.
- Temporarily disturbed areas should be restored to pre-work conditions to the extent possible, including protecting existing root systems and allowing re-sprouting of herbaceous and woody plants. Native trees and shrubs should be used that are endemic to the project vicinity or region of the State where the activity is occurring.

4.3.5.6 Pollutant protection

- The contractor should use BMPs, as stated in their Spill Prevention Control and Countermeasures Plan, to ensure that no foreign material such as oil or fuel from construction equipment will enter any wetlands, flowing or standing water.
- All equipment should be fueled and maintained more than 200 feet from the nearest wetland, ditches, flowing or standing water.
- Equipment should be checked daily for leaks and should be well maintained to prevent lubricants and any other deleterious materials from entering waters of the State. Prior to entering the water or below the HTL, all equipment should be free of any external petroleum products, hydraulic fluid, coolants, and other deleterious materials. Wash water should not be discharged to any water body without pre-treatment.
- All equipment entering waters that may be used by listed fish species and/or if the waters are critical habitat, should use vegetable oil or other biodegradable acceptable hydraulic fluid substitute.

4.3.5.7 Concrete work

- Concrete truck chute cleanout areas should be established to properly contain wet concrete and wash water and prevent it from entering wetlands and other waterbodies.
- The contractor will protect all inlets and catchments from stormwater runoff from fresh concrete, tackifier, paving, or paint striping if inclement weather unexpectedly occurs.
- All concrete should be poured in the dry, or within confined waters not being dewatered to surface waters, and should be allowed to cure a minimum of 7 days before contact with surface water

4.3.5.8 Bridge work

- Bridge construction will take place from the adjacent streambanks, existing bridges, barges, or temporary work bridges. Some work may be allowed within a dewatered channel or on a dry gravel bar with WDFW, NMFS and USFWS approval, but no equipment or vehicle staging should be allowed in these areas.
- New stream crossing structures, including channel-spanning bridges, should not reduce the existing stream width.

4.3.5.9 Bank protection

- If site-specific conditions allow, fish habitat should be improved by incorporating large woody debris into bank protection projects.
- Installation of riprap and other materials should occur from the banks or outside the wetted perimeter as much as possible.
- Project vicinities with existing riprap should be allowed to increase the lineal distance of the riprapped area below the HTL by an additional 5 percent.
- All materials, such as riprap or gravel, placed within the water should be free of rock fines, silt, soil, or other extraneous material.

4.3.5.10 Cutting and filling

- Fill material should only be placed in specified and permitted locations. Fill placement may be permanent or temporary and should be located in a way that minimizes impacts to sensitive areas.

- Temporary fills should be entirely removed and the site restored to pre-existing contours.

4.3.5.11 Pile installation and removal

- Installation of steel piles with an impact hammer in-water requires the use of a bubble curtain or other approved sound attenuation method(s) to minimize impacts within waterbodies that may be used by listed species, including marine mammals
- In tidally influenced areas, piles should be driven during slack tides whenever practicable.
- Sound pressure should be monitored per the approved WSDOT Hydroacoustic Monitoring Protocol for in-water pile driving to determine ambient conditions and the sound pressure generated during in-water impact pile driving of steel piles, including H-piles, and sheet piles. Sound pressure monitoring will occur for in-water work where listed fish species may be present.

4.3.6 Significant Unavoidable Adverse Impacts

Permanent loss of habitat would occur, similar to any major development project on a partially undeveloped site. However, with the implementation of the required/proposed mitigation measures listed above, no significant unavoidable adverse impacts to plants and animals would be anticipated.

4.4 Land Use, Shoreline Use, and Recreation

4.4.1 Affected Environment

For this section of the EIS, the affected environment for the Land Use, Shoreline Use, and Recreation resources is defined as the footprint, the truck traffic routes (excluding highways), and a 200-foot buffer for each of the proposed Alternatives to evaluate impacts to adjacent properties. Land Use and Recreation resources are typically analyzed by evaluating the parcels of land they occupy and their adjacent properties; Shoreline Use is typically analyzed using a 200-foot buffer as outlined in the Washington State Shoreline Management Act. For analysis of this section, a 200-foot buffer was applied to Land Use, Shoreline Use, and Reaction evenly to evaluate adjacent properties in a standard fashion. The affected environment for each of the four proposed Alternatives are shown in detailed figures under each Alternative.

4.4.1.1 Land Use

The Tukwila Comprehensive Plan (TCP) (City 2024e) identifies the values of the City by stating that:

We seek to protect our shoreline, streams, and other natural amenities such as trees and historical landmarks. We seek to create a natural environment, a physical infrastructure, and community image that prompts people to respect and care for each other and which attracts newcomers to live, do business, shop in, visit, and enjoy the special features of the City.

Land Use Districts within the proposed Project area Alternatives and truck routes have been defined by the City of Tukwila Municipal Code (TMC) (18.08.010) (City 2024b), City of Burien Municipal Code (Title 19) (Burien 2019), and King County Code (KCC) (21A) (King County 2024b) and have been delineated through county and city official zoning maps. There are 15 Land Use Districts within a 200- foot buffer of the proposed Alternatives and truck routes; they are listed and described in Table 4.1-1 .

Table 4.4-1. Land Use Districts and Descriptions within the proposed Alternatives

Land Use Zone	Description
City of Tukwila	
Low Density Residential (LDR)	This district is intended to provide low-density family residential areas together with a full range of urban infrastructure services in order to maintain stable residential neighborhoods, and to prevent intrusions by incompatible land uses.
High Density Residential (HDR)	This district is intended to provide a high-density, multiple-family district which is also compatible with commercial office areas.
Manufacturing Industrial Center/ Heavy (MIC/H)	This district is intended to provide a major employment area containing heavy or bulk manufacturing and industrial uses, distributive and light manufacturing and industrial uses, and other uses that support those industries.
Manufacturing Industrial Center/ Light (MIC/L)	This district is intended to provide a major employment area containing distributive light manufacturing and industrial uses and other uses that support those industries.

Land Use Zone	Description
Heavy Industrial (HI)	This district is intended to provide areas characterized by heavy or bulk manufacturing uses and distributive and light manufacturing uses, with supportive commercial and office uses. The development standards are the minimum necessary to assure safe, functional, efficient, and environmentally sound development.
Light Industrial (LI)	This district is intended to provide areas characterized by distributive and light manufacturing uses, with supportive commercial and office uses.
Commercial Light Industrial (CLI)	This district is intended to provide for areas characterized by a mix of commercial, office, or light industrial uses. The standards are intended to promote viable and attractive commercial and industrial areas.
Regional Commercial Mixed Use (RCM)	This district is intended to provide for areas characterized by commercial services, offices, lodging, entertainment, and retail activities with associated warehousing, and accessory light industrial uses, along a transportation corridor and intended for high-intensity regional uses. Residential uses mixed with certain commercial uses are allowed at second story or above. The zone's standards are intended to promote attractive development, an open and pleasant street appearance, and compatibility with adjacent residential areas.
Residential Commercial Center (RCC)	This district is intended to create and maintain pedestrian-friendly commercial areas characterized and scaled to serve a local neighborhood, with a diverse mix of residential, retail, service, office, recreational and community facility uses.
City of Seattle	
Industrial and Maritime MML U/65	MML U/65 is an industrial and maritime zone, which generally allows only industrial and certain commercial uses with some zones in this class providing limited opportunities for workforce housing that supports industrial uses.
Industrial and Maritime MML U/85	MML U/85 is an industrial and maritime zone, which generally allows only industrial and certain commercial uses with some zones in this class providing limited opportunities for workforce housing that supports industrial uses.
City of Burien	
RS-7,200	Single family residential zone. The purpose of these zones is to establish areas in which a wide range of single-family housing opportunities can be provided, while preserving the character of the surrounding neighborhood and protecting environmentally sensitive areas. The intent is to provide a variety of attractive, well-designed housing choices that meet the needs of existing and future City residents.
RM-18	Multi-family residential zone. The purpose of these zones is to establish areas in which a wide range of single-family and multi-family housing opportunities can be provided, which are compatible with adjacent lower density single-family housing, and which protect environmentally sensitive areas. The intent is to provide a variety of stable and attractive, well-designed housing choices that are located near transit, employment, shopping and recreational facilities, and meet the needs of existing and future City residents. Redevelopment of existing housing complexes is encouraged.

Land Use Zone	Description
King County	
Urban Residential R-6	The purpose of the urban residential zone (R) is to implement comprehensive plan goals and policies for housing quality, diversity and affordability, and to efficiently use urban residential land, public services and energy.
Urban Residential R-24	The purpose of the urban residential zone (R) is to implement comprehensive plan goals and policies for housing quality, diversity and affordability, and to efficiently use urban residential land, public services and energy.

4.4.1.1.1 Future Land Use

The Growth Management Act (GMA) (WSL 2024a) requires comprehensive plans to identify areas of use to accommodate the building intensities and the future population targets of the City. Recreation, open space, and public facilities are all considered during planning of future land use. The affected environments of the proposed Alternatives are not within areas identified in the City's Comprehensive Plan that will have changes to zoning, shorelines use designations, or recreation. The future land use environments for the proposed Alternatives are consistent with current uses and designations.

4.4.1.2 Shoreline Use

The Shoreline Management Act (Chapter 90.58 RCW) (WSL 2024b) is implemented at the local through local jurisdictions' Shoreline Master Programs (SMPs) (City 2020). Local governments develop SMPs based on the act and state guidance, and the state ensures that local SMPs consider statewide public interests. The SMP Shoreline Management Act generally applies shorelines and the upland areas within 200 feet of the shoreline. The Duwamish River is a shoreline, and Tukwila SMP provides policies and regulations for activities within shoreline jurisdiction.

Shoreline environment designations are classification of shoreline areas that reflect local shoreline conditions, including ecological functions and shoreline development (City 2020). Environment designations provide "the framework for implementing shoreline policies and regulatory measures specific to the environmental designation" [WAC 173-26-191(1)(d)]. Tukwila's SMP (City 2020) identifies two shoreline designations within a 200-foot buffer of the proposed Project Alternatives and their associated truck routes:

- Shoreline Residential- Zoned for Residential Uses and land use is currently predominantly residential or developable land;
- Urban Conservancy- Zoned for Open Space or has a high proportion of undevelopable land such as wetlands, steep slopes, or large parks.

According to the Tukwila Shoreline Master Program (City 2020), the purpose of the Shoreline Residential environment is to accommodate urban density residential development, appurtenant structures, public access, and recreational activities. The purpose of the Urban Conservancy environment is to protect ecological functions where they exist in urban and developed settings, and restore ecological functions where they have been previously degraded, while allowing a variety of compatible uses.

4.4.1.3 Recreation

Public recreational areas included in this EIS are open spaces designated as parks, trails, preserves, sites, natural areas, and greenways. There is one non-public recreational facility discussed in this section, the

Seattle Police Athletic Association is a non-profit, membership-based organization that is entirely separate from, and independent of, the Seattle Police Department and the City of Seattle (SPAA 2024).

Below are the goals of the City of Tukwila Parks, Recreation, and Open Space Plan (PROS)(City 2019):

1. Parks, recreation, and open spaces are part of a convenient and connected System
2. The parks and recreation system builds a sense of community
3. Parks, recreation opportunities, and public services offer opportunities for all regardless of age, abilities, and cultures
4. Parks and facilities are well maintained, clean, safe, inviting, and affordable
5. Parks, recreation opportunities, and open spaces promote healthy, active lifestyles, are designed and managed to engage and enhance the natural environment and the local economy.

The City of Tukwila maintains green spaces and organizes environmental programs and volunteer opportunities through the parks system to maintain a connected and healthy community. The City has partnered with the Green Cities Partnership, a collaboration of Puget Sound cities working to steward natural open spaces; Tukwila's program is called the Green Tukwila Partnership (City 2024c). The seven recreational areas listed below (and shown in Figure 4.4-2, Figure 4.4-4, Figure 4.4-6, Figure 4.4-8, and Figure 4.4-10) may occur within a 200-foot buffer of one of more of proposed Project Alternatives and their associated truck routes:

4.4.1.3.1 Duwamish River

The Duwamish River is a central feature in the Allentown neighborhood for both recreational and environmental reasons. Tukwila residents have a strong connection with the river and desire expanded choices to access and enjoy the river (City 2024d). River access includes all of the places where people can physically access or view the river, including boat launches and docks, water access points, and fishing areas. Each of the proposed Alternatives include buffers that overlap with views of, or access to, the Duwamish River.

In addition to individual recreational opportunities, there are organizations and clubs that provide group and community engagement focused on the Duwamish River, such as the Duwamish Rowing Club and the Duwamish Alive! Coalition. These organizations welcome people of all ages and skill level to learn about and participate in activities such as rowing, canoeing, kayaking, boating, and fishing.

4.4.1.3.2 Duwamish Hill Preserve

Duwamish Hill Preserve is located on South 115th Street, at the north end of the BNSF Intermodal Facility, and is adjacent to the Duwamish River. This 10.5-acre park is on land that is of historical, cultural, and ecological significance in Tukwila (City 2024d). Due to its elevated position above the Duwamish River, the hill offered a vantage point from which Native Americans could watch for incoming groups and communicate with fellow tribe members along the Duwamish River Valley (City 2024d). The preserve includes an outdoor classroom area, the Cultural Garden, and enhanced trail system. Duwamish Hill Preserve is managed as a public open space preserve dedicated to the conservation and enhancement of its rich Native American cultural history, ecological importance, and community impact (City 2024d).

4.4.1.3.3 Green River Trail

The Green River Trail is an extensive, paved regional trail that lies on the west and south banks of the Duwamish River throughout much of the Allentown neighborhood. Not only does the Green River Trail offer opportunities for recreation, but it is also a commuting corridor for many of the workers in the local business parks. Users of the trail can take advantage of multiple locations to launch small watercraft, fish, and view wildlife. As part of the King County Regional Trails System, it increases mobility and access for residents to connect to other communities and to commercial areas (King County 2024c).

4.4.1.3.4 Seattle Police Athletic Association

The Seattle Police Athletic Association (SPAA) is a non-profit, membership-based organization that is entirely separate from, and independent of, the Seattle Police Department and the City of Seattle (SPAA 2024). Since 1943, the SPAA has maintained an approximately 30-acre outdoor firearm training facility at the northwest end of the BNSF Intermodal Facility. This recreation and training facility is zoned as heavy Manufacturing or Industrial Center due to inherent noise and safety reasons of the firearms training center. Although the SPAA is private and is not zoned as a park or public recreation area, it is being considered in the EIS as a recreation location because it maintains a green space and attracts visitors to this special attraction within the city.

4.4.1.3.5 Tukwila Community Center

The Tukwila Community Center is located near the corner of 42nd Avenue South and South 124th Street. The community center is on a parcel that is approximately 12.3 acres with approximately 1,050 feet of frontage along the Duwamish River (City 2024d). The Tukwila Community Center is easily accessible by public transportation and has indoor and outdoor facilities. Indoor facilities include meeting rooms, classrooms, a banquet facility with a commercial kitchen, a gym and fitness center, locker rooms, and showers. Outdoor facilities include a picnic shelter, picnic tables and grills, a playground, basketball hoops, ball fields, an open playfield, a skate park, a spray park, a restroom, and walking paths. The Community Center is the hub for community events hosting community play days, organized sports, clubs, and classes. The Center also organizes trips, holiday celebrations, and health and social programs.

4.4.1.3.6 Codiga Park

Codiga Park is located at the south end of the BNSF Intermodal facility between 50th Place South and the Duwamish River. This park is located on a bend in the Duwamish River; it is a partially restored tidal wetland that was previously a dairy farm (City 2024d). This 6.75-acre park provides public amenities such as access to the river and the Green River Trail, and has a picnic shelter and picnic tables. Through the Shoreline Master Program (2020) the City of Tukwila identifies Codiga Park as a fish and wildlife habitat conservation area that requires a 100-foot buffer from development along the shoreline of the park boundary.

4.4.1.3.7 West Skyway Natural Area

The West Skyway Natural Area is an unimproved, vacant, 3.2-acre parcel of land managed by King County. This natural, densely vegetated area is at the south end of the BNSF Intermodal Facility and is bordered by I-5, the BNSF ROW, South 129th Street, and Beacon Coal Mine Road. This area is not a formal park or recreational area, but provides natural landscape and a buffer to the interstate and rail traffic to the residents along South 129th Street (King County 2022a).

4.4.2 Relevant Plans, Policies, and Regulations

The relevant plans, policies, regulations, and guidance consulted when analyzing the potential impacts of the proposed Alternatives are described in Table 4.4-2.

Table 4.4-2. Relevant Plans, Policies, and Regulations

Law, Regulation, or Guidance	Description
State	
Growth Management Act (GMA)	Requires all cities and counties in Washington to adopt development regulations that protect critical areas, including shorelines.
Shoreline Management Act of 1971 Chapter 90.58 RCW	Permitted uses in the shorelines of the state shall be designed and conducted in a manner to minimize, insofar as practical, any resultant damage to the ecology and environment of the shoreline area and any interference with the public's use of the water.
Washington State Shoreline Master Program. WAC 173-26-191	Shoreline master programs are both planning and regulatory tools. Master programs balance and integrate the objectives and interests of local citizens, they address the full variety of conditions on the shoreline, and they consider and, where necessary to achieve the objectives of chapter 90.58 RCW, influence planning and regulatory measures for adjacent land. Master programs address conditions and opportunities of specific shoreline segments by classifying the shorelines into "environment designations" as described in WAC 173-26-211.
Local	
City of Tukwila Comprehensive Plan (2015)	A comprehensive plan is a broad statement of community goals and policies that direct the orderly and coordinated physical development of a city into the future. It reflects current community goals and needs, anticipates change, and provides specific guidance for future legislative and administrative actions. It reflects the results of public involvement, technical analysis, and the judgment of decision makers.
King County Critical Areas Ordinance (King County Code [KCC] 21A)	This ordinance was developed under the directives of the GMA to designate and protect critical areas and to assist in conserving the value of property, safeguarding the public welfare, and providing protection for these areas.
King County Open Space Plan (2022b)	This plan provides a framework guiding King County in the planning, development, stewardship, and management of its complex system of 200 parks, 175 miles of regional trails, and 206,000 acres of open space.
King County Zoning Code Title 21A KCC	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.

Law, Regulation, or Guidance	Description
City of Tukwila Environmentally Critical Areas TMC 18.45	The purpose of TMC Chapter 18.45 is to protect the environment, human life and property; to designate and classify ecologically critical areas including but not limited to regulated wetlands and watercourses and geologically hazardous areas and to protect these critical areas and their functions while also allowing for reasonable use of public and private property. These regulations are prepared to comply with the Growth Management Act.
Tukwila Zoning Code Title 18 TMC	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.
City of Seattle Environmentally Critical Areas SMC 25.09	The purpose of Chapter 25.09 to provide for and promote the health, safety and welfare of the general public, and to not create or otherwise establish or designate any particular person, or class, or group of persons who will or should be especially protected or assisted by the terms or provisions.
Seattle Zoning Code Title 23 SMC	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.
City of Tukwila Parks, Recreation, and Open Space Plan (2019)	The Parks, Recreation and Open Space (PROS) Plan provides a comprehensive guide for the parks, recreation and open space system, and plays a major role in supporting the citywide vision of Tukwila's Strategic Plan.
City of Tukwila Ordinance 2625: Critical Areas Regulations (2020)	Regulations that protect the functions of sensitive areas, including wetlands, watercourse, fish and habitat conservation areas, and areas of potential geological instability
City of Tukwila Ordinance 2626: Tukwila Shoreline Master Program (SMP) (2020)	The SMP is intended to guide new shoreline development, redevelopment, and promote reestablishment of natural shoreline functions, where possible.
Zoning, City of Burien Municipal Code (BMC) Title 19	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.

4.4.3 Methodology

In this Section of the EIS, the potential impacts of the proposed Project on the land and shoreline use and recreation resources are analyzed and evaluated under the guidelines of the City's values and the City's, County's, and State's management plans, ordinances, acts, and laws. The proposed Alternatives and their associated traffic routes (excluding highways), plus a 200-foot buffer, were used in analyzing the potential impacts of the Alternatives on the space that they would occupy and their effect on adjacent properties.

Impacts to land use were evaluated by analyzing how the proposed Project would fit within existing zoning codes, and how, and to what extent, the proposed Project Alternatives could impact the City's future plans for the land use. Shoreline use was analyzed by examining the current shoreline designations and the types of development or redevelopment may be permittable in those locations. The proposed Project Alternatives were also analyzed for their potential impacts to recreation; this resource was evaluated qualitatively based on the goals of the City of Tukwila PROS Plan.

4.4.4 Impacts Analysis

In this sub-section, the proposed Alternatives are analyzed in turn in respect to the resources of Land Use, Shoreline Use, and Recreation. The impacts for Land Use, Shoreline Use, and Recreation are evaluated by using the definitions listed in Table 4.4-3.

Table 4.4-3. Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The proposed Project would be fully consistent with the intent of applicable land use, shoreline use, or recreation plans and policies.
Minor	The proposed Project would result in short-term temporary impacts, or minimal long-term impacts to land use, shoreline use, or recreation resources.
Moderate	The proposed Project would result in long-term or permanent impacts to recreation, land use, or shoreline use, but mitigation can be applied to reduce the impact to be less than significant.
Significant	The proposed Project would cause long-term, permanent, or irreversible inconsistencies with applicable land use or recreation plans and policies or the zoning codes.

The impacts from both construction and operations for these resources are analyzed, and a summary of the magnitude of impacts is presented at the end of Section 4.4.4 in Table 4.4-4.

4.4.4.1 No Action Alternative

A detailed description of the No Action Alternative components and routes are provided in Section 3.4. Figure 4.4-1 shows zoning, and Figure 4.4-2 shows shoreline designation, parks, trails, and recreational facilities within and adjacent to the No Action Alternative.

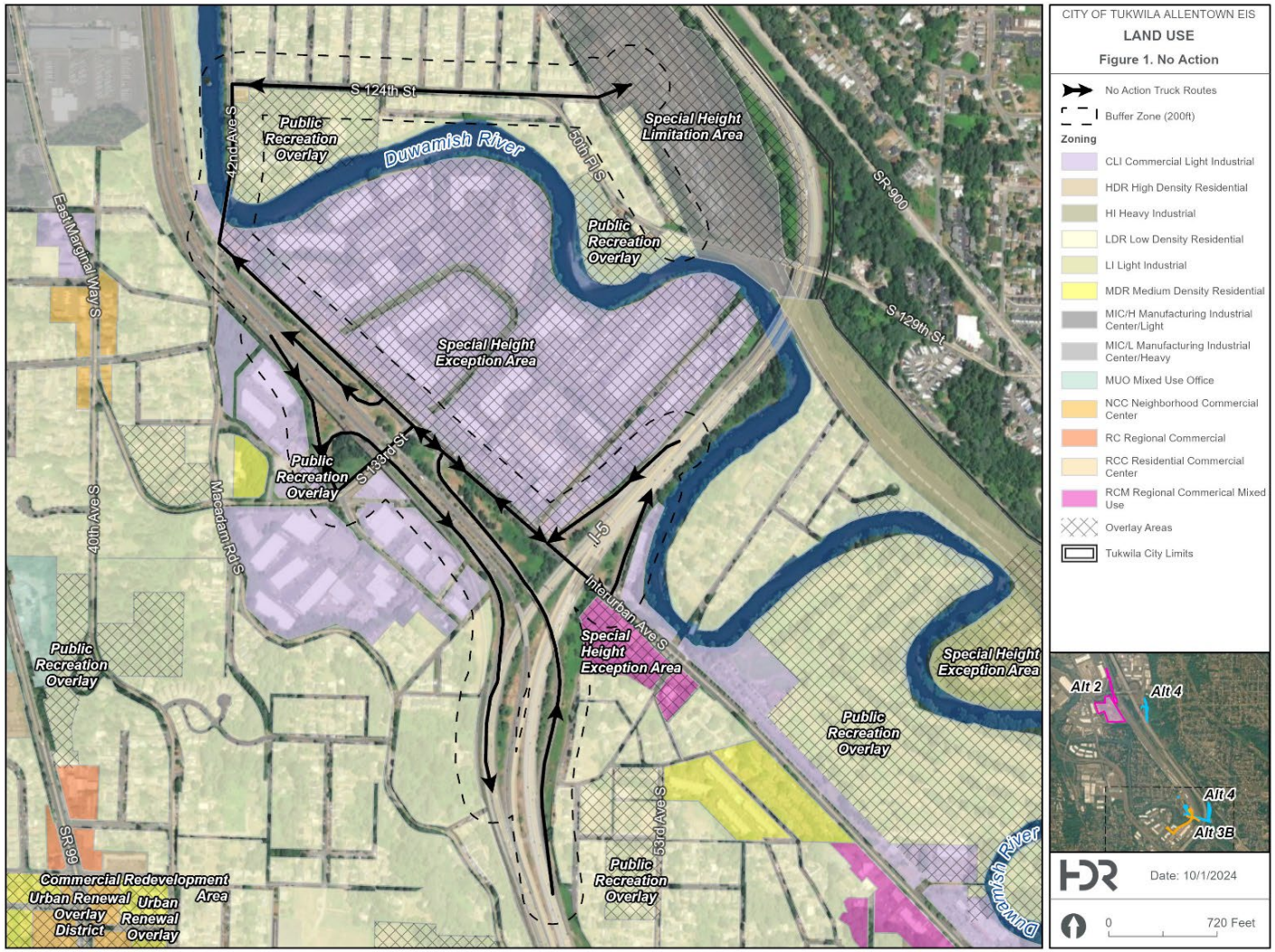


Figure 4.4-1. Land Use for the No Action Alternative

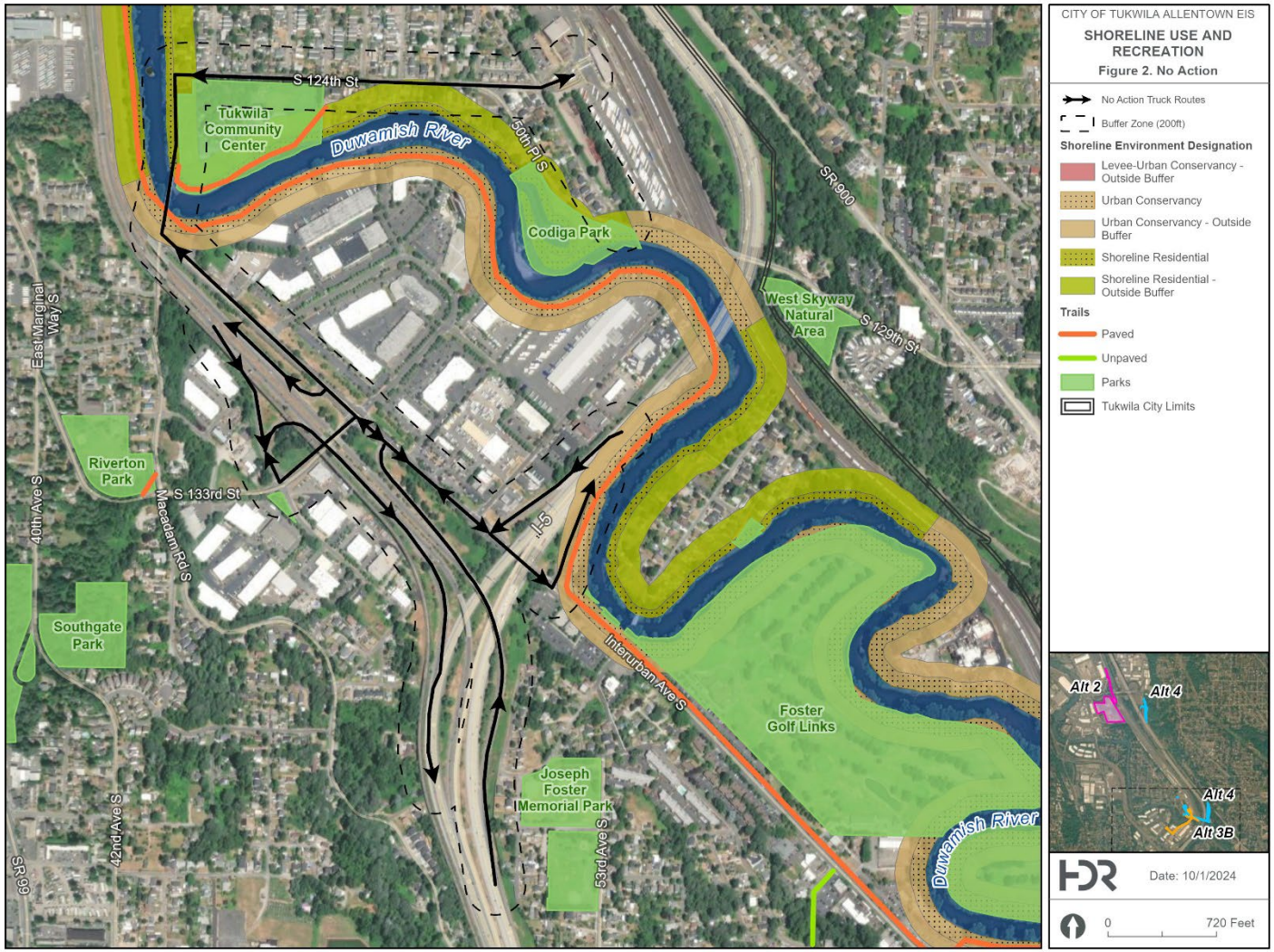


Figure 4.4-2. Shoreline Designation and Recreation for the No Action Alternative

4.4.4.1.1 Land Use

4.4.4.1.1.1 No Action Construction Impacts to Land Use

Construction impact analysis is not applicable because the No Action Alternative is the current operating condition of the BNSF Intermodal Facility and the truck transportation route.

4.4.4.1.1.2 No Action Operations Impacts to Land Use

The truck route for the No Action Alternative includes travel along Interurban Avenue South where the adjacent properties are zoned as Commercial Light Industrial (CLI) (City 2024a). Continued use of this roadway and ramps onto I-5 would be consistent with current zoning, and therefore, would have No Impact on Land Use.

However, the truck route for the No Action Alternative travels along 42nd Avenue South and South 124th Street. The route and adjacent properties are zoned as Low Density Residential (LDR), Residential Commercial Center (RCC), and Regional Commercial Mixed Use (RCM); refer to Table 4.4-1 for Land Use District descriptions. The continued heavy truck traffic throughout the LDR and RCC zoned areas create a **Significant** impact because residential areas are not zoned for industrial-level traffic. The No Action Alternative is not consistent with current land use plan TMC 18.60.060, and it would cause long-term or irreversible inconsistencies with LDR zoning which is intended to maintain stable residential neighborhoods and to prevent intrusions by incompatible land uses such as for industrial or manufacturing purposes.

4.4.4.1.2 Shoreline Use

4.4.4.1.2.1 No Action Construction Impacts to Shoreline Use

Construction impact analysis is not applicable because the No Action Alternative is the current operating condition of the BNSF Intermodal Facility and the truck transportation route.

4.4.4.1.2.2 No Action Operation Impacts to Shoreline Use

Shoreline Use within and adjacent to the truck route for the No Action Alternative is designated as Urban Conservancy and Shoreline Residential (City 2024a). The impacts to Urban Conservancy shoreline would be No Impact as this designation allows for multiple uses. The impacts to the Shoreline Residential designation would be **Moderate** because continuing trucking operations would disrupt the intent of the Shoreline Management Act which states that Shoreline Residential areas are to accommodate residential development and structures and to support recreation, not to support industrial activities such as heavy trucking. Mitigation could be implemented to reduce the impact to a minor level.

4.4.4.1.3 Recreation

4.4.4.1.3.1 No Action Construction Impacts to Recreation

Construction impact analysis is not applicable because the No Action Alternative is the current operating condition of the BNSF Intermodal Facility and the truck transportation route.

4.4.4.1.3.2 No Action Operation Impacts to Recreation

The truck route for the No Action Alternative passes over the Green River Trail on an existing vehicle bridge; this alternative would have a Minor impact to recreation along the trail.

The No Action truck route also follows 42nd Avenue South and South 124th Street; it impacts the majority of pedestrian and vehicle access points to the Tukwila Community Center (Figure 4.4-2). The continued operation of this alternative does not follow the City's Parks, Recreation, and Open Space Plan because the heavy trucking traffic impedes convenient and connected access, it disrupts a sense of community, and it does not promote safe and inviting access to this recreation facility. Impacts of the No Action Alternative on Recreation would be **Significant**.

4.4.4.2 Alternative 2: Airport Way South

A detailed description of this proposed Alternative's components and routes are provided in Section 3.3.1. Figure 4.4-3 shows the zoning, and Figure 4.4-4 shows the shoreline designation, parks, and recreational facilities within and adjacent Alternative 2.

4.4.4.2.1 Land Use

4.4.4.2.1.1 Alternative 2 Construction Impacts to Land Use

The proposed construction area for Alternative 2 is zoned as Manufacturing Industrial Center/ Heavy (MICH/H) within the City of Tukwila (City 2024a), as Industrial (MML U/85, MML U/65) within the City of Seattle (SDCI 2024), and as Residential (Rs-7,200, RM-18) in the City of Burien (Burien 2019); refer to Table 4.4-1 for Land Use District descriptions. The truck entrance and operations yard for Alternative 2 would be located on City of Seattle government owned parcels. The current Police Athletic Association training facility would need to be relocated for construction of Alternative 2 to occur. While the land use of parcels 032304-9030 and 032304-9099 would change from a members-only recreation facility in an industrial area to a private, restricted access industrial facility, these parcels would not require rezoning for the Project. Construction of new access and an operations yard for the BNSF Intermodal Facility in this area would be consistent with zoning regulations and future land use designations. Therefore, the construction of Alternative 2 would have **No Impact** on Land Use.

4.4.4.2.1.2 Alternative 2 Operations Impacts to Land Use

The proposed truck travel route for Alternative 2 would not occur in residential areas; heavy vehicles would be routed through MIC/H, Manufacturing Industrial Center/ Light (MIC/L), and Light Industrial (LI) zones and along Interstate, State Road, and access road rights-of-way (City 2024a). Operation of new access and an operations yard for the BNSF Intermodal Facility in this area would be consistent with current and planned zoning regulations. Therefore, the construction of Alternative 2 would have **No Impact** on Land Use.

4.4.4.2.2 Shoreline Use

4.4.4.2.2.1 Alternative 2 Construction Impacts to Shoreline Use

The construction area for Alternative 2 does not overlap with a Shoreline Use Area or buffer. Analysis of impacts from construction on Shoreline designations in not applicable.

4.4.4.2.2.2 Alternative 2 Operations Impacts to Shoreline Use

The truck route for Alternative 2 would travel along East Marginal Way South, Tukwila International Boulevard, and SR 99 which overlap, in parts, with Urban Conservancy shoreline (City 2024a). There would be **No Impact** to Urban Conservancy shoreline as the truck route would follow an existing, high-traffic road that carries heavy trucks to and from multiple industrial destinations.

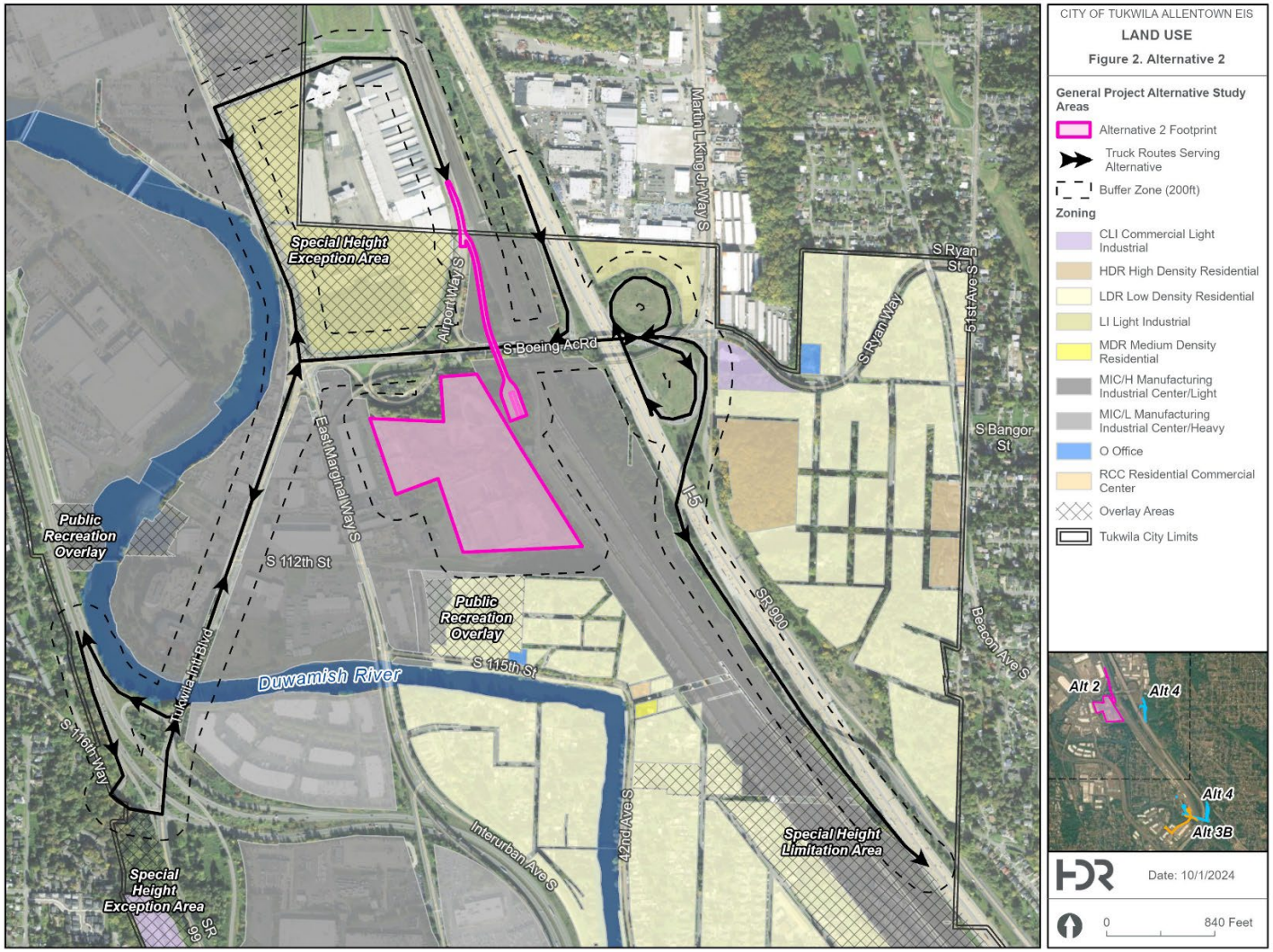


Figure 4.4-3. Land Use for Alternative 2

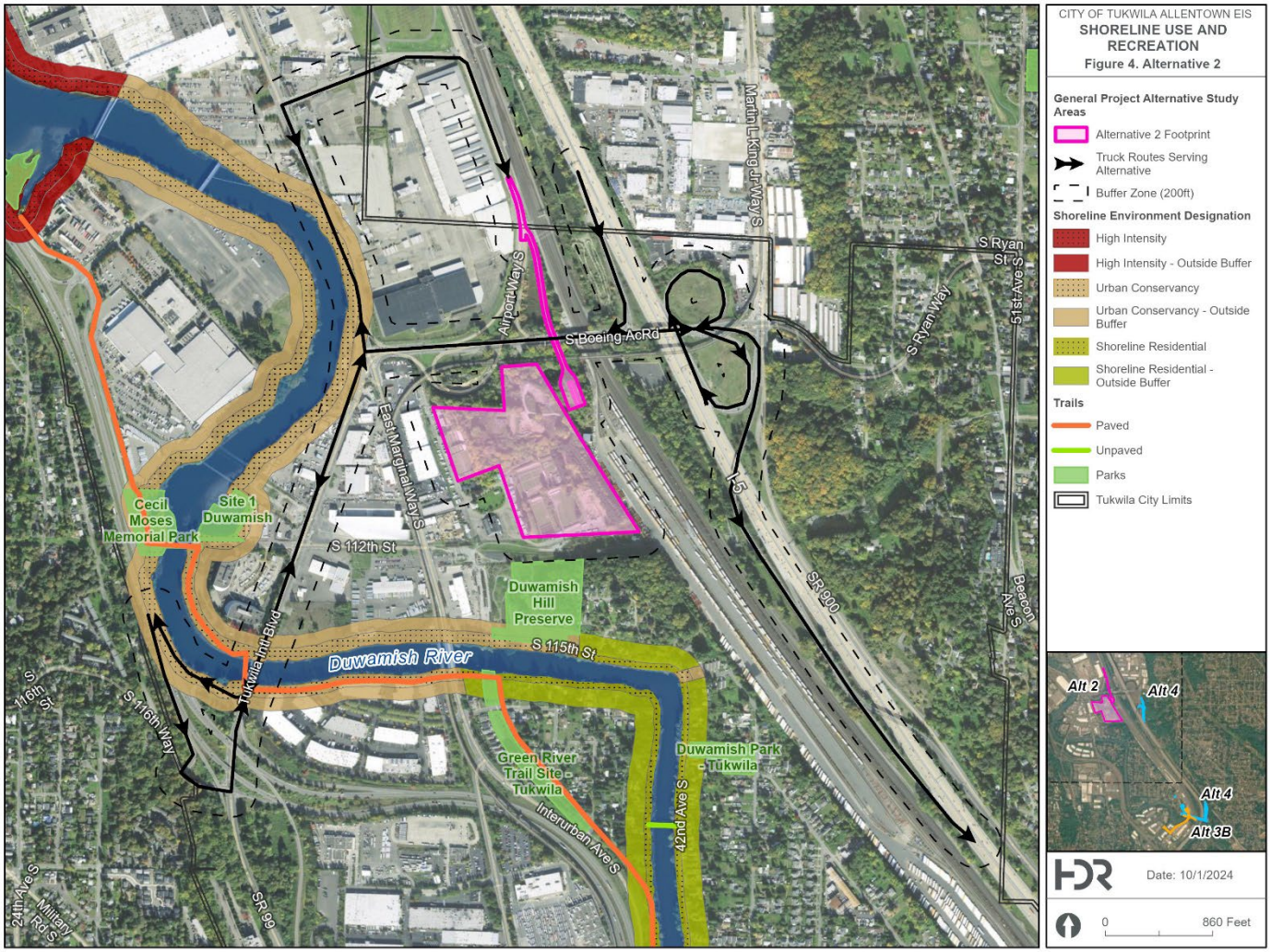


Figure 4.4-4. Shoreline Designation and Recreation for Alternative 2

4.4.4.2.3 Recreation

4.4.4.2.3.1 Alternative 2 Construction Impacts to Recreation

The truck entrance and operations yard for proposed Alternative 2 would be located on city owned lands that has hosted Seattle Police Athletic Association (SPAA) for over 80 years, see Figure 4.4-4. The removal of the SPAA to accommodate a new BNSF operations yard would be a **Significant** impact because this popular, historic recreational facility would be permanently removed, affecting both civilian and law enforcement users. Potential mitigation for this impact is described in Section 4.4.5. Impacts to Noise from the potential replacement of this firearms recreation facility with the BNSF intermodal facility operations yard are discussed in Section 4.10.

4.4.4.2.3.2 Alternative 2 Operations Impacts to Recreation

The northern border of the Duwamish Hill Preserve is not within the 200-foot buffer of Alternative 2, see Figure 4.4-4. Although the operations of Alternative 2 would not directly impact the Preserve, it could potentially impact the sense of open space and could detract from the sense of a natural environment to visitors to the Preserve. As a result, operations impact to the Duwamish Hill Preserve could be **Minor**, rather than 'none' or 'not applicable'. Potential mitigation for this impact is described in Section 4.4.5.

The Green River Trail would be adjacent to the truck route for Alternative 2 for approximately 350 feet as both the truck traffic and trail would use the Tukwila International Boulevard bridge to cross the Duwamish River, see Figure 4.4-4. The proposed truck route would cross over the Green River Trail on the south bank of the Duwamish River via the Tukwila International Boulevard bridge. Operations Impacts to the Green River Trail would be **Minor** because the truck traffic would be travelling along an existing high-volume roadway and would not alter the existing means or ability to access this recreational area. Potential mitigation for this impact is described in Section 4.4.5.

4.4.4.3 Alternative 3B: Improvements to 48th Place South

A detailed description of this proposed Alternative's components and routes are provided in Section 3.4.2. Figure 4.4-5 shows the zoning, and Figure 4.4-6 shows the shoreline designation, parks, and recreational facilities within and adjacent to Alternative 3B.

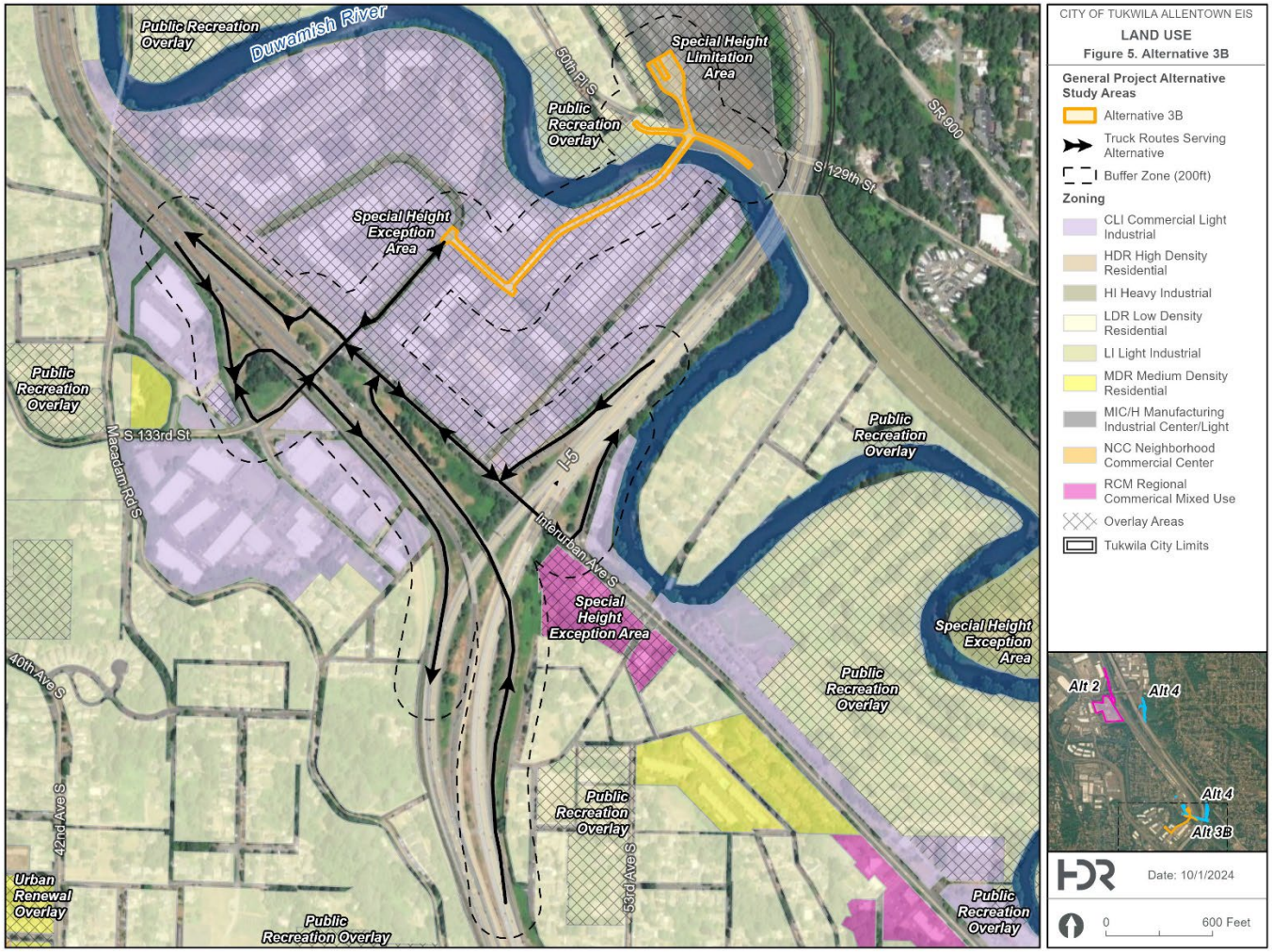


Figure 4.4-5. Land Use for Alternative 3B

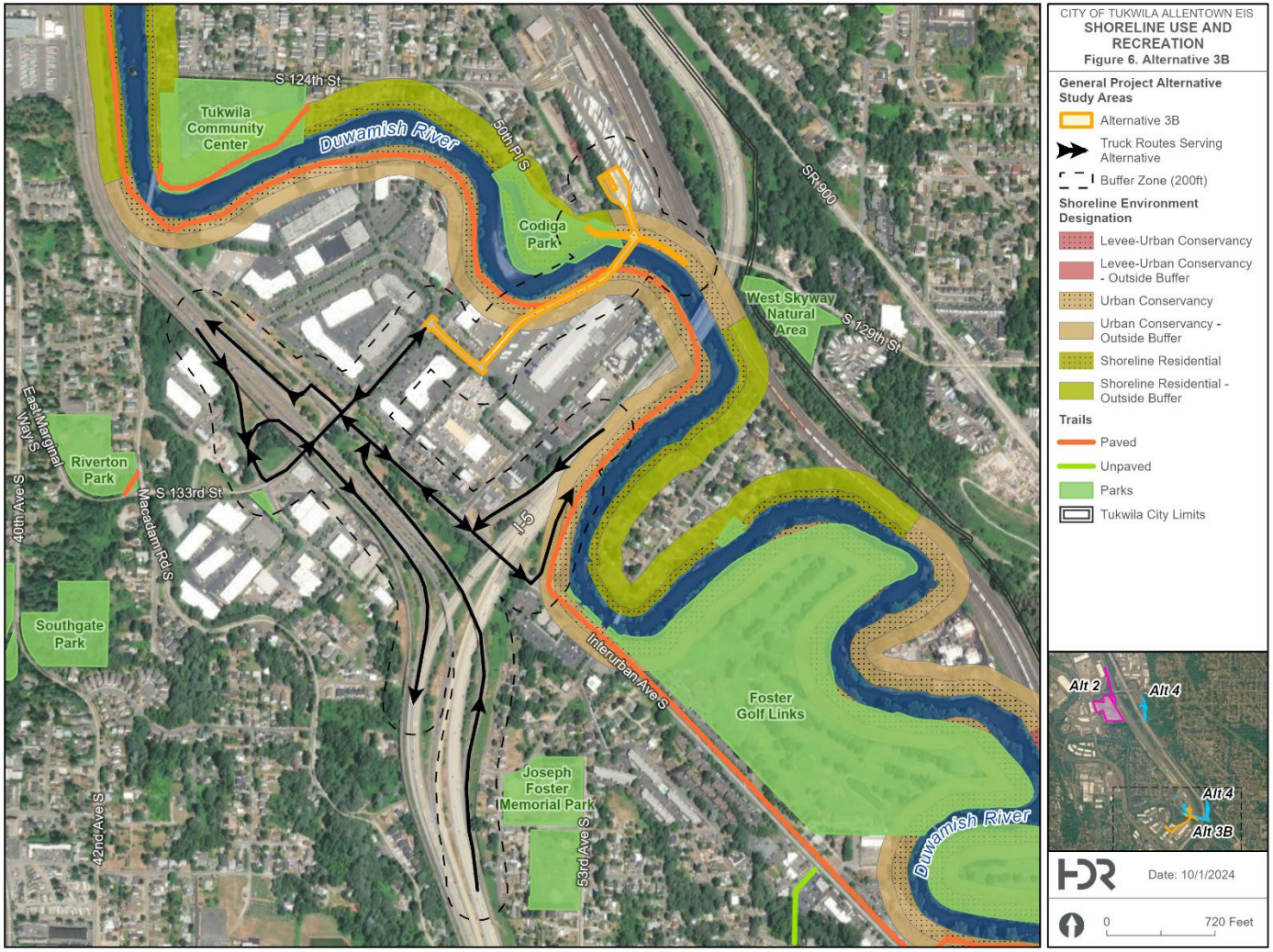


Figure 4.4-6. Shoreline Designation and Recreation for Alternative 3

4.4.4.3.1 Land Use

4.4.4.3.1.1 Alternative 3B Construction Impacts to Land Use

The proposed construction area for Alternative 3B is zoned as Manufacturing Industrial Center/ Light (MIC/H), Commercial Light Industrial (CLI), and Low Density Residential (LDR) (City 2024a); refer to Table 4.4-1 for Land Use District descriptions. The truck entrance for Alternative 3B would be located on BNSF parcels, and the access ramps and other new construction for this alternative would occur within the Gateway Corporate Center and along the road right-of-way of Railroad Avenue. The majority of construction for this alternative would occur within MIC/H and CLI designated areas which would result in No Impact to Land Use in those areas. However, the western access ramp along Railroad Avenue would be constructed within a Low-Density Residential area, which would result in **Minor** impacts to Land Use during the construction phase of this proposed Alternative.

4.4.4.3.1.2 Alternative 3B Operations Impacts to Land Use

The proposed truck travel route for Alternative 3B would not occur in residential areas; heavy vehicles would be routed through CLI and RCM zones and along Interstate, State Road, and access road rights-of-way. The western ramp that is proposed for the access intersection on Railroad Avenue will be for residential traffic only for east-west travel along Railroad Avenue; this ramp that extends into LDR-zoned land will not be used by truck traffic to enter or exit the BNSF South Seattle Facility.

The Land Use during operations for Alternative 3B would be consistent with current land uses within the CLI, MIC/HI zones, and Recreational Area. During operations, there would be no impact to land use in the MIC/HI zone. Truck traffic would increase in the CLI designated area which could result in **Moderate** impacts to land use, as the truck traffic associated with the BNSF facility would not be characterized as light industrial. Potential mitigation for this impact is described in Section 4.4.5.

4.4.4.3.2 Shoreline Use

4.4.4.3.2.1 Alternative 3B Construction Impacts to Shoreline Use

The construction of Alternative 3B would occur within the buffers of Urban Conservancy and Residential Shoreline designations (City 2024a). The impacts to Urban Conservancy and Residential Shoreline would be **Moderate** because construction would introduce new infrastructure to the Urban Conservancy shoreline. Vehicle bridges are permitted under the Urban Conservancy and Shoreline Residential designations only if the bridge connects public right-of-way (TMC 18.44); therefore, the new bridge would be consistent with shoreline use, but would create new disturbance. With mitigation, these impacts could be reduced to the Minor level. Potential mitigation for this impact is described in Section 4.4.5.

4.4.4.3.2.2 Alternative 3B Operations Impacts to Shoreline Use

Proposed Alternative 3B would span the Duwamish River. The main ramps, retaining walls, and new bridge abutments for the dedicated truck entrance/exit from the BNSF Intermodal Facility would be located within and over Urban Conservancy shoreline and buffer areas. A retaining wall and ramp from the new intersection of the truck access with Railroad Avenue would be located within the Residential Shoreline designation and buffer. Because the purpose of Urban Conservancy is to protect and restore ecological functions of open space while allowing for multiple uses, operations of Alternative 3B would introduce new bridge infrastructure to the shoreline areas instead of restoring ecological functions.

While building a new vehicle bridge over water that connects public right-of-way is permittable by the Tukwila Municipal code and the Tukwila Shoreline Master Program, the operation of Alternative 3B would have long term impacts to Shoreline Use due to the presence of new infrastructure. Therefore, there would be a **Moderate** impact on Shoreline Use for the operations of Alternative 3B. With mitigation, these impacts could be reduced to the Minor level; potential mitigation for this impact is described in Section 4.4.5.

4.4.4.3.3 Recreation

4.4.4.3.3.1 Alternative 3B Construction Impacts to Recreation

The truck access and redesigned Railroad Avenue intersection for proposed Alternative 3B would occur within the recreational areas of the Duwamish River, Green River Trail, and Codiga Park. Impacts to these recreational areas during construction would be **Moderate** as recreationists and commuters along the trail would be detoured or deterred for this phase of the proposed Project. With mitigation, these impacts could be reduced to the Minor level; potential mitigation for this impact is described in Section 4.4.5.

4.4.4.3.3.2 Alternative 3B Operations Impacts to Recreation

Impacts to public of the Duwamish River, Green River Trail, and Codiga Park would be No Impact to **Minor** as features of the new bridge might alter the landscape of the Duwamish River, Green River Trail, and Codiga Park, but they would meet the goals of the City of Tukwila Parks, Recreation, and Open Space Plan to have a connected System and to engage the local economy. The new bridge and redesigned roadways would be constructed with sidewalks; residents would be able to more easily access the Green River Trail from Codiga Park by crossing the Duwamish River via the new bridge for proposed Alternative 3B.

4.4.4.4 Alternative 4: New Bridge from SR 900 (MLK Jr Way) to South 129th Street

A detailed description of this proposed Alternative's components and routes are provided in Section 3.4.3. Figure 4.4-7 and Figure 4.4-9 show the zoning, and Figure 4.4-8 and Figure 4.4-10 show shoreline designation, and parks and recreational facilities within and adjacent to Alternative 4.

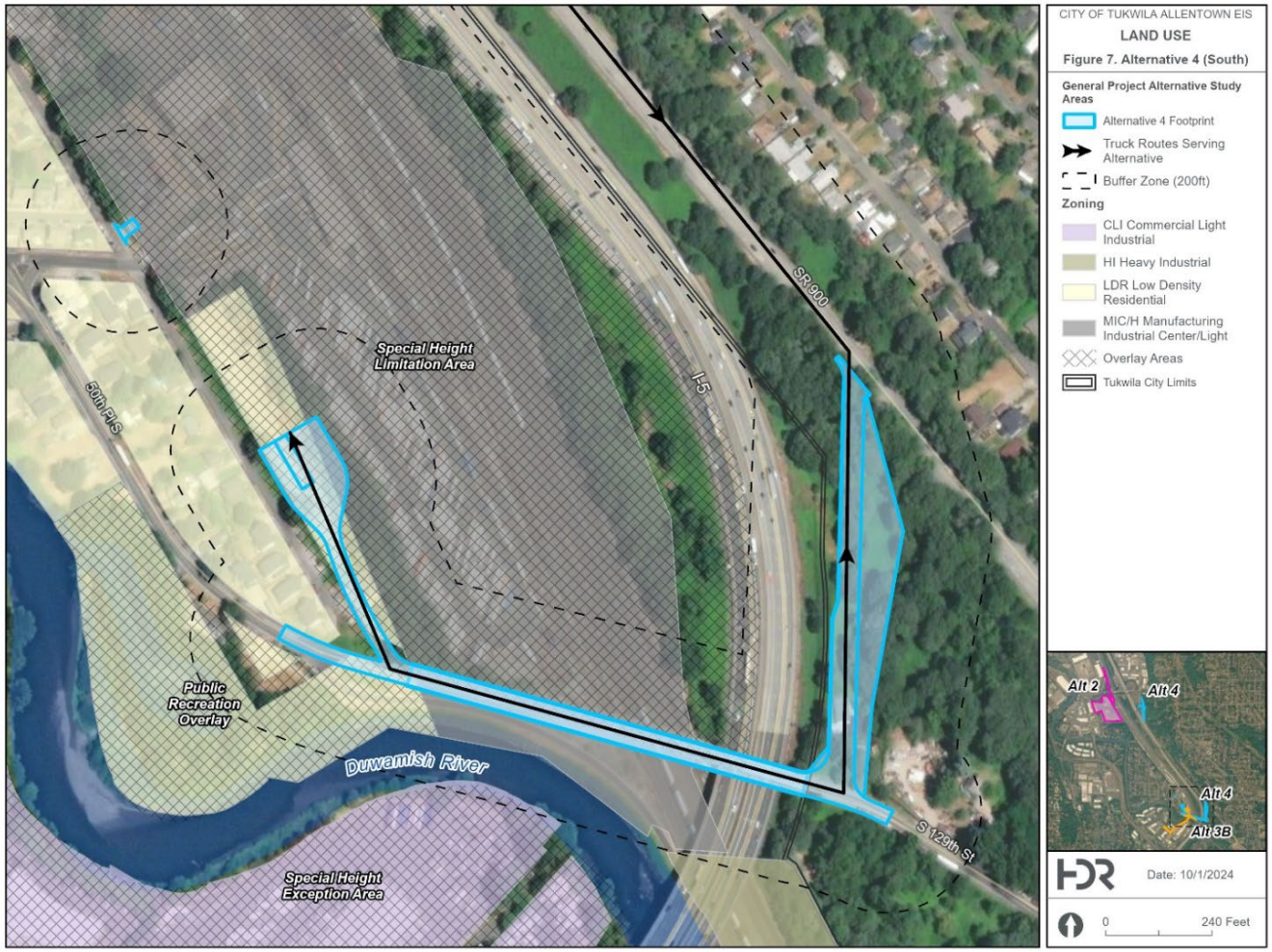


Figure 4.4-7 Land Use for Alternative 4, Southern Portion

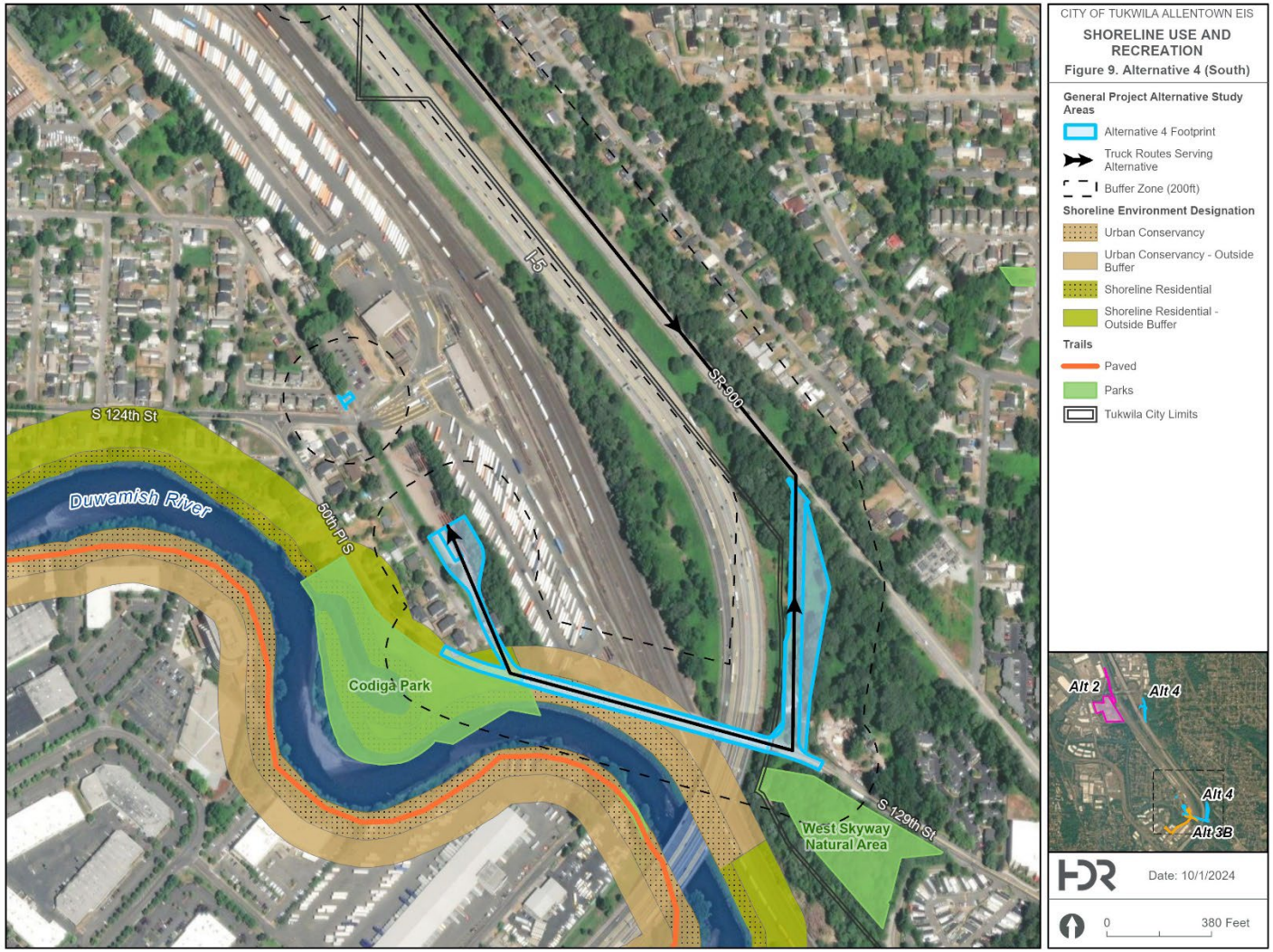


Figure 4.4-8. Shoreline Designation and Recreation for Alternative 4, Southern Portion

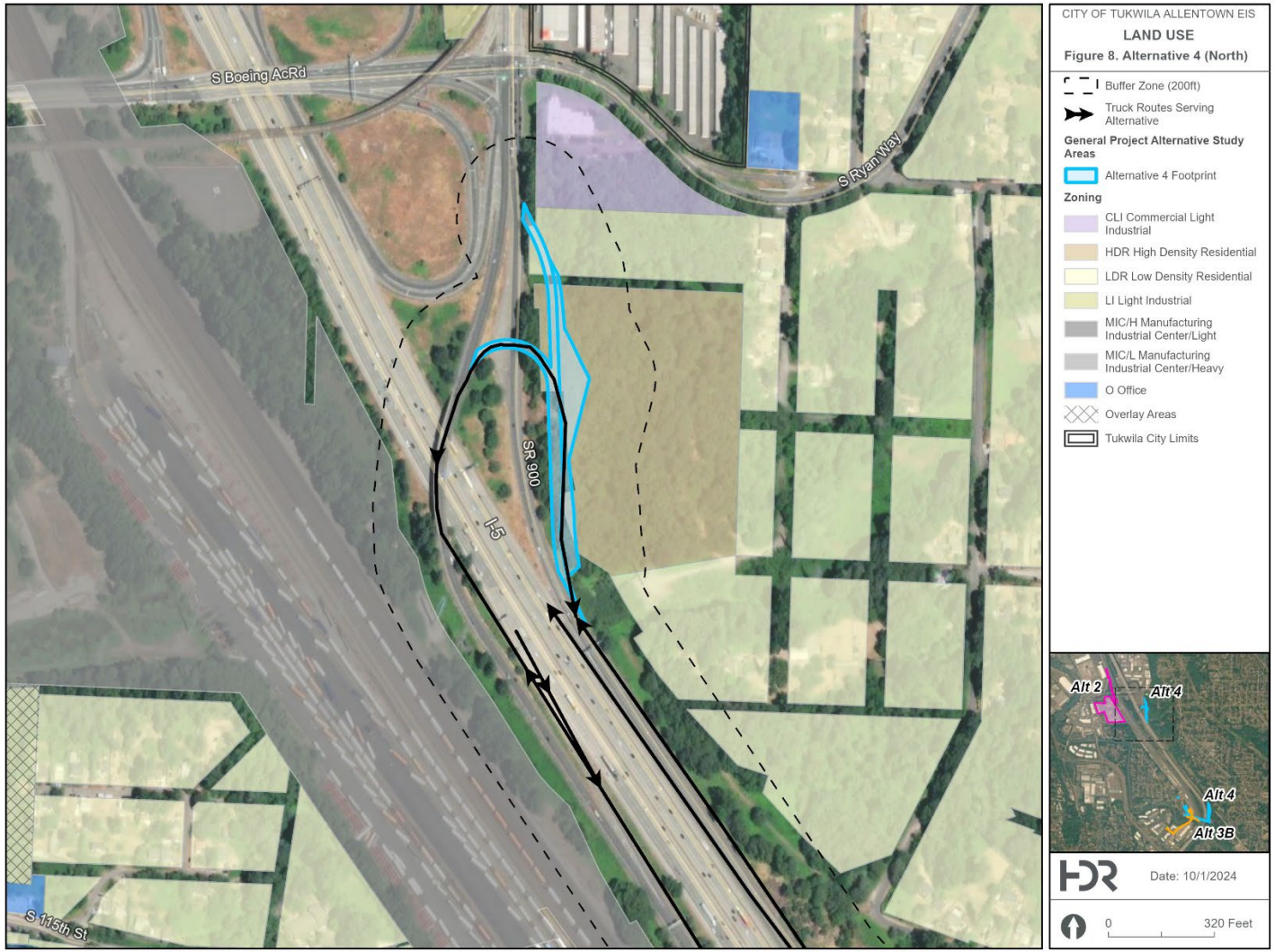


Figure 4.4-9. Land Use for Alternative 4, Northern Portion

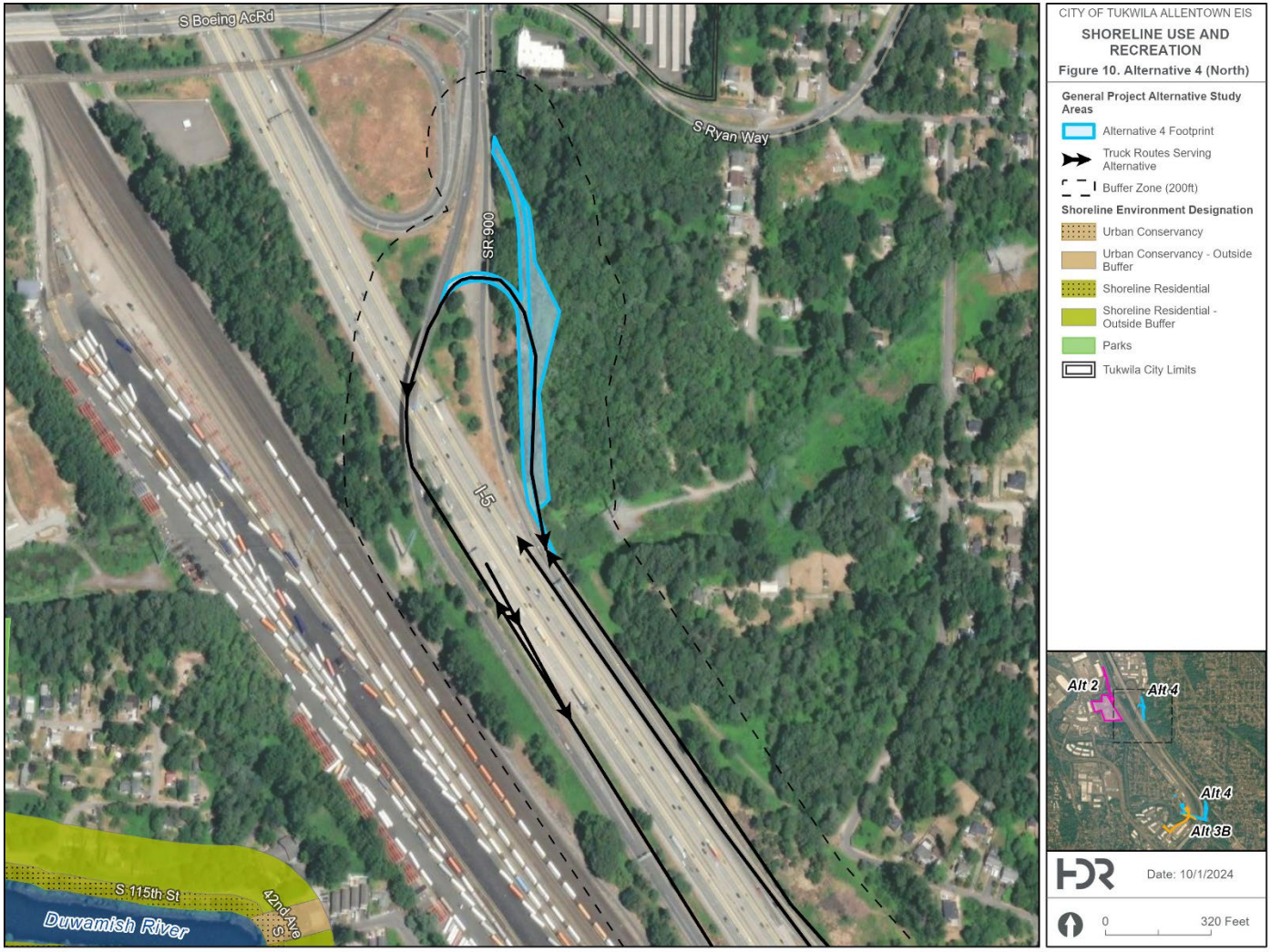


Figure 4.4-10. Shoreline Designation and Recreation for Alternative 4, Northern Portion

4.4.4.4.1 Land Use

4.4.4.4.1.1 Alternative 4 Construction Impacts to Land Use

The proposed construction areas for Alternative 4 are zoned as Low Density Residential (LDR), High Density Residential (HDR), Manufacturing Industrial Center/ Heavy (MIC/H), Commercial Light Industrial (CLI), and Heavy Industrial(HI) (City 2024a).The southern portion of proposed Alternative 4 is located in Skyway-West Hill and Tukwila. Skyway-West Hill is an urban unincorporated area in King County southeast of Seattle, northeast of Tukwila, and northwest of Renton, Washington (King County 2022a). The parcels of land in Alternative 4 that are in Skyway-West Hill (King County) are zoned as Urban Residential (R-6 and R-24). Refer to Table 4.4-1 for Land Use District descriptions.

The truck entrance for proposed Alternative 4 would be located on BNSF parcels zoned as MIC/H, and on land zoned as, and currently occupied by residential housing. Six parcels on the east side of 51st Street Place South would need to be rezoned from LDR to MIC/H. Five of the parcels are owned by BNSF, and parcel 0179002255 is a privately owned 5-bedroom, 2.5-bathroom residence (King County 2024d). The residents of this home would be directly displaced by the construction of Alternative 4. The parcels of privately-owned lands in Skyway-West Hill are vacant, however, and residents would not be displaced by the acquisition of these parcels for the construction of the new connecting access road from SR 900 to South 129th Street within a new right-of-way or easement for Alternative 4. Additionally, two vacant parcels in the northern portion of proposed Alternative 4 are zoned as LDR and HDR. These parcels would need to be acquired partially or in full to construct the access road improvements for trucks to enter and exit SR 900.

Because the proposed Project would need to acquire full or partial parcels of privately-owned lands, and change the land use zoning on those parcels from Residential to Industrial, Alternative 4 would have **Significant** impacts to Land Use.

4.4.4.4.1.2 Alternative 4 Operations Impacts to Land Use

The impacts to Land Use from the operation of Alternative 4 would be identical to the construction impacts. Because the proposed Project would need to acquire full or partial parcels of privately-owned lands, and change the land use zoning on those parcels from Residential to Industrial, Alternative 4 would have **Significant** impacts to Land Use.

4.4.4.4.2 Shoreline Use

4.4.4.4.2.1 Alternative 4 Construction Impacts to Shoreline Use

The construction of Alternative 4 would occur within Urban Conservancy shoreline and buffer area, and within the buffer area for Residential Shoreline (City 2024a). The impacts to Urban Conservancy and Residential Shoreline would be **Moderate** because construction would introduce new infrastructure to the Urban Conservancy shoreline with the construction of the BNSF facility ingress/egress ramps and the widening of the South 129th Street bridge. With mitigation, these impacts could be reduced to the Minor level. Potential mitigation for this impact is described in Section 4.4.5.

4.4.4.4.2.2 Alternative 4 Operations Impacts to Shoreline Use

Proposed Alternative 4 would be located within Urban Conservancy shoreline and buffer area, and within the buffer area for Residential Shoreline. There is existing roadways and infrastructure in the proposed locations, and the operation of proposed Alternative 4 would not be inconsistent with the

current or planned use of these shoreline designations. Therefore, after construction, impacts on Shoreline Use for the operations of Alternative 4 would be **Minor**. Potential mitigation for this impact is described in Section 4.4.5.

4.4.4.4.3 Recreation

4.4.4.4.3.1 Alternative 4 Construction Impacts to Recreation

The 200-foot buffer for Alternative 4 overlaps with the West Skyway Natural Area. Construction will not disturb this natural area; there will be No Impact to recreation for this location.

The right-of-way for 50th Place South overlaps with the boundaries of Codiga Park. Construction for proposed Alternative 4 would require making improvements to this road in the vicinity of the proposed entrance to the BNSF facility. Impacts to recreation at Codiga Park during construction would be **Minor** as recreationists and would be detoured or delayed from using the park's east entrance due to construction activities for this phase of the proposed Project.

4.4.4.4.3.2 Alternative 4 Operations Impacts to Recreation

The West Skyway Natural Area is within the 200-foot buffer for Alternative 4. No part of the proposed Alternative will fall within the natural area. This location is an undeveloped green space with no recreational facilities. Alternative 4 would not result in ground disturbance to this green space, and the West Skyway Natural Area would continue to provide green space and environmental enjoyment. Alternative 4 would have No Impact on the West Skyway Natural Area.

Heavy vehicle traffic for BNSF intermodal facility would not be using 50th Place South as an access route. The entrances to the Codiga Park are not within the truck route, and visitors to the park would not need to cross in front of truck traffic to access the park. Once the construction phase is complete for proposed Alternative 4, impacts to recreation at Codiga Park would be **Minor** as there would be increased traffic to the area which may intermittently affect enjoyment of the natural environment. Potential mitigation for this impact is described in Section 4.4.5.

4.4.4.5 Summary of Impacts per Alternative

A summary of the impacts for Land Use, Shoreline Use, and Recreation for the proposed Project Alternatives is presented in Table 4.4-4.

Table 4.4-4. Impact Summary Table

		Magnitude of Impacts[1]		
Alternative	**Phase**	**Land Use**	**Shoreline Use**	**Recreation**
No Action	Construction	N/A	N/A	N/A
	Operation	Significant	Moderate	Significant
2	Construction	No Impact	N/A	Significant
	Operation	No Impact	No Impact	Minor
3B	Construction	Minor	Moderate	Moderate
	Operation	Moderate	Moderate	Minor
4	Construction	Significant	Moderate	Minor
	Operation	Significant	Minor	Minor

[1] If a resource has more than one magnitude, the highest level is used in this chart for conservative comparison

4.4.5 Mitigation Measures

As part of the SEPA process, if an Alternative is determined to have negative impacts, possible mitigation measures must be presented to support minimizing the impacts to the greatest extent (WAC 197-11-768).

4.4.5.1 No Action Alternative

The No Action Alternative represents the current operating conditions of the BNSF -related heavy vehicle traffic through the Allentown neighborhood of Tukwila. Feasible mitigation measures are presented in this EIS as Alternatives 2, 3B, and 4.

4.4.5.2 Alternative 2: Airport Way South

Alterative 2 would not have an impact on Land Use or Shoreline designations.

Recreation would be significantly impacted by the removal of the Seattle Police Athletic Association facility. Mitigation for this impact could include relocating the recreational facility to another suitable location within the City of Tukwila.

The impacts to Duwamish Hill Preserve would be minor and would not directly affect access to or the nature of the Preserve. However, mitigation for the possible impacts of the BNSF operations yard could include constructing a decorative and noise-reducing wall or mound and/or installing attractive and disguising landscaping at the south end of the new operations yard.

Similarly, there would be no direct impacts to the Green River Trail from implementing Alternative 2, but mitigation measures can be put into effect to enhance the user experience. Barriers between the sidewalk and the traffic lanes on the Tukwila International Boulevard bridge could be visually and structurally improved, and hazard awareness signage for pedestrians and vehicles alike could be installed.

4.4.5.3 Alternative 3B: Improvements to 48th Place South

The Moderate impacts to Land Use from implementing Alternative 3B would stem from the presence of an increased volume of industrial truck traffic in Gateway Corporate Park and the interaction of this new traffic element in an office and light industrial area. This impact could be mitigated by including additional traffic control engineering. Mitigation could include improved pedestrian crossings and signage, installing a green strip and setting back the sidewalks from the street, and/or redesigning the parking lot entrance of the office building at 13075 Gateway Drive South. If one of the entrances to this office building is relocated to Gateway Drive from 57th Avenue South, there would be fewer impacts of heavy vehicle traffic on land use of the business park.

The new bridge across the Duwamish River would result in Moderate impacts to Shoreline Use and Recreation. The impact to open space and natural environment can be mitigated in the following ways:

- Minimization of impact: During construction, new ground disturbance would be kept to a minimum within a clearly defined and monitored limit of disturbance. Best Management Practices will be used to minimize erosion and compaction. The construction teams would follow spill control and Stormwater Pollution Prevention plans.
- Rectification of impact: After construction, the area of construction can be rehabilitated to restore riparian vegetation and aquatic habitats.

- Compensation for impact: Instead of constructing a purely utilitarian bridge, the bridge could be designed to be an attractive local feature or an architectural landmark for the City. This kind of infrastructure adds visual interest to commuters and recreationists and can become a defining feature. Like many cities with well-designed and recognizable bridges, beautiful design can enhance the city's culture and identity.
- Reduction of impact: The impact of the new bridge on Recreation can be reduced by including it in part of the recreation trails and systems. Instead of detracting or subtracting from the established recreational facilities, the bridge can be included as part of the trail system. The pedestrian sidewalks along the bridge can be made without steps so that cyclists can travel from the Green River Trail to Codiga Park without needing to dismount. New signs can direct trail and park users of the new route. As with the barriers and safeguards along the Tukwila International Boulevard bridge, the new bridge across the Duwamish could include pedestrian and cyclist safety features.

4.4.5.4 Alternative 4: New Bridge from SR 900 (MLK Jr Way) to South 129th Street

The impacts to Land Use for Alternative 4 would be significant. Potential mitigation for this impact would be monetary compensation and/or assistance with relocation for displaced residents.

4.4.6 Significant Unavoidable Adverse Impacts

The impacts analyzed for the Land Use, Shoreline Use, and Recreation section that were determined to be Significant would be avoidable by selecting another Alternative. As there is no preferred alternative for this analysis, the impacts must be weighed against each other equally rather than in relation to a "standard". Each of the Alternatives presented in this analysis have trade-offs; they affect the resources in different ways and to different degrees. The purpose of this Environmental Impact Statement is to find an alternate solution to the current operating conditions of the traffic related to the BNSF facility- a solution that will reduce truck traffic in residential and recreational areas.

4.5 Air Quality and Greenhouse Gas

4.5.1 Affected Environment

Ambient "air quality" refers to the condition of the outdoor air within our environment. Good ambient air quality pertains to the degree to which the air is clean, clear, and free from pollutants such as smoke, dust, and gaseous impurities in the air. Air quality is determined by the concentration of various pollutants in the atmosphere. The main pollutants of concern are called criteria pollutants and toxic air pollutants. The criteria pollutants that are regulated nationwide via National Ambient Air Quality Standards (NAAQS) consist of carbon dioxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter including particulate matter less than 10 microns in diameter (PM_{10}) and less than 2.5 microns in diameter ($PM_{2.5}$). The regulated toxic pollutants are from a list of 187 chemical compounds designated by the United States Environmental Protection Agency (EPA) and over 400 toxic pollutants designated by the state and local air quality agency as posing cancer or other human health risks. EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment. These priority air toxics are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter, which are a subset within what is called Mobile Source Air Toxics (MSAT). While the Federal Highway Administration (FHWA) considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future EPA rules.

4.5.1.1 Study Area

The study area for evaluating impacts on air quality is within and near the Project site that could be affected by construction and operation activities on the Project site. The Project site is in the Allentown district of the City of Tukwila, Washington within King County. Allentown is bounded by the right-of-way for a Seattle City Light transmission corridor to the north, I-5 and BNSF's South Seattle Intermodal Facility to the east, and the Duwamish River to the south and west. Land use in Allentown is mainly zoned for low-density residential development, primarily single-family housing, along with several neighborhood parks, the Tukwila Community Center, and the Green River Trail. Natural areas include restored habitat in the Duwamish Hill Reserve, several small wetlands, and the Duwamish River's riparian corridor. In addition to BNSF's South Seattle facility, nearby land uses include the Gateway Corporate Center, single-family development in the Riverton neighborhood, and commercial development along 48th Avenue South, consisting primarily of freight and truck-related services. Several major transportation routes are in the vicinity of Allentown, including I-5 to the east and south; and to the west, SR 599, Interurban Avenue, East Marginal Way, and an elevated section of Sound Transit's Link Light Rail line. The BNSF property is approximately 2.6 miles northeast of Seattle-Tacoma International Airport.

For the evaluation of climate and greenhouse gases, the study area is discussed in terms of regional air quality, as changes in climate are realized more broadly. Immediately adjacent properties to the BNSF facility are a sliver of undeveloped land and Interstate I-5 to the east; rail lines, overpass roads, and undeveloped land to the north; a shooting range, residential and commercial property to the west; and

rail lines, overpass roads and the Duwamish River to the south. The closest schools from the location of Alternative 3b and 4 construction areas are two schools located approximately 0.6 miles to the northeast (Rainier View Elementary School) and another school located approximately 0.7 miles east (Campbell Hill Elementary School). Duwamish Hill Preserve, i.e. park land, is located near to Alternative 2 and 4 construction areas, approximately 0.4 miles south and 0.3 miles southeast, respectively.

At the time of drafting this Environmental Impact Statement, no preferred alternative has been selected. As a result, the travel demand model for the preferred alternative, which provides essential inputs for the quantitative MOVES assessment is not yet available. Therefore, this air quality section will discuss relevant federal and state regulations and outline how the project should proceed once that information becomes available.

4.5.1.1.1 Area Air Quality Environment

Air quality in and around the study area, i.e., King County, has generally been good for approximately 59 percent of the year, with some moderate air quality for approximately 39 percent of the year and less than 2 percent with unhealthy air for sensitive groups or others (PSCAA 2023). Air quality in this area is regulated and enforced by the USEPA, Washington Department of Ecology, and the Puget Sound Clean Air Agency (PSCAA).

One of the ambient air monitors located in King County, and considered representative of air quality at the Allentown site, is located at 11675 44th Avenue South, Tukwila, Washington. This monitoring station monitors for $PM_{2.5}$ concentrations. The $PM_{2.5}$ design values, i.e. annual arithmetic mean concentrations averaged over three years for demonstrating compliance, from this monitoring station for 2022 and 2023 have shown the ambient annual mean $PM_{2.5}$ concentrations have been 7.2 micrograms per cubic meter ($\mu g/m^3$) and 7.3 $\mu g/m^3$ compared to the current standard of 9 $\mu g/m^3$. These values are approximately 80 to 81 percent of the current standard and 60 to 61 percent of the previous standard of 12 $\mu g/m^3$. The 24-hour $PM_{2.5}$ 98th percentile concentration from this station for 2023 was 24 $\mu g/m^3$ which is approximately 69 percent of the ambient standard; 35 $\mu g/m^3$ (EPA 2025a).

4.5.1.1.2 Climate and Greenhouse Gasses (GHGs) Environment

"Climate" is the average weather conditions over time for a particular region, usually taken over a period of 30 years or more. While the topic of climate can be global in nature, changes in climate for this EIS are discussed with respect to potential impacts on regional air quality in Washington for the proposed Project. Atmospheric warming associated with climate change has the potential to increase ground-level ozone in many regions, which may present challenges for compliance with the ozone standards in the future. The impact of climate change on other air pollutants, such as particulate matter, is less certain, but research is underway to address these uncertainties.

The region around the Project site experiences a maritime climate with winters that are cool and very wet with high temperatures averaging in the mid- to upper 40s Fahrenheit and lows near freezing. Snow is not very common, with occurrences typically only on a few days each year. Spring has less rain and milder temperatures, with highs regularly in the mid-50s to around 60°F. Summers are warm and dry with highs in the 70s on most days, with some days reaching the 80s and occasionally the 90s. Summer thunderstorms occur occasionally but are mostly isolated and rarely severe. These storms typically originate from the Cascade Mountains and are from warm moist air from monsoonal flow in the

southwest U.S. By fall, temperatures start to drop, and precipitation increases. The average rainfall in the months of October to March is 4.7 to 7.9 inches per month, with the lowest rainfall between May and September averaging between 0.7 and 2.3 inches per month. The wind direction is most often from the north between early July and early September and most often from the south between early September through early July. The average of the mean hourly wind speed does not vary significantly throughout the year and varies between 2.9 to 5.4 mph (Weather Spark 2024).

Gases that trap heat in the atmosphere are referred to as greenhouse gasses (GHGs) because they capture heat radiated from the earth that would otherwise be lost to space. While the physical mechanism of this heat capture is different than for a greenhouse, it has the same effect of keeping surface temperatures warmer, and so these gases are referred to as GHGs. The accumulation of GHGs contributes to temperature increases and global climate change. Regulated GHGs include CO_2, methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), perfluorocarbons (PFCs), and hydrofluorocarbons (HFCs). Carbon dioxide, methane, and nitrous oxide are commonly emitted from sources of fuel combustion (e.g., stationary boilers, heaters, engines, and mobile sources such as construction equipment and on-road vehicles). Methane is also commonly emitted from agricultural practices such as livestock and crop farming. PFCs and HFCs can be found contained within industrial processes, electrical equipment, and building cooling systems as coolants/refrigerants, although sometimes these systems leak into the atmosphere. GHGs have long atmospheric lifetimes that vary from one year to thousands of years and have significantly varying potentials to trap heat that are described as their global warming potential. According to EPA's GHG emission factors hub, on a 100-year time horizon, CH_4 is estimated to be 28 times as potent as CO_2 at trapping heat, N_2O is estimated to be 265 times as potent as CO_2, while SF_6 is 23,500 times more potent than CO_2. GHG emissions are typically reported as CO_2 equivalents (CO_2-e), which convert the quantities of non-CO_2 emissions into an equivalent amount of CO_2 to report emissions as a single quantity, usually in metric tons.[1]

In 2021, the state of Washington produced approximately 96 million gross metric tons of CO_2-e. The transportation industry is the largest source, at 40 percent of the state's GHG emissions, followed by industrial, residential, and commercial energy use at 19, 6, and 5 percent, respectively, and electricity consumption (both in state and out of state) at 19 percent. The sources of the remaining 10 percent of emissions are agriculture and waste management processes (Ecology 2021a).

Some of the effects of climate change over the last 50 to 100+ years in Washington State include the following, as presented in a special report issued by the Intergovernmental Panel on Climate Change (PSI 2021):

- Average snowpack has declined by approximately 30 percent from 1955 to 2016.
- The total area occupied by glaciers in the North Cascades has declined by more than 56 percent since 1900.
- Sea level has risen in northern Puget Sound by as much as four inches, with other increases elsewhere.

[1] Criteria pollutants and toxic pollutants are typically reported in units of short tons (English units).

- Peak stream flow is occurring earlier in the year by as much as 20 days when comparing 1948 data to 2002 data for the most snow-covered areas near Puget Sound.
- Coastal waters have warmed between 0.9°F and 1.8°F between 1990 and 2012, with the Pacific Ocean and Puget Sound shifting to slightly less alkaline conditions.

4.5.2 Relevant Plans, Policies, and Regulations

The relevant federal, state, and local laws, regulations, Executive Orders, plans, and policies that establish the regulatory framework regarding air quality and greenhouse gases (GHGs) are provided below in Table 4.5-1.

Table 4.5-1 Summary of Relevant Air Quality and GHG Laws, Regulations, Plans, and Policies

Laws, Regulations, Plans, and Policies	Description
Federal Level	
Clean Air Act and Amendments (https://www.epa.gov/clean-air-act-overview/evolution-clean-air-act)	Enacted in 1970, as amended in 1977 and 1990, requires the USEPA to develop and enforce regulations to protect the public from air pollutants and their health impacts.
National Ambient Air Quality Standards (NAAQS) (https://www.epa.gov/criteria-air-pollutants/naaqs-table)	Established by USEPA. Specifies the maximum acceptable ambient air concentrations for seven criteria air pollutants: carbon monoxide (CO), ozone, nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead, and particulate matter ($PM_{2.5}$ and PM_{10}). Primary NAAQS set limits to protect public health, and secondary NAAQS set limits to protect public welfare. Geographic areas where concentrations of a given criteria pollutant violate the NAAQS are classified as nonattainment areas for that pollutant; maintenance areas have reduced pollution to achieve standards but have long-term requirements to ensure that they maintain attainment.
Transportation Conformity (40 Code of Federal Regulations [CFR] 93, Subpart A) https://www.epa.gov/state-and-local-transportation/project-level-conformity-and-hot-spot-analyses	Required under the Clean Air Act, transportation conformity ensures that federally supported highway and transit projects are consistent with a state's air quality goals. It applies to areas that do not meet or previously did not meet the NAAQS for ozone, carbon monoxide, or particulate matter. Conformity determinations are required for transportation plans, programs, and projects to ensure they do not worsen air quality.

Laws, Regulations, Plans, and Policies	Description
Updated Interim Guidance on Mobile Source Air Toxic (MSAT) Analysis in National Environmental Policy Act (NEPA) Documents https://www.fhwa.dot.gov/ENVIRONMENT/air_quality/air_toxics/policy_and_guidance/msat/	USEPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment. These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter, ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. FHWA established the framework to evaluate MSAT impacts in NEPA documents using a tiered approach: (1) No analysis for projects with no meaningful MSAT effects, such as categorical exclusions; (2) Qualitative analysis for projects with low potential effects, like minor widenings or new interchanges with AADT below 140,000-150,000; and (3) Quantitative analysis for projects with higher potential effects, such as major freight facilities or highways exceeding 140,000-150,000 AADT. For applicable projects, all nine priority MSATs are considered, and mitigation strategies are explored if emissions differences among alternatives are significant.
GHG Reporting Program Rule (40 CFR 98)	The GHG Reporting Program requires reporting of GHG data and other relevant information from large GHG stationary emission sources, fuel and industrial gas suppliers, and CO_2 injection sites in the United States. The numeric reporting threshold is 25,000 metric tons per year of GHGs in terms of CO_2 equivalent emissions.
GHG Emissions and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles (numerous parts under 40 CFR and 49 CFR)	The USEPA and the Department of Transportation's National Highway Traffic Safety Administration jointly finalized standards for medium- and heavy-duty vehicles that would improve fuel efficiency and cut carbon pollution to reduce the impacts of climate change.
State Level	
Washington State General Regulations for Air Pollution Sources (WAC 173-400); Washington State Clean Air Act (RCW 70.94)	Establishes the rules and procedures to control or prevent the emissions of air pollutants; provides the regulatory authority to control emissions from stationary sources, reporting requirements, emissions standards, permitting programs, and the control of air toxic emissions.
Washington State Department of Transportation (WSDOT) Air Quality and Greenhouse Gas Guidance (https://wsdot.wa.gov/engineering-standards/environmental-guidance/air-quality-energy-greenhouse-gas-emissions)	Outlines requirements for evaluating air quality, MSATs, GHG emissions, and energy impacts in WSDOT projects. Ensures compliance with NEPA, SEPA, and federal and state conformity regulations. Provides a tiered analysis framework, decision trees, and mitigation strategies for transportation projects, including the use of MOVES and ICE for emissions inventory modeling.

Laws, Regulations, Plans, and Policies	Description
Washington State Ambient Air Quality Standards (WAC 173-476)	Establishes maximum acceptable levels in the ambient air for particulate matter, lead, SO_2, NO_2, ozone, and CO; Washington adopts current federal NAAQS in state regulations.
Washington State Greenhouse Gas Reporting Regulation (WAC 173-441)	Requires specific emissions source categories or other facilities to annually report their greenhouse gas emissions; 10,000 metric tons per year is the numeric threshold.
Washington State Controls for New Sources of Toxic Air Pollutants (WAC 173-460)	Establishes controls for new and modified sources of toxic air pollutants.
Limiting Greenhouse Gas Emissions (RCW 70.235)	Requires state to reduce overall GHG emissions as compared to a 1990 baseline and to report emissions to the governor biannually.
Local Level	
Puget Sound Clean Air Agency Regulations (Regulations I through III, activated by RCW 70.94)	Regulate stationary sources of air pollution in Pierce, King, Snohomish, and Kitsap counties. Include emissions standards and permitting, evaluating toxic air contaminant impacts, and SEPA requirements.
King County Comprehensive Plan	The King County Comprehensive Plan (King County 2024g) outlines strategies and policies for environmental protection, conservation, restoration, and sustainability, which include improving air quality and reducing greenhouse gas emissions with reduction goals for 2020 through 2050, and preparing for climate change effects.

Laws, Regulations, Plans, and Policies	Description
City of Tukwila Comprehensive Plan	The City of Tukwila Comprehensive Plan 2024 Update (City 2024e) outlines strategies and policies for protecting clean air and the climate for present and future generations through reduction of greenhouse gas emissions and promotion of efficient and effective solutions for transportation, clean industries, and development. Policies/goals with direct impact to this project include: Policy T-1.4 . Work with BNSF to mitigate impacts associated with rail and intermodal yard operations within Tukwila's residential neighborhoods. Goal T-5: Environment - Plan, design, and construct transportation projects that reduce greenhouse gas emissions, improve community health, and protect the natural environment. Policy T-5.1. Collaborate with King County, the Port of Seattle, and BNSF to ensure that King County International Airport, SeaTac International Airport, and BNSF railway operations and development: • Enhance Tukwila goals and policies; • Incorporate Tukwila land use plans and regulation; • Minimize adverse impacts to Tukwila residents; and, • Are not encroached upon by incompatible land uses.

Sources: www.epa.gov; Rulemaking - Washington State Department of Ecology, King County 2024g, City 2024a

4.5.2.1 Descriptions of Federal, State, and Local Standards

The 1970 Federal Clean Air Act and subsequent amendments required the EPA to establish regulations for controlling the nations' air quality. These regulations set criteria for the National Ambient Air Quality Standards (NAAQS). The primary NAAQS are protective of public health. The secondary NAAQS are protective of public welfare and the environment. Both primary and secondary standards specify ambient air concentration limits, with a safety margin, for pollutants to avoid adverse health and environmental effects. These standards are designed to protect the most susceptible public populations such as those with respiratory illnesses, the very young, the elderly, and those engaging in strenuous work or exercise.

The EPA identified seven pervasive criteria air pollutants and established health-based ambient air quality standards for them. Ozone (O_3), carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb) were the initial criteria pollutants followed by PM_{10} (particulate matter less than or equal to 10 microns in diameter) and $PM_{2.5}$ (particulate matter less than or equal to 2.5 microns in diameter), which are subsets of particulate matter and more commonly regulated. Ozone is a pollutant that is not typically directly emitted, but it forms in the lower

atmosphere from direct emissions of NOx and volatile organic compounds (VOC) and their photochemical reactions with sunlight.

Geographic areas of the United States that do not meet the NAAQS for any one or more of the criteria pollutants are designated by the USEPA as nonattainment areas. Areas that were once designated nonattainment but are now achieving the NAAQS are termed maintenance areas. Areas that have pollutant levels below the NAAQS are termed attainment areas. In nonattainment areas, states must develop plans to reduce emissions and bring the area back into attainment with NAAQS. Maintenance areas have requirements that last for at least 20 years to ensure that they stay in attainment. The Allentown proposed Project is in King County, Washington, which is classified as in attainment with the NAAQS for all criteria pollutants.

As of May 14, 2021, King County went from maintenance status to attainment status for PM_{10} as the 20-year maintenance period lapsed on that date. As of October 11, 2016, and November 25, 2016, King County went from maintenance status to attainment status for CO and one-hour Ozone as the 20-year maintenance period lapsed on those dates, respectively (EPA 2025a). As such, there will be no requirement for quantitative CO or PM hot-spot analysis for transportation conformity purposes for this project. The Metropolitan Planning Organization (MPO), Puget Sound Regional Council (PSRC), is responsible for demonstrating the regional conformity via long-range transportation plans (LRTPs) and/or Transportation Improvement Programs (TIPs) by showing that projected emissions remain within the State Implementation Plan (SIP) motor vehicle emissions budgets (MVEBs). Project-level hot-spot analysis is not required for ozone, but non-exempt projects must be included in a conforming TIP and LRTP. Conformity must be redetermined at least every four years or when significant changes occur, with interagency consultation involving USEPA, FHWA, Federal Transportation Administration (FTA), state air agencies, and MPOs.

Table 4.5-2 identifies the primary and secondary NAAQS for the criteria pollutants under federal and Washington State law. Washington has adopted the federal primary and secondary standards.

Table 4.5-2 Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard	Secondary Standards	Form
Ozone	8 hours	0.070 ppm[a]	0.070 ppm	Annual 4th-highest daily max. 8-hour concentration, averaged over 3 years
Carbon monoxide (CO)	1 hour	35 ppm	No applicable standard	Not to be exceeded more than once/year
	8 hours	9 ppm	No applicable standard	
Nitrogen dioxide (NO_2)	1 hour	0.100 ppm (100 ppb)	No applicable standard	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Annually	0.053 ppm (53 ppb)	0.053 ppm (53 ppb)	Annual mean

Pollutant	Averaging Time	Primary Standard	Secondary Standards	Form
Sulfur dioxide (SO_2)	1 hour	0.075 ppm	No applicable standard	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	3 hours	0.5 ppm for state, no applicable standard for federal	0.5 ppm	Not to be exceeded more than once/year
	Annually	0.02 ppm for state, no applicable standard for federal	No applicable standard	Not to be exceeded
	24 hours	0.14 ppm for state, no applicable standard for federal [b]	No applicable standard	Not to be exceeded more than once/year
Particulate matter (PM_{10})	24 hours	150 µg/m^3 [c]	150 µg/m^3	Not to be exceeded more than once/year on average over 3 years
Fine particulate matter ($PM_{2.5}$)	24 hours	35 µg/m^3 [d]	35 µg/m^3	98th percentile, averaged over 3 years
	Annually	9 µg/m^3 [e]	15 µg/m^3	Annual mean, averaged over 3 years
Lead	Rolling 3-month average	0.15 µg/m^3	0.15 µg/m^3	Not to be exceeded

Sources: EPA 2025b; WAC Chapter 173-476

[a] This 2015 NAAQS is the most stringent NAAQS still in effect for ozone. A 2008 8-hour ozone standard of 0.075 ppm also remains in effect. The 2015 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentration is 0.070 ppm or less.

[b] The 24-hour average concentration for sulfur oxides in the ambient air must not exceed 0.14 ppm by volume more than once per calendar year (WAC 173-476-130).

[c] The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard.

[d] The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile is less than the standard.

Note: ppm: parts per million; µg/m^3: micrograms per cubic meter.

[e] On March 6, 2024, the USEPA promulgated a final rule that changed this standard to 9 µg/m^3 effective on May 5, 2024. While there may be activity in 2025 by the Trump Administration to attempt to revert back to the previous 12 µg/m^3 standard, that would require legal court decisions and regulatory changes that have not been reached and completed at this time.

The USEPA General Conformity Rule (40 Code of Federal Regulations [CFR] 51 and 93, Subpart B) applies to federal actions or federally funded actions (non-transportation agency actions) occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by pollutant and depend on the severity of the nonattainment status for the air quality management area in question. These *de minimis* levels represent the quantity of emissions above which the need for a conformity assessment with the State Implementation Plan (SIP) is required. The SIP is the state's plan for meeting and maintaining the NAAQS, which must be approved by the USEPA,

including revisions. The USEPA General Conformity rule does not apply in King County; therefore, it doesn't apply to the Allentown proposed Project.

The USEPA Transportation Conformity Rule (40 CFR 93, Subpart A) applies to federal actions or federally funded actions (transportation agency actions) occurring in nonattainment or maintenance areas. King County is not part of a nonattainment or maintenance area. However, PSRC, which is the MPO responsible for demonstrating regional conformity in the area that includes King County, is still issuing a TIP due to the maintenance status of Pierce County. Therefore, transportation conformity demonstration is still in place for projects inside King County. The project must also follow WSDOT guidance for compliance with the Regional Transportation Improvement Plan, which is discussed further below in Section 4.5.3.1 Impacts Methodology.

The Clean Air Act identifies 187 compounds that are known to cause cancer or serious health effects. This group of compounds is called air toxics or hazardous air pollutants (HAPs). The USEPA has identified 21 HAPs emitted from mobile sources, referred to as MSAT, within a few final rules: Control of Emissions of Hazardous Air Pollutants from Mobile Sources (40 CFR 80, 85, 86). These rules mainly regulate fuel and vehicle manufacturers. The USEPA designated nine priority MSAT due to their potential for causing cancer and serious health effects when exposures are long enough and at sufficient concentrations: acetaldehyde, acrolein, benzene, ethylbenzene, formaldehyde, diesel particulate matter (DPM)/diesel exhaust organic gases, naphthalene, polycyclic organic matter, and 1,3-butadiene. These priority MSAT are to be analyzed in this EIS regarding operational emissions from truck hauling to and from the BNSF South Seattle Intermodal Facility. Per WSDOT and FHWA's MSAT guidance, this project would be changing the traffic pattern near the major intermodal freight facility which has the potential to concentrate high levels of diesel particulate matter in a single location. Additionally, the guidance indicates a project involving a significant number of diesel vehicles as a new project or accommodating with a significant increase in the number of diesel vehicles for an expansion project near populated area, is considered a Project with Higher Potential MSAT Effects per FHWA guidelines. A quantitative MSAT analysis is required for this type of project.

The Washington State Department of Ecology (Ecology) provides protection of public health and the environment by establishing and enforcing rules to prevent and reduce air pollution and approve emissions with limitations. Enforcement of most of the Clean Air Act requirements has been delegated by the USEPA to Ecology and seven clean air agencies with local authority in the state. Ecology works to improve air quality throughout the state by overseeing the development and conformity of the SIP. Ecology oversees the statewide air monitoring network and ensures that the monitoring data meets the federal requirements of 40 CFR 58. Ecology also requires facilities that have applicable emissions source categories (e.g., stationary fuel combustion, electricity generation, specific types of manufacturers, petroleum industry sources) and emit at least 10,000 metric tons of CO_2 equivalents annually to report their greenhouse gas emissions annually (WAC Chapter 173-441).

The Puget Sound Clean Air Agency (PSCAA) regulates air quality within the counties of Pierce, King, Snohomish, and Kitsap. PSCAA has local authority for setting regulations and permitting of stationary emissions sources and construction emissions.

4.5.3 Methodology

This EIS is providing only a qualitative analysis for air quality, MSAT, and GHG emissions. The qualitative analysis for operational activities indicates a potential for air quality and GHG impacts; however, after a preferred alternative is chosen and a full traffic study/analysis is completed, it will support a quantitative analysis of operational activities to confirm expected air quality, GHG and climate change impacts. In a similar manner, construction activity impacts are only provided qualitatively. The evaluation of potential impacts on air quality and GHG from a quantitative analysis will consist of conducting the following tasks:

- Select the appropriate study area for the travel demand model that includes the baseline and horizon year for both the no action condition and the preferred alternative.
- Develop the travel demand model for the no action condition and the preferred alternative, once selected over the design year. The study will assess heavy vehicle traffic within the designated roadway network, including truck movements entering and exiting the BNSF Intermodal Facility and routes to/from the nearest highway.
- Using the results of the full traffic study/analysis, develop a quantitative assessment of the levels of direct and indirect criteria pollutants, MSAT, and GHG emissions from the Project operational activities for the no action condition and the preferred alternative.
- Within the study area, select the appropriate roadway links that would experience ±5% AADT between the no action condition and the preferred alternative in the baseline year and/or horizon year.
- The county level MOVES analysis will be based on the results of the travel demand model that include vehicle classification, road type VMT distribution, fuel mix, alternative vehicle fuel type, speed distribution, and vehicle population data along with traffic route information and county level information to generate emission factors (in g/VMT) in the USEPA MOVES5 model .The criteria air pollutant, MSAT and GHG emission factors will be multiplied by the network vehicle miles traveled for heavy vehicle traffic under the No Action condition and the Preferred Alternative to calculate the annual emissions burden.
- For the construction activity quantitative GHG analysis, refer to the FHWA Infrastructure Carbon Estimator Tool (ICE) that will be used to estimate energy related GHG emissions based on general construction characteristics in accordance with the WSDOT Air Quality and GHG Emissions Guidance. Criteria pollutant emissions estimation is not required because the project is not located in a nonattainment or maintenance area.

4.5.3.1.1 Characterization of Air Quality Impacts

The proposed Project is located in an area designated as attainment for all criteria air pollutants under the NAAQS. Given the attainment status and the lapsed of maintenance period for all criteria air pollutants, this project does not require a quantitative hot-spot analysis for CO or PM under transportation conformity regulations per WSDOT Air Quality and Greenhouse Gas Guidance. As a result, the proposed project is not anticipated to contribute to or exacerbate any violations of the NAAQS, and no significant impacts to criteria air pollutants are expected. However, to be consistent with transportation conformity, the emissions induced by this project will need to be reflected in the Puget Sound Regional Council latest Regional Transportation Improvement Plan.

4.5.3.1.2 Characterization of MSAT Impacts

The project site is located in the Allentown district of Tukwila, Washington, near major transportation corridors, including I-5, SR 599, and the BNSF South Seattle Intermodal Facility, which contribute to elevated emissions of diesel particulate matter (DPM) and other MSAT. The proximity of residential areas, schools, parks, and natural habitats to the project site increases the potential for human exposure to air toxics.

Per FHWA and WSDOT MSAT guidance, this project involves changes in traffic patterns near a major intermodal freight facility and has the potential to concentrate high levels of DPM due to the significant presence of diesel vehicles. Given the project's characteristics and its location near a populated area, it qualifies as a Project with Higher Potential MSAT Effects. The quantitative MSAT analysis to assess operational emissions will be conducted when the preferred alternative is chosen.

4.5.3.1.3 Characterization of GHG Impacts

GHG emissions from transportation projects are typically assessed using the MOVES model for operational emissions estimate and the FHWA Infrastructure Carbon Estimator (ICE) tool for construction-related emissions, as recommended in the WSDOT Air Quality, Greenhouse Gas, and Energy Guidance (WSDOT 2024b).

At the time of this EIS draft, no preferred alternative has been selected. As a result, the travel demand model required to quantify project-specific vehicle miles traveled (VMT), speed distribution, and other key inputs for the MOVES-based GHG analysis is not yet available. WSDOT guidance indicates that a quantitative GHG analysis should be conducted using the MOVES modeling. Given the absence of essential traffic data, a quantitative GHG emissions analysis could not be performed at this time.

Once the preferred alternative is identified, the analysis should incorporate the latest planning assumptions, methodologies consistent with WSDOT and federal guidance, and an evaluation of both operational and construction-phase emissions. Per WSDOT guidance, the MOVES model should be used to estimate tailpipe emissions, while the ICE tool should be applied to estimate emissions from material production, construction equipment, and worksite activities.

4.5.4 Impacts Analysis

4.5.4.1.1 Construction Impacts

Construction activities generating air pollutant emissions include fuel combustion within the internal combustion engines of non-road construction equipment. This could include graders, bulldozers, backhoes, loaders, skid steers, excavators, rollers, cranes, high lifts, dump trucks, concrete trucks, paving equipment, street sweepers, and water trucks. In addition, particulate fugitive dust emissions would be generated from land clearing disturbances and soil excavations and movements, and passenger and truck delivery traffic on unpaved and paved roads. Asphalt paving of roads and parking areas would generate minor VOC emissions. The construction workers commuting in vehicles would also generate some combustion emissions; however, based on the size of the construction and low level of workers for any alternative, those commuting emissions would be minimal. As stated previously, construction activity GHG impacts will be further analyzed quantitatively when the construction energy analysis is completed using the ICE model.

Construction activities will operate in compliance with PSCAA Regulation I, Section 9.15 – Fugitive Dust Control Measures, which include minimizing fugitive dust through control methods such as wet or

chemical suppression techniques, reducing vehicle speeds, cleaning vehicle undercarriages or wheels, and covering or wetting truckloads of soils or loose materials. The construction activities will also comply with PSCAA Regulation I, Section 9.03 – Emission of Air Contaminant: Visual Standard, which includes a 20 percent opacity standard.

The following BMPs would be implemented during construction to minimize potential for air quality impacts during construction in accordance with King County Comprehensive Plan development policies and goals, and Puget Sound Clean Air Agency Regulation 1, Section 9.15:

- Apply dust suppression materials on exposed soil areas and construction paths/roadways and/or water during dust-generating construction activities to limit fugitive dust emissions.
- Require mobile construction equipment and any stationary engines be powered by USEPA-certified engines that meet applicable USEPA emission standards.
- Implement and enforce a 10- to 15-mile-per-hour speed limit for construction vehicles while moving on site.
- Provide a wheel washing and/or vehicle undercarriage cleaning system for trucks leaving the Project construction site.
- Require all loose material truck loads to have covers and/or use wetting agents to minimize escape of dust.

4.5.4.1.2 Operations Impacts

The qualitative analysis for operational activities indicates a potential for adverse air quality and GHG impacts, including MSAT impacts; however, after a preferred alternative is chosen and a full traffic study/analysis is completed, it will support a quantitative analysis of operational activities to determine the expected air quality, GHG and climate change impacts.

4.5.5 Mitigation Measures

The determination of whether a significant air quality or GHG impact from Project operations emissions is expected has not been made at this time; therefore, the need for mitigation measures is also not determined at this time. After a full traffic study/analysis is completed and a quantitative air quality and GHG analysis is completed, that determination will be made and documented. Implementation of fugitive dust best management practices described above under Construction Impacts would minimize construction activity emissions.

4.5.6 Significant Unavoidable Adverse Impacts

The determination of whether a significant air quality or GHG impact from Project operations emissions is expected has not been made at this time; therefore, this section will not be completed until after a preferred alternative is chosen, a full traffic study/analysis is completed, and a quantitative air quality and GHG analysis is completed.

4.6 Transportation

This section provides an analysis of potential impacts of truck routes on the existing transportation network.

4.6.1 Affected Environment

The study area encompasses routes with key roadways and intersections that connects the local freeway network to the BNSF facility. The proposed alternatives in this study (No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4) are reconfigurations of the existing BNSF yard, which would also modify the existing truck routes currently used by trucks to travel to the facility.

The study area includes a few different routes:

- The existing truck route without detour* ("No Action Alternative").
    - *An existing temporary detour route is being used due to structural damage to the 42nd Avenue South bridge. The detour route was excluded from this EIS analysis. Freeways were also excluded from the EIS analysis.
- Three truck routes associated with proposed Alternatives 2, 3B, and 4.

Six study intersections from the traffic study conducted for this project are identified as critical connections between the local road network, regional freeways, and the BNSF facility. These intersections overlap with truck routes that serve the existing BNSF facility (temporary detour route) and the proposed alternative truck routes which includes the No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4.

All analyses in this transportation section are presented by study intersections instead of truck routes to be consistent with the traffic study conducted for the project, except pavement conditions data. Pavement conditions data is provided by the City of Tukwila (City) and analyzed by roadways that overlap with truck routes instead of study intersections.

The list of six[2] study intersections and their identifiers are as follows and shown in Figure 4.6-1. These identifiers are not associated with a particular order:

- Intersection 1: Southbound (SB) I-5 off-ramp & South Boeing Access Road
- Intersection 2: Interurban Avenue South & Gateway Drive (N)
- Intersection 3: Interurban Avenue South & Gateway Drive (S)/South 133rd Street
- Intersection 4: Interurban Avenue South & SB I-5 off-ramp
- Intersection 5: Interurban Avenue South & Northbound (NB) I-5 on-ramp
- Intersection 6: Martin Luther King Jr Way South & South 129th Street

Table 4.6-1 lists the alternatives and the corresponding study intersections along the truck routes, as presented in the traffic study completed for this project. A figure of the alternatives, alternatives truck routes and intersections are shown in Figure 4.6-1.

[2] E Marginal Way South & South 115th Street was included in the Allentown EIS Intersection Study (Appendix D), but will not be included in this analysis because it does not overlap with any of the project's alternatives.

Table 4.6-1 Project Alternatives and Associated Intersections

Alternatives	Associated Intersections
No Action Alternative	Interurban Ave S & Gateway Dr (N) Interurban Ave S & Gateway Dr (S)/S 133rd St Interurban Ave S & SB I-5 off-ramp Interurban Ave S & NB I-5 on-ramp
Alternative 2	SB I-5 off-ramp & S Boeing Access Rd
Alternative 3B	Interurban Ave S & Gateway Dr (S)/S 133rd St Interurban Ave S & SB I-5 off-ramp Interurban Ave S & NB I-5 on-ramp
Alternative 4	Martin Luther King Jr Way S & S 129th St.*

*Note: Martin Luther King Jr Way S & S 129th St is the closest intersection to Alternative 4 that had data available.

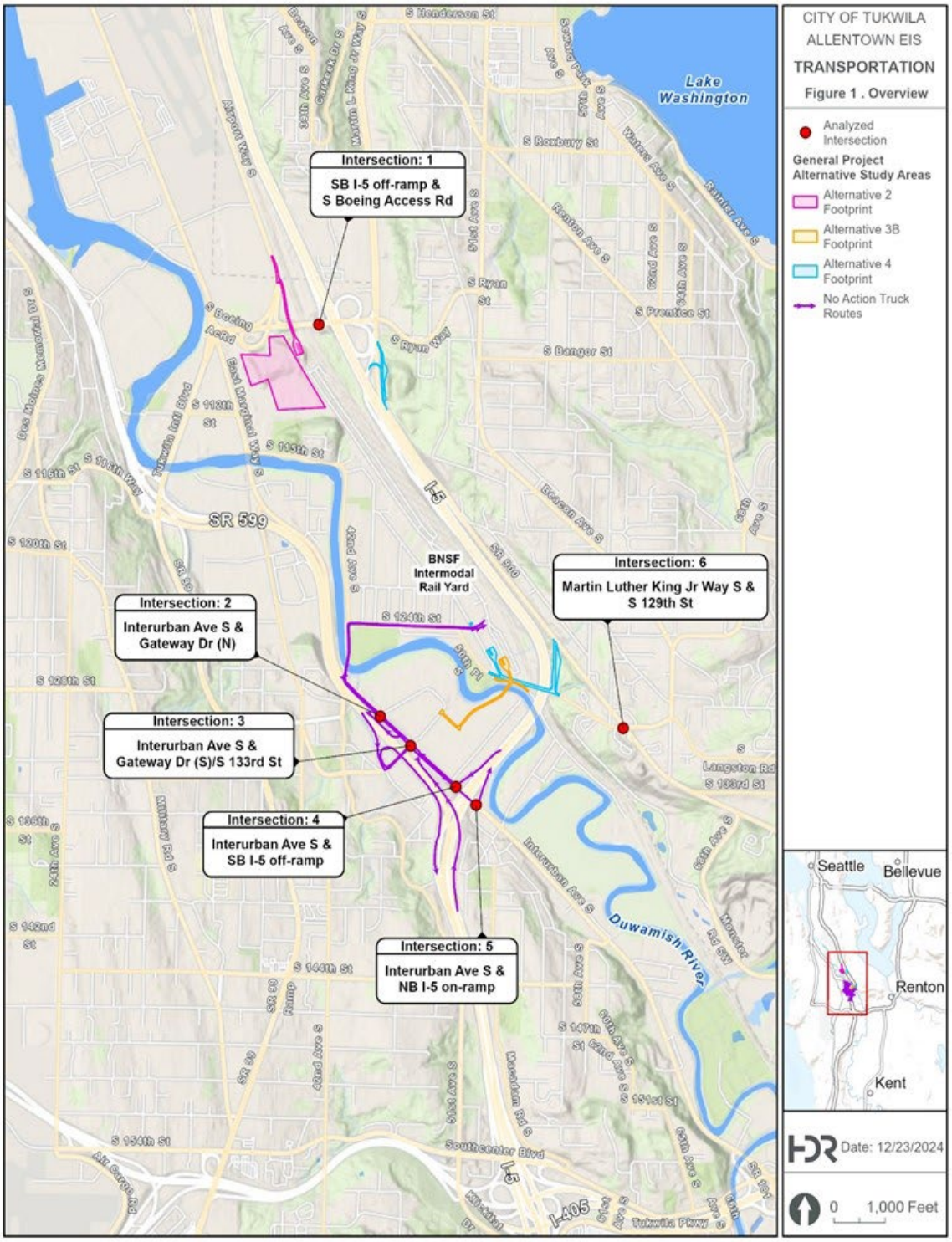


Figure 4.6-1 Study Intersections and Alternative Footprints

4.6.2 Relevant Plans Policies and Regulations

Relevant policies and regulations related to transportation are summarized in Table 4.6-2.

Table 4.6-2 Regulations and Policies for Transportation

Laws and Regulations	Description
Federal	
Highway Safety Act and the Federal Railroad Safety Act	Gives the Federal Highway Administration (FHWA) and Federal Railroad Administration (FRA) regulatory jurisdiction over safety at federal highway/rail grade crossings.
Manual on Uniform Traffic Control Devices (23 U.S.C. 109(d))	Provides standards and guidelines for traffic control devices.
State	
Transportation System Policy Goals (RCW 47.04.280)	Establishes the following goals for the transportation system in Washington State: economic vitality, preservation, safety, mobility, environment, and stewardship.
Motor Vehicles – Rules of the Road (RCW 46.61)	Establishes rules of the road for vehicle and rail crossings.
City Streets as Part of State Highways (RCW 47.24)	Regulates the maintenance and jurisdictional control for city streets that are part of state highways.
Local	
Traffic Regulations (Tukwila Municipal Code Title 9)	Establishes regulations for vehicle traffic in the City of Tukwila.
City of Tukwila Comprehensive Plan – Transportation Element	The Transportation Element (Element 13) of the Tukwila Comprehensive Plan establishes Tukwila's transportation goals and policies for the 20-year planning period.
City of Tukwila Infrastructure Design and Construction Standards	Establishes design and construction requirements, criteria, and specifications for construction projects in the City of Tukwila.

4.6.3 Methodology

The Allentown EIS Intersection Study (Appendix D) conducted for this project involved the collection and analysis of various transportation variables at six study intersections: turning movement counts (TMCs), level of service (LOS) and delay, Annual Average Daily Traffic (AADT), and crash data. Pavement conditions data for roadways were provided from the City. Results from the traffic analysis would drive the impacts analysis in Section 4.6.4.

4.6.3.1 LOS and Delay

Vehicle turning movement count (TMC) data was collected to produce the LOS and Delay measures. TMCs provide insights into traffic volumes, peak hour flows, and directional distributions among motorized vehicles, heavy vehicles, and pedestrians/bicycles. TMC data was collected on April 23, 2024,

during the PM Peak hours from 4:00 PM to 6:00 PM, by All Traffic Data Services, and consists of truck turns and passenger vehicle turns. Video camera counts were used instead of tube counts at these intersections, as cameras are easier to install and are more effective in capturing traffic counts for different movements. TMC data for four intersections along the Interurban Ave South were balanced[3], as these intersections are adjacent to each other. Google Earth was used to collect geometric data of the seven intersections to ensure the accurate representation of existing lane configurations.

The quantitative data analysis of traffic operations at the intersections for the Project was conducted using Synchro 11. Synchro 11 is a traffic analysis tool that assists engineers and planners in designing, modeling, optimizing, and simulating intersection networks. This software was used to calculate LOS and delay at all the intersections identified in Section 4.6.1. LOS and delay measures provide insight into the quality of traffic at the intersections. The average of the delays experienced by all vehicles at each intersection (due to red lights, stop signs, or other control features) are determined, and each of these average delays are assigned a letter grade referred to as LOS, ranging from LOS A (least congested) to LOS F (worst congested).

The grading scale for LOS is based on the guidelines from the 6th edition of the Highway Capacity Manual (HCM) (Cubic Trafficware 2019; Transportation Research Board (TRB) (TRB 2016). The HCM is a transportation manual widely accepted and used by the U.S. Department of Transportation (USDOT) and Federal Highway Administration (FHWA). Table 4.6-3 shows the HCM peak hour delay performance indicators for signalized and unsignalized intersections.

Table 4.6-3 Delay Performance Indicators for Intersection LOS

LOS	Description	Average Delay Range (seconds/vehicle)	
		Signalized	Unsignalized
A	No congestion; nearly all drivers experience little to no delay	0 to 10.0	0 to 10.0
B	No congestion; most drivers experience little to no delay	10.1 to 20.0	10.1 to 15.0
C	Light congestion; most drivers experience minor delay	20.1 to 35.0	15.1 to 25.0
D	Moderate congestion; individual movements with high delay	35.1 to 55.0	25.1 to 35.0
E	Heavy congestion, with high delays on multiple movements	55.1 to 80.0	35.1 to 50.0
F	Extensive delays due to cycle failures at signals or sparse opportunities to make desired movements at unsignalized intersections	80.1 or more	50.1 or more

Source: TRB 2016; Cubic Trafficware 2019.

The HCM delay performance indicators are used to assign LOS to the Synchro delay results, and the methodology for measuring intersection vehicle delays in the Synchro 11 model is the same as methodology used in the 6th edition of the HCM.

Generally, LOS D is considered to have moderate congestion but is considered the worst acceptable condition for peak hour intersection traffic operations. LOS E is often characterized by having heavy

[3] "Balance" in traffic analyses refers to the process of distributing traffic volumes equally across intersections. Balancing ensures accuracy, consistency, reduces errors and ensures an efficient allocation of data.

congested conditions, with unstable flow and high delays. At LOS F, the intersection is overcapacity and likely experiences congestion periods of 15 to 60 minutes per day.

According to the Transportation Element in the City of Tukwila Comprehensive Plan, the acceptable Level of Service (LOS) standard is LOS E or better. Therefore, the City of Tukwila standard of acceptability for intersection LOS (E or better) is applied for PM peak hour conditions in this project.

In addition to assessing existing conditions of LOS and delay in year 2024, future traffic conditions in year 2045 were also projected. In accordance with traffic studies conducted by the City of Tukwila, an annual growth rate of 1% was calculated to calculate traffic operations in the Synchro model for the year 2045. This analysis is critical for planning and implementing necessary improvements to accommodate future traffic demand.

4.6.3.2 Vehicle Miles Traveled (VMT)

Vehicle Miles Traveled (VMT) was calculated using the Average Annual Daily Traffic (AADT) collected from the Washington State Department of Transportation (WSDOT), and segment lengths measured between the six intersections under study using Google Maps. Total VMT provides a metric for evaluating traffic patterns and roadway usage in the area. Quantifying VMT offers insights into the extent of vehicle travel across these segments, informing decisions on congestion management, roadway maintenance needs, and potential environmental impacts, such as emissions and air quality.

The annual truck VMT would be used to analyze and compare between alternatives. Due to limited data availability for these routes, some engineering judgment and assumptions were applied. For example, AADT volume from related highways, such as I-5 and SR 599, was used to estimate a more accurate truck percentage for each route.

4.6.3.3 Crash Analysis

Crash data for six study intersections were requested for a five-year period, from January 1, 2019, to December 31, 2023, through the WSDOT Public Disclosure Request Center. WSDOT crash data were examined with respect to severity and year, both in terms of raw crash counts and, in the case of intersections, the intersection crash rate. The intersection crash rate was calculated based on crash records and estimated daily entering vehicle volumes.

4.6.3.4 Pavement Analysis

The project would increase truck traffic on public streets near the site; this is anticipated to have impacts to existing pavement. To assess and compare the impact the increase truck traffic will have on the roadway pavement, current PCI ratings, truck VMT and total pavement area was calculated for the No Build and each Build alternative. Pavement conditions were analyzed to determine the potential impact of trucks on remaining pavement service life. City of Tukwila Public Works Department has updated data for the City's asphalt roadway inventory in 2024. This inventory includes existing pavement conditions on city streets, and calculations of the Pavement Condition Index (PCI) ratings for all roadways within the City.

To evaluate the existing pavement conditions within the study area, City streets that overlap with truck routes for the alternatives were selected to provide PCI ratings. According to the City, PCI is a numerical rating of the pavement condition based on the type and severity of distresses observed on the pavement surface. The PCI value of the pavement condition is represented by a numerical index

between 0 and 100, where 0 is rated as “Very Poor” condition and 100 is rated as “Excellent” conditions. Table 4.6-4 shows the ratings and associated descriptive terms outlined by the City below.

Table 4.6-4 Pavement Conditions and Associated Descriptive Terms

Pavement Condition Index (PCI)	Descriptive Term
0 to 25	Very Poor
25 to 40	Poor
40 to 50	Marginal
50 to 60	Fair
60 to 70	Good
70 to 85	Very Good
85 to 100	Excellent

The square feet (sq. ft.) of roadway areas for each alternative would be reported to measure the impacts of each alternative’s truck route on existing pavement. If an alternative truck route impacts a larger roadway surface area, this implies an increase in degradation of existing pavement, which indicates that the pavement may require maintenance sooner. Degradation of existing pavements may have implications on the City’s operations and maintenance funding.

4.6.4 Impacts Analysis

The impacts analysis includes results from the transportation analyses and variables considered in Section 4.6.3. Impacts are evaluated using the impact magnitude definitions listed in Table 4.6-5, and comparisons are made between the proposed alternatives.

Table 4.6-5 Impact Magnitude and Description

Magnitude of Impact	Description
Little or No Impact	Proposed Project’s truck routes would not adversely impact existing and future projected roadway and intersection conditions.
Minor	There may be short-term or minor adverse impacts to existing and future projected roadway and intersection conditions.
Moderate	There may be long-term or permanent adverse impacts to existing and future projected roadway and intersections.
Significant	The proposed Project would cause long-term and adverse impacts to existing and future projected roadways and intersections.

Similar routes are anticipated to be used during construction and operations. Hence, construction and operations impacts are anticipated to be similar. For construction impacts, the study area consists of the roads and intersections that construction vehicles would use to access the proposed Project site. For operational impacts, the study area consists of roads and intersections used by trucks moving to and from the BNSF facility to access the proposed alternative footprints (Figure 4.6-1).

4.6.4.1 LOS and Delay Results based on Turning Movement Counts (TMC)

As mentioned in Section 4.6.3.1, existing and future TMCs (2024 and 2045) at the intersections were collected, and used to generate the LOS and delays standards at each intersection and their respective

directions. LOS and delay results by intersection would be used for the impact analysis in this EIS. Table 4.6-6 and Table 4.6-7 show the 2024 and 2045 LOS and delay results respectively, and Figure 4.6-2 shows the change between the 2024 and 2045 LOS and delay results. As mentioned in Table 4.6-3, intersections with an LOS of A is generally the least congested, and intersections with an LOS of F is generally the most congested.

Table 4.6-6 2024 Synchro LOS and Delay Results (without Detour)

Study Intersections LOS/ Delay (s/veh)	Intersection Control[1]	Southbound	Northbound	Eastbound	Westbound	All
Intersection 1: SB I-5 off-ramp & S Boeing Access Rd	S	A / 9.2	-	B / 11.6	B / 11.7	**B / 11.2**
Intersection 2: Interurban Ave S & Gateway Dr (N)	U	-	-	-	B / 13.6	**B / 13.6**
Intersection 3: Interurban Ave S & Gateway Dr (S)/S 133rd St	S	A / 8.8	A / 9.9	B / 10.8	A / 9.9	**A / 9.7**
Intersection 4: Interurban Ave S & SB I-5 off-ramp	S	B / 15.4	A / 8.8	-	A / 9.0	**B / 11.6**
Intersection 5: Interurban Ave S & NB I-5 on-ramp	U	-	B / 13.0	-	-	**B / 13.0**
Intersection 6: Martin Luther King Jr Way S & S 129th St	S	F / 87.0	B / 13.3	A / 9.4	B / 10.1	**D / 51.4**

[1]Note: S= Signalized Intersection and U = Unsignalized Intersection. LOS/Delay for unsignalized intersections is determined based on the worst movement.

Table 4.6-7 2045 Synchro LOS and Delay Results

Study Intersections LOS/ Delay (s/veh)	Intersection Control[1]	Southbound	Northbound	Eastbound	Westbound	All
Intersection 1: SB I-5 off-ramp & S Boeing Access Rd	S	A / 9.8	-	B / 14.4	B / 14.4	**B / 13.5**
Intersection 2: Interurban Ave S & Gateway Dr (N)	U	-	-	-	B / 16.5	**B / 16.5**
Intersection 3: Interurban Ave S & Gateway Dr (S)/S 133rd St	S	A / 9.2	B / 15.6	B / 12.2	B / 11.1	**B /12.2**
Intersection 4: Interurban Ave S & SB I-5 off-ramp	S	B / 17.2	A / 9.3	-	A / 9.5	**B / 12.7**
Intersection 5: Interurban Ave S & NB I-5 on-ramp	U	-	B / 14.7	-	-	**B / 14.7**
Intersection 6: Martin Luther King Jr Way S & S 129th St	S	F / 190.6	B / 15.7	B / 10.1	B / 11.2	**F / 106.6**

1Note: S= Signalized Intersection and U = Unsignalized Intersection. LOS/Delay for unsignalized intersections is determined based on the worst movement.

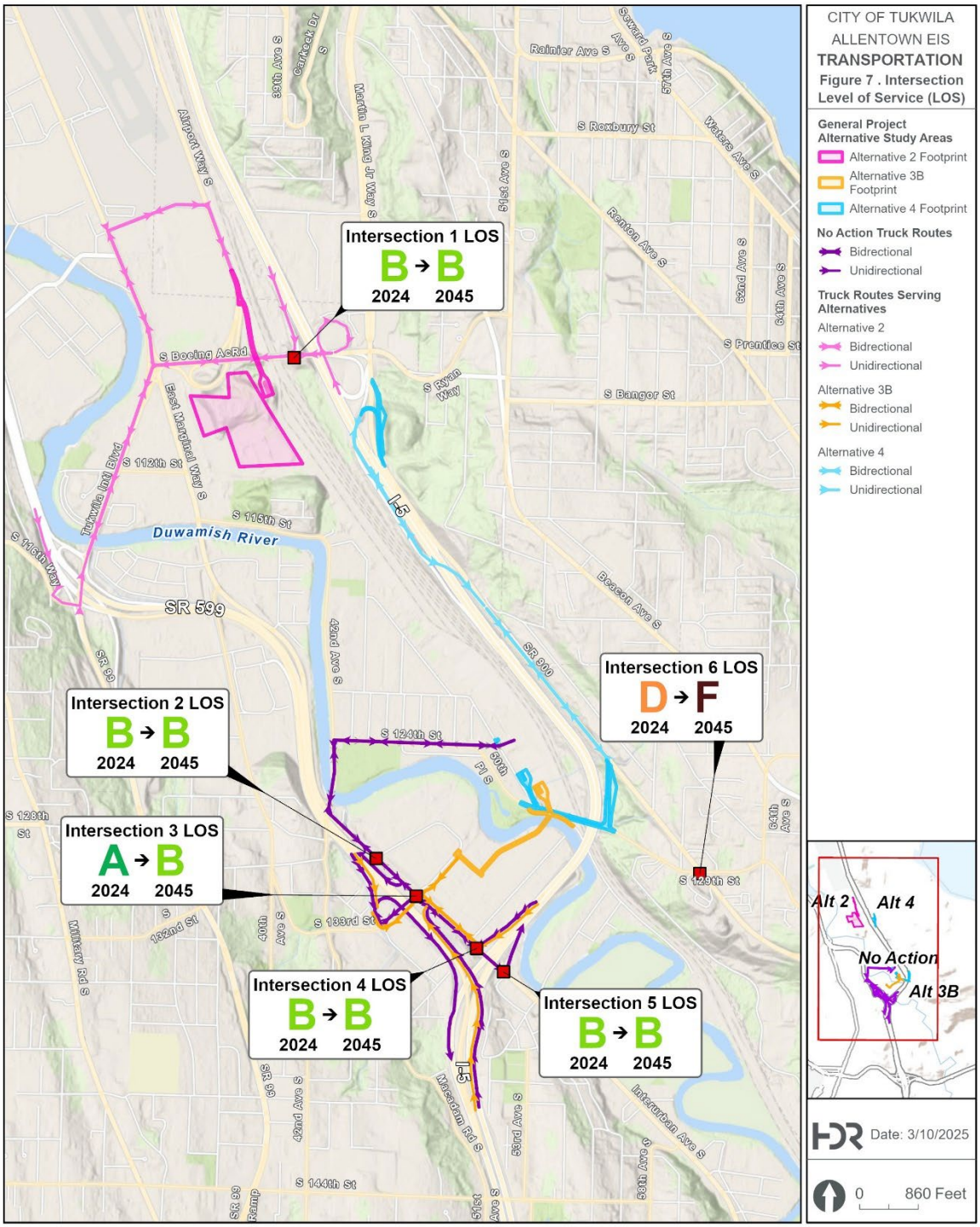


Figure 4.6-2 Change in LOS and Delay Results from 2024 to 2025 for Intersection 1 through 6

4.6.4.1.1 No Action Alternative: Construction and Operations Impacts to LOS and Delay at Intersections

The No Action Alternative overlaps with four study intersections (Intersection 2, 3, 4, and 5). Intersections overlapping with the No Action Alternative truck routes are anticipated to have a future (2045) projected LOS and delay standard of B, which overall meets the City of Tukwila's standard of acceptability for intersection LOS (E or better). Impacts are anticipated to range from **little or no impacts** to **minor impacts** for the No Action Alternative.

4.6.4.1.2 Alternative 2: Construction and Operations Impacts to LOS and Delay at Intersections

Alternative 2 overlaps with one study intersection (Intersection 1). Alternative 2 is anticipated to have an existing (2024) or future (2045) projected LOS and delay standard of B, which meets the City of Tukwila's standard of acceptability for intersection LOS (E or better). Impacts are anticipated to range from **little or no impacts** to **minor impacts** for Alternative 2.

4.6.4.1.3 Alternative 3B: Construction and Operations Impacts to LOS and Delay at Intersections

Alternative 3B overlaps with three study intersections (Intersection 3, 4, and 5). Alternative 3B has an existing (2024) or future (2045) projected LOS and delay standard of B, which meets the City of Tukwila's standard of acceptability for intersection LOS (E or better). Impacts are anticipated to range from **little or no impacts** to **minor impacts** for Alternative 3B.

4.6.4.1.4 Alternative 4 Construction and Operations Impacts to LOS and Delay at Intersections

Alternative 4 overlaps with one study intersection (Intersection 6). This intersection is outside of City of Tukwila's jurisdiction. Alternative 4 is anticipated to have a future (2045) projected LOS and delay standard of F, which is higher than King County's Level of Service standard of LOS E or better. **Moderate to significant impacts** are anticipated from Alternative 4.

4.6.4.2 Vehicle Miles Traveled (VMT) Results

Truck VMT was calculated by multiplying the vehicle AADT, truck percentage, segment length for each alternative, and total days in a year. Table 4.6-8 summarizes the annual truck VMT for each alternative. All alternatives use different truck travel routes and have varying VMTs. A higher VMT could indicate increased traffic congestion; increased collisions; result in greater vehicle emissions and adverse air quality impacts; and signify an increase in roadway maintenance needs.

Table 4.6-8 Results of Annual Vehicle Miles Traveled (VMT) for Alternatives

Alternative Scenarios	Length (miles)	Site Truck AADT (veh/day)	VMT (Annual)
Truck VMT for no action travel route	15.80	900	5,190,000
Truck VMT for travel route alternative 2	15.40	900	5,059,000
Truck VMT for travel route alternative 3B	11.10	900	3,646,000
Truck VMT for travel route alternative 4	26.40	900	8,672,000

As shown in Table 4.6-8, the highest annual VMT among the alternatives is 8.7 million; and the lowest annual VMT is 3.6 million. Alternative 4 would have the highest annual VMT among the alternatives at 8.7 million, followed by the No Action Alternative and Alternative 2 at 5.2 and 5.1 million respectively. Alternative 3B would have the lowest annual VMT at 3.6 million.

4.6.4.2.1 No Action Alternative: Annual VMT Results

The No Action Alternative is anticipated to have an annual VMT of 5.2 million. In comparison with other alternatives, this calculated VMT is in the middle range. The No Action Alternative is anticipated to have **minor impacts** to roadway conditions based on the calculated VMT.

4.6.4.2.2 Alternative 2: Annual VMT Results

Alternative 2 is anticipated to have an annual VMT of 5.1 million. In comparison with other alternatives, this calculated VMT is in the middle range. Alternative 2 is anticipated to have **minor impacts** to roadway conditions based on the calculated VMT.

4.6.4.2.3 Alternative 3B: Annual VMT Results

Alternative 3B is anticipated to have an annual VMT of 3.6 million. In comparison with other alternatives, this calculated VMT is in the lowest range. Alternative 3B is anticipated to range from **little to no impacts to minor impacts** to roadway conditions based on the calculated VMT.

4.6.4.2.4 Alternative 4: Annual VMT Results

Alternative 4 is anticipated to have an annual VMT of 8.7 million. In comparison with other alternatives, this calculated VMT is in the highest range. Alternative 4 is anticipated to range from **minor to moderate** impacts towards roadway conditions based on the calculated VMT.

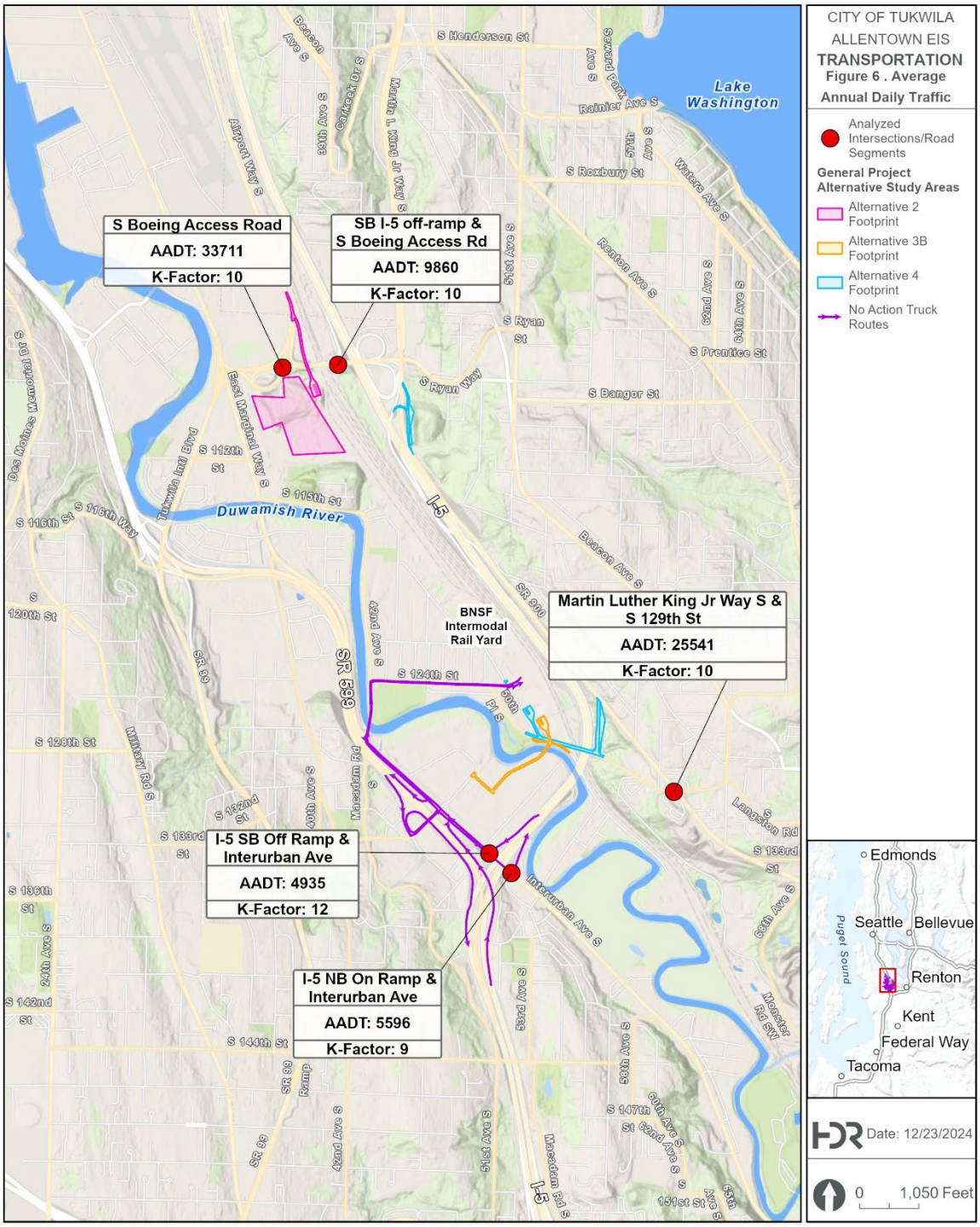


Figure 4.6-3 Overview of Annual VMT by Alternatives

4.6.4.3 Crash Analysis Results

Crash data for six study intersections was requested through the WSDOT Public Disclosure Request Center. Data for 2019 to 2023 is shown in Table 4.6-9 and Table 4.6-10. The data shows a total of 138 crashes, with Martin Luther King Jr. Way South & 129th Street having the highest number of recorded crashes. No fatalities were recorded in the data that was provided.

Table 4.6-9 Crash Data Summary 2019-2023 for Six Study Intersections

Intersection	2019	2020	2021	2022	2023	Total
SB I-5 off-ramp & S Boeing Access Rd	6	3	10	12	15	**46**
Interurban Ave S & Gateway Dr (N)	1	1	0	0	0	**2**
Interurban Ave S & Gateway Dr (S)/S 133rd St	1	2	5	4	3	**15**
Interurban Ave S & SB I-5 off-ramp	1	1	3	0	1	**6**
Interurban Ave S & NB I-5 on-ramp	1	1	0	1	4	**7**
Martin Luther King Way & S 129th St	13	15	13	12	9	**62**
Total by Year	**25**	**24**	**31**	**31**	**33**	**138**

Table 4.6-10 Crash Data Summary 2019-2023 for Six Study Intersections by Severity

Intersection	Fatal	Serious Injury	Minor Injury	Possible Injury	No Injury	Total
SB I-5 off-ramp & S Boeing Access Rd	0	2	5	9	30	**46**
Interurban Ave S & Gateway Dr (N)	0	0	0	1	1	**2**
Interurban Ave S & Gateway Dr (S)/S 133rd St	0	0	7	0	8	**15**
Interurban Ave S & SB I-5 off-ramp	0	1	0	0	5	**6**
Interurban Ave S & NB I-5 on-ramp	0	0	3	0	4	**7**
Martin Luther King Way & S 129th St	0	0	7	17	38	**62**
Total by Severity	**0**	**4**	**24**	**27**	**89**	**138**

The intersection with the highest recorded total crashes is Martin Luther King Way & South 129th Street at 62 total recorded crashes over the five-year period, which is the closest intersection to Alternative 4. This intersection also has the highest number of severe crashes, with four crashes classified as “serious injury” and 24 classified as “minor injury”. The intersection with the lowest recorded total crashes is Interurban Ave South/Gateway Dr (N) at two total recorded crashes over the five-year period, which overlaps with the No Action Alternative. These two crashes are also classified as “possible injury” or “no injury”, which are the least severe type of crashes.

The overall calculated crash rate for all study intersections ranges between 0.5 to 0.7, which is lower than the Washington state average of 1.0 to 1.5. This indicates that the crash rates for all study intersections are low across the board. Therefore, there would be no further crash rate analyses beyond data presented in the tables above.

4.6.4.4 Pavement Conditions Results

Pavement Conditions Index (PCI) data, Truck VMT, and roadway area for the alternatives' truck routes were gathered from the City of Tukwila Public Works Department and calculated. Data is shown in Table 20 below. The PCI along each truck route varies for each alternative and is shown to provide a baseline for existing pavement conditions. Truck VMT and the total roadway area for each alternative also varies significantly.

Table 4.6-11 Comparison of PCI between Alternatives

Alternative	Lowest and Highest PCI Rating	Truck VMT (annual)	Roadway Areas (sq. ft.)
No Action Alternative	Lowest PCI Rating: 41.2 (Marginal) Highest PCI Rating: 89.3 (Excellent)	5,190,000	2,002,200
Alternative 2	Lowest PCI Rating: 36.2 (Poor) Highest PCI Rating: 88 (Excellent)	5,059,000	1,951,500
Alternative 3B	Lowest PCI Rating: 52.7 (Fair) Highest PCI Rating: 89.3 (Excellent)	3,646,000	1,406,600
Alternative 4	Lowest PCI Rating: 57.3 (Fair) Highest PCI Rating: 64.6 (Good)	8,672,000	3,345,400

Figure 4.6-4 shows the PCI for all roadway segments in the City and the alternative footprints.

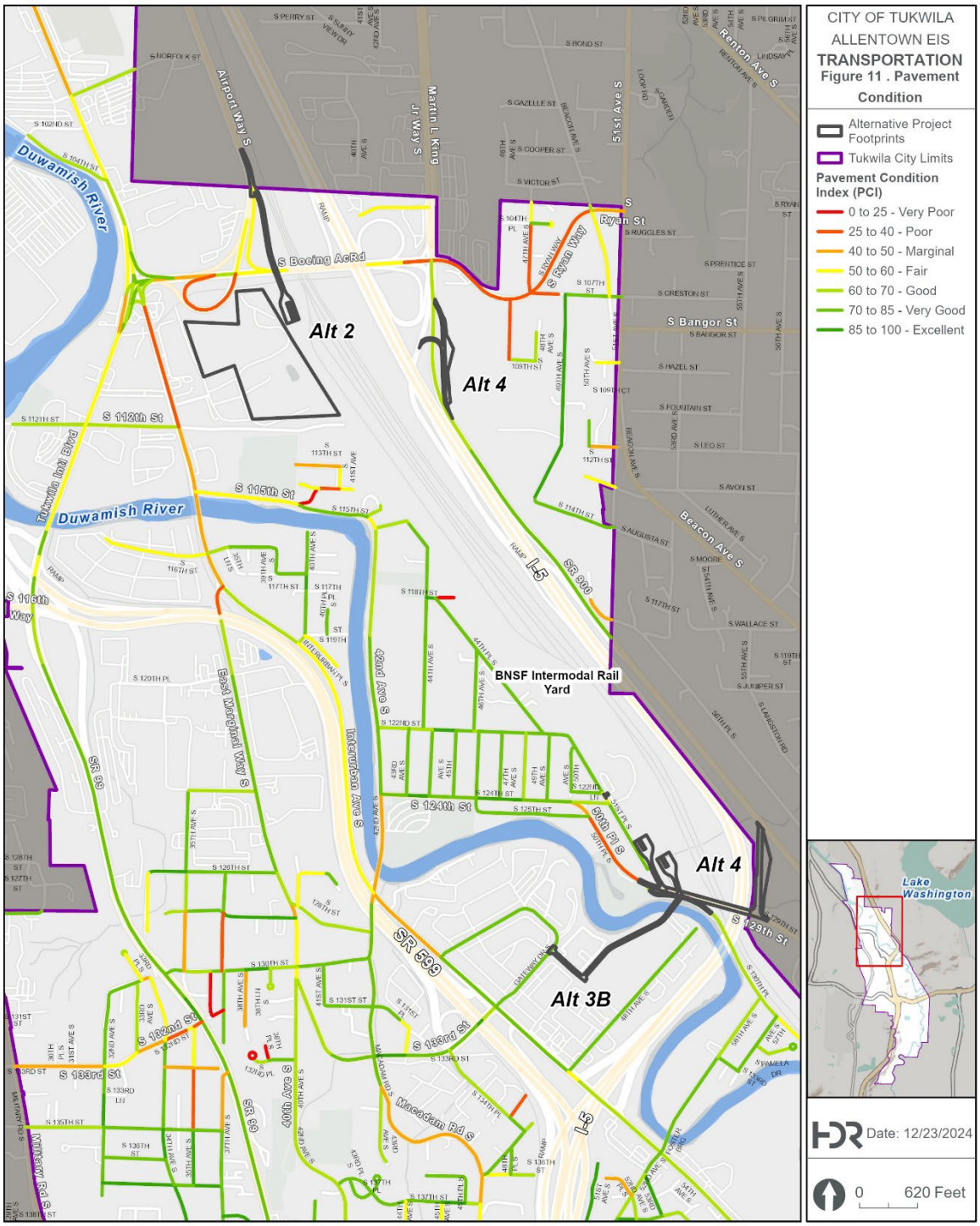


Figure 4.6-4 Pavement Condition Index (PCI) of the City of Tukwila

Comparing the truck VMT and total square footage of pavement for each build alternative, Alternative 4 would have the greatest impact to the existing roadway condition due to the largest truck VMT and total pavement square footage, resulting in an increase pavement degradation compared to the No Action alternative. This can be attributed to the total length of the truck route being the greatest for all alternatives.

Alternative 2 and Alternative 3B both result in a smaller truck VMT and pavement area compared to the No Action. This can be attributed to the shorter length of truck route compared to the No Action alternative. This may result in prolonging the service life of portions of exiting pavement along the roadway segments that will see a reduction in truck VMT compared to the No Action alternative.

4.6.4.5 Summary of Impacts by Alternative

A summary of the construction and operational impacts for the variables considered including LOS, AADT, crash data, and PCI data for the proposed project alternatives are presented in Table 4.6-12. Construction and operational impacts are similar, as the routes being used during these two phases are assumed to be similar.

Table 4.6-12 Impact Summary Table

	Magnitude of Impacts for Variables in the Transportation Analysis[1]		
Alternative	**Level of Service (LOS)**	**Vehicle Miles Traveled (VMT)**	**Pavement Conditions**
No Action	Minor	Minor	Minor
2	Minor	Minor	Minor
3B	Minor	Minor	Minor
4	Significant	Moderate	Minor

[1] If a resource has more than one magnitude of impact (i.e. a range of impacts), the highest level is used in this chart for conservative comparison.

4.6.5 Mitigation Measures

The proposed Project would not result in operational degradation of the transportation system within the project area. Future decline in LOS for the year 2045 is due to an assumed 1% annual increase in natural traffic volume growth. LOS and Delay results for 2045 indicate that, without improvements, several intersections will experience severe congestion. Martin Luther King Jr Way South/South 129th Street (Alternative 4) is expected to continue facing substantial delays, resulting in LOS F with delays exceeding 300 seconds per vehicle. General measures such as retiming and coordinating traffic signals would improve the LOS.

In the long term, opportunities for multimodal integration should be explored to reduce dependency on vehicular traffic to reduce AADT. Enhancing pedestrian and bicycle facilities, as well as planning phased infrastructure investments, would help accommodate incremental traffic growth while minimizing disruptions during construction. Finally, engaging local stakeholders, including residents and businesses,

will be critical to addressing community concerns related to traffic impacts and environmental considerations. Collaboration with the WSDOT would help to align local improvements with regional transportation goals, fostering a cohesive and sustainable transportation network for Tukwila.

For pavement conditions, the City has designated various treatment conditions for the pavements as corresponding to the pavement scores. Preventative maintenance or surface treatment strategies are recommended for areas with a PCI rating of 70 to 100, overlays (thin, moderate, thick) are recommended for pavements with PCI ratings of 40 to 70, and reconstruction (base or surface) is recommended for pavements with PCI ratings of 0 to 40. Pavements in the study area are mostly rated 'Good' which indicates that overlays are recommended. Specific mitigation strategies related to the project would have to be proposed by the City, if needed.

Short-term Traffic Mitigation Recommendations:

- Implement signal timing adjustments at key intersections, particularly at Martin Luther King Jr Way South/ South 129th Street, to alleviate congestion and improve overall traffic flow.
- Enhance safety features at high-crash locations, such as improved signage, road markings, and dedicated turn lanes to reduce the likelihood of collisions and improve safety for all road users.

Long-term Traffic Mitigation Recommendations:

- Pursue capacity enhancements at critical intersections, including the addition of lanes or advanced signal optimization, to address projected traffic growth and mitigate future congestion.
- Implement **Alternative 3B** to balance the distribution of traffic volumes and minimize delays across the network. This alternative also offers environmental benefits by reducing truck VMT compared to other options.
- Consider multimodal integration opportunities, such as enhancing pedestrian and bicycle facilities, to reduce vehicular dependency and promote sustainable transportation options.

4.7 Health and Safety

This section describes the potential environmental health and safety hazards that may result from construction and operation of the proposed Project's Alternatives 2, 3B, and 4 as well as from the No Action Alternative. Risks to environmental health and safety could occur during construction or during operations. The risks may include fire or explosion; electrical and mechanical hazards; inadvertent release of hazardous materials; and exposure to existing hazardous materials sites. The potential exposure to such risks by the public, construction workers, and employees during operations are evaluated. Potential mitigation measures are also identified in this section.

Health and safety concerns relating to pedestrians and vehicle traffic are discussed in Section 4.6.

4.7.1 Affected Environment

The study area for the environmental health and safety analysis is a 0.5-mile radius from the footprint of each alternative. A 0.5-mile search radius was used to match the ASTM-defined search radius for state-listed contaminated sites. Known hazardous materials sites and hazardous materials cleanup sites within 0.5 mile from each alternative are identified below. Natural hazards, such as flooding or volcanic eruptions are addressed in their respective resource sections (Section 4.1 and Section 4.2).

4.7.1.1 Hazardous Materials and Sites

Hazardous materials are materials that, because of their chemical, physical, or biological properties, pose a potential risk to life, health, the environment, or property when not properly contained.

A survey of known contaminated sites within the study area was conducted using the Washington State Department of Ecology's (Ecology's) online system (Ecology 2024a). In total, 58 sites were mapped within the 0.5-mile study areas of Alternatives 2, 3B, and 4 and the No Action Alternative. Of these sites, 22 were identified as either awaiting cleanup or have had cleanup activities started. The remaining sites were excluded from further analysis based on regulatory status. It is important to note that due to the long-term history of development and heavy industrial use in the area, including rail operations at the BNSF South Seattle Intermodal Facility, hazardous materials may be present in soil and groundwater that have not been identified by the Ecology database.

In addition to the confirmed or suspected contaminated sites listed below for each alternative, all of the alternatives are located within the mapped Tacoma Smelter Plume (Ecology 2024b). Alternatives 2 and 4 are mapped as an area with less than 20 parts per million (ppm) predicted arsenic concentrations in soil. Predicted arsenic concentrations range from 20 to 40 ppm for Alternative 3B and the No Action Alternative. Model Toxic Controls Act Method A cleanup levels for arsenic is 20 ppm (Ecology 2024b).

Table 4.7-1 through Table 4.7-4 summarize the confirmed and suspected contaminated sites within 0.5 mile of each alternative. Due to each alternative's relatively close proximity to each other, the same confirmed or suspected contaminated site may be listed under one or more alternative. Figure 4.7-1 through Figure 4.7-5 show the locations of each site in relation to each alternative.

Table 4.7-1 No Action Alternative – Confirmed and Suspected Contaminated Sites within 0.5 mile

Site Name	Cleanup Site Id	Site Status	Address	Affected Media and Contaminants Confirmed and Suspected above Cleanup Levels
C & D Wells LLC	7001	Cleanup Started	12677 E Marginal Way S	Metals priority pollutants, non-halogenated solvents, lead, benzene, petroleum products confirmed in soil and groundwater
Crowell Residence	3377	Awaiting Cleanup	4105 S 139th St	Petroleum products confirmed in soil and groundwater
Fostoria Gardens	2178	Cleanup Started	4501 S 134th St	Arsenic and metals priority pollutants confirmed in soil; arsenic confirmed in groundwater
King County Metro Transit South Base	7077	Cleanup Started	12100 12200 E Marginal Way S	Benzene, petroleum products confirmed in soils and groundwater
Peterson Tukwila 76	7543	Cleanup Started	13310 Interurban Ave S	Beneze and petroleum products confirmed in soil and groundwater
Shell 120598	5937	Cleanup Started	13138 Interurban Ave S	Benzene and petroleum hydrocarbons confirmed in groundwater; petroleum products confirmed in soils

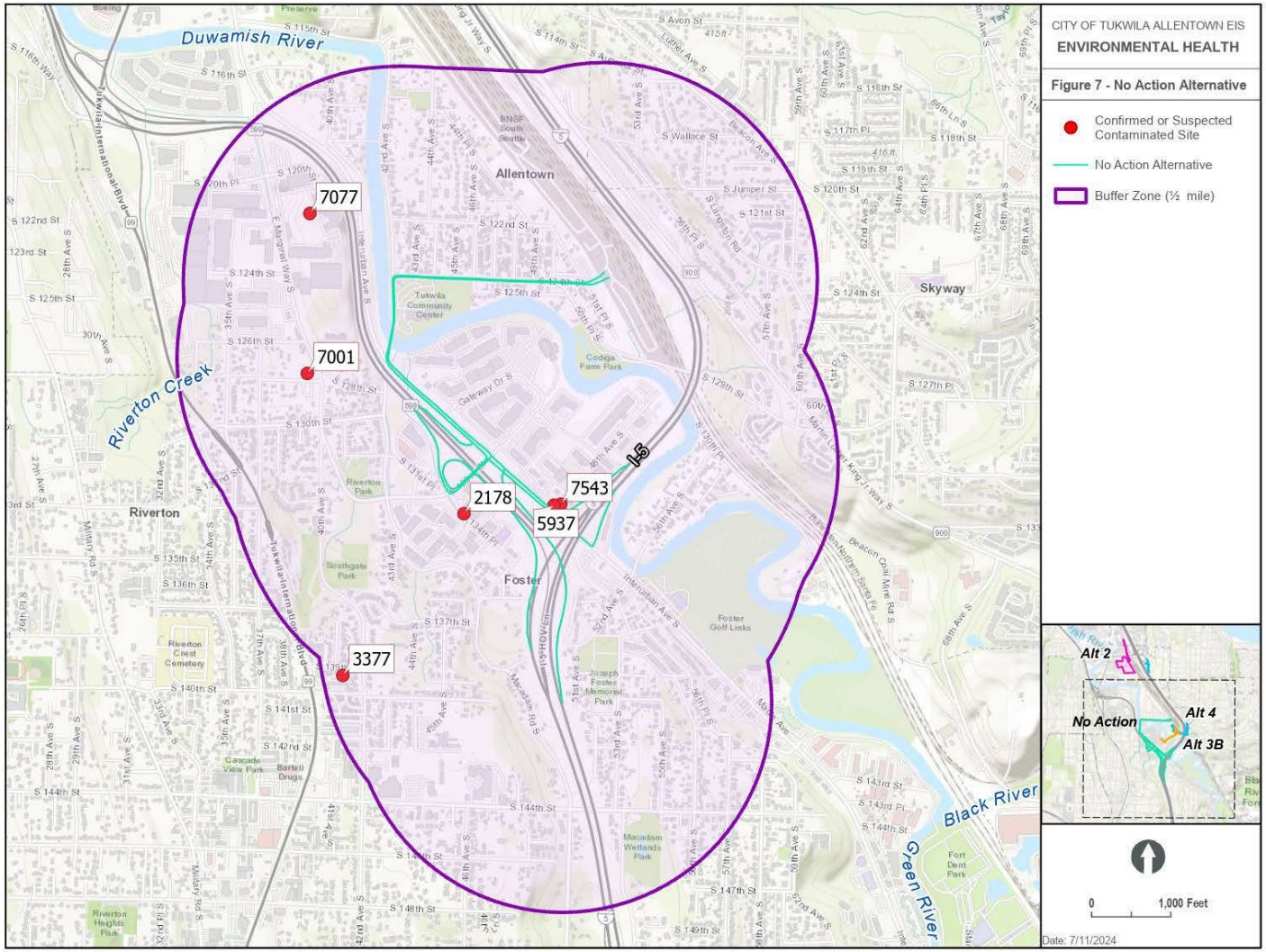


Figure 4.7-1. No Action Alternative- Confirmed and Suspected Contaminated Sites Mapped

Table 4.7-2. Alternative 2 – Confirmed and Suspected Contaminated Sites within 0.5 mile

Site Name	Cleanup Site Id	Site Status	Address	Affected Media and Contaminants Confirmed and Suspected above Cleanup Levels
Affordable Auto Wrecking	1484	Awaiting Cleanup	9802 Martin Luther King Jr Way S	Metals priority pollutants, non-halogenated solvents, Polycyclic Aromatic Hydrocarbons (PAHs), and petroleum products suspected in soils. Metals priority pollutants, non-halogenated solvents, PAHs, and petroleum products confirmed or suspected in soils.
BNSF Locomotive Spill	15030	Cleanup Started	S Norfolk St & Airport Way S	Confirmed petroleum products in soil; suspected in groundwater
Boeing Field Chevron	7030	Cleanup Started	10805 Tukwila International Blvd	Benzene, non-halogenated solvents, petroleum products confirmed in soils and groundwater
Boeing Military Flight Center	12904	Cleanup Started	10002 E Marginal Way S	Confirmed PCBs in soils; suspected in groundwater
Chinook Wind	15160	Awaiting Cleanup	11244 Tukwila International Blvd	Confirmed halogenated pesticides, lead, metals-other, petroleum products, PCBs, and PAHs in soil. Petroleum products and PAHs confirmed in groundwater.
Easteys ARCO	5834	Cleanup Started	9834 9840 Martin Luther King Jr Way S	Benzene, petroleum products confirmed in soil and groundwater
Emerald Gateway	6584	Cleanup Started	3301 S Norfolk St	Halogenated organics, non-halogenated solvents, petroleum hydrocarbons confirmed in groundwater, and confirmed and suspected in soil
McConkey Property	11275	Cleanup Started	10710 E Marginal S & 10650 27th S	Confirmed benzene and petroleum products in soil; suspected in groundwater
North Winds Weir Intertidal Restoration	813	Cleanup Started	2724 S 112TH St	Confirmed metals in groundwater, confirmed PAHs and petroleum products in soil
Northwest Auto Wrecking	1877	Cleanup Started	10230 E Marginal Way S	Suspected and confirmed halogenated organics, metals, non-halogenated solvents, PCBs, and petroleum products in soil and groundwater

Site Name	Cleanup Site Id	Site Status	Address	Affected Media and Contaminants Confirmed and Suspected above Cleanup Levels
Seattle Police Athletic Association	16604	Awaiting Cleanup	11030 E Marginal Way S	Confirmed arsenic, lead, petroleum products and PAHs in soils
Triad Machinery Inc Tukwila	1800	Awaiting Cleanup	11210 Tukwila International Blvd	Confirmed or suspected arsenic, metals priority pollutants, and petroleum products in soil and groundwater

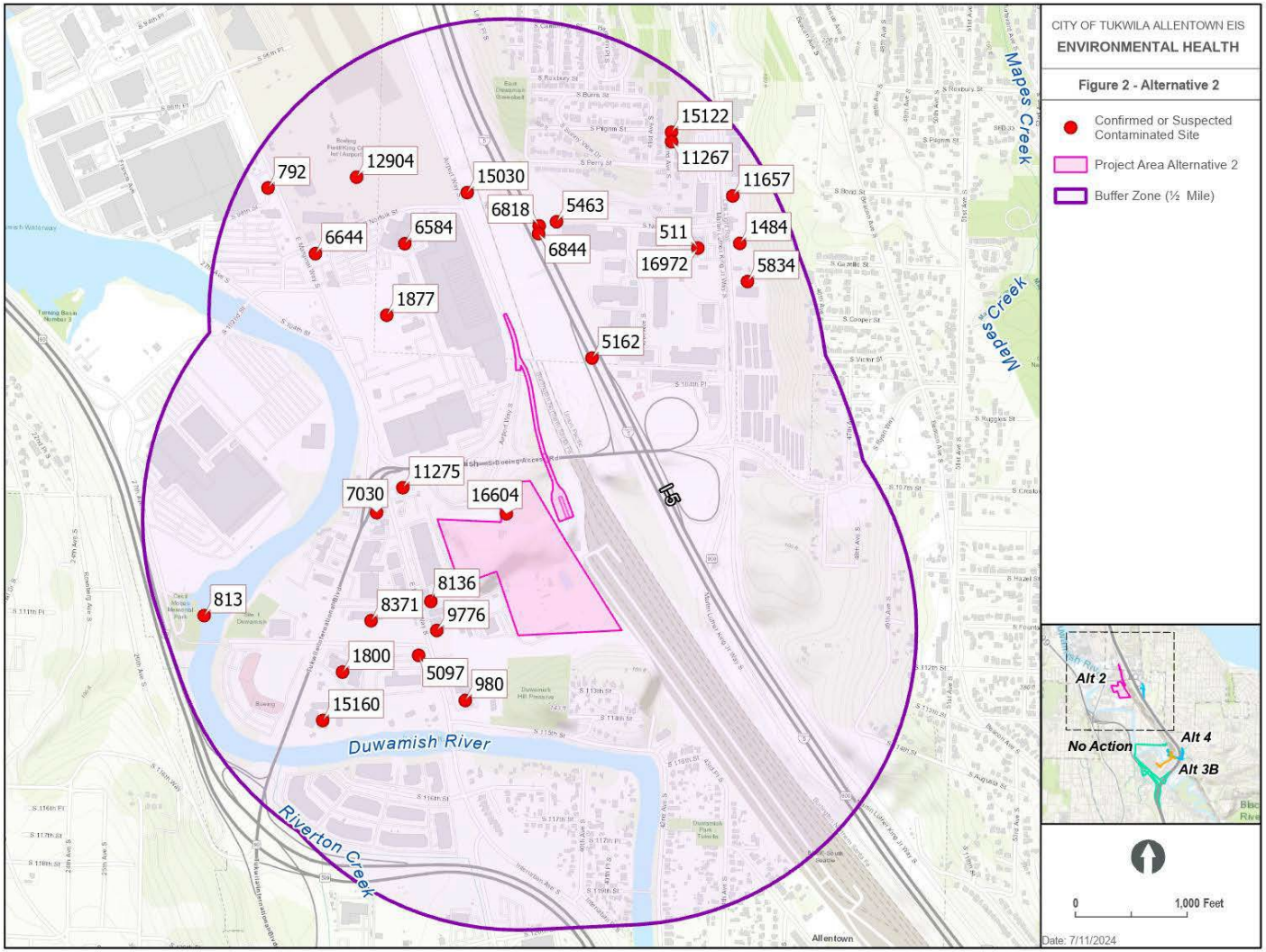


Figure 4.7-2. Confirmed and Suspected Contaminated Sites Mapped within 0.5 mile of Alternative 2

Table 4.7-3. Alternative 3B – Confirmed and Suspected Contaminated Sites within 0.5 mile

Site Name	Cleanup Site Id	Site Status	Address	Affected Media and Contaminants Confirmed and Suspected above Cleanup Levels
Exxon 72894	9417	Cleanup Started	12911 Martin Luther King Jr Way S	Confirmed benzene, lead, methyl tertiary-butyl ether, non-halogenated solvents, and petroleum hydrocarbons in soils and groundwater
Fostoria Gardens	2178	Cleanup Started	4501 S 134th St	Arsenic and metals priority pollutants confirmed in soil; arsenic confirmed in groundwater
Penske Truck Leasing 1990	8272	Cleanup Started	12840 48th Ave S	Arsenic, benzene, lead, petroleum products confirmed or suspected in groundwater; benzene, petroleum products confirmed or suspected in soils
Penske Truck Leasing 1994	8273	Cleanup Started	12840 48th Ave S	Arsenic, benzene, lead, petroleum products confirmed or suspected in groundwater; benzene, petroleum products confirmed or suspected in soils
Peterson Tukwila 76	7543	Cleanup Started	13310 Interurban Ave S	Beneze and petroleum products confirmed in soil and groundwater
Shell 120598	5937	Cleanup Started	13138 Interurban Ave S	Benzene and petroleum hydrocarbons confirmed in groundwater; petroleum products confirmed in soils

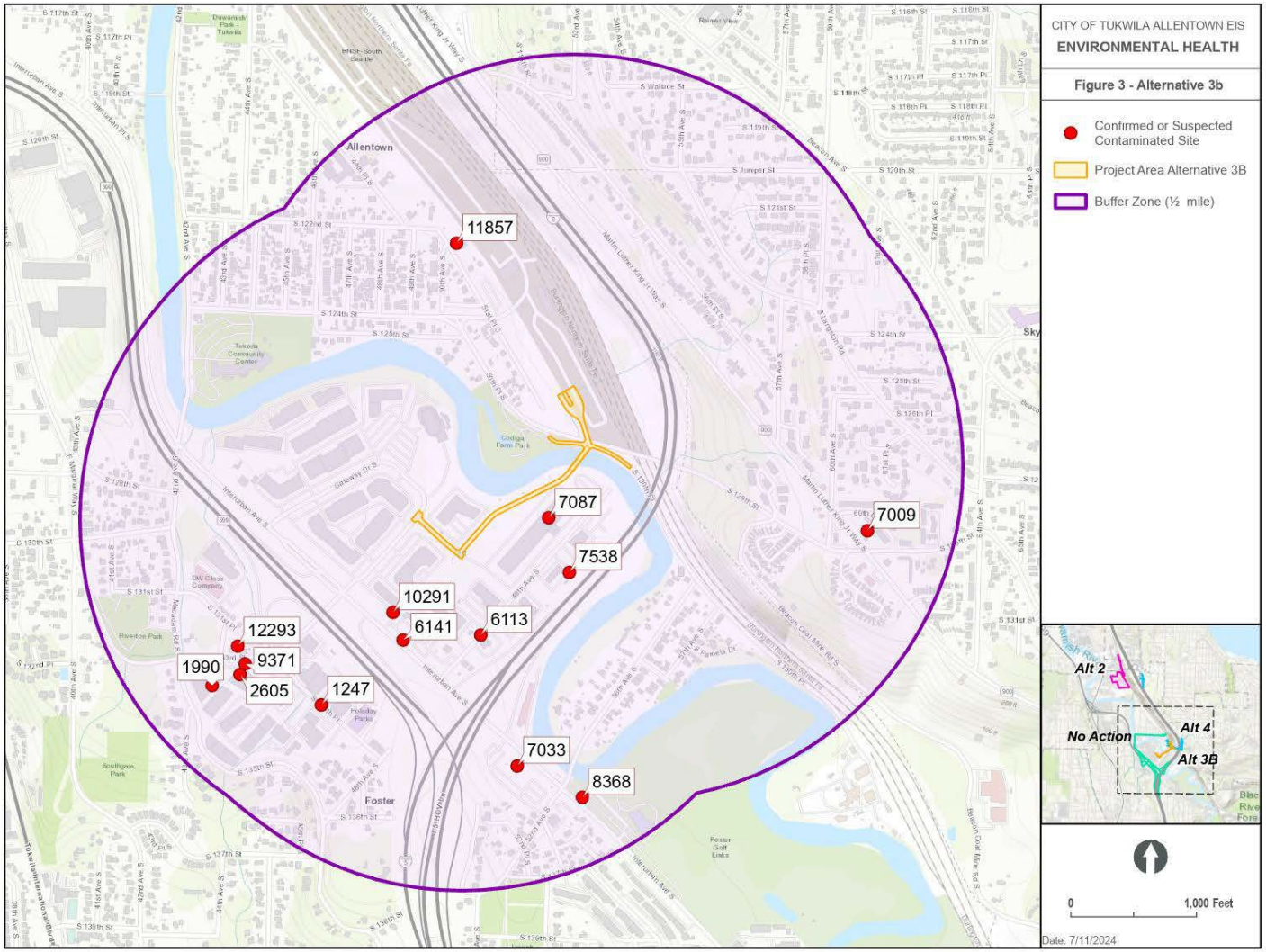


Figure 4.7-3. Confirmed and Suspected Contaminated Sites Mapped within 0.5 mile of Alternative 3B

Table 4.7-4. Alternative 4 – Confirmed and Suspected Contaminated Sites within 0.5 mile

Site Name	Cleanup Site Id	Site Status	Address	Affected Media and Contaminants Confirmed and Suspected above Cleanup Levels
Affordable Auto Wrecking	1484	Awaiting Cleanup	9802 Martin Luther King Jr Way S	Metals priority pollutants, non-halogenated solvents, PAHs, and petroleum products suspected in groundwater. Metals priority pollutants, non-halogenated solvents, PAHs, and petroleum hydrocarbons confirmed or suspected in soils.
Building Busters	1961	Awaiting Cleanup	13001 Martin Luther King Jr Way S	Suspected petroleum products in soil and groundwater
Easteys ARCO	5834	Cleanup Started	9834 9840 Martin Luther King Jr Way S	Benzene, petroleum hydrocarbons confirmed in soil and groundwater
Exxon 72894	9417	Cleanup Started	12911 Martin Luther King Jr Way S	Confirmed benzene, lead, methyl tertiary-butyl ether, non-halogenated solvents, and petroleum hydrocarbons in soils and groundwater
Penske Truck Leasing 1990	8272	Cleanup Started	12840 48th Ave S	Arsenic, benzene lead, petroleum products confirmed or suspected in groundwater; benzene, petroleum hydrocarbons confirmed or suspected in soils
Peterson Tukwila 76	7543	Cleanup Started	13310 Interurban Ave S	Benzene and petroleum products confirmed in soil and groundwater
Seattle Police Athletic Association	16604	Awaiting Cleanup	11030 E Marginal Way S	Confirmed arsenic, lead, metals, petroleum products, and PAHs above cleanup levels in soil
Shell 120598	5937	Cleanup Started	13138 Interurban Ave S	Benzene and petroleum products confirmed in groundwater; petroleum products confirmed in soils

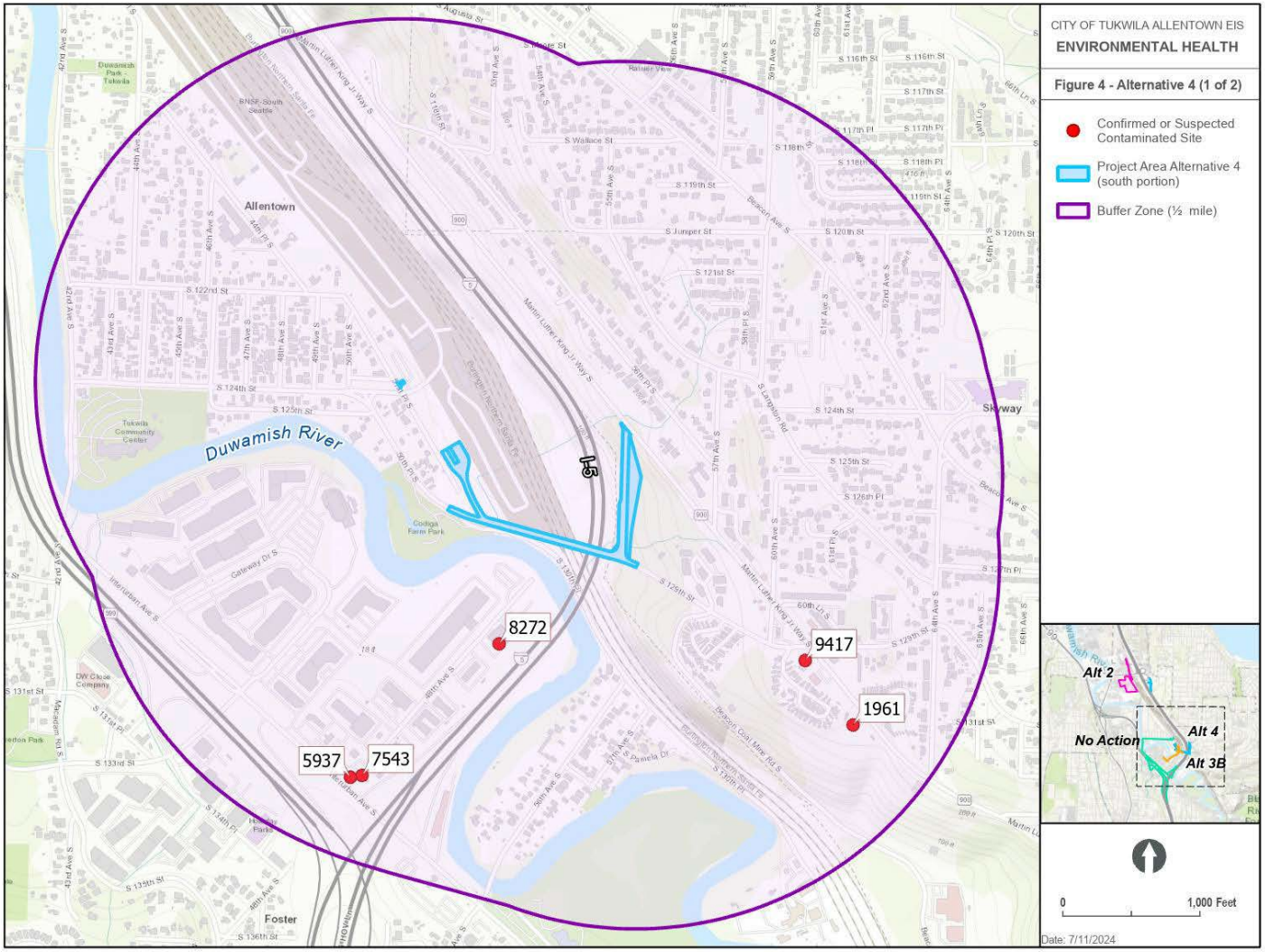


Figure 4.7-4. Confirmed and Suspected Contaminated Sites Mapped within 0.5 mile of Alternative 4 (South)

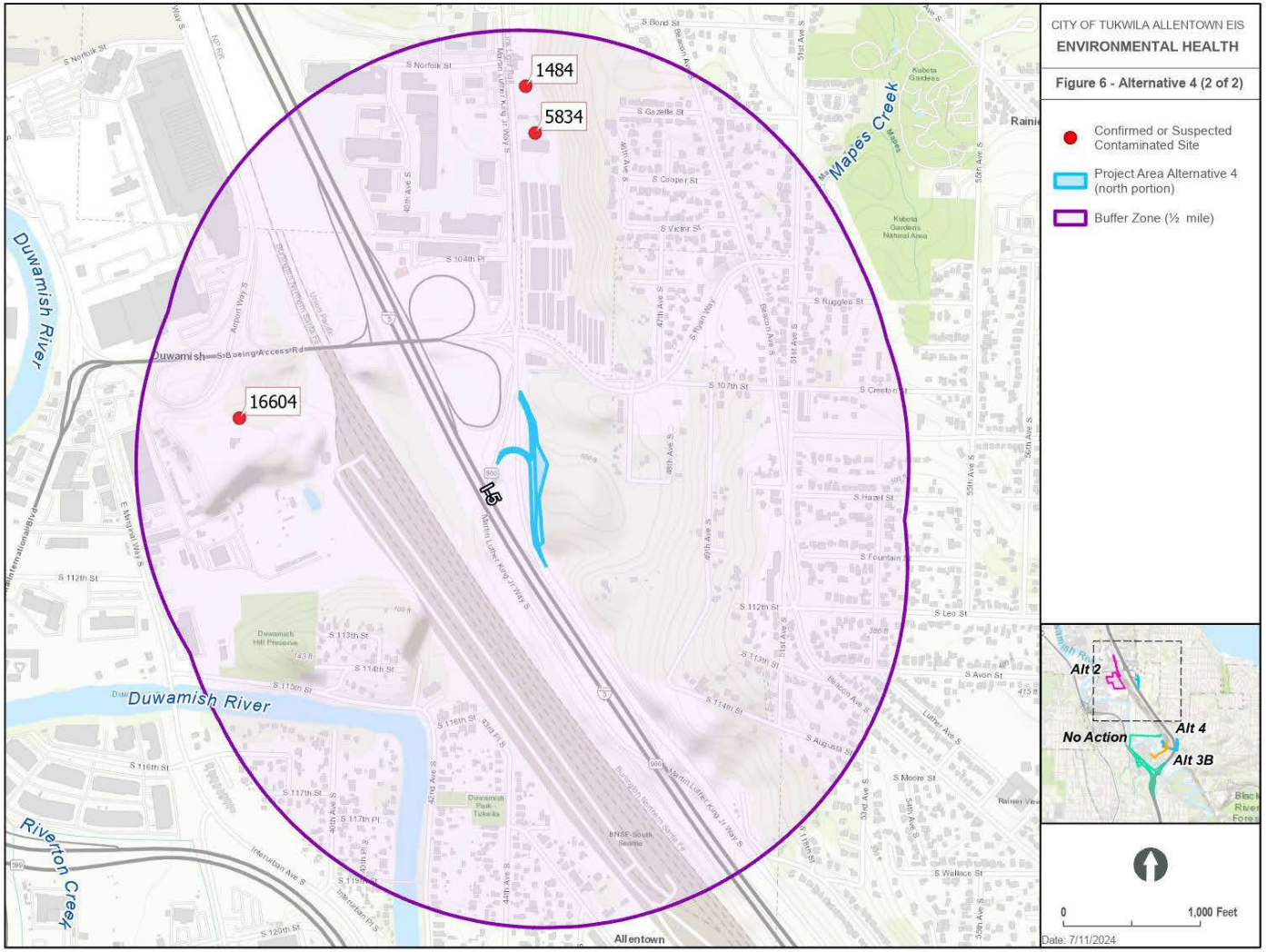


Figure 4.7-5. Confirmed and Suspected Contaminated Sites Mapped within 0.5 mile of Alternative 4 (South)

4.7.2 Relevant Plans Policies and Regulations

This section summarizes federal, state, and local regulations related to health and safety that are applicable to the proposed Project. Relevant policies and regulations related to health and safety are summarized in Table 4.7-5.

Table 4.7-5. Applicable Policies and Regulations for Health and Safety

Laws and Regulations	Description
Federal	
Pipeline and Hazardous Materials Safety Administration (PHMSA) (49 CFR 105–110, and 171–180, 190-195)	Regulates the movement of hazardous materials.
Limits on Liability (33 USC 2704)	Establishes limits on liability of a responsible party to incur costs from certain types of incidents.
Hazardous Materials Transportation Act (49 USC 51)	Authorizing Act for all aspects of hazardous materials packaging, handling, and transportation for vessel, truck, and rail. Requirements enforced by PHMSA (listed above).
Comprehensive Environmental Response, Compensation and Liability Act (40 CFR 300-302)	Establishes authority for governmental response to hazardous substance releases to the environment and liability for responsible parties for response actions and damage to natural resources.
Occupational Safety and Health (29 CFR 1904, 1910)	Regulates emergency planning and response, including air contaminant exposure limits for workers.
Superfund Amendment and Reauthorization Act (40 CFR 302)	Amended CERCLA and requires reporting for emergency response, emergency release, and hazardous and toxic chemical releases.
Federal Resource Conservation and Recovery Act (42 USC 6901 et seq.)	Governs the generation, storage, and transportation of hazardous waste and waste management activities for hazardous waste treatment, storage, and disposal facilities. This is a delegated Washington State program under the Washington Hazardous Waste Management Act.
Toxic Substances Control Act (15 USC 2601–2629)	Tracks industrial chemicals in the United States and regulates intrastate and interstate commerce.
Department of Transportation Hazardous Materials Regulations (49 CFR 100–185)	Protect against the risks to life, property, and the environment and apply to all interstate, intrastate, and foreign transport of hazardous materials in commerce.
State: Washington	
Pollution Prevention Plan Requirements (WAC 173-307)	Requirements for Pollution Prevention Plans associated with hazardous substance users and waste generators.
Washington Industrial Health and Safety Act (RCW 49.17)	Regulates emergency planning and response, including air contaminant exposure limits for workers.

Laws and Regulations	Description
Model Toxics Control Act and its implementing regulations (RCW 70.105D and WAC 173- 340)	Requires potentially liable persons to assume responsibility for cleaning up contaminated sites. Requires reporting hazardous substance releases if they constitute a threat to human health or the environment.
Washington Administrative Code (WAC 173-340-300)	Requires reporting hazardous substance releases if they constitute a threat to human health or the environment.
General Occupational Health Standards (WAC 296–62)	Protect the health of employees and help create a healthy work place by establishing requirements to control health hazards including chemical hazard communication and exposure programs.
Local	
TMC Title 21 Environmental Regulations Code 17.02	City environmental policy adheres to State SEPA policy and Ecology rules and regulations.
King County Code, Chapter 20.44.085	King County is required under RCW 43.21C.120 to adopt rules pertaining to the integration of the policies and procedures of the State SEPA into programs within King County's jurisdiction. King County rules are consistent those of the Ecology, Chapter 197-11 WAC.
City of Seattle Municipal Code 25.05	City environmental policy adheres to State SEPA policy and Ecology rules and regulations.

4.7.3 Methodology

Potential impacts on environmental health and safety were evaluated based on the applicable federal, state, and local regulatory frameworks, as well as health and safety related to construction and operation of the proposed Project Alternatives.

Potential impacts are discussed in qualitative terms and are evaluated based on the definitions listed in Table 4.7-6.

Table 4.7-6. Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The proposed Project would not result in any impacts to health and safety.
Minor	The proposed Project would result in temporary impacts to health and safety
Moderate	The proposed Project either would result in permanent impacts to health and safety that have been mitigated to be less than significant
Significant	The proposed Project would result in significant permanent impacts that cannot be mitigated to be less than significant.

4.7.4 Impacts Analysis

4.7.4.1 No Action Alternative

Moderate Impact. The No Action Alternative would not result in the potential for release of contaminants. However, any existing health and safety hazards, including contaminated soils and groundwater would remain within the study area. In addition, the potential for spills or release during transport and operations would continue, resulting in potential impacts to the public and employees. These potential impacts would be minor due to requirements that if a release of hazardous materials were to occur, emergency response and cleanup measures would be implemented as mandated by federal and state laws, including Washington State regulations under Revised Code of Washington (RCW) 90.56.The transport of hazardous materials during operations will comply with applicable federal and state regulations identified in Table 4.7-1 under the No Action Alternative.

4.7.4.2 Impacts Common to All Build Alternatives

4.7.4.2.1 Construction Hazards

Moderate Impact. Various site preparation activities are proposed, including, but not limited to, clearing, grading, and roadway construction. During construction of proposed Alternatives 2, 3B, or 4, construction workers could experience typical construction hazards including trips, slips, and falls; electrical or mechanical hazards; overhead hazards from cranes or excavators; and risk of blunt force trauma from accidents with machinery.

Hazardous materials likely to be transported through the proposed Project site during construction include materials typical of construction projects and would generally be used and handled in relatively small quantities. Impacts from releases would likely be localized and short term in nature, although fuel spills could reach and affect the Duwamish River. Any spills that occur would require reporting and response as required by federal and state laws. The transport of hazardous materials would be compliant with applicable federal and state regulations such as the Resource Conservation and Recovery Act, U.S. Department of Transportation Hazardous Materials Regulations, and other regulations identified in the Regulatory Framework in Table 4.7-5.

Construction workers could also be exposed to inadvertent release of hazardous materials. Hazardous materials likely to be present during construction would include materials typical of construction projects, which are generally handled and used in relatively small quantities and include fuels and lubricant oils for construction vehicles and equipment. Diesel fuel is the primary potentially hazardous substance that could be used in a significant quantity during construction. Construction of the proposed Project could expose hazardous materials in the proposed Project site that pose risks to human health and the environment through contact with contaminated soil, contaminated groundwater, and inhalation of toxic vapors. The selected contractor should be required to provide an emergency response plan and practice proper hazardous material storage, handling, and emergency procedures including spill notification and response requirements in accordance with RCW 49.17 and WAC 173-303.

Contractors would be required develop a Project Health and Safety Plan (HASP) prior to construction for all phases of the proposed Project, which would mitigate risks to construction workers as required by Washington Administrative Code 296-800-100. The HASP would be implemented to manage and control

safety risks, as well as to guide responses in the case of emergency situations during construction, including evacuation plans.

Based on these considerations, public and occupational health and safety risks during construction of the proposed Project include the potential exposure to electrical and mechanical hazards for construction workers, inadvertent release of hazardous materials, and exposure to existing hazardous materials sites. A moderate impact, from implementation of the proposed Project, is anticipated.

4.7.4.2.2 Operations Impacts

4.7.4.2.2.1 Inadvertent Release of Hazardous Materials

Moderate Impact. Hazardous materials may be transported to the BNSF intermodal facility. Petroleum products, such as fuel used in truck transport or hazardous materials transported to the BNSF intermodal facility, are potentially hazardous if accidentally released to the environment. These products could threaten plant and animal species, particularly aquatic life, such as that found in the Duwamish River. Spills of these products during truck transport could impact the public, soil, groundwater, surface waters, plants, and animals. If a release of hazardous materials were to occur, emergency response and cleanup measures would be implemented as required by federal and state laws, including Washington State regulations under Revised Code of Washington (RCW) 90.56. Similar to the No Action Alternative, any spills that could occur would require reporting and responding as required by federal, state, and local laws. The transport of hazardous materials during operations would be in compliance with the applicable federal and state regulations identified in Table 4.7-5. The proposed Project would not result in a change to BNSF operations or volume of hazardous materials transported to its facility. Therefore, the impact from the inadvertent release of hazardous materials during the operation of the proposed Project would be the same moderate impact as the No Action Alternative.

4.7.5 Mitigation Measures

Below is a description of the mitigation measures that would be available to minimize or avoid impacts health and safety from construction and operations of the proposed Project. Mitigation measures would be common to Alternatives 2, 3B, and 4.

A. ***HS-1: Prepare a Project Health and Safety Plan.*** In accordance with RCW 49.17, in order to ensure worker safety on site during construction, the selected Contractor should be required develop a HASP prior to construction of the Project. The HASP would be implemented to manage and control safety risks as well as to guide responses in the case of emergency situations during construction. The HASP should be provided to the permitting agency prior to permit issuance.

B. ***HS-2: Prepare Emergency Response Plan.*** The selected Contractor should be required to provide an emergency response plan and practice proper hazardous material storage, handling, and emergency procedures including spill notification and response requirements in accordance with RCW 49.17 and WAC 173-303. The emergency response plan should be provided to the permitting agency prior to permit issuance. Best Management Practices (BMPs) would be in place to minimize impacts on environmental health. Implementation of appropriate spill prevention and control measures would ensure that the risk of an

accidental release of hazardous materials remains low throughout construction of the Project.

C. ***HS-3: Comply with Model Toxics Control Act Regulations for Unexpected Encounter with Hazardous Materials***. The permitting agency would be required to inform the City and contractors that they are instructed to immediately stop subsurface activities if potentially hazardous materials are encountered, or significantly stained soil is found, during construction. Contractors would be instructed to follow applicable regulations including the Model Toxics Control Act and its implementing regulations (RCW 70.105D and WAC 173-340) regarding discovery and response for hazardous materials encountered during the construction process.

D. ***HS-4: Comply with Washington Industrial Safety and Health Act (WISHA) Rules.*** The permitting agency would be required to inform the City and contractors that they are required to comply with WISHA rules that protect workers from hazardous job conditions. WISHA regulates an array of occupational hazards in WAC 296 (Safety Standards for Construction Work) such as safety standards for construction work (WAC 296-155), general safety and health standards (WAC 296-24), and general occupational health standards (WAC 296-62).

4.8 Public Services and Utilities

This section describes the potential impacts to public services (fire, police, and medical) and utilities (water, sewer, and stormwater; natural gas; electrical facilities; and solid waste services) that may result from construction and operation of the proposed Project. Potential mitigation measures are also identified in this section.

4.8.1 Affected Environment

The study area for the public services and utilities analysis is the service areas of the public service agencies and utility providers in relation to proposed Project build alternatives and the No Action Alternative. Table 4.8-1 lists the existing utilities services and providers for each Alternative

Table 4.8-1 Utility Services and Providers within the Study Area

Service	Provider
Police/Sheriff	City of Tukwila, Seattle Police Department, King County Sheriff's Department, Washington State Patrol
Fire	Puget Sound Regional Fire Authority; King County Fire Protection District No. 20, Seattle Fire Department
Medical	St. Anne Medical Center in Burien and Valley Medical Center
Domestic Water	Skyway Water and Sewer District, City of Tukwila, Seattle Public Utilities
Stormwater	King County Department of Natural Resources and Parks – Stormwater Services Section, Seattle Public Utilities, City of Tukwila Public Works Department
Electrical Facilities	Seattle City Light
Solid Waste	Recology, City of Seattle, Waste Management

4.8.1.1 Police and Sheriff Services

The City of Tukwila Police Department, Seattle Police Department, King County Sherriff's Department, and the Washington State Patrol provide law enforcement services to the jurisdictions that include the Alternatives of the proposed Project.

The Tukwila Police Department employs approximately 77 commissioned officers. The law enforcement services provided include patrol, traffic units, K-9 units, marine unit, and administrative (City 2022a). The nearest Tukwila Police Department is located approximately 1.5 miles southwest of Alternative 3B.

The King County Sheriff's Office employs over 1,000 uniformed and professional staff and provides air support, search and rescue, marine rescue, and patrol. King County Sheriff's Office also provides services to Muckleshoot Tribal Lands, Metro Transit, King County International Airport (Boeing Field), and 12 cities (King County 2024e).

The Seattle Police Department is the largest municipal law enforcement agency in Washington state, with 1,200 authorized sworn officers and 631 civilian employees. Law enforcement services include foot, car, and bike patrols; harbor patrol of 59 square miles of waterway; traffic and parking enforcement; and K-9 units (City of Seattle 2024b).

The Washington State Patrol provides traffic law enforcement on state highways and drug law enforcement, Hazardous Materials Team oversight, and incident response services. The Washington State Patrol Field Operations Bureau oversees eight districts within the state. District 2 serves King County, and the field office for District 2 is located in Bellevue, WA (WSP 2020).

4.8.1.2 Fire Services

Fire services for the proposed Project Alternatives and the surrounding area are provided by the Puget Sound Regional Fire Authority, King County Fire District 20, and the Seattle Fire Department (Station 33). The City of Tukwila contracts out fire and EMS services to the Puget Sound Regional Fire Authority. The Puget Sound Fire Authority employs 345 uniformed personnel and provides emergency and non-emergency services to the communities of Covington, Kent, Maple Valley, SeaTac, and parts of unincorporated King County, in addition to the City of Tukwila. Puget Sound Regional Fire Authority has 17 fire stations to provide services to an approximately 120 square mile area (Puget Sound Regional Fire Authority 2024).

King County Fire Protection District No. 20 provides emergency services to an approximately three-square-mile service area in the West Hill Community of King County.

In total, the Seattle Fire Department has 995 uniformed personnel, including firefighters, emergency medical technicians, and chiefs. The department also employs 85 civilian personnel (Seattle Fire Department 2023).

4.8.1.3 Medical

Two hospitals are located near the study area: St. Anne Medical Center in Burien, and Valley Medical Center located in Renton, which is part of University of Washington Medicine. Both are full-service hospitals with emergency rooms. St. Anne Medical Center is located approximately four miles southwest of Alternative 3B. Valley Medical Center is located approximately 3.7 miles southeast of Alternative 4.

4.8.1.4 Domestic Water

The water supply for the proposed Project Alternatives and the surrounding service area is provided by a combination of the City of Tukwila's Public Works Department, Skyway Water and Sewer District, and Seattle Public Utilities. The City of Tukwila's water service area covers approximately 8.6 square miles, and per the 2015 Comprehensive Plan, includes approximately 45 miles of transmission and distribution pipelines. The City of Tukwila's drinking water comes from the Cedar River Watershed, which is owned and maintained by Seattle Public Utilities. The City is a member of the Cascade Water Alliance, which is a group of seven municipalities that collectively purchase water from Seattle Public Utilities (City 2022b).

The Skyway Water and Sewer District service area is approximately 1.8 square miles for water (serving 3,400 customers). The Skyway Water and Sewer District maintains approximately 40 miles of water mains.

Seattle Public Utilities water supply comes from one of two watersheds: approximately 30 to 40 percent of the water supply comes from the Tolt River Watershed, and the remaining 60 to 70 percent of the water supply come from Cedar River Watershed. In total, Seattle Public Utilities provides water to 1.6 million people in the greater Seattle area (Seattle Public Utilities 2024).

4.8.1.5 Stormwater

Stormwater within and adjacent to the proposed Project Alternatives is managed by King County Department of Natural Resources and Parks – Stormwater Services Section, Seattle Public Utilities, and City of Tukwila Public Works Department. These municipalities regulate stormwater discharges via Tukwila Municipal Code (TMC) 14.30, Seattle Municipal Code (SMC) 22.800, and Title 9 of King County Code (KCC).

4.8.1.6 Sewer

Sewer collection service within the study area is provided by the Skyway Water and Sewer District, Seattle Public Utilities, and the City of Tukwila. These three jurisdictions own and operate independent collection systems, which include pipelines and pump stations to collect and carry wastewater flows in their service area, which then flow to King County's regional system for treatment and disposal. King County owns and operates the regional treatment plants, pipelines, pump stations, and other related facilities. The Skyway Water and Sewer District service area is approximately 2.7 square miles for sewer (serving 4,100 customers). The District maintains approximately 48 miles of sewer system piping. The SPU system collects residential, commercial, and industrial sewage and delivers it to interceptor lines operated by the regional sewage treatment agency (King County). The City of Tukwila's sewer system is comprised of approximately of approximately 37 miles of gravity sewer main and the operation and maintenance of 12 lift stations and force mains.

4.8.1.7 Electrical Facilities

Electrical service in the study area is provided by Seattle City Light. Seattle City Light is one of the nation's largest municipally owned utilities serving more than 420,000 homes and 49,000 businesses throughout Seattle, Shoreline, Lake Forest Park, Burien, Renton, Tukwila, SeaTac, Normandy Park, and Unincorporated King County. Hydroelectric plants generate approximately 88 percent of Seattle City Light's electricity. Remaining electrical service is generated by wind, nuclear, biogas, and other unspecified sources.

4.8.1.8 Solid Waste

Starting in 2023, solid waste services within the City of Tukwila are provided by Recology, with the City signing a 10-year contract with the company. Recology provides both residential and business solid waste services. The City of Seattle provides solid waste services for the portion of Alternative 2 located within that jurisdiction. Domestic and commercial solid waste services are provided by private providers within unincorporated King County. For the portion of Alternative 4 located in King County, solid waste services are provided by Waste Management. Solid waste in the study area is ultimately taken to King County's Cedar Hill Landfill for disposal.

4.8.2 Relevant Plans Policies and Regulations

This section summarizes state and local regulations related to public services and utilities that are applicable to the proposed Project. There are no federal regulations applicable to the proposed Project. Relevant policies and regulations related to public services and utilities are summarized in Table 4.8-2.

Table 4.8-2. Applicable Policies and Regulations for Public Services and Utilities

Policies and Regulations	Description
State	
Washington Administrative Code	The Washington Administrative Code (WAC) includes water quality standards that are implemented at the local municipality level. Relevant standards that guide stormwater management and site development manuals, include: • Chapter 173-200 of the WAC, Water Quality Standards for Groundwaters of the State of Washington • Chapter 173-201A WAC, Water Quality Standards for Surface Waters of the State of Washington • Chapter 173-204 WAC, Sediment Management Standards.
Washington State Growth Management Act (GMA)	Under the GMA (Revised Code of Washington 36.70A), certain counties and cities must create and regularly update comprehensive plans to identify where growth will occur and to plan for housing, transportation, water, sewer, natural gas, electrical lines, and other necessary facilities. Jurisdictions under the GMA are required to have a capital facilities' plan element within their comprehensive plans. The capital facilities element requires a forecast of future needs, expansions or new facilities, locations, and capacities of expanded or new facilities and a 6-year plan for financing. The land use element, capital facilities element, and financing plan must all be coordinated and consistent.
Washington Department of Ecology Stormwater Water Quality Regulations	Ecology has the authority to issue stormwater permits guided by both the federal water pollution permit program, known as the National Pollutant Discharge System (NPDES), and also state water quality laws. Stormwater permits vary from water quality general for releasing treated stormwater or wastewater discharge to either surface or groundwater; Construction Stormwater General Permit to control and reduce water pollution during construction; and Municipal Stormwater NPDES.
Local	
City of Tukwila Comprehensive Plan, Utilities Element	The City of Tukwila Comprehensive Plan includes a chapter that identifies goals and policies for utilities. The City of Tukwila Comprehensive Plan has goals and policies in the Utilities Element that address public services and utilities, including: • Policy 12.1.7: Participate in the regulation of all water, sewer and surface water utility services within the City's eventual boundaries. • Policy 12.1.10: Establish and maintain franchises and working agreements with sewer and water utilities currently operating within the City limits, to ensure that the level of service provided is consistent with the City's requirements and neighborhood revitalization plans.
City of Seattle Comprehensive Plan	The City of Seattle Comprehensive Plan includes a chapter that identifies goals and policies for public services and utilities, including: • Goal U G5 Work with non-City utilities to promote the City's overall goals for utility service and coordinated construction within the right-of-way • Policy U 5.1 Provide affected non-City utilities with timely and effective notices of planned road and right-of-way trenching, maintenance, and upgrade activities.
King County Comprehensive Plan	King County Comprehensive Plan includes a chapter that identifies goals and policies for utilities, including: • F-101 King County, the cities, special purpose districts or local service providers shall plan as partners.

Policies and Regulations	Description
	• F-102 King County shall work with cities, special purpose districts, other local service providers and residents to identify and distinguish local, countywide and regional services. • F-204 King County should work with the cities, special purpose districts and other service providers to define regional and local services and to determine the appropriate providers of those services.
City of Tukwila Code	Tukwila Municipal Code (TMC) 14.30, regulates development activities that could affect stormwater and non-stormwater discharges to the stormwater drainage system, including establishing the methods for controlling the introduction of pollutants into the stormwater drainage system.
City of Seattle Code	The City of Seattle regulates stormwater under SMC 22.800, which is also referred to as the Stormwater Manual. Part of the purpose of this code is to meet the requirements of state and federal law and the City of Seattle's municipal stormwater NPDES permit and to protect the public drainage system from loss, injury and damage.
King County Code	Title 9 of KCC is the Surface Wate, Stormwater, and Groundwater Management Manual. The purpose of this Chapter is to promote the public health, safety and welfare by providing for the comprehensive management of stormwater runoff and surface water and erosion control.

4.8.3 Methodology

The public services and utilities analysis evaluates the proposed Project's potential to result in conflicts and/or plan inconsistencies that would result in significant impacts on public services and utilities. The section was written following review of publicly available plan information from the affected public service and utility providers. This section also evaluates the proposed Project's potential to introduce facilities or components that could result in localized public service and utility conflicts or plan inconsistencies. If the proposed Project is determined to be inconsistent with the provision of public services or utilities, or inconsistent with plans for serving the area as future development occurs, an impact would occur. A significant impact would occur if the proposed Project would result in irreversible interruptions to public services and utilities in the area that cannot be addressed via mitigation or would be inconsistent with local growth and demand for services that cannot be addressed via mitigation.

4.8.4 Impacts Analysis

This section describes the potential environmental impacts related to public services and utilities as a result of Project implementation. Potential impacts are discussed in qualitative terms are evaluated based on the definitions listed in Table 4.8-3.

Table 4.8-3. Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The project would not result in any impacts to public services.
Minor	The project would result in temporary impacts to public services.
Moderate	The project would result in permanent impacts to public services that can be mitigated for.

Magnitude of Impact	Description
Significant	The proposed Project would result in significant permanent impacts to public services that cannot be mitigated for.

4.8.4.1 No Action Alternative

No Impact. Under the No Action Alternative, the truck traffic traveling to and from the BNSF intermodal facility would continue under current operating conditions. No changes to existing public services or utilities would occur as a result of Project activities, and no additional impacts would occur with the continued operation of this alternative.

4.8.4.2 Construction Impacts

This section includes the general impacts that would be common to Alternatives 2, 3B, and 4.

4.8.4.2.1 Police and Sheriff Services

Minor Impact. During construction, police services would be provided by the City of Tukwila, Seattle Police Department, and/or King County Sheriff's Department. These jurisdictions may provide traffic control services for City or County right-of-way (ROW) if construction would necessitate law enforcement traffic control services by a uniformed officer(s).

Construction activities would result in increased traffic to and from the proposed Project and an increased presence of construction materials and equipment. Emergency response times may increase due to increased traffic. The addition of construction equipment may lead to service calls for property crimes such as theft or vandalism.

Minor impacts to police and sheriff services from increased traffic, construction activities, and traffic control would be intermittent and temporary, occurring over the construction period, which may create a need for services from police and sheriff services during that time. However, the increased need would not be at a level that would permanently interfere with or cause a decreased level of service for City of Tukwila, Seattle Police Department, or King County Sheriff's Department; therefore, impacts would be minor.

4.8.4.2.2 Fire Services

Minor Impact. Puget Sound Regional Fire Authority, Seattle Fire Department, and/or King County Fire Protection District would provide fire services to the proposed Project during construction. The increased presence of construction equipment, physical property, and vehicles may result in inadvertent traffic delays that may affect emergency service and fire protection response times. Increased traffic from construction could also result in a higher potential for motor vehicle collisions, which could also require emergency services. Further, emergencies related to construction at the proposed Project site could lead to the need for fire and emergency services, such as medical emergencies, construction accidents, fires, and emergencies related to natural disasters that could occur in and affect the proposed Project site.

Impacts to fire services from increased traffic, construction activities, and traffic control would be intermittent and temporary, occurring over the construction period, which could create a need for

emergency and fire services during that time. However, the increased need would not be at a level that would permanently interfere with or cause a decreased level of service for fire service providers in the study area; therefore, impacts would be minor.

4.8.4.2.3 Domestic Water

Minor Impact. Project construction would require the use of locally available water supplies that are distributed by City of Tukwila (via the Cascade Water Alliance), Seattle Public Utilities, and/or the Skyway Water and Sewer District. During construction, water would be required for various activities, such as controlling dust, compacting soil, and mixing concrete. The proposed Project's construction water demand would be minor, short-term, and temporary.

Construction of the proposed Project would be constrained to the proposed Project site and long-term interruption of water services to adjacent parcels is not anticipated. No temporary shutoffs are anticipated as a result of Project construction. Adjacent parcels could experience interruptions if an unanticipated large-scale main break were to occur; however, temporary impacts would be minor.

4.8.4.2.4 Stormwater

Moderate Impact. Construction would result in ground-disturbing activities that could change drainage patterns on site and in the immediate vicinity of the proposed Project. Prior to construction, the Applicant would be required to comply with Ecology Stormwater Quality Regulations, obtain coverage under the National Pollutant Discharge System through a Construction Stormwater General Permit to help control runoff, and reduce water pollution from the construction site. Prior to construction, the Applicant would be required to develop a SWPPP in conformance with requirements in TMC 14.30, SMC 22.800, and/or Title 9 of KCC; implement sediment erosion and pollution prevention control measures; and receive an approved permit under the NPDES program. Therefore, impacts to stormwater are anticipated to be Moderate.

4.8.4.2.5 Sewer

Minor Impact. Wastewater produced during construction would be minimal and would be discharged to the municipal sewer system or hauled off site and the waste disposed of at an appropriate facility in accordance with appropriate regulations. As such, construction of the proposed Project would not impact sewer capacity outside of normal impacts expected during and after temporary construction projects.

Sewer utility relocations are not anticipated for construction. However, adjacent parcels could experience interruptions if an unanticipated large-scale main break were to occur. However, since a main break is unlikely, impacts would be minor.

4.8.4.2.6 Electricity

Minor Impact. The proposed Project is located in a developed areas of the City of Tukwila, City of Seattle, and King County which has existing infrastructure for electric power provided by Seattle City Light. Construction related activities of the proposed Project would result in fuel consumption from the use of construction tools and equipment, as well as transport of workers and materials to or from the construction site. Electricity is not expected to be consumed in large quantities during construction-related activities, as construction equipment is expected to be fueled with diesel,

gasoline, or electricity. It is possible that short-term interruptions could occur during installation of street lighting as part of construction the proposed Project. However, any service interruption would be temporary in nature. Temporary connections to utility customers would typically be established before planned service interruptions to minimize impacts. However, inadvertent damage to underground utilities could occur if utility locations are uncertain or misidentified. Therefore, impacts to electricity are anticipated to be minor.

4.8.4.2.7 Solid Waste Services

Minor Impact. Construction of the proposed Project would be limited to the proposed Project site and would not impact or interrupt solid waste services to adjacent parcels. Construction activities would result in an increase in solid waste services in the proposed Project site during construction; however, no interruptions to service are anticipated. Therefore, impacts to solid waste services are anticipated to be minor.

4.8.4.3 Operations Impacts

Moderate Impact. The proposed Project is not anticipated to result in changes to BNFS's overall operations or staffing. Therefore, with the exception of stormwater and electrical facilities, no additional utility connections or demands are anticipated for operation of the proposed Project. Since no additional truck or employee trips are anticipated as a result of operations, an increased need for emergency services is not anticipated. Impacts to stormwater and electrical utilities from operation are described below.

All of the build alternatives would result in an increase of impervious surface and therefore the amount of surface water runoff is anticipated to increase with proposed Project operations. Onsite stormwater would be collected and treated in accordance with the City of Tukwila, Seattle, and/or King County guidelines and the Ecology Stormwater Management Manual for Western Washington.

Additional electrical utilities would be required for new street lighting associated with road improvements but would not result in additional strain on existing infrastructure and would not affect infrastructure or electricity on adjacent properties. Further, the Applicant would be required to submit service applications to Seattle City Light to ensure adequate supply for electrical service availability; therefore, impacts would be moderate.

4.8.5 Mitigation Measures

Below is a description of the mitigation measures that would be available to minimize or avoid impacts public services from construction and operations of the proposed Project. Mitigation measures would be common to Alternatives 2, 3B, and 4.

- **PS-1: Utility Surveys.** The applicant would conduct potholing and pre-construction surveys to identify utility locations. The utility locations would reduce the likelihood of inadvertent service disruptions from a main break.
- **PS-2: Emergency Services Coordination.** The applicant would notify and coordinate with emergency service providers prior to the start of construction to ensure reliable emergency access or alternative routes to minimize delays in response times.

4.9 Cultural Resources

This section describes the affected environment in the context of cultural resources, provides analysis of the alternatives for potential impacts to those resources, and discusses potential mitigation. The term cultural resources refers to the broad range of resources that represent or convey a place's heritage or help tell the story of a region's past. Cultural resources include archaeological resources, historic built-environment resources, and traditional cultural places (TCP). A cultural resource can be any building, structure, object, site, landscape, or district associated with human activity or use of the environment.

Cultural resources include archaeological resources, historic built-environment resources, and traditional cultural places (TCP). Archaeological resources encompass sites, objects, features, and deposits located on or below the ground surface that are evidence of prior human occupation or use in a particular area. Historic built-environment resources include human-made objects, buildings, structures, sites, and districts that are over 45 years in age and not in ruin. TCPs are sites or locations considered culturally important to the history of a group of people or are locations where culturally important events or practices are known to have occurred or are occurring. Additionally, ethnographic place names that although are not documented as TCPs, potentially have significant meaning to Indian Tribes.

4.9.1 Affected Environment

The affected environment for cultural resources consists of the footprint for Alternatives 2, 3B, and 4, and surrounding areas that would be affected by construction of the proposed action (Study Area). Information about the affected environment was obtained from the technical report, Cultural Resources Inventory Report for BNSF Allentown Truck Re-Route Project EIS (Allen et al. 2024).

4.9.1.1 Cultural Setting

4.9.1.1.1 Precontact Context

The temporal time frames used in the following discussion include regional-specific labels that represent shifts in subsistence strategies, sociopolitical organization, settlement and land use, and material culture within the environment of the Puget Sound region, adapted within the broader phase categories used for many regions across the Pacific Northwest. The phases are divided into three sections based on archaeological data and are discussed below, as follows: the Paleo-Indian, Archaic, and Pacific periods.

4.9.1.1.2 Paleo-Indian Period (Before 12,500 Years BP)

Much of the late Pleistocene terrain in the Puget Sound Region was uninhabitable because of glaciers, and the lands that were occupied at this time were predominantly coastal reaches. Sites from this period are rare, as Paleo-Indian populations were small and highly mobile, and much of the land during this time was covered by glaciers. The earliest occupants in present-day western Washington at this time are known as Paleo-Indians, who were highly mobile hunter-gatherers living in small groups. These occupations are characterized by the presence of large, fluted projectile points (Ames and Maschner 1999; Carlson 1990). Paleo-Indians were also thought to be maritime-oriented and therefore occupied coastal reaches that are now submerged because of relative sea-level rise following glacial retreat (Carlson 1990; Dixon 1993; Fedje and Christensen 1999; Fladmark 1979). Ocean levels rose and submerged many of these coastal sites with the commencement of the warming Holocene epoch.

4.9.1.1.3 Archaic Period (12,500–6,400 Years BP)

Sites from the Archaic period, which dates from 12,500 to 6,400 years BP, are also sparse within the archaeological record (Ames and Maschner 1999; Carlson 1990). Similar to the Paleo-Indians, populations during the Archaic period were small, highly mobile, and generally concentrated along the coast and major waterways. Sea-level changes, erosion, and dense vegetation have obscured much of the evidence of coastal occupation during this time; however, as the climate continued to warm, glaciers retreated over larger areas and provided opportunity for inland expansion (Ames and Maschner 1999). Archaic sites are identifiable by the presence of large, lanceolate projectile points and bifaces, with the addition of microblades, in Pacific Northwest Archaic tool assemblages (Ames and Maschner 1999).

4.9.1.1.4 Pacific Period (circa 6,400–250 Years BP)

The Early Pacific period (6,400 to 3,800 years BP) saw an increase in the use of marine resources as well as the appearance of human burials in middens and cemeteries, more diversity in subsistence activities, and the increased use of bone, antler, and ground stone tools. Microblade technology disappeared; however, ground stone tools (e.g., celts and adze blades) appeared in the toolkit, along with diversification of chipped-stone tool forms and an increase in ornamental pieces, which appear in human burial sites and cemeteries. This shift likely represented an expansion of contact and trade with neighboring groups (Kirk and Daugherty 2007).

The Middle Pacific period (3,800 to 1,500 years BP) is marked by the appearance of long-term settlements and plank houses, intensification of salmon harvesting, and a variegation in tool form and style including fishing technologies (e.g., wooden fishing weirs and girdled/drilled net sinkers) (Ames and Maschner 1999).

The Late Pacific period (1,500 to 250 years BP) saw an increase in the use of larger woodworking tools, a decline in the use of chipped-stone tools, and an increase in funerary ritual and burial activities.

Stabilizing sea levels during this period mean that the Middle and Late Pacific periods are the most visible in the coastal archaeological record (Ames and Maschner 1999). The end of the Pacific period is marked by the introduction of smallpox to the region (Ames and Maschner 1999).

Many of the precontact occupation sites along the Duwamish River have been dated to the Pacific Period (Campbell 1981). Site 45KI00023 (The Duwamish No. 1 site/ həʔapus) is approximately 4.4 miles downriver from the Project Area. This site was originally recorded in 1975, and subsequent archaeological investigations documented midden features, hearths, postholes and the remains of structures, and a limited amount of bone and stone tools (Campbell 1981; Lorenz 1976). Dating of organic material shows occupation of the site from 2,030 to 226 years BP (Robbins et al. 1998).

4.9.1.1.5 Ethnographic Context

The Study Area is located within the traditional territory of the Duwamish (Dxʷdəwʔabš) people, a Puget Salish- or Lushootseed-speaking group that historically inhabited the Duwamish Valley and the shoreline of Elliot Bay (Cummings 2020; Duwamish Tribe 2021). The Duwamish were closely tied through intermarriage and a blend of coastal and riverine subsistence strategies with the Suquamish people, who occupied the west side of the Puget Sound near Agate Pass (Haeberlin and Gunther 1930). The Green River and Upper White River (Smulkamish) groups, now known as the Muckleshoot, traditionally inhabited the Duwamish Valley southeast in areas around modern-day Auburn including the upper

White and Green Rivers (Cummings 2020) (see Appendix E [Allen et al. 2024] for detailed ethnographic context).

4.9.1.1.6 Historic Context

4.9.1.1.6.1 Allentown

The Allentown neighborhood was platted in the early 1900s by the Allen and the Hillman families (Reinartz 1991:155-157). By 1940, parcels along the bank of the Duwamish River in both the Hillman and Allen plats had been developed, and most were further subdivided and improved upon between 1940 and 1964 (NETR 2024). In 1966, the Archie Codiga Bridge was built over the Northern Pacific Railroad (NP) right-of-way (ROW), and in 1967, I-5 was completed through Allentown between State Route 900 and the NP ROW. In 1970, Burlington Northern Railroad (BN) widened the railroad ROW and constructed its Intermodal Facility (BNSF 2010, 2024; NETR 2024). On the west bank of the Duwamish, the peninsula began to develop into a light industrial area in about 1968. By 1969, a large trucking business had been constructed along I-5, and by 1977, the south half of the peninsula had been developed. By 1980, Tukwila Commerce Park had been completed at the north end of the peninsula (King County 2024f; NETR 2024). Gateway Corporate Center was in development by 1986 and completed by 1991 (Nicola Wealth 2024). The BECU building was completed in 1990 (King County 2024f).

4.9.1.1.6.2 Seattle Police Athletic Association

The Seattle Police Athletic Association (SPAA) in the north end of Allentown was established during World War II as a marksmanship and physical fitness facility for Seattle Police Department (SPD) officers (SPAA 2024). Beginning in 1943, the SPD utilized prisoner labor from the city of Seattle's jail to help with site construction. In 1947, The SPAA donated 32 acres of land to the City of Seattle for use as a rehabilitation facility with the agreement that the City would maintain the SPAA's Rifle and Pistol Ranges located there. An additional 19 acres of land were leased from the NP, and six additional acres were purchased for a total of 57 acres. The SPD Rehabilitation Program (SPDRP) opened on the SPAA parcels in August 1948 with 50 inmates (called "patients"), and by 1953, the capacity had been increased to 100. The patients constructed all the buildings on the property (Burr 1959).

4.9.1.2 Cultural Resources Within the Study Area

There are no listed or designated National Register of Historic Places (NRHP)-, Washington Heritage Register (WHR)-, and King County Landmarks Register (KCLR)-historic properties located within, overlapping, or adjacent to the Project area.

A district comprised of 13 contributing resources that is potentially eligible to the NRHP, WHR, or KCLR was identified within the Study Area. Eight of the district's contributing resources are also individually eligible for the NRHP, WHR, and KCLR. One additional resource within the Study Area that was not associated with the potential historic district was previously determined eligible for the NRHP by DAHP and is also eligible for the WHR and KCLR.

There is one historic archaeological site within the Study Area (45KI00538 [Columbia and Puget Sound Railroad]); however, this site was previously determined not eligible for the NRHP. The Columbia and Puget Sound Railroad Grade intersects proposed Alternative Area 4 as it passes under a bridge along South 129th Street. The DAHP determined that 45KI00538 is not eligible for listing in the NRHP on January 10, 2021. The Project will not impact this recorded archaeological feature, which does not

require further consideration under the Revised Code of Washington (RCW). There are no additional known archaeological resources present within the Study Area.

It is understood that the Duwamish River is a culturally significant landscape for Tribes. However, the City is not aware of any TCPs within the Study Area. There are known ethnographic place names associated with oral traditions that intersect the Study Area (Ballard 1929; Waterman et al. 2001). These place names have not been formally recorded in WISAARD as TCPs.

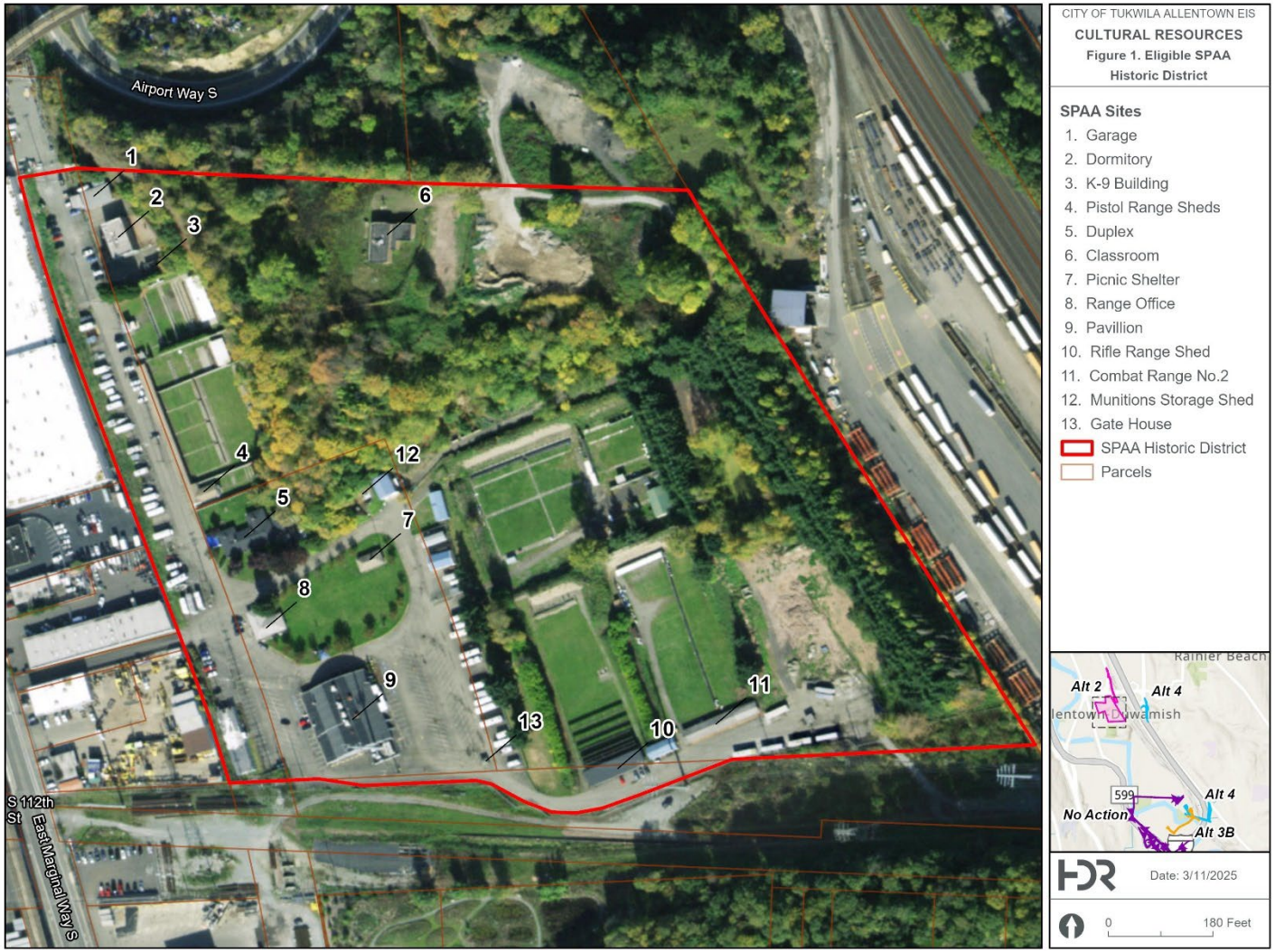
4.9.1.2.1 Seattle Police Athletic Association Historic District

The potentially eligible historic district (SPAA Historic District) is included in Table 4.9-1 and a map of the district is provided in Figure 4.9-1. The district's proposed boundary encompasses two King County Tax Parcels (Nos. 0323049099 and 0323049057) as well as portion of two additional parcels (Nos. 0323049030 and 0323049138) and is located within Alternative 2. Historic built-environment resources surveyed for this analysis are listed in Table 4.9-1 by Property ID and depicted in Figure 4.9-1. Alternative 2 is anticipated to impact the eligible historic district and the eight individually eligible properties within its boundary.

The eligible SPAA Historic District contains buildings, structures, and landscapes associated with the SPAA, the SPDRP, and Seattle Police Department Alcoholics Rehabilitation Farm (SPDARF) (see Appendix E [Allen et al. 2024] for historic context of the SPDRP and SPDARF). The potential Historic District is eligible for listing in the NRHP under Criterion A in the Areas of Social History and Recreation for its association with the SPAA, SPDRP, and SPDARF, and under Criterion C in the area of Architecture as a distinguishable cluster of post-World War II buildings and structures associated with the SPDRP. Under Criterion A, the character-defining features of the site include the buildings and structures constructed by SPD inmates, shooting ranges and training areas, the central lawn with surrounding driveway, and the general site layout. The potential district's period of significance is 1943-1976, corresponding with the beginning of SPAA's ownership of the site (1943) and the date the last historic-age building was completed (1976). Under Criterion C, the character-defining features of the district are the buildings, structures, and landscapes constructed during the SPDRP and SPDARF era including the Picnic Shelter (1947), SPDRP Dormitory (1948), Duplex (1950), the Pavilion (1953), the Pistol Range and Sheds (ca. 1959), and the Range Office (1960), as well as the central lawn, driveway, general site plan, and circulation pattern between the buildings. Under Criterion C, the period of significance is 1943-1960, corresponding with the dates of construction of the first and last SPDRP/SPDARF buildings. The potential SPAA Facility Historic District is also eligible for listing in the WHR and KCLR.

Table 4.9-1. Individually eligible and contributing SPAA Facility Historic District resources included in the impact analysis and keyed to map in Figure 4.9-1.

Map Key	Property ID	Historic Name	Year Built	Register Listing (Individual Level)	Historic District Status
N/A	N/A	Seattle Police Athletic Association (SPAA) Historic District	Ca. 1943-76	N/A	Recommended eligible for the NRHP, WHR, and KCLR.
1	734859	Garage- Seattle Police Athletic Association	Ca. 1969-77	Not Individually Eligible for the NRHP, WHR, or KCLR	Contributes to SPAA Facility Historic District
2	734860	Seattle Police Department Rehabilitation Program Dormitory-SPAA Facility	1948	Assumed Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
3	734861	K-9 Building- Seattle Police Athletic Association	Ca. 1969-77	Not Individually Eligible for the NRHP, WHR, or KCLR	Contributes to SPAA Facility Historic District
4	734863	Pistol Range Sheds- Seattle Police Athletic Association	1959	Not Individually Eligible for the NRHP, WHR, or KCLR	Contributes to SPAA Facility Historic District
5	734864	Duplex- Seattle Police Athletic Association	Ca. 1950	Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
6	734865	Classroom- Seattle Police Athletic Association	1976	Assumed Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District.
7	734867	Picnic Shelter- Seattle Police Athletic Association	Ca. 1958	Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
8	734868	Range Office- Seattle Police Athletic Association	1960	Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
9	734870	Pavilion- Seattle Police Athletic Association	1953	Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
10	734871	Rifle Range Shed- Seattle Police Athletic Association	Ca. 1969-77	Not Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
11	734873	Combat Range No. 2 Range Shed- Seattle Police Athletic Association	Ca. 1969-77	Not Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
12	734874	Munitions Storage Shed- Seattle Police Athletic Association	Ca. 1947	Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
13	734875	Gate House- Seattle Police Athletic Association	Ca. 1960	Not Individually Eligible for the NRHP, WHR, and KCLR	Contributes to SPAA Facility Historic District
Note: DAHP has not made determinations of eligibility for these 13 historic built-environment resources.					



CITY OF TUKWILA ALLENTOWN EIS

CULTURAL RESOURCES

Figure 1. Eligible SPAA Historic District

SPAA Sites

1. Garage
2. Dormitory
3. K-9 Building
4. Pistol Range Sheds
5. Duplex
6. Classroom
7. Picnic Shelter
8. Range Office
9. Pavillion
10. Rifle Range Shed
11. Combat Range No.2
12. Munitions Storage Shed
13. Gate House

SPAA Historic District

Parcels

Date: 3/11/2025

0 180 Feet

Figure 4.9-1. Map of the recommended eligible SPAA Historic District keyed to Table 4.9-1 (Allen 2024).

4.9.1.2.2 Seattle & Walla Walla Railroad/Puget Sound Shore Railroad Company/Seattle, Lake Shore & Eastern Railroad/Northern Pacific Railway Black River Junction to the Lake Washington Ship Canal

One NRHP-, WHR-, and KCLR- eligible resource not affiliated with the historic district (Seattle & Walla Walla Railroad/Puget Sound Shore Railroad Company/Seattle, Lake Shore & Eastern Railroad/Northern Pacific Railway Black River Junction to the Lake Washington Ship Canal [S&WW/PSS/SLS&E/NP]) is shown in Table 4.9-2 and depicted in Figure 4.9-2. This historic property was previously determined eligible for the NRHP by DAHP in 2017. It is located adjacent to Alternatives 2, 3B, 4, and the No Action Alternative; however, it is not anticipated to be permanently impacted by the Project.

Table 4.9-2. Individually eligible historic property not associated with the SPAA Historic District.

Property ID	Historic Name	Year Built	Register Listing (Individual Level)	Historic District Status
708606	Seattle & Walla Walla Railroad/Puget Sound Shore Railroad Company/Seattle, Lake Shore & Eastern Railroad/Northern Pacific Railway Black River Junction to the Lake Washington Ship Canal (S&WW/PSS/SLS&E/NP)	Ca. 1883-1905	Previously Determined Individually Eligible for the NRHP. Recommended eligible for the WHR and KCLR.	N/A

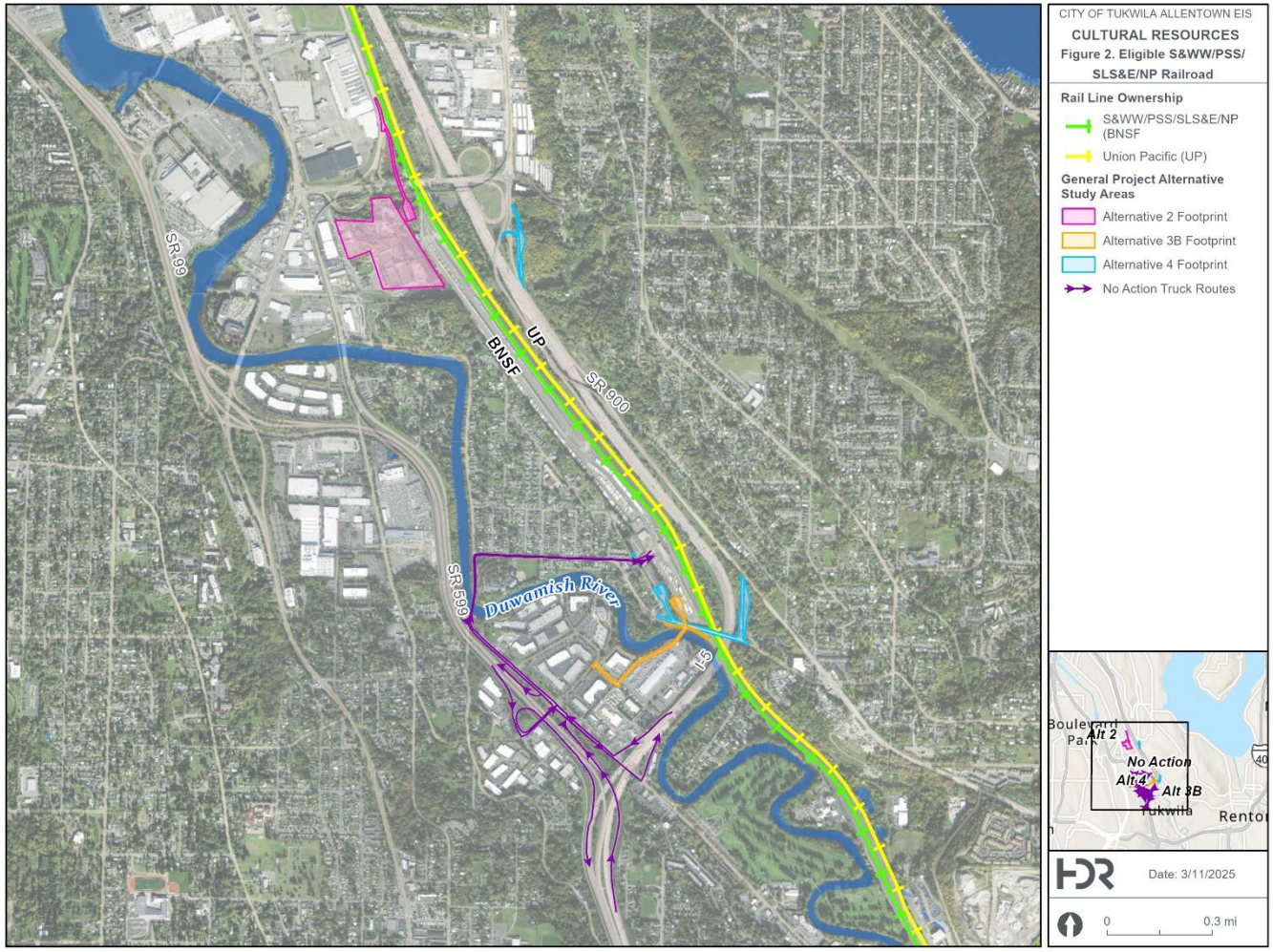


Figure 4.9-2 Eligible S&WW/PSS/SLS&E/NP (BNSF) railroad in proximity to Alternative 2, 3B, 4, and the No Action Alternative depicted on aerial imagery (Allen 2024).

4.9.2 Relevant Plans, Policies, and Regulations

The Project is within King County and must comply with the King County Code (KCC), as well as the RCW.

Chapter 20.62 of the KCC outlines procedures and regulations for the identification and protection of historic and archaeological resources significant to the history of King County. Historic or archaeological resources that are of significance to King County are defined under KCC 20.62.040, and the procedures for nomination of locally significant resources to the King County Landmarks Register (KCLR) are defined under KCC 20.62.050. In accordance with KCC 20.62.150, any resources identified in the King County Historic Resource Inventory (KCHRI) shall not be altered, demolished, or relocated as a consequence of any development proposal without prior review from the appointed King County landmarks commission.

Precontact archaeological sites and historic archaeological resources are protected by several Washington State regulations on both public and private lands. RCW 27.44 (Indian Graves and Records) and RCW 27.53 (Archaeological Sites and Resources) require that a person obtain a permit from DAHP before excavating, removing, or altering Native American human remains or archaeological resources in Washington. Chapters 25–48 of the Washington Administrative Code outline the requirements of the Archaeological Excavation and Removal Permit. Failure to obtain a permit is punishable by civil fines and penalties under RCW 27.53.095 and criminal prosecution under RCW 27.53.090.

4.9.3 Impacts

4.9.3.1 Methodology

Information about identification and evaluation methods is described in the technical report, *Cultural Resources Inventory Report for BNSF Allentown Truck Re-Route Project EIS* (Appendix E; Allen et al. 2024). The City's consultant, HDR, performed cultural resources background review and a reconnaissance-level historic built-environment survey within the Project Area (Allen, et al. 2024). The cultural resources background review was performed using the Washington Information System for Architectural and Archeological Records Data (WISAARD), historic maps and imagery, and publicly available documents to assess the potential for archaeological and ethnographic resources, TCPs, and known place names in the Project Area. There is one previously recorded historic archaeological site within the Study Area (45KI00538); however, it was previously not eligible for the NRHP. There are no additional archaeological resources within the Project Area, and thus, no impacts were assessed for these resources.

HDR performed a reconnaissance-level historic built-environment survey of Alternatives 2, 3B, and 4 in accordance with the Washington State Standards for Cultural Resources Reporting (DAHP 2023). The reconnaissance-level historic built-environment survey involved extensive photographic and written documentation of all resources 35 years old and older within the proposed Study Area. Prior to fieldwork, HDR conducted research through the King County Assessor's online database and HistoricAerials.com to identify all parcels within the Project Area that contain historic-age built-environment resources.

Adverse impacts to cultural resources occur when a project action diminishes the characteristics of a cultural resource that qualify it for listing the NRHP, WHR, and/or KCLR. The integrity of a cultural resource is assessed through the characteristics that define its location, design, setting, materials, workmanship, feeling, and association. Most of the characteristics of these seven qualities must be

present for a resource to convey its significance. Project effects are based on the potential for significant impacts to a cultural resource's integrity and divided into three categories:

- **No effect:** no change to the integrity of a resource.
- **Less-than-significant**: temporary or reversible impacts that may diminish a resource's integrity, but the resource retains the characteristics that qualify it for listing in the NRHP, WHR, and KCLR, and do not diminish the recourse's ability to convey its significance.
- **Significant**: permanent direct or indirect effects, per CFR 800.5, that diminish the characteristics that qualify it for listing in the NRHP, WHR, and KCLR and its integrity such that it is no longer able to convey its significance.

Impacts to cultural resources could occur during both construction and operation. These impacts are defined by their effect on a resources' integrity:

- Minor impacts are those caused by temporary project-related construction and operation activities such as increase in noise and vibration, increased dust, increased traffic or traffic congestion, temporary changes to access, and the presence of construction equipment. These impacts are temporary and minimal and do not permanently diminish the integrity of a resource.
- Moderate impacts are those that result in diminished integrity and may or may not diminish the resource's ability to convey its significance and its eligibility for the NRHP, WHR, and KCLR. These could include alterations to a resource that diminish its integrity such that it may no longer be individually eligible for the NRHP, WHR, and KCLR, but retains enough integrity to contribute to a historic district.
- Significant impacts may include destruction, damage to, or alteration of a resource; removal of a resource from its original location; changes to the use or physical features of a resource; and the introduction of permanent visual, atmospheric, or audible elements that permanently diminish the integrity of the resource such that it is no longer able to convey its significance.

4.9.3.2 Impacts Analysis

Table 4.9-3 lists the documented archaeological resources and historic built-environment resources (both eligible and non-eligible) that would be impacted in each proposed Alternative Study Area. The City is not aware of any TCPs within the Study Area.

A total of 37 historic-age built-environment resources were surveyed. One of those was previously determined eligible for the NRHP by DAHP and fourteen resources are recommended eligible for the NRHP, WHR, and KCLR, and thus, are considered significant for the purposes of this EIS. Impacts were assessed for those 15 historic properties. Archaeological survey could not be performed due to lack of access to private property; however, background review indicates only a single historic archaeological site within Alternative 4. This site was previously determined not eligible for the NRHP and as such, does not require assessment for Project impacts. There are no additional known archaeological resources present within the Study Area.

Alternative Study Area 2 has a very high likelihood to impact multiple historic built-environment resources that are either eligible for the NRHP individually or contribute to the potential SPAA Historic District. While both Alternative Study Area 3B and 4 will impact the S&WW/PSS/SLS&E/NP (Property ID

708606, these impacts would be temporary and not have the potential to impact the character-defining features of the railway segment.

Table 4.9-3. Proposed Alternative Study Areas and probabilities to impact present archaeological and historic built-environment resources

Alternative Study Area	Probability	Present Archaeological Resources	Present Eligible Historic Built-Environment Resources	Present Non- Eligible Historic Built-Environment Resources
2	Very High	None but likely location of multiple known place names.	• Seattle & Walla Walla Railroad/Puget Sound Shore Railroad Company/Seattle, Lake Shore & Eastern Railroad/Northern Pacific Railway Black River Junction to the Lake Washington Ship Canal (S&WW/PSS/SLS&E/NP) • SPAA Facility Historic District • Garage – SPAA Facility • Seattle Police Department Rehabilitation Program Dormitory – SPAA Facility • K-9 Building – SPAA Facility • Pistol Range Sheds – SPAA Facility • Duplex – SPAA Facility • Classroom – SPAA Facility • Picnic Shelter – SPAA Facility • Range Office – SPAA Facility • Pavilion – SPAA Facility • Rifle Range Shed – SPAA Facility • Combat Range No. 2 Range Shed – SPAA Facility • Munitions Storage Shed – SPAA Facility • Gate House – SPAA Facility	• Boeing Access Road Bridge • West Boeing Access Road Bridge • 10836 East Marginal Way South • BNSF South Seattle Intermodal Facility Historic District • Combat Range No. 1 – SPAA Facility • Butler Building – SPAA Facility • SPAA Office – SPAA Facility
3B	Medium	None	• Seattle & Walla Walla Railroad/Puget Sound Shore Railroad Company/Seattle, Lake Shore & Eastern Railroad/Northern Pacific Railway Black River Junction to the Lake Washington Ship Canal	• BNSF South Seattle Intermodal Facility Historic District • Gateway Corporate Center Historic District • UPRR-OWR&N Segment • Green River Trail • 13123 Interurban Avenue • Building 5 – Gateway Corporate Center; 12806 Gateway Drive South • Building 6 – Gateway Corporate Center; 12761 Gateway Drive South
4	Low	Columbia and Puget Sound Railroad Grade (45KI00538; not eligible)[1]	• Seattle & Walla Walla Railroad/Puget Sound Shore Railroad Company/Seattle, Lake Shore & Eastern Railroad/Northern Pacific Railway Black River Junction to the Lake Washington Ship Canal (S&WW/PSS/SLS&E/NP)	• State Route 900 • UPRR-OWR&N Segment • Archie Codiga Bridge (South 129th Street Bridge) • 5510 South 129th Street • 12529 51st Place South • 12537 51st Place South

[1] Site 45KI00538 was previously determined not eligible for listing in the NRHP and therefore does not require further consideration under the RCW.

4.9.3.2.1 Construction Impacts

4.9.3.2.1.1 Short-Term Construction Impacts

There is a single historic archaeological site within Alternative 4, which was previously determined not eligible for the NRHP and as such, does not require assessment for Project impacts. There are no additional known archaeological resources present within the Study Area. The City is not aware of any TCPs within the Study Area. Construction activities could impact unknown archaeological resources or TCPs that may be present within the Study Area through vibration, noise, or visual changes.

Short-term construction impacts include a temporary increase in noise and vibration, as well as more truck traffic, traffic congestion, temporary changes to access, and increased dust. The presence of construction equipment could result in short-term, minor, visual changes to the setting of historic properties.

These construction activities would likely result in minor impacts to the eligible segment of S&WW/PSS/SLS&E/NP railroad. Construction activities associated with Alternatives 2, 3B, and 4 in the vicinity of the segment and the presence of Project-related construction equipment within the BNSF ROW could result in short-term, minor, visual changes to its setting.

Project activities would not cause physical destruction or damage to any part of the segment, and no alterations would occur to the segment that would be inconsistent with the Secretary of the Interior's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines. No part of the segment would be removed from its current location, and no changes would occur to the character of the segment's use or to physical features within the segment's setting that contribute to its historic significance. No visual, atmospheric, or audible elements would be introduced that would diminish the integrity of the segment's significant historic features. No neglect would occur to the segment, and the segment's ownership would not be impacted. None of the project activities associated with Alternatives 2, 3B, and 4 would have the potential to impact the character-defining features of the segment. In addition, all impacts related to construction activity would be temporary and minimal.

4.9.3.2.1.2 Long-term Project Operation and Maintenance Impacts

There is a single historic archaeological site within Alternative 4, which was previously determined not eligible for the NRHP and as such, does not require assessment for Project impacts. There are no additional known archaeological resources nor TCPs present within the Study Area. Construction activities could impact unknown archaeological resources or TCPs that may be present within the Project Area through physical damage, relocation, burial, or visual changes.

Long-term impacts relating to project operation and maintenance will be similar to the short-term impacts to historic built environment resources on a more permanent basis. These include an increase in noise and vibration, as well as more truck traffic, traffic congestion, temporary changes to access, and increased dust. These would likely result in permanent minor impacts to the eligible segment of S&WW/PSS/SLS&E/NP. Operation and maintenance activities associated with Alternatives 2, 3B, and 4 in the vicinity of the segment and the presence of Project-related construction equipment within the BNSF ROW could result in permanent, minor, visual changes to its setting.

Project activities would not cause physical destruction or damage to any part of the segment, and no alterations would occur to the segment that would be inconsistent with the Secretary of the Interior's

standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines. No part of the segment would be removed from its current location, and no changes would occur to the character of the segment's use or to physical features within the segment's setting that contribute to its historic significance. No visual, atmospheric, or audible elements would be introduced that would diminish the integrity of the segment's significant historic features. No neglect would occur to the segment, and the segment's ownership would not be impacted. None of the project activities associated with Alternatives 2, 3B, and 4 would have the potential to impact the character-defining features of the segment.

4.9.4 Mitigation Measures

Based on the background review and survey results presented in the technical report (Appendix E; Allen, et al. 2024), the three proposed alternative areas have variable potential for containing archaeological resources and historic built-environment resources. There are no known TCPs within any of the proposed alternatives.

Alternative 2 (as currently described) would result in probable significant adverse impacts to the SPAA Historic District and its contributing resources that are recommended eligible to the NRHP, WHR, and KCLR. HDR recommends that Alternative 2 be avoided. If Alternative 2 is selected, additional documentation, evaluation, and consultation with DAHP, the King County Historic Preservation Program, and affected Indian Tribes to mitigate significant adverse impacts will be required.

The following additional measures implemented during construction and operation may help avoid, minimize, reduce, or monitor for the potential for impacts identified in impacts analysis (WAC 197-11-768):

- If Alternative 2 is selected, perform an intensive-level survey of the potential SPAA Historic District to determine the location of cultural resources relative to the specific areas of ground disturbance and building, structure, and landscape alteration and demolition.
- Conduct an archaeological survey of the selected Alternative area prior to construction.
- Consult with Indian Tribes regarding potential TCPs and known place names.
- Design and site construction to avoid significant impacts to cultural resources.
- Include Tribal and archaeological monitors during Project construction and develop a Monitoring and Inadvertent Discovery Plan (MIDP) prior to construction.

4.9.5 Significant Unavoidable Adverse Impacts

Significant unavoidable adverse impacts are those that diminish a cultural resource's integrity of location, design, setting, materials, workmanship, feeling, and association such that it is no longer able to convey its significance and no longer eligible for the NRHP, WHR, and/or KCRL. This could be as a result of alteration, demolition, removal, or change-in-use.

Alternative 2 has a high probability for significant unavoidable adverse impacts as the potential SPAA Historic District is located within the proposed area of disturbance. According to the proposed project description for Alternative 2, most of the northern parcel would be graded and leveled to accommodate construction of the BNSF Intermodal Facility's entrance gates, laydown yard, chassis storage, and trailer storage, and to allow large vehicles to maneuver throughout the site. The proposed project description includes demolition and new, permanent construction within the northern parcel; however, plans do not specifically depict where features would be placed within the northern parcel, and specific areas for demolition and new construction within the northern parcel have not been identified at this stage of

high-level conceptual modeling. The area for disturbance within the northern parcel was delineated based on the square footage needs of the existing BNSF facilities that would be moved to the site and could potentially be expanded or redesigned. The southwestern SPAA parcel, containing the Duplex, Picnic Shelter, Pavilion, and Range Office is not currently planned to have any physical disturbance.

Based on the project description, proposed Project activities within the northern parcel could cause physical destruction or damage to the potential SPAA Historic District's buildings and structures, and alterations could occur to the potential SPAA Historic District that would be inconsistent with the SOI's standards for the treatment of historic properties (36 CFR Part 68) and applicable guidelines. The potential SPAA Historic District's buildings and structures within and adjacent to the proposed disturbance area could be removed from their current location, and changes could occur to the character of the potential SPAA Historic District's use or to physical features within the SPAA Facility's setting that contribute to its historic significance. Visual, atmospheric, or audible elements could be introduced that would diminish the integrity of the potential SPAA Historic District's significant historic features both within and adjacent to the proposed disturbance area. Changes to the potential SPAA Historic District's ownership could also occur.

In addition, proposed Project-related construction activities in the vicinity of the potential SPAA Historic District could result in temporary increases in noise and vibration, as well as more truck traffic, traffic congestion, temporary changes to access, and increased dust. The presence of Project-related construction equipment within the potential SPAA Historic District parcels could result in short-term, minor, visual changes to the setting.

Based on the project description, proposed Alternative 2 activities within the SPAA parcels would have the potential to impact the character-defining features of the potential SPAA Historic District and its individual historic properties.

4.10 Noise

4.10.1 Affected Environment

4.10.1.1 Characteristics of Noise

Sound is made up of tiny fluctuations in air pressure and is characterized by its amplitude (how loud it is), frequency (or pitch), and duration. Within the range of human hearing, sound can vary in amplitude by over one million units. Therefore, a logarithmic scale, known as the decibel (dB) scale, is used to quantify sound intensity and to compress the scale to a more manageable range. Noise is simply defined as unwanted sound; the terms noise and sound are often used interchangeably. Noise of sufficient strength might pose health concerns such as hearing loss or sleep disturbances. Noise impacts are somewhat variable and often depend on land uses. For example, areas where people sleep tend to be more sensitive to noise compared with places where people congregate during the day, such as parks or schools. This section describes basic acoustical concepts; how noise is regulated at the municipal, county, and state level; and existing noise levels in the project area. This section also includes estimates of noise associated with the proposed project alternatives and a discussion of appropriate mitigation to reduce noise impacts.

The human ear does not hear all frequencies equally. In fact, the human hearing organs of the inner ear de-emphasize low and very high frequencies. The A-weighting scale is the most common weighting scale used to reflect this selective sensitivity of human hearing. It puts more emphasis or "weight" on the frequencies we hear efficiently, and less weight on frequencies we do not hear efficiently. A-weighted decibels are noted using the abbreviation dBA. Table 4.10-1 lists noise levels for typical sources.

Table 4.10-1 Typical Source Noise Levels

Sound Pressure Level, dBA	Typical Sources
100	Jet flyover at 1000 feet
90	Gas lawn mower at 3 feet
85	Food blender at 5 feet
75	Shouting at 3 feet
70	Vacuum Cleaner at 10 feet
60	Conversational speech
50	Quiet urban daytime
40	Quiet urban nighttime
35	Quiet suburban nighttime
30	Quiet bedroom at night
20	Quiet rural nighttime
0	Approximate threshold of hearing

Source: MPCA 2015, adapted

Most sounds are made up of a wide range of frequencies and are termed broadband sounds. Sounds that are focused within a particular frequency range are tonal sounds. Sound sources can be constant or time varying. Environmental sound levels are often expressed over periods of time, thereby allowing

time-varying signals to be represented by sound levels averaged over intervals (for example, a one-hour period). One metric used to describe environmental sound is the equivalent average sound level (Leq), which represents a constant sound that, over the specified time period, has the same acoustic energy as the time-varying signal. It is a mean average noise level over a one-hour period.

4.10.1.2 Noise Study Area

The BNSF South Seattle Hub (SSH) in the Allentown neighborhood of Tukwila, Washington is an important economic link to the Puget Sound Region. It serves as an inland port, providing domestic intermodal transloading between truck and rail. In order to improve livability and safety in Allentown without compromising the operations of the BNSF intermodal facility, the City of Tukwila (City) is evaluating new potential truck access routes to the facility.

The City is the lead agency overseeing the preparation of an Environmental Impact Statement (EIS) under the State Environmental Policy Act (SEPA) for the proposed Allentown Truck Reroute Project (Project). The existing truck route and No Action Alternative, in addition to three proposed route alternatives are analyzed in the EIS to determine potential impacts on the built and natural environment. The Alternatives were brought forth through the scoping process and present changes that minimize truck traffic interface with residential and recreational areas. These routes are shown in Figure 4.10-1 below.

Noise related to operation of the proposed project will originate from trucks operating along the selected new route. The distribution of truck operations within the existing facility may change due to the Project; however, the quantity of trucks operating within the facility will not change as a result of the Project.

The noise study area for construction and operational noise is an area extending 500 feet from the No-Action truck route and the route alternatives, as shown in Figure 4.10-2 through Figure 4.10-6. This corresponds to the typical study area extents of a Federal Highway Administration (FHWA) traffic noise study.

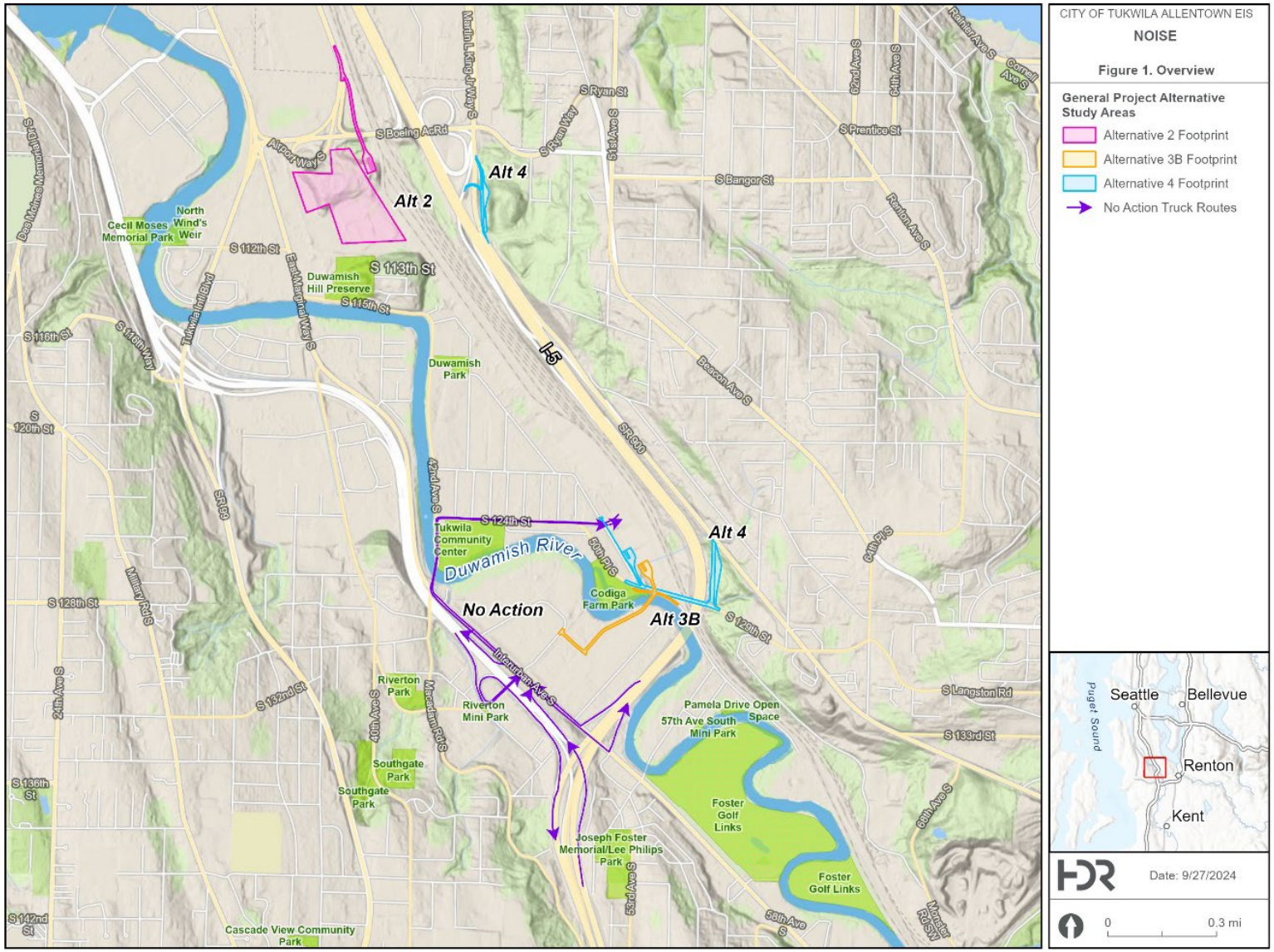


Figure 4.10-1 Vicinity Map of Alternatives

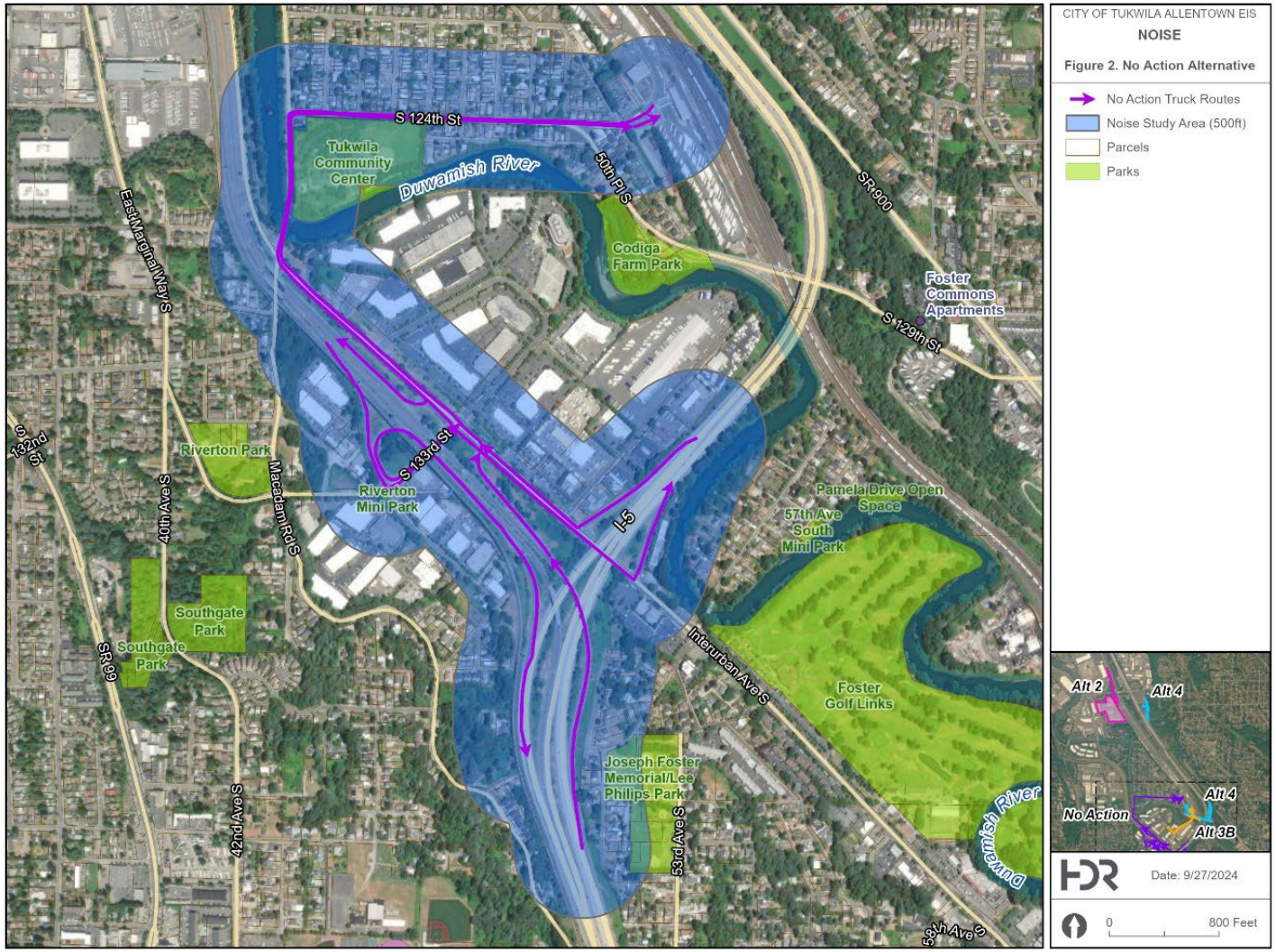


Figure 4.10-2.Noise Study Area for the No Action Alternative

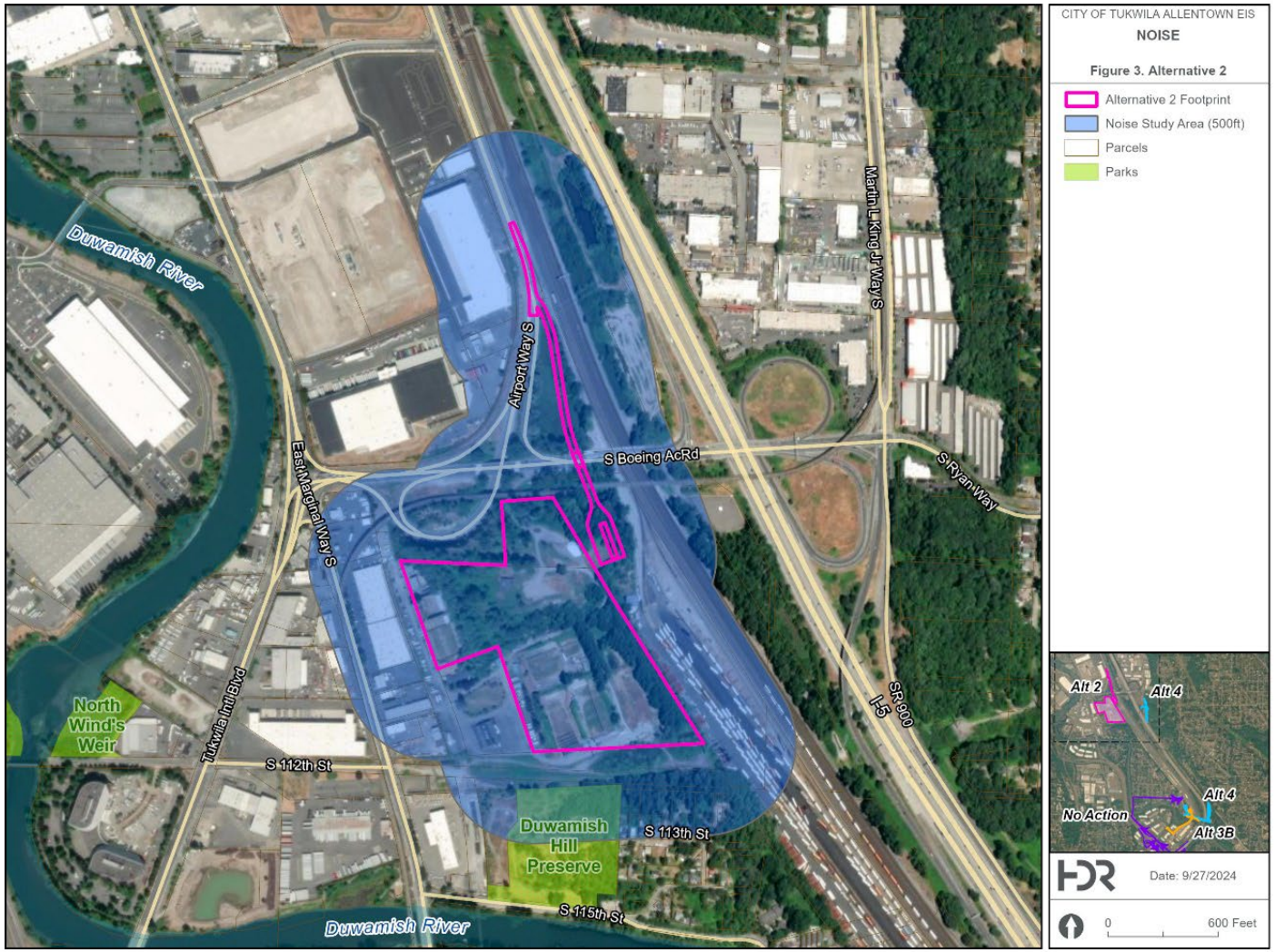


Figure 4.10-3. Noise Study Area for Alternative 2

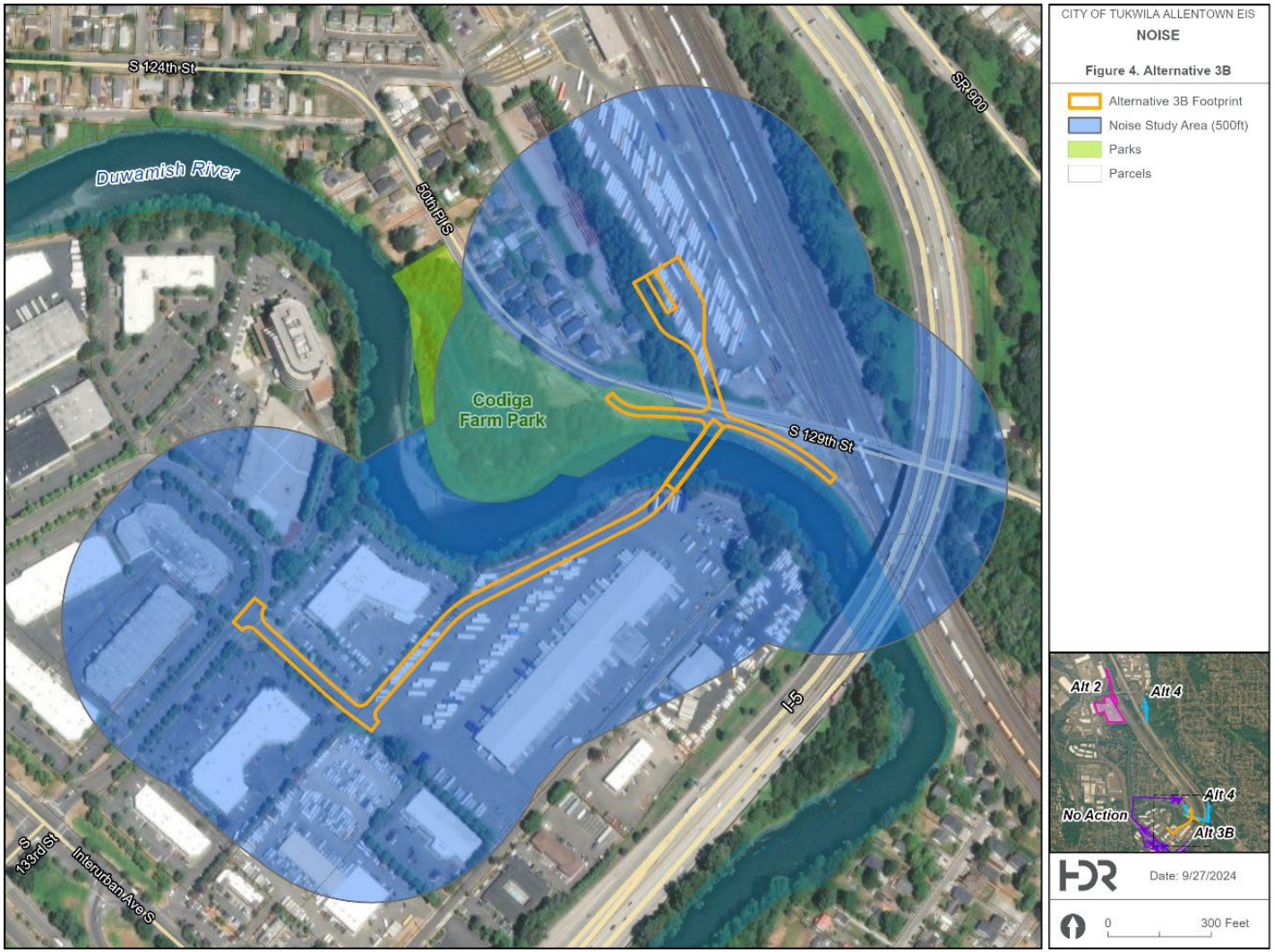


Figure 4.10-4 Noise Study Area for Alternative 3B

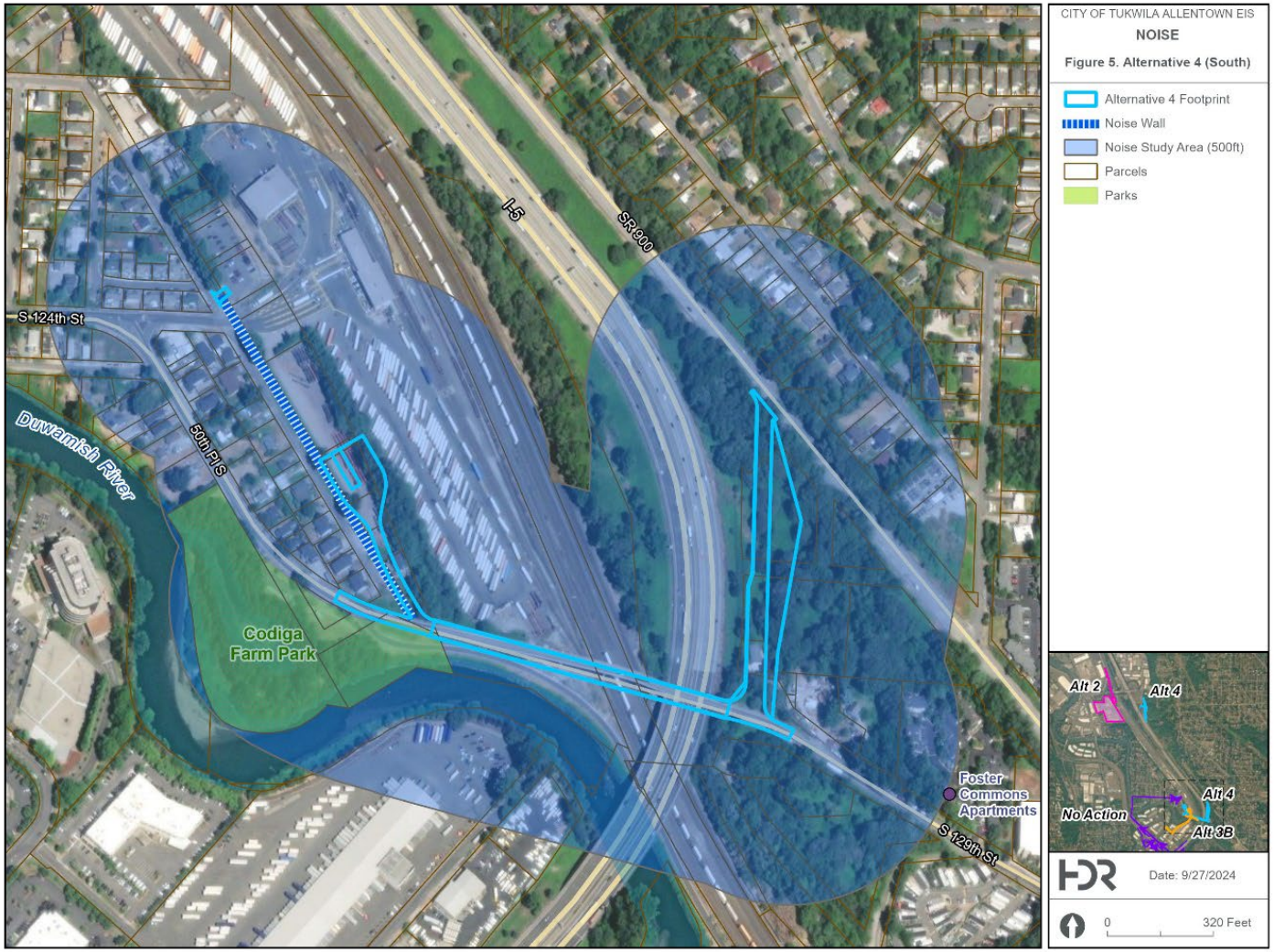


Figure 4.10-5 Noise Study Area for Alternative 4 (South Portion)

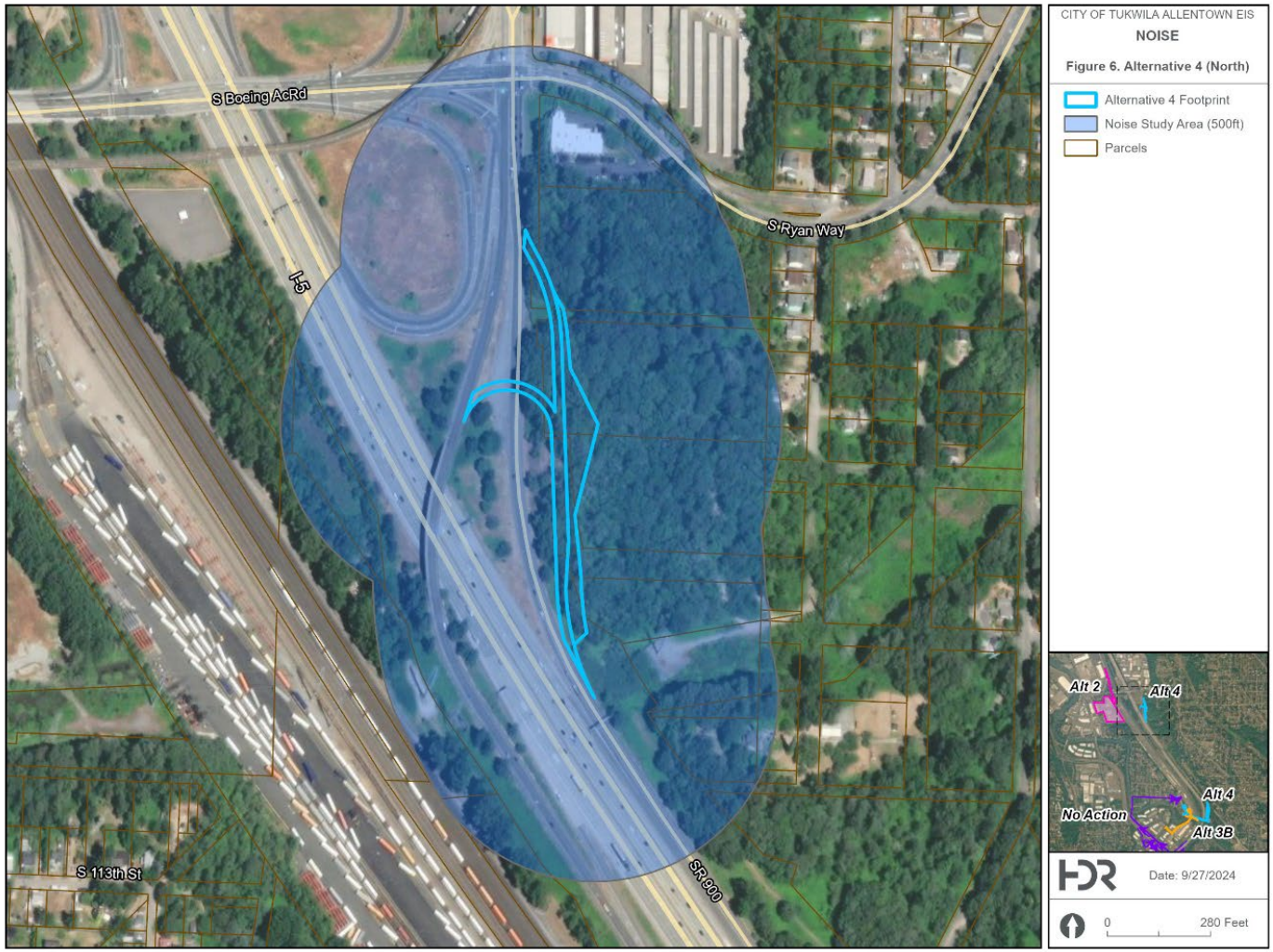


Figure 4.10-6 Noise Study Area for Alternative 4 (North Portion)

4.10.1.3 Existing Noise Environment

The dominant features of the soundscape in the Project area are noises from transportation corridors close to the area. All project alternatives are near Interstate 5, an eight-lane highway. The existing truck route is near State Route 599, a four-lane divided highway. The existing BNSF intermodal facility and the railway adjacent to it are also sources of noise in the area. Near the north end of the BNSF intermodal facility, the Seattle Police Athletic Association (SPAA) operates a shooting range that is a source of noise for residents along South 113th Street during its daily operating hours of 9:00 AM – 4:30 PM.

Noise-sensitive land uses along the existing truck route include residences along South 124th Street and the Tukwila Community Center. Trucks accessing the BNSF intermodal facility along this route comprise a large proportion of the truck traffic in this area, and thus represent a large proportion of the noise that residents near the route are exposed to.

Noise-sensitive land uses near Alternative 2 include Duwamish Hill Preserve and residences along South 113th Street. Noise-sensitive land uses along Alternatives 3B and 4 include residences along 51st Place South and Codiga Farm Park.

Table 4.10-2 contains typical A-weighted noise levels for residential areas.

Table 4.10-2 Typical Residential Noise Levels

Residential Land Use Category	Daytime Sound Pressure Level, dBA	Nighttime Sound Pressure Level, dBA
Very noisy urban	66	58
Noisy urban	61	54
Urban and noisy suburban	55	49
Quiet urban and normal suburban	50	44
Quiet suburban	45	39
Very quiet suburban and rural	40	34

Source: ANSI/ASA 2013

4.10.2 Relevant Plans Policies and Regulations

Noise is addressed in the City of Tukwila and King County noise ordinances, and the Washington Administrative Code (WAC).

4.10.2.1 Washington Administrative Code - Chapter 173-60

The State of Washington has a robust environmental noise control program. It regulates maximum allowable noise levels using different limits for receiving lands of differing noise sensitivity. Chapter 173-60-040 of the WAC establishes different noise limits, depending upon the environmental designation for noise abatement (EDNA) or area or zone (environment) of the property from which the noise originates and the property where the noise is received.

EDNA Class A represents lands where people reside and sleep. Typically, Class A EDNA includes the following types of property used for human habitation: residential, multiple family living accommodations, recreational and entertainment (such as camps, parks, camping facilities, and resorts), and community service (such as orphanages, homes for the aged, hospitals, and health and correctional facilities).

EDNA Class B represents lands with uses requiring protection against noise interference with speech. Typically Class B EDNA includes the following types of property: commercial living accommodations; commercial dining establishments; motor vehicle services; retail services; banks and office buildings; miscellaneous commercial services properties not used for human habitation; recreation and entertainment property not used for human habitation (such as theaters, stadiums, fairgrounds, and amusement parks); and community services property not used for human habitation (such as educational, religious, governmental, cultural, and recreational facilities).

EDNA Class C represents lands with economic activities of such a nature that higher noise levels than experienced in other areas is normally anticipated. People working in these areas are normally covered by noise control regulations of the department of labor and industries. Uses typical of Class A EDNA are generally not permitted within such areas. Typically, Class C EDNA includes the following types of property: storage, warehouse, and distribution facilities; industrial property used for the production and fabrication of durable and nondurable man-made goods; and agricultural and silvicultural property used to produce crops, wood products, or livestock.

Under the WAC, no person may cause or permit noise that exceeds the maximum permissible noise levels listed in Table 4.10-3 to intrude into the property of another person. Between 10:00 PM and 7:00 AM, the noise limitations presented in Table 4.10-3 are reduced by 10 dBA for receiving property within Class A EDNAs. At any hour of the day or night, those noise limitations may be exceeded for any receiving property by no more than:

- 5 dBA for a total of 15 minutes in any one-hour period; or
- 10 dBA for a total of 5 minutes in any one-hour period; or
- 15 dBA for a total of 1.5 minutes in any one-hour period.

Table 4.10-3 Washington Administrative Code Noise Limits

	EDNA of Receiving Property		
EDNA of Noise Source	**Class A**	**Class B**	**Class C**
Class A	55 dBA	57 dBA	60 dBA
Class B	57 dBA	60 dBA	65 dBA
Class C	60 dBA	65 dBA	70 dBA

Source: Washington Administrative Code 173-60-040

Noise emissions from motor vehicles on public highways are exempt[4]. Therefore, only noise from vehicles using non-public sections of the proposed roadways would be subject to these noise limits. The

[4] WAC 173-62-020 defines "public highway" as the entire width between the boundary lines of every way publicly maintained by the department of highways or any county or city when any part thereof is generally open to the use of the public for purposes of vehicular travel as a matter of right.

assessment of potential project impacts on noise considers the project area to be an industrial land use (EDNA Class C), and surrounding noise-sensitive land uses are primarily residential neighborhoods (EDNA Class A). Therefore, the maximum allowable operational noise level at residences surrounding the project area is 50 dBA during the night and 60 dBA during the day. That limit can be exceeded for brief durations as explained above.

Construction noise is specifically addressed and is exempt from regulation unless it occurs during nighttime hours (10:00 PM to 7:00 AM), when it is subject to the numeric limits. If construction occurs during nighttime hours, it is subject to the maximum permissible noise levels in Chapter 173-60-040. The assessment of potential project impacts on noise considers the project area to be an industrial land use (EDNA Class C) adjacent to a residential neighborhood (EDNA Class A). Therefore, the maximum allowable nighttime construction noise level at residences surrounding the project area is 50 dBA (60 dBA reduced by 10 dB, as explained in the preceding paragraph for nighttime hours). That limit can be exceeded for brief durations as explained above.

4.10.2.2 King County Code – Chapter 12.86 Noise

The King County Code (KCC) Chapter 12.86 regulates maximum allowable noise levels using different limits for receiving lands of differing noise sensitivity. These limits are shown in Table 4.10-4. Between 10:00 PM and 7:00 AM on weekdays and between 10:00 PM and 9:00 AM on weekends, the noise limitations presented in Table 4.10-4 are reduced by 10 dBA for rural and residential receiving properties. These limits are based on the Leq during a specified measurement interval. The maximum sound level (Lmax) during this interval may not exceed the specified limits by more than 15 dBA.

Table 4.10-4 King County Code Noise Limits

	Receiving Property District			
Sound Source District	**Rural**	**Residential**	**Commercial**	**Industrial**
Rural	49 dBA	52 dBA	55 dBA	57 dBA
Residential	52 dBA	55 dBA	57 dBA	60 dBA
Commercial	55 dBA	57 dBA	60 dBA	65 dBA
Industrial	57 dBA	60 dBA	65 dBA	70 dBA

Source: King County Code 12.86.110

Noise emissions from motor vehicles on public highways are exempt.[5] Therefore, only noise from vehicles using non-public sections of the proposed roadways would be subject to these limits. The assessment of potential project impacts on noise considers the project area to be an industrial land use, with nearby residential areas. Therefore, the maximum allowable operational noise level at residences surrounding the project area is 50 dBA during the night and 60 dBA during the day. The maximum allowable Lmax from individual vehicles on the non-public routes would be 65 dBA during the night and 75 dBA during the day.

Per KCC section 12.86.520, “normal and usual” construction noise is restricted to specified operation times based on equipment type but is exempt from sound level requirements. Operating hours for heavy equipment are between 7:00 AM and 7:00 PM on weekdays and between 9:00 AM and 7:00 PM

[5] KCC 12.86.030 (P) defines “public highway” as the entire width between the boundary lines of every way publicly maintained by the Washington state Department of Transportation or any county or city when any part thereof is generally open to the use of the public for purposes of vehicular travel as a matter of right

on weekends. Operating hours for impact-noise-generating equipment are between 8:00 AM and 5:00 PM on weekdays and between 9:00 AM and 5:00 PM on weekends. Operating hours for all other construction activities are between 7:00 AM and 10:00 PM on weekdays and between 9:00 AM and 8:00 PM on weekends.

4.10.2.3 City of Tukwila Municipal Code – Chapter 8.22

The City of Tukwila regulates environmental noise using the limits shown in Table 4.10-5. These are essentially the same as the limits in WAC 173-60-040. The same specifications as in WAC apply regarding durations of exceedances. Daytime is defined as 7:00 AM-10:00 PM Monday through Friday, and 8:00 AM-10:00 PM on Saturday, Sunday, and State-recognized holidays.

Table 4.10-5 City of Tukwila Municipal Code Noise Limits

	Receiving Property District			
Sound Source District	**Residential, Daytime**	**Residential, Nighttime**	**Commercial**	**Industrial**
Residential	55 dBA	45 dBA	57 dBA	60 dBA
Commercial	57 dBA	47 dBA	60 dBA	65 dBA
Industrial	60 dBA	50 dBA	65 dBA	70 dBA

Source: Tukwila Municipal Code 8.22.050

The code also specifies that no sound is permitted that is plainly audible on a receiving property in a residential district at a distance of at least 50 feet from the sound-producing source, including sounds created by any motor vehicle operated off public highways[6]. This would apply to vehicle noise on non-publicly accessible Project roadways. Noise from motor vehicles on public highways is exempt from the above limits.

The operation of equipment or facilities of surface carriers engaged in commerce by railroad is exempt. Construction noise is exempt during daytime hours as defined above.

4.10.3 Impacts

4.10.3.1 Methodology

Noise impacts are evaluated using the definitions listed in Table 4.10-6.

[6] TMC Section 8.22.020 defines "Public highway" as the entire width between the boundary lines of every way publicly maintained by the Washington State Department of Transportation (WSDOT) or any county or city, when any part thereof is generally for the use of the public for vehicular travel or a matter of right.

Table 4.10-6 Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The proposed Project would not cause an exceedance of applicable noise limits and would not result in an increase in noise levels at any noise-sensitive area.
Minor	The proposed Project would cause a temporary increase in noise levels at noise-sensitive areas but would not exceed applicable noise limits.
Moderate	The proposed Project would temporarily exceed applicable noise limits and/or would cause a long-term increase in noise levels at noise-sensitive areas.
Significant	The proposed Project would exceed applicable noise limits and/or would cause a disruptive increase in existing noise levels; these exceedances/increases would be long-term and unable to be mitigated.

Noise impacts are primarily defined as exceedances of regulatory thresholds identified in section 1.10.2 at the locations where those limits apply. Noise from trucks on publicly accessible roadways constructed as part of the Project would be exempt from regulatory limits. Noise from trucks on the facility site would be subject to the limits, however, the Project will not result in an increase in truck volumes on the site, and therefore will not result in an increase in overall noise levels from the site, though it may affect the distribution of noise within the site. Since operational noise from the project would be either exempt from regulatory limits or would not pose a change to existing noise levels, a quantitative noise analysis was not performed. However, a qualitative discussion of potential noise effects is undertaken.

Similarly, noise from daytime construction activities is exempt and not subject to limitation under each of the local and state environmental noise ordinances and requirements. Construction activities would occur during daytime hours only, as defined by applicable ordinances, and would thus be exempt from regulatory limits. However, annoyance due to increased noise levels during construction is still possible.

4.10.3.2 Impacts Analysis

4.10.3.2.1 Construction Impacts

Construction activities would occur during exempted hours only, and would thus not be subject to regulation by state and local noise ordinances. Each of the applicable ordinances has a slightly different definition of what constitutes exempted hours. The most restrictive hours are found in the King County code, which would satisfy the requirements of all applicable ordinances if followed. Exempted hours are as follows:

- Equipment excluding impact sources and heavy equipment: 7:00 AM – 10:00 PM weekdays, 9:00 AM – 8:00 PM weekends.
- Equipment excluding impact sources: 7:00 AM – 7:00 PM weekdays, 9:00 AM – 7:00 PM weekends.
- All construction equipment: 8:00 AM – 5:00 PM weekdays, 9:00 AM – 5:00 PM weekends.

Even though it would not be subject to regulation, construction noise could still result in temporary increases in noise near noise-sensitive areas such as residences and parks, which could interfere with activities like speech and recreation, resulting in annoyance.

No construction would take place as part of the No Action Alternative; therefore, no noise impacts due to construction would occur.

Under Alternative 2, the noise-sensitive areas most likely to be affected by construction noise are homes along South 113th Street and the Duwamish Hill Preserve.

Under Alternative 3B, the noise-sensitive areas most likely to be affected by construction noise are Codiga Park and homes along 50th Place South and 51st Place South.

Under Alternative 4, the noise-sensitive areas most likely to be affected by construction noise are homes along 50th Place South, the south end of 51st Place South, the south end of 56th Place South, the Foster Commons Apartments, and Codiga Park. The driveway construction on 51st Place South could affect nearby homes on 51st Place South and South 124th Street, but that construction activity would be of especially short duration. Construction for the northern area of Alternative 4 may affect the southernmost home on 47th Avenue South.

All impacts related to construction noise are expected to be **minor** since they would be temporary and not subject to limitation from noise ordinances, provided they occur during allowable times.

4.10.3.2.2 Operations Impacts

Truck traffic along publicly accessible sections of roadway, including those constructed as part of this project, would be exempt from noise limits. However, noise from trucks associated with the project may still cause annoyance if increases in noise are experienced in noise-sensitive areas.

In each of the proposed alternatives, truck traffic would be rerouted. Once the project is completed, trucks will no longer have to use neighborhood streets to access the BNSF intermodal facility, reducing the existing noise along that route. In general, truck traffic along the new routes would comprise a small proportion of overall traffic on pre-existing roadways that are part of the routes, and thus would only provide a minimal increase in noise. The largest changes in noise associated with the Project would be along roadways that are newly constructed as part of the Project, as well as any existing roadways where trucks accessing the BNSF facility comprise a substantial portion of traffic.

The highest noise levels would occur immediately adjacent to the truck routes, so the highest noise levels at noise-sensitive receptors would be expected in areas where the proposed route passes especially close.

In the No-Action Alternative, trucks would continue to travel along South 124th Street, causing **significant** noise levels for residents on that street as well as for the Tukwila Community Center.

In Alternative 2, truck routes do not pass adjacent to any noise-sensitive areas. Activity on the north end of the BNSF facility could increase, potentially affecting the homes along 113th Avenue South and Duwamish Hill Preserve. Based on the distance to those areas, the increase in noise is expected to be minor. Alternative 2 would also require the closure of the SPAA shooting range, eliminating it as a source of noise in the area. However, since the character of truck noise and shooting range noise is substantially different, the presence of added truck noise may still be perceived as an increase in noise

even if overall noise levels decrease. Additionally, the increase in noise could be more pronounced during hours when the shooting range was not in operation.

In Alternative 3B, the new access to the BNSF facility would be near residences on 51st Place South, increasing noise levels not only on the new roadway, but also on the southern end of the facility, where all truck traffic would now have to pass through. This increase could correspond to a **moderate** impact.

In Alternative 4, the proposed access to the BNSF facility is immediately adjacent to residences along 51st Place South. This increase in noise would likely be significant if not mitigated. The new route on the north end of Alternative 4 would not be particularly close to residences and would not be expected to cause any noise impacts.

4.10.4 Mitigation Measures

No significant adverse impacts are expected during construction or operation of the project. However, some mitigation measures are proposed where noise could cause particular annoyance.

For Alternative 2, minimizing operations in the parts of the new area of the BNSF facility that are nearest to the homes along 113th Avenue South and Duwamish Hill Preserve is recommended to keep the increase in noise levels minimal in those areas, particularly during nighttime hours.

For Alterative 3B, a noise wall may be constructed along the south side of the new access road, extending into the BNSF facility, to shield homes on 51st Place South from increased noise due to new truck traffic. The noise wall should have a top height of at least 12 feet above pavement level, so that elevated truck exhausts are blocked by the wall.

A noise wall is proposed as part of Alternative 4 to reduce noise from the access road to the BNSF facility that would pass close to residences on 51st Place South. The noise wall is proposed along the west side of the access road, extending north along the edge of the facility where trucks would be coming in. The noise wall should have a top height of at least 12 feet above pavement level, so that elevated truck exhausts are blocked by the wall.

To reduce the potential for construction noise to cause annoyance, best practices for construction noise management should be followed. These may include the following (FTA 2019):

- Construct noise barriers, such as temporary walls or piles of excavated material, between noisy activities and noise-sensitive receivers.
- Re-route truck traffic away from residential streets. Select streets with the fewest homes if no alternatives are available.
- Site equipment on the construction lot as far away from noise-sensitive sites as possible.
- Construct walled enclosures around especially noisy activities or clusters of noisy equipment.
- Combine noisy operations to occur in the same time period. The total noise level produced will not be substantially greater than the level produced if the operations were performed separately.
- Avoid impact pile-driving where possible in noise-sensitive areas.
    - Drilled piles or the use of a sonic/vibratory pile driver or push pile driver are quieter alternatives where the geological conditions permit their use.
- Use specially quieted equipment, such as quieted and enclosed air compressors and properly working mufflers on all engines.

4.10.5 Significant Unavoidable Adverse Impacts

A significant unavoidable adverse impact for noise would be an area where new heavy truck traffic occurs at a location immediately adjacent to a noise-sensitive area, where factors prevent the construction of a noise wall or other mitigation. No such areas have been identified, therefore no significant unavoidable adverse impacts for noise are expected as part of this project.

4.11 Environmental Justice

This section provides an environmental justice (EJ) analysis of project impacts to surrounding communities and addresses any disproportionate environmental and health impacts on minority and low-income communities in the City of Tukwila (City) (WSDOT 2024a).

Environmental justice is defined under the HEAL Act (Chapter 70A.02 RCW) as "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, rules, and policies".

Minority is defined by Washington State Department of Transportation (WSDOT 2024a) as an individual who is a member of the following group(s):

- 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 the Spanish culture or origin, regardless of race).
- Asian/Pacific Islander (a person having origins in the Far East, Southeast Asia or the Indian subcontinent).
- Pacific Islander (a person having origins in any of the Pacific Islands).
- American Indian or Alaskan Native (any of the original peoples of North America, and who maintains cultural identification through tribal affiliation or community recognition).

Tribal communities and populations are included under the definition of "minority". A summary of Tribal communities and populations is provided in this chapter; however, detailed analysis and impacts would be provided in Section 4.9 – Cultural Resources of this EIS.

Low-income is defined by the U.S. Census Bureau as having a household income that is at or below the federally designated poverty level for a household of four; based on the annual statistical poverty thresholds from the U.S. Census Bureau (USCB 2023b).

EJ analysis also seeks to provide equal access and participation in the public involvement process for people who may have limited English proficiency (LEP). **Limited English proficiency (LEP)** is defined as individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English (WSDOT 2024a). LEP populations will be evaluated through the public participation plan for this project and not through this EJ section of the EIS.

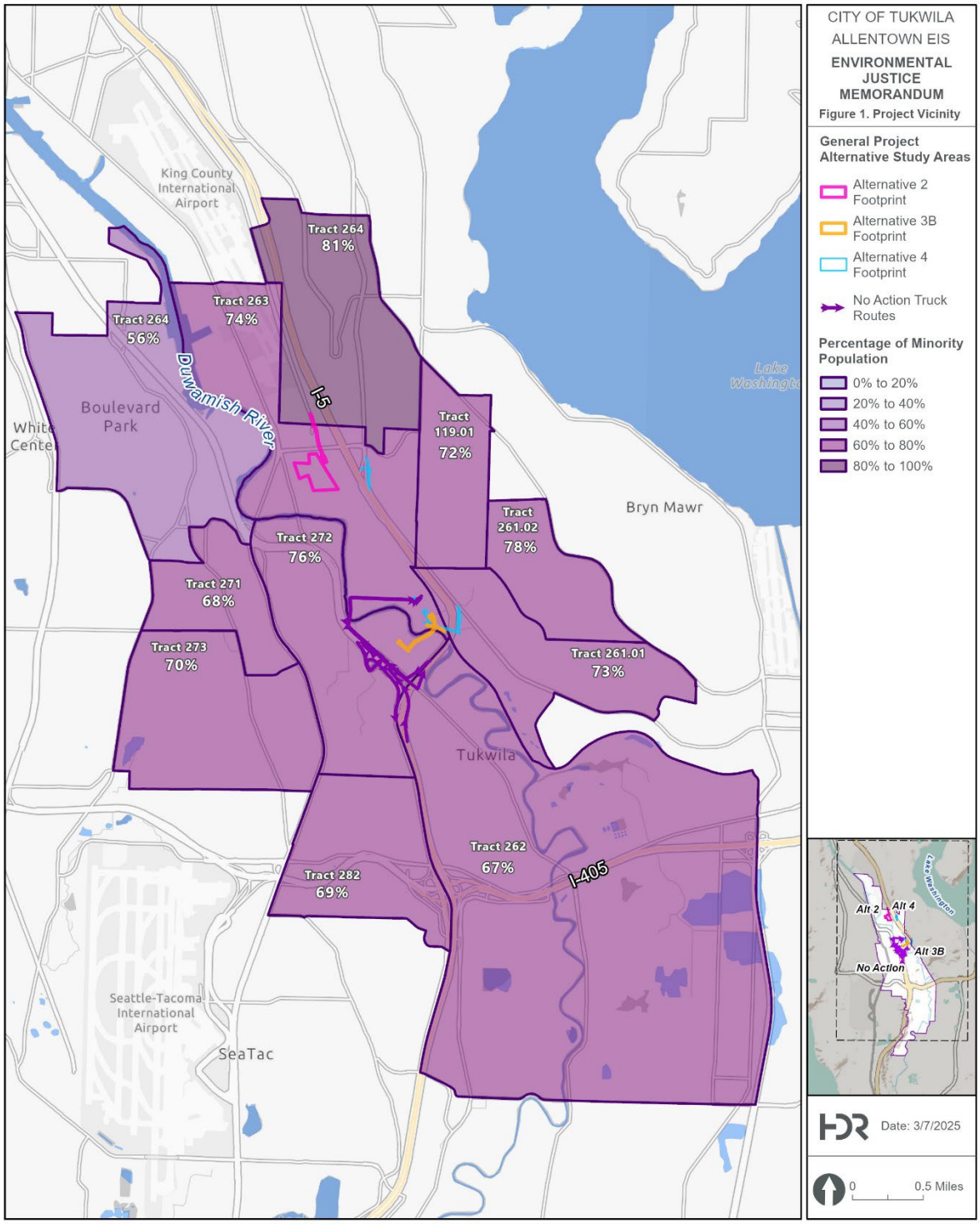


Figure 4.11-1 Census Block Groups in the Study Area

4.11.1 Affected Environment

To determine the presence of EJ populations in the affected environment, a 0.5-mile radius was applied to the No Action Alternative[7], Alternative 2, Alternative 3B, and Alternative 4 to form study areas for each of the alternative. The 0.5 mi radius was determined by recommended guidance from WSDOT (2014).

Census tracts were used to analyze the presence of EJ populations in the alternatives' study areas. Tract data was selected because it provides a stable set of geographic units for the presentation of statistical data, and they contain a larger population size compared to other statistical boundaries used by the U.S. Census Bureau (USCB 2022).

The U.S. Census Bureau was used to pull census tract level percentages of minority and low-income populations. Percentages for City of Tukwila and King County were also listed for comparison. The American Community Survey (ACS) five-year, 2018-2022 dataset was used for this analysis. Minority data was pulled from the Race and Ethnicity ACS Demographic and Housing Estimates table (Table ID: DP05), and low-income data was pulled from the Poverty Status in the Past 12 Months table (Table ID: S1701). For the purposes of this analysis, an alternative or census tract is classified as having EJ populations if their minority and low-income population percentages are equal to or higher than the City of Tukwila and King County.

4.11.1.1 Minority Populations

This section identifies minority populations in the Alternative 2, Alternative 3B, and Alternative 4, and No Action Alternative study areas.

4.11.1.1.1 Minority Populations within the No Action Alternative Study Area

Table 4.11-1 shows minority populations in the No Action Alternative study area compared to minority populations in the City of Tukwila and King County. The No Action Alternative study area overlaps with nine census tracts: Census Tract 119.01, Census Tract 261.01, Census Tract 261.02, Census Tract 262, Census Tract 263, Census Tract 282[8], Census Tract 273, Census Tract 271, Census Tract 272.

Table 4.11-1 Population by Race/Ethnicity (No Action Alternative)

	No Action Alternative Study Area*		City of Tukwila**		King County***	
Race/Ethnicity	**Population**	**Percentage**	**Population**	**Percentage**	**Population**	**Percentage**
Non-Hispanic White Alone	11,319	29%	6,195	29%	1,260,271	56%

[7] The existing truck route without detour is the "No Action Alternative". An existing temporary detour route is being used due to structural damage to the 42nd Ave S bridge. The detour route was excluded from this EIS analysis. Freeways were also excluded from the EIS analysis.

[8] Census Tract 282 was included as it overlaps with the 0.5-mi buffer in the No Action Alternative study area. This tract extends further from the immediate study area and truck routes, but the entirety of the tract would need to be included as census tracts are predetermined geographical boundaries by the U.S. Census Bureau.

Race/Ethnicity	No Action Alternative Study Area*		City of Tukwila**		King County***	
	Population	Percentage	Population	Percentage	Population	Percentage
Black or African American alone	7,128	18%	3,675	17%	144,187	6%
American Indian or Alaskan Native alone	292	1%	182	<1%	10,019	<1%
Asian alone	10,326	26%	5,225	24%	435,379	19%
Native Hawaiian or Pacific Islander alone	738	2%	711	3%	16,415	<1%
Two or More Races[1]	1,813	5%	665	3%	147,298	7%
Some Other Race[1]	403	1%	123	<1%	11,929	<1%
Hispanic or Latino (of any race)	7,433	19%	4,793	22%	228,873	10%
Total Minority[2]	**28,133**	**71%**	**15,374**	**71%**	**994,100**	**44%**
Total Population	**39,452**	**100%**	**21,569**	**100%**	**2,254,371**	**100%**

SOURCE: *(USCB 2024a), **(USCB 2024b), ***(USCB 2024c)

1 "Two or More Races and "Some Other Race" does not include Hispanic or Latino populations (US Census Bureau 2024). Hispanic or Latino (of any race) is in a separate row.

2 "Total Minority" in includes Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, Two or More Races, Some Other Race and Hispanic or Latino of any race as defined by WSDOT Environmental Manual (2024a).

The total minority population in the No Action Alternative study area (71 percent) is the same as the minority population in the City of Tukwila (71 percent) and greater than the minority percentages in King County (44 percent). See Figure 4.11-2 for a visual representation of minority population in the No Action Alternative study area by individual census tracts.

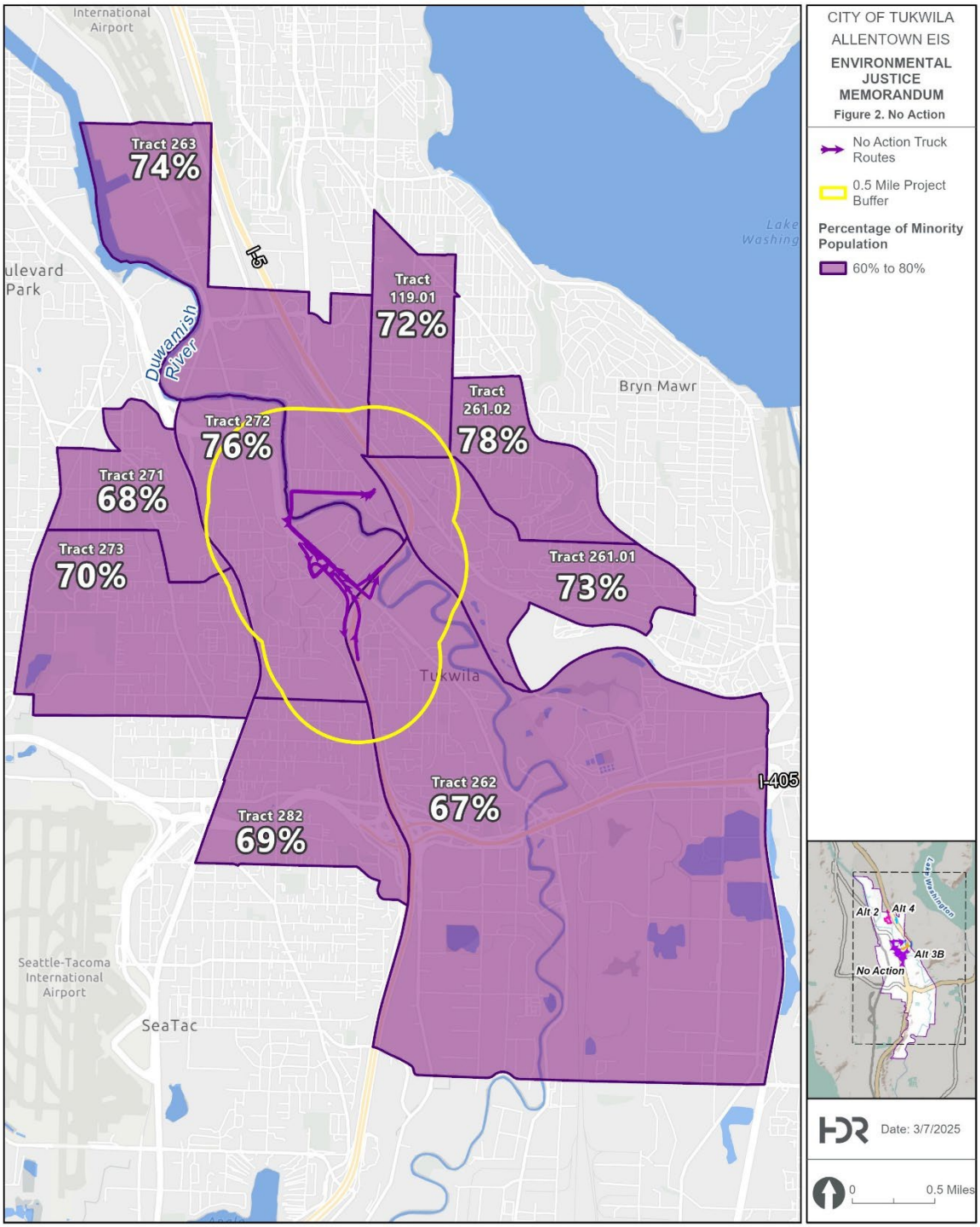


Figure 4.11-2 Minority Population by Census Tracts in the No Action Alternative Study Area

4.11.1.1.2 Minority Populations within the Alternative 2 Study Area

Table 4.11-2 displays minority populations in the Alternative 2 study area compared to minority populations in the City of Tukwila and King County. Alternative 2 study area overlaps with four census tracts: Census Tract 117, Census Tract 263, Census Tract 264, and Census Tract 272.

Table 4.11-2 Population by Race/Ethnicity (Alternative 2: Airport Way South)

	Alternative 2 Study Area*		City of Tukwila**		King County***	
Race/Ethnicity	**Population**	**Percentage**	**Population**	**Percentage**	**Population**	**Percentage**
Non-Hispanic White Alone	4,863	30%	6,195	29%	1,260,271	56%
Black or African American alone	2,323	14%	3,675	17%	144,187	6%
American Indian or Alaskan Native alone	175	1%	182	<1%	10,019	<1%
Asian alone	4,366	27%	5,225	24%	435,379	19%
Native Hawaiian or Pacific Islander alone	213	1%	711	3%	16,415	<1%
Two or More Races[1]	465	3%	665	3%	147,298	7%
Some Other Race[1]	193	1%	123	<1%	11,929	<1%
Hispanic or Latino (of any race)	3,715	23%	4,793	22%	228,873	10%
Total Minority[2]	**11,450**	**70%**	**15,374**	**71%**	**994,100**	**44%**
Total Population	**16,313**	**100%**	**21,569**	**100%**	**2,254,371**	**100%**

SOURCE: *(USCB 2024a), **(USCB 2024b), ***(USCB 2024c)

1 "Two or More Races and "Some Other Race" does not include Hispanic or Latino populations (US Census Bureau 2024). Hispanic or Latino (of any race) is in a separate row.

2 "Total Minority" in includes Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, Two or More Races, Some Other Race and Hispanic or Latino of any race as defined by WSDOT Environmental Manual (2024a).

The minority population in the Alternative 2 study area (70 percent) is lower than the minority population in the City of Tukwila (71 percent), but higher than the minority percentage in King County (44 percent). See Figure 4.11-3 for a visual representation of minority population in the Alternative 2 study area by individual census tracts.

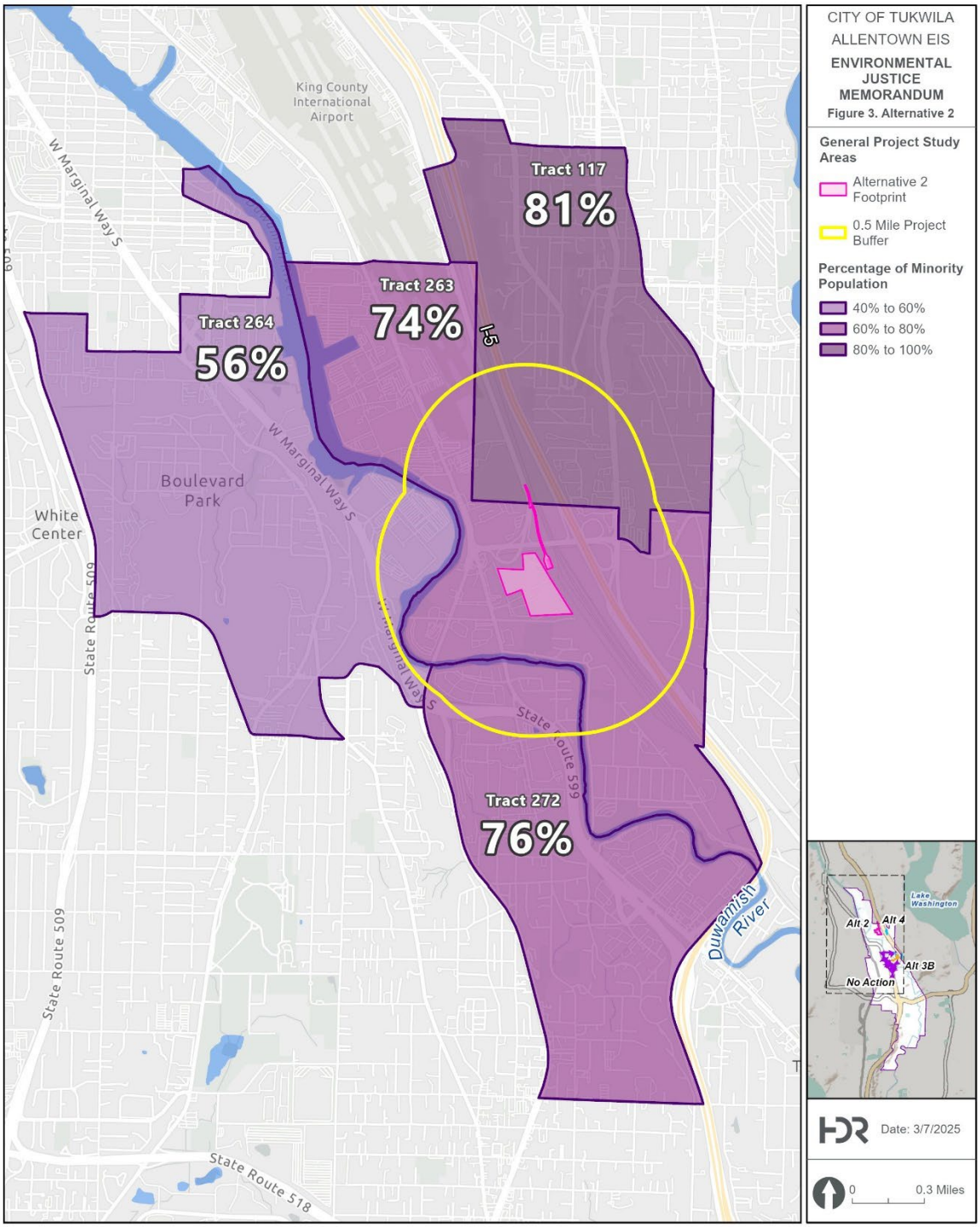


Figure 4.11-3 Minority Population by Census Tracts in the Alternative 2 Study Area

4.11.1.1.3 Minority Populations within the Alternative 3B Study Area

Table 4.11-3 displays minority populations in the Alternative 3B study area compared to minority populations in the City of Tukwila and King County. Alternative 3B study area overlaps with six census tracts: Census Tract 262, Census Tract 119.01, Census Tract 261.01, Census Tract 261.02, Census Tract 272, Census Tract 263.

Table 4.11-3 Population by Race/Ethnicity (Alternative 3B: Improvements to 48th Place South)

	Alternative 3B Study Area*		City of Tukwila**		King County***	
Race/Ethnicity	**Population**	**Percentage**	**Population**	**Percentage**	**Population**	**Percentage**
Non-Hispanic White Alone	6,459	27%	6,195	29%	1,260,271	56%
Black or African American alone	4,413	19%	3,675	17%	144,187	6%
American Indian or Alaskan Native alone	292	1%	182	<1%	10,019	<1%
Asian alone	6,335	27%	5,225	24%	435,379	19%
Native Hawaiian or Pacific Islander alone	298	1%	711	3%	16,415	<1%
Two or More Races[1]	1,432	6%	665	3%	147,298	7%
Some Other Race[1]	377	2%	123	<1%	11,929	<1%
Hispanic or Latino (of any race)	4,026	17%	4,793	22%	228,873	10%
Total Minority[2]	**17,173**	**73%**	**15,374**	**71%**	**994,100**	**44%**
Total Population	**23,632**	**100%**	**21,569**	**100%**	**2,254,371**	**100%**

SOURCE: *(USCB 2024a), **(USCB 2024b), ***(USCB 2024c)

1 "Two or More Races and "Some Other Race" does not include Hispanic or Latino populations (US Census Bureau 2024). Hispanic or Latino (of any race) is in a separate row.

2 "Total Minority" in includes Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, Two or More Races, Some Other Race and Hispanic or Latino of any race as defined by WSDOT Environmental Manual (2024a).

The minority population in the Alternative 3B study area (73 percent) is higher than the minority population in the City of Tukwila (71 percent) and King County (44 percent). See Figure 4.11-4 for a visual representation of minority population in the Alternative 3B study area by individual census tracts.

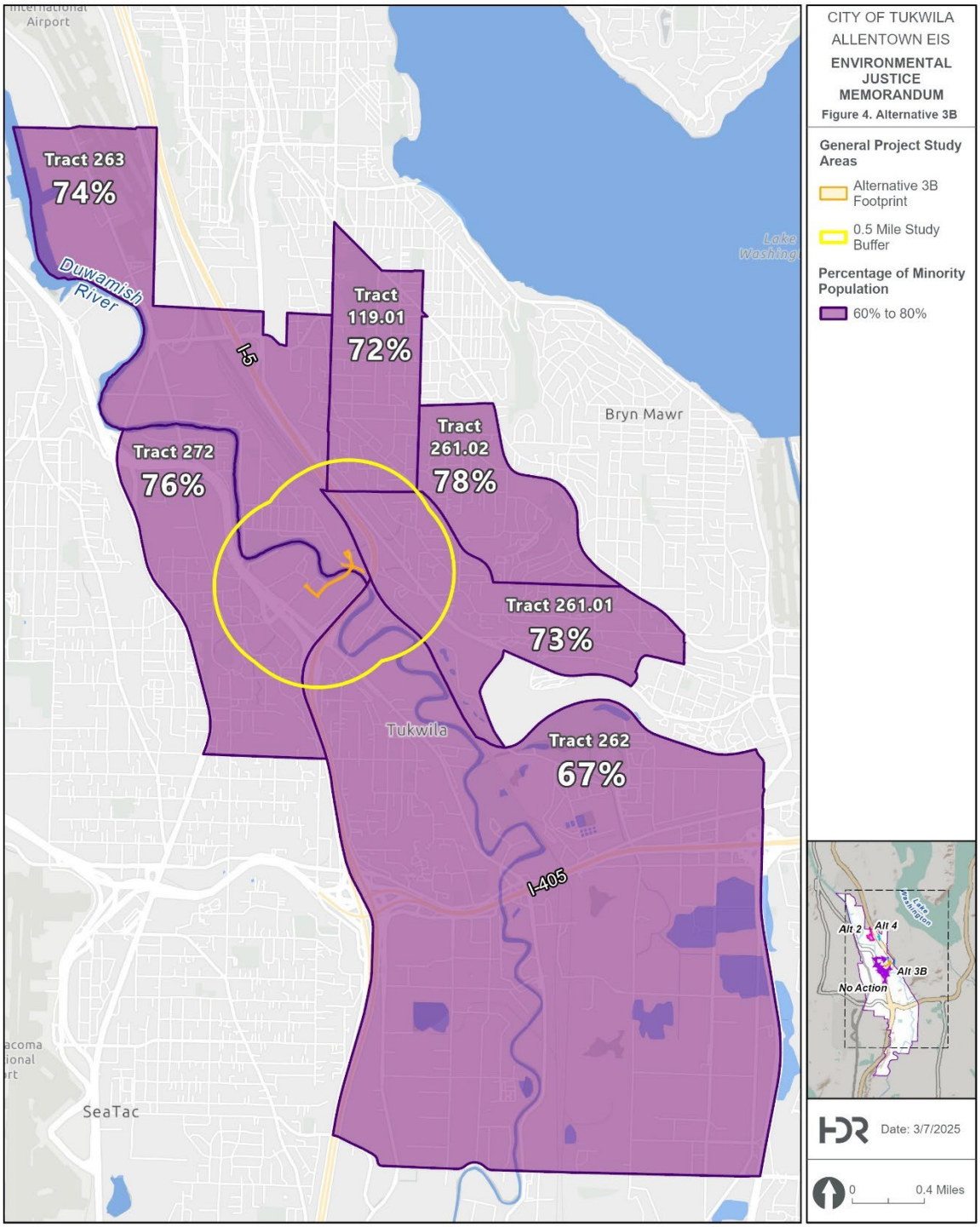


Figure 4.11-4 Minority Population by Census Tracts in the Alternative 3B Study Area

4.11.1.1.4 Minority Populations within the Alternative 4 Study Area

Table 4.11-4 displays minority populations in the Alternative 4 study area compared to minority populations in the City of Tukwila and King County. Alternative 4 study area overlaps with seven census tracts: Census Tract 262, Census Tract 119.01, Census Tract 261.01, Census Tract 117, Census Tract 261.02, Census Tract 272, Census Tract 263.

Table 4.11-4 Population by Race/Ethnicity (Alternative 4: New Bridge from SR 900)

	Alternative 4 Study Area*		City of Tukwila**		King County***	
Race/Ethnicity	**Population**	**Percentage**	**Population**	**Percentage**	**Population**	**Percentage**
Non-Hispanic White Alone	7,539	26%	6,195	29%	1,260,271	56%
Black or African American alone	5,451	19%	3,675	17%	144,187	6%
American Indian or Alaskan Native alone	333	1%	182	<1%	10,019	<1%
Asian alone	9,136	31%	5,225	24%	435,379	19%
Native Hawaiian or Pacific Islander alone	298	1%	711	3%	16,415	<1%
Two or More Races[1]	1,575	5%	665	3%	147,298	7%
Some Other Race[1]	414	1%	123	<1%	11,929	<1%
Hispanic or Latino (of any race)	4,605	16%	4,793	22%	228,873	10%
Total Minority[2]	**21,812**	**74%**	**15,374**	**71%**	**994,100**	**44%**
Total Population	**29,351**	**100%**	**21,569**	**100%**	**2,254,371**	**100%**

SOURCE: *(USCB 2024a), **(USCB 2024b), ***(USCB 2024c)

1 "Two or More Races and "Some Other Race" does not include Hispanic or Latino populations (US Census Bureau 2024). Hispanic or Latino (of any race) is in a separate row.

2 "Total Minority" in includes Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Pacific Islander, Two or More Races, Some Other Race and Hispanic or Latino of any race as defined by WSDOT Environmental Manual (2024a).

The minority population in the study area (74 percent) is higher than the minority population in the City of Tukwila (71 percent) and King County (44 percent). See Figure 4.11-5 for a visual representation of minority population in the Alternative 3B study area by individual census tracts.

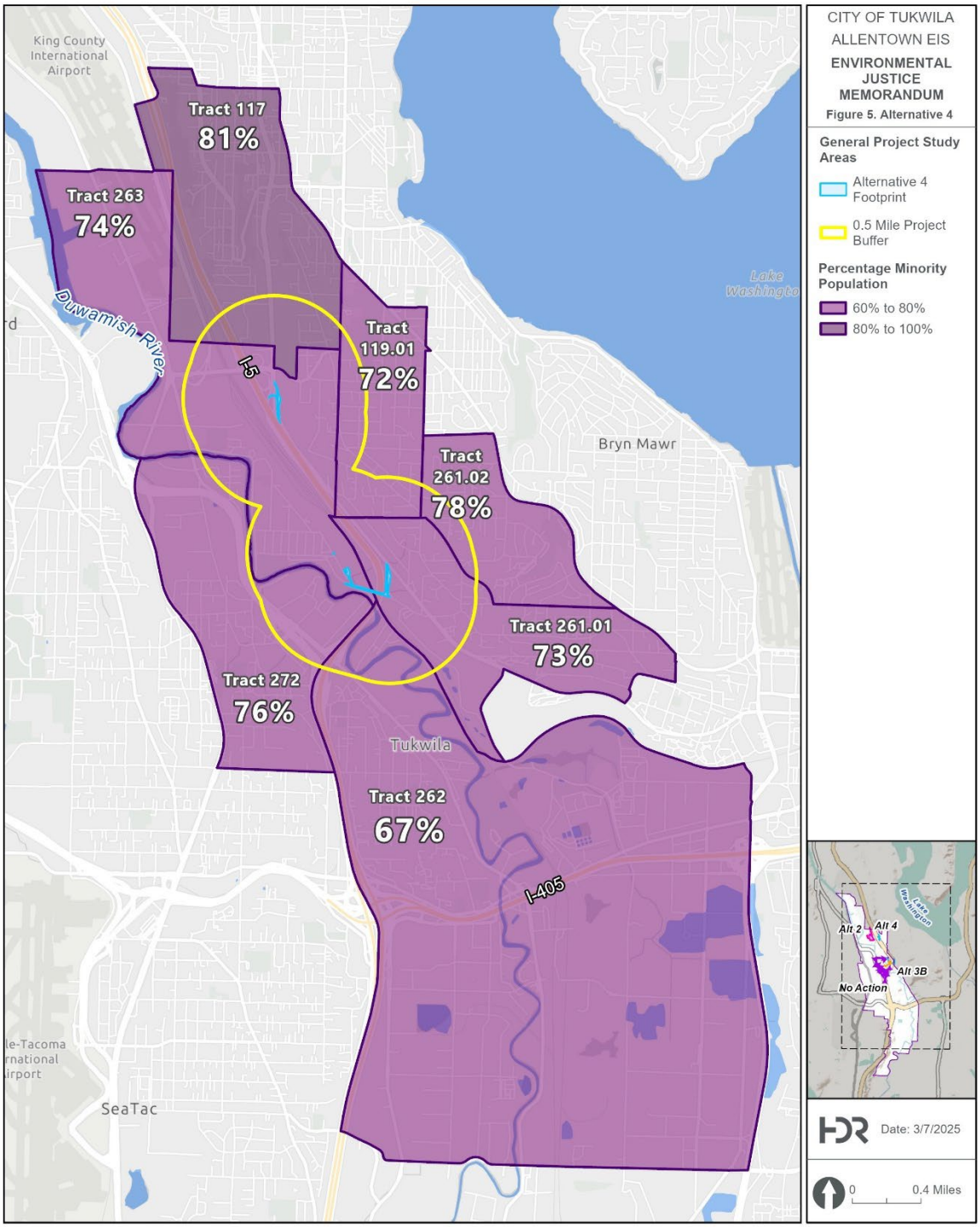


Figure 4.11-5 Minority Population by Census Tracts in the Alternative 4 Study Area

4.11.1.1.5 Summary of Minority Populations of the Study Areas

Between all alternatives, Alternative 4 study area has the highest minority percentage at 74 percent, followed by Alternative 3B at 73 percent, the No Action Alternative at 71 percent, and Alternative 2 at 70 percent.

Both Alternative 3B and Alternative 4 have a higher percentage of minority population than the City of Tukwila, whereas Alternative 2 has a minority population at 70 percent, which is 1 percent lower than the City of Tukwila. The No Action Alternative has the same percentage of minority population as the City of Tukwila. All alternatives have a higher percentage of minority population than King County (44 percent).

4.11.1.2 Low-Income Populations

This section identifies low-income populations in the study area based on the census tract data across Alternative 2, Alternative 3B, Alternative 4, and the No Action Alternative. "Population below poverty level" by the U.S. Census Bureau will be used interchangeably with "low-income populations".

Population for whom poverty status is determined was compiled from the U.S. Census 2022: ACS five-Year Estimates Data Profiles (ACS Poverty Status in the Past 12 Months, Table ID: S1701) for the respective study areas. The same information was compiled for King County and the City of Tukwila for comparison.

4.11.1.2.1 Low-income Populations within the No Action Alternative Study Area

Table 4.11-5 displays the presence of low-income populations (in percentages) in the No Action Alternative study area compared to low-income populations in the City of Tukwila and King County as a whole. The No Action Alternative study area overlaps with nine census tracts: Census Tract 119.01, Census Tract 261.01, Census Tract 261.02, Census Tract 262, Census Tract 263, Census Tract 282, Census Tract 273, Census Tract 271, Census Tract 272.

Table 4.11-5 Population Below Poverty Level (No Action Alternative)

Census Tract (King County, Washington)	Population*	Number Below the Poverty Level	Percent Below Poverty Level
Census Tract 119.01	4,571	388	9%
Census Tract 261.01	3,747	520	14%
Census Tract 261.02	4,364	1,066	24%
Census Tract 262	6,013	472	8%
Census Tract 263	1,781	72	4%
Census Tract 271	3,950	942	24%
Census Tract 272	2,938	481	16%
Census Tract 273	6,542	1,121	17%
Census Tract 282	5,135	649	13%
Study Area Total	**39,041**	**5,711**	**15%**
City of Tukwila	**21,200**	**2,821**	**13%**
King County	**2,223,603**	**187,794**	**8%**

SOURCE: (USCB 2024d)

*The poverty universe estimates are not the same as the population estimates from the Census Bureau's Population Estimates Program. They include group quarters populations only for noninstitutionalized group quarters; and excludes populations in

residents of college dormitories, military housing, all institutional group quarters, and children under age 15 not related to a reference person within the household (U.S. Census Bureau 2021). Source: https://www.census.gov/programs-surveys/saipe/guidance/model-input-data/denominators/poverty.html

The population below poverty level in the No Action Alternative study area (15 percent) is higher than the population below poverty level in the City of Tukwila (13 percent) and King County (8 percent). See Figure 4.11-6 for a visual representation of low-income population in the No Action Alternative study area by individual census tracts.

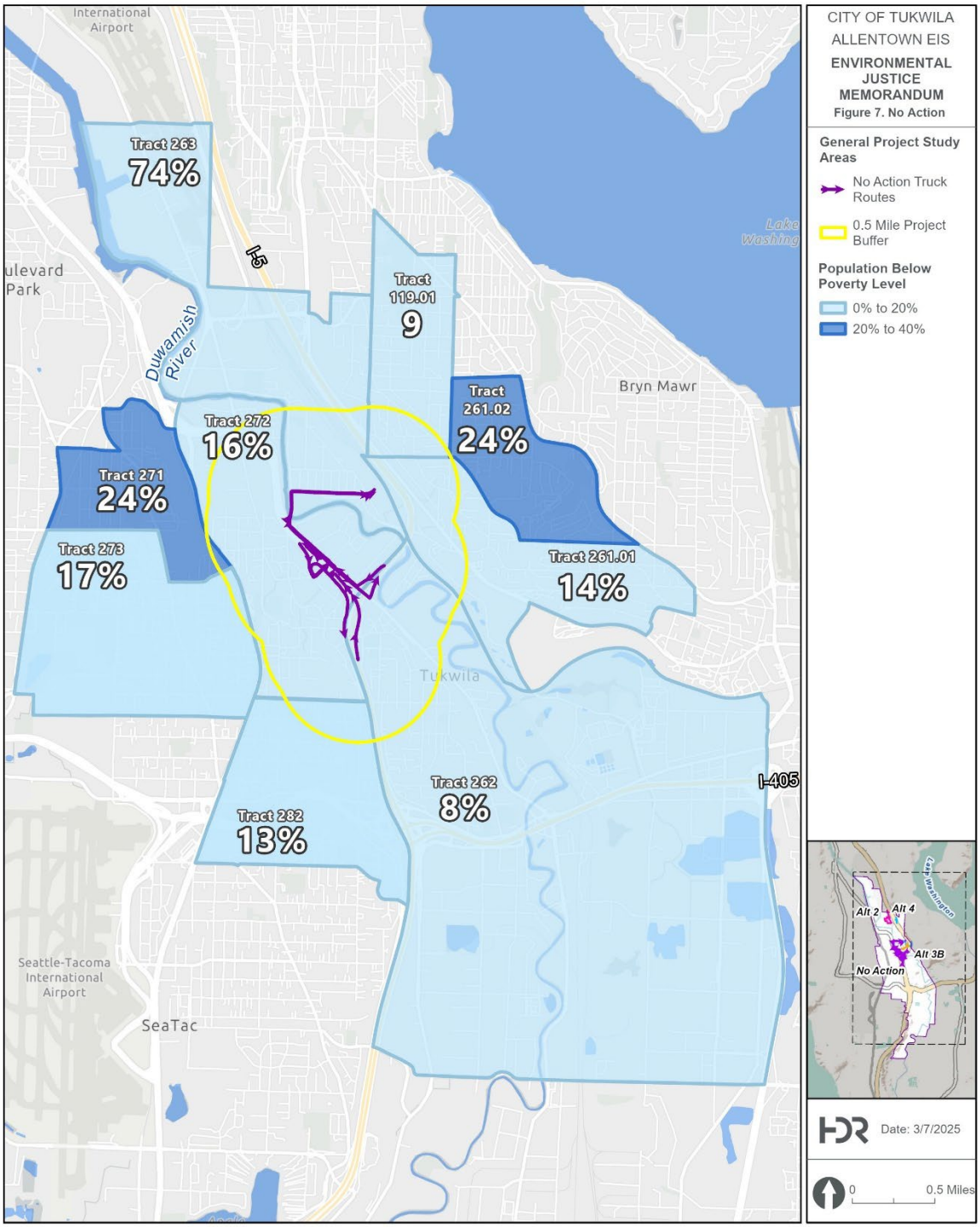


Figure 4.11-6 Low-Income Population by Census Tracts in the No Action Alternative Study Area

4.11.1.2.2 Low-income Populations within the Alternative 2 Study Area

Table 4.11-6displays the presence of low-income population percentages in the Alternative 2 study area compared to low-income populations in the City of Tukwila and King County. Alternative 2 study area overlaps with four census tracts: Census Tract 117, Census Tract 263, Census Tract 264, and Census Tract 272.

Table 4.11-6 Population Below the Poverty Level (Alternative 2: Airport Way South)

Census Tract (King County, Washington)	Population*	Number Below the Poverty Level	Percent Below Poverty Level
Census Tract 117	5,696	889	16%
Census Tract 263	1,781	72	4%
Census Tract 264	5,820	1,506	26%
Census Tract 272	2,938	481	16%
Study Area Total*	**16,235**	**2,948**	**18%**
City of Tukwila	**21,200**	**2,821**	**13%**
King County	**2,223,603**	**187,794**	**8%**

SOURCE: (USCB 2024d)

*The poverty universe estimates are not the same as the population estimates from the Census Bureau's Population Estimates Program. They include group quarters populations only for noninstitutionalized group quarters; and excludes populations in residents of college dormitories, military housing, all institutional group quarters, and children under age 15 not related to a reference person within the household (U.S. Census Bureau 2021). Source: https://www.census.gov/programs-surveys/saipe/guidance/model-input-data/denominators/poverty.html

The population below poverty level in the Alternative 2 study area (18 percent) is higher than the population below poverty level in the City of Tukwila (13 percent) and King County (8 percent). See Figure 4.11-7 for a visual representation of low-income population in the Alternative 2 study area by census tracts.

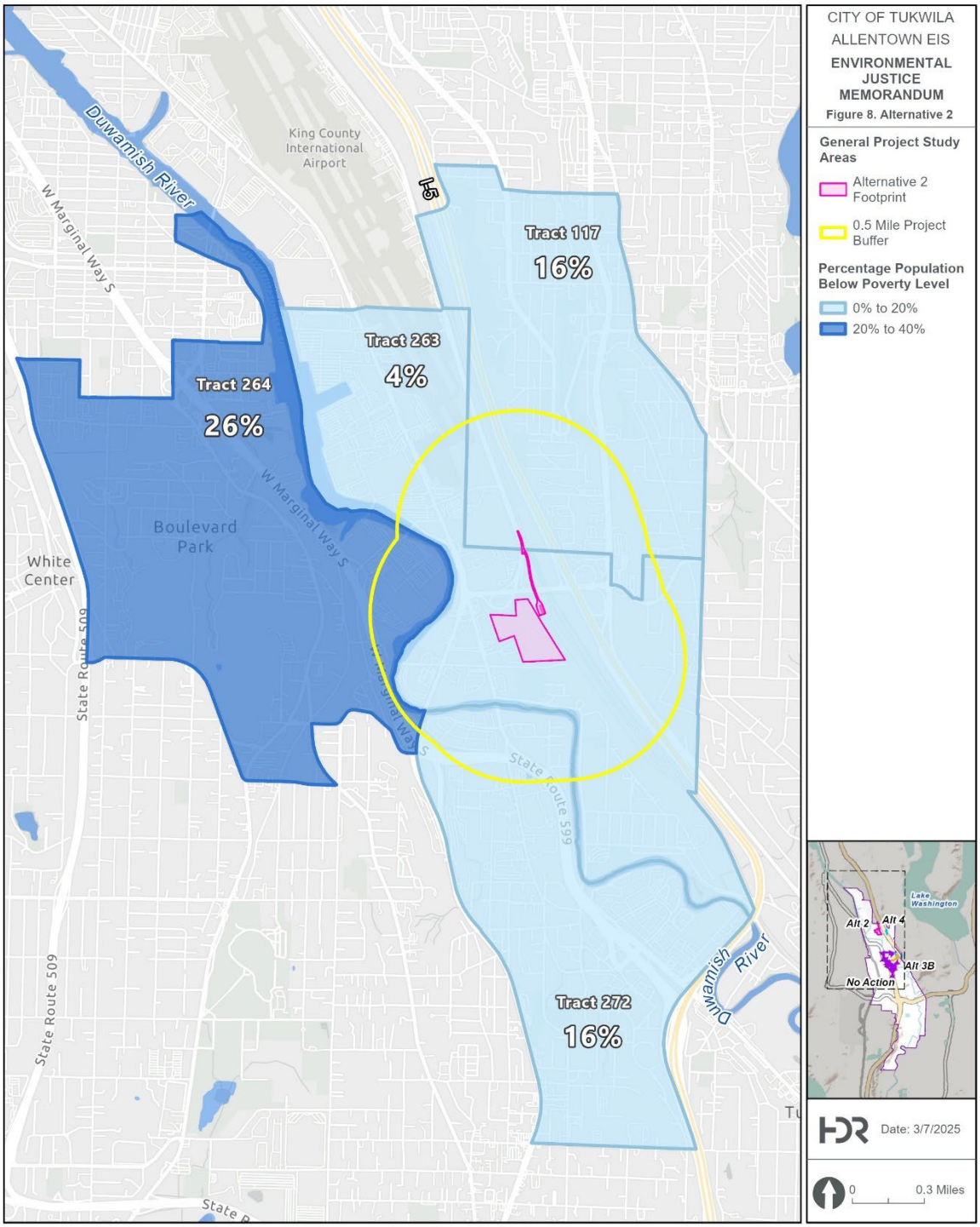


Figure 4.11-7 Low-Income Population by Census Tracts in the Alternative 2 Study Area

4.11.1.2.3 Low-income Populations within the Alternative 3B Study Area

Table 4.11-7 displays the presence of low-income populations in the Alternative 3B study area compared to low-income populations in the City of Tukwila and King County. Alternative 3B study area overlaps with six census tracts: Census Tract 119.01, Census Tract 261.01, Census Tract 261.02, Census Tract 262, Census Tract 263, Census Tract 272.

Table 4.11-7 Population Below Poverty Level (Alternative 3B: Improvements to 48th Place South)

Census Tract (King County, Washington)	Population*	Number Below the Poverty Level	Percent Below Poverty Level
Census Tract 119.01	4,571	388	9%
Census Tract 261.01	3,747	520	14%
Census Tract 261.02	4,364	1,066	24%
Census Tract 262	6,013	472	8%
Census Tract 263	1,781	72	4%
Census Tract 272	2,938	481	16%
Study Area Total*	**23,414**	**2,999**	**13%**
City of Tukwila	**21,200**	**2,821**	**13%**
King County	**2,223,603**	**187,794**	**8%**

SOURCE: (USCB 2024d)

*The poverty universe estimates are not the same as the population estimates from the Census Bureau's Population Estimates Program. They include group quarters populations only for noninstitutionalized group quarters; and excludes populations in residents of college dormitories, military housing, all institutional group quarters, and children under age 15 not related to a reference person within the household (U.S. Census Bureau 2021). Source: https://www.census.gov/programs-surveys/saipe/guidance/model-input-data/denominators/poverty.html

The population below poverty level in the Alternative 3B study area (13 percent) is same as the population below poverty level in the City of Tukwila (13 percent), but higher than King County (8 percent). See Figure 4.11-8 for a visual representation of low-income population in the Alternative 3B study area by census tracts.

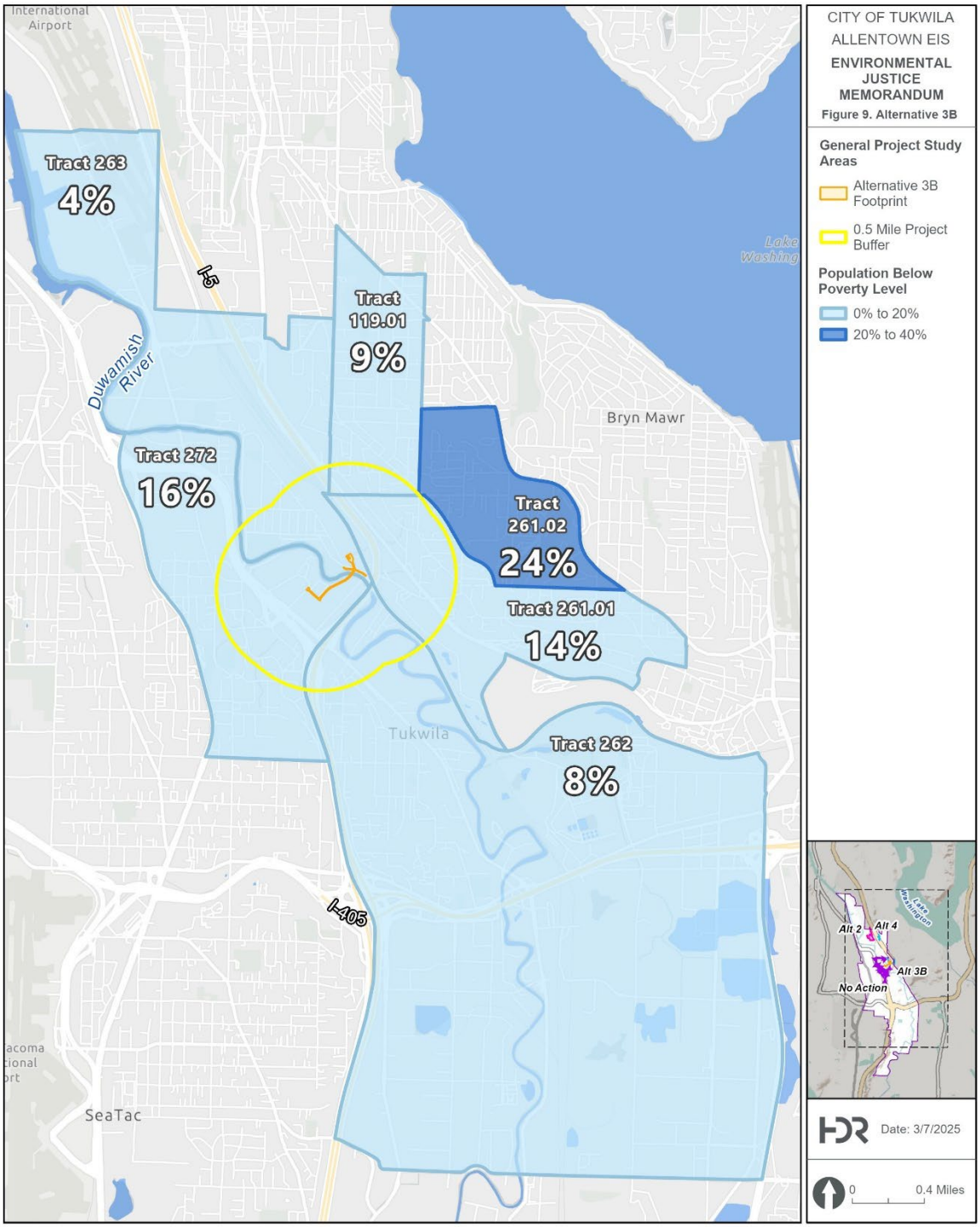


Figure 4.11-8 Low-Income Population by Census Tracts in the Alternative 3B Study Area

4.11.1.2.4 Low-income Populations within the Alternative 4 Study Area

Table 4.11-8 displays the presence of low-income populations (in percentages) in the Alternative 4 study area compared to minority populations in the City of Tukwila and King County as a whole. Alternative 4 study area overlaps with seven census tracts: Census Tract 117, Census Tract 119.01, Census Tract 261.01, Census Tract 261.02, Census Tract 262, Census Tract 263, Census Tract 272.

Table 4.11-8 Population Below Poverty Level (Alternative 4: New Bridge from SR 900)

Census Tract (King County, Washington)	Population*	Number Below the Poverty Level	Percent Below Poverty Level
Census Tract 117	5,696	889	16%
Census Tract 119.01	4,571	388	9%
Census Tract 261.01	3,747	520	14%
Census Tract 261.02	4,364	1,066	24%
Census Tract 262	6,013	472	8%
Census Tract 263	1,781	72	4%
Census Tract 272	2,938	481	16%
Study Area Total*	**29,110**	**3,888**	**13%**
City of Tukwila	**21,200**	**2,821**	**13%**
King County	**2,223,603**	**187,794**	**8%**

SOURCE: (USCB 2024d)

*The poverty universe estimates are not the same as the population estimates from the Census Bureau's Population Estimates Program. They include group quarters populations only for noninstitutionalized group quarters; and excludes populations in residents of college dormitories, military housing, all institutional group quarters, and children under age 15 not related to a reference person within the household (U.S. Census Bureau 2021). Source: https://www.census.gov/programs-surveys/saipe/guidance/model-input-data/denominators/poverty.html

The population below poverty level in the Alternative 4 study area (13 percent) is same as the population below poverty level in the City of Tukwila (13 percent) and higher than King County (8 percent). See Figure 4.11-9 for a visual representation of low-income population in the Alternative 4 study area by census tracts.

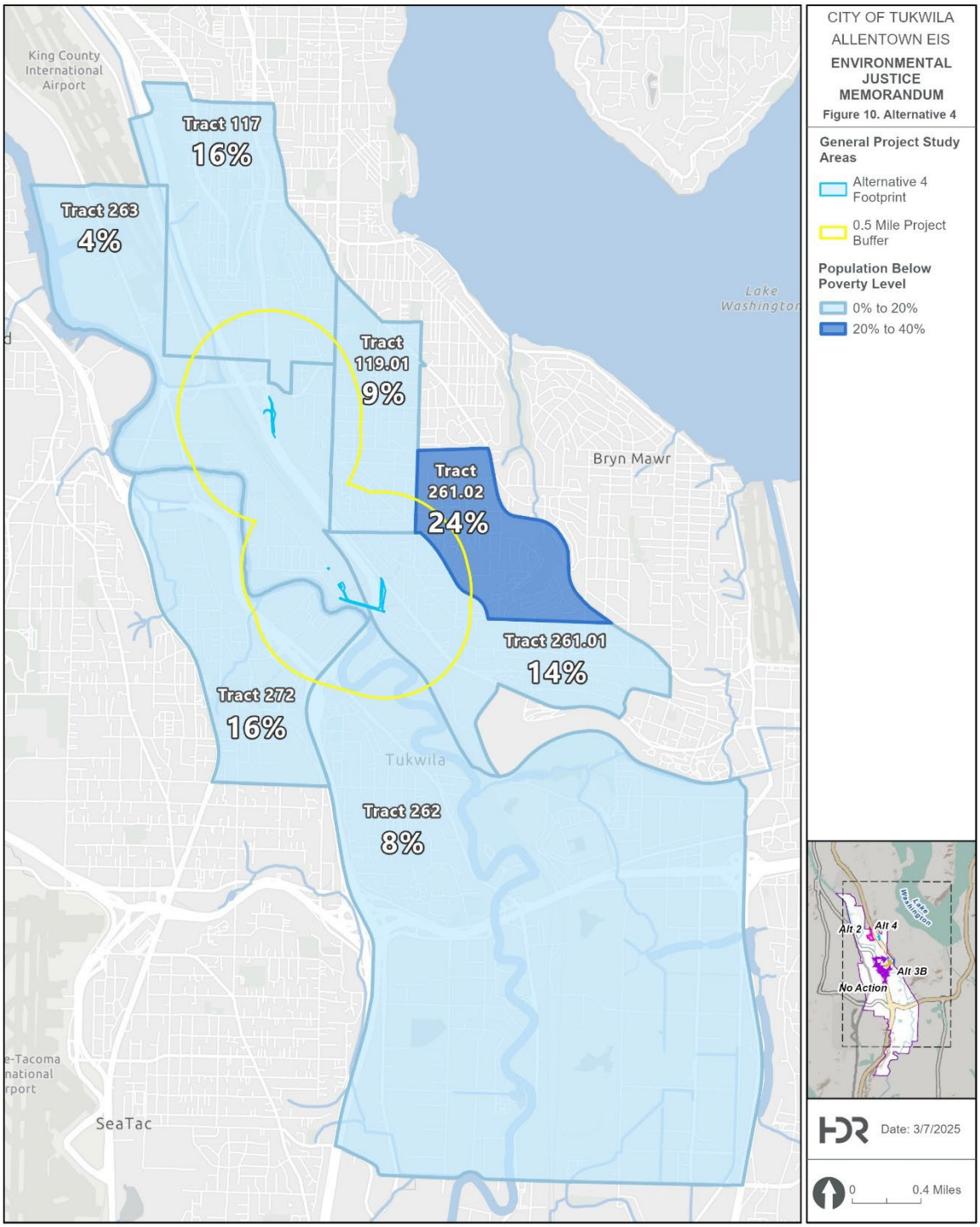


Figure 4.11-9 Low-Income Population by Census Tracts in the Alternative 4 Study Area

4.11.1.2.5 Summary of Low-Income Populations of the Study Areas

Between all alternatives, Alternative 2 has the highest percentage of populations below poverty level at 18 percent, followed by the No Action Alternative at 15 percent, and Alternative 3B and Alternative 4 both at 13 percent.

Both Alternative 2 and the No Action Alternative have a higher percentage of populations below poverty level than the City of Tukwila, and Alternative 3B and Alternative 4 have a minority population at 13 percent, which is the same as City of Tukwila. All alternatives have a higher percentage of populations below poverty level than King County (8 percent).

4.11.1.3 Tribal Communities and Populations

The Washington Territory was organized on behalf of the United States in 1853 and the Treaty of Point Elliott, ratified in 1859, was signed by the Duwamish, Suquamish, Snoqualmie, Snohomish, Lummi, Skagit, Swinomish and other tribes on January 22, 1855. One of the Snoqualmie Indian chiefs signed in the name of the Stillaguamish, Snohomish, and Snoqualmie Indians (12 Stat. 971). The Treaty of Point Elliot resulted in the Indian Tribes ceding thousands of acres of lands to the federal government in exchange for reservations and guaranteed perpetual access to ancestral fishing, hunting, and gathering sites, referred to as usual and accustomed areas (U&A).

During the 1960s and 1970s, State laws attempted to limit Indian fishing to only reservation lands. In response, Indian fishers organized a movement grounded in “fish-ins” and public education to challenge these continued threats to their treaty fishing rights. The fishers were faced with harassment, violence, and arrest, events that are referred to as the Fish Wars. These Fish Wars were pivotal in enforcing rights for treaty-reserved fish and shellfish resources within U&A areas.

The Tribes’ reserved rights were reaffirmed in 1974 (and upheld in 1979) during a United States vs. Washington court case that became known as the Boldt Decision, named for trial court judge, George Hugo Boldt. This case reaffirmed the right of the Indian tribes in Washington State to co-manage salmon and other fish within the state and to also continue harvesting fish in accordance with the various treaties. Today, the Indian Tribes in Washington State co-manage salmon and other fish with the state and to also continue harvesting fish in accordance with the various treaties (384 F. Supp. 312, W. Dist. WA, [1974]).

The Muckleshoot Indian Tribe and Suquamish Tribe hold adjudicated fishing rights in the Duwamish Waterway and Elliot Bay, among other areas. For purposes of the Treaty, the term “fish” includes both anadromous fish and naturally occurring shellfish beds. Fish and shellfish have always played a very important role in Indian tribal economy and culture since time immemorial, including both subsistence and ceremonial practice. Tribes have historically harvested, currently harvest, and intend to harvest fish and shellfish in the future within their U&A fishing grounds.

Additionally, the Duwamish Tribal Organization headquarters is directly across from the Study Area (Duwamish Tribe 2018). The Duwamish Tribal Organization is not federally recognized; however, many Duwamish people have chosen to move to the Port Madison Indian Reservation or enroll in the Muckleshoot Indian Reservation, while other Duwamish people continue to seek independent Duwamish tribal status (Suquamish 2023).

There are no Tribal lands within the Study Area.

4.11.2 Relevant Plans, Policies, and Regulations

There are currently no legally binding requirements for environmental justice analysis for SEPA (WSDOT 2023). Additionally, SEPA EIS requirements in Chapter 197-11 WAC does not list environmental justice as a required element of the environment. Environmental justice is analyzed in this SEPA DEIS due to the presence of high minority and low-income populations in the City, as well as comments received during the scoping process.

Applicable plans and guiding documents that assist with making an informed EJ analysis for this project are listed in Table 4.11-9

Table 4.11-9 Relevant Plans, Policies, and Regulations

Laws and Regulations	Description
Federal	
Due to the revocation of Executive Orders 12898 and 14098, there are currently no federal regulations and documents applicable to the Project.	
State	
Washington State Department of Transportation (WSDOT), Environmental Manual	The WSDOT Environmental Manual M 31-11 is a compilation of environmental policies and processes that is to be used as a guidance resource for the Washington State Department of Transportation (WSDOT) and its environmental consultants. The manual includes a chapter on Environmental Justice (Chapter 460), which provides direction necessary for project teams to meet federal and state environmental justice (EJ) requirements during the environmental review process for transportation improvement projects.
Local	
There are no local regulations applicable to the Project	

4.11.3 Methodology

In order to determine the ways in which the No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4 could disproportionately impact environmental justice populations, this analysis reviewed the effects analyses presented in Sections 4.1 through 4.11 (the Environmental Analysis resource sections) of this EIS to identify the overall effects from the proposed Project. When adverse impacts were identified in the discipline reports for the other elements of the environment, these impact determinations were assessed for the potential for environmental impacts to disproportionately affect environmental justice populations of interest. Where mitigation measures that could avoid, minimize, or reduce the identified impact below the level of significance were identified, these were also considered.

In order to determine the ways in which the Proposed Action and Alternative 1 could potentially impact environmental justice populations, the City first reviewed the effects analyses presented in Sections 4.1

through 4.11 of this EIS to identify the overall effects from the Project. After identifying adverse effects, project effects that could affect people differently were isolated. For example, the City examined the effects of construction air quality on environmental justice populations, because environmental justice populations living or working closer to project construction could be affected more than people living farther away. In other words, the City evaluated whether low-income or minority populations would experience disproportionately high and adverse effects as a result of the proposed Project.

The term “disproportionately high and adverse effects” is used to encompass both human health and environmental effects. This analysis considers both short-term (construction) and long-term (operation) effects specific to populations that could experience disproportionate effects as a result of the proposed Project.

A significant impact would occur if the Project would cause an irreversible disproportionate adverse effect on environmental justice populations.

A majority of the construction impacts would occur within the immediate project area. Operational impacts would include new alternative routes to the BNSF Intermodal Facility in Allentown. Impacts with the potential to affect environmental justice communities could occur with respect to air quality, noise, transportation, water resources, public services and utilities, cultural resources, visual resources and aesthetics, and health and safety and are discussed further below.

Any adverse construction impacts related to geology and soils, water resources, plants and animals would be anticipated to be localized to the project site or not have the potential to impact people directly, so no environmental justice community impacts are anticipated. Hence, the impacts in Section 4.11.4 would not discuss any of these environmental impacts.

The subsections below provide an analysis of whether the construction and operational impacts identified in the respective chapters would disproportionality affect environmental justice populations. To determine the magnitude of impacts, the following categories are defined in Table 4.11-10:

Table 4.11-10 Magnitude of impacts

Magnitude of Disproportionate Impact	Description
No Impact	The proposed Project would not have disproportionate impacts to environmental justice populations in the study area or census tract.
Minor	The proposed Project would have temporary and minor disproportionate impacts to environmental justice populations in the study area or census tract, and mitigation measures would help restore environment to pre-existing conditions.
Moderate	The proposed Project would have temporary and long-term disproportionate impacts to environmental justice populations in the study area or census tract, but mitigation actions can be applied to reduce the impact to a minor level.

Magnitude of Disproportionate Impact	Description
Significant	The proposed Project would cause long-term or irreversible disproportionate impacts to environmental justice populations study area or census tract. No mitigation measures could be applied.

4.11.4 Impacts Analysis

4.11.4.1 Construction Impacts

4.11.4.1.1 No Action Alternative

Under the No Action Alternative, impacts from construction are not applicable because the No Action Alternative is the existing truck route to the BNSF Intermodal facility; truck traffic would continue under current operating conditions.

4.11.4.1.2 Alternative 2, Alternative 3B, and Alternative 4

4.11.4.1.2.1 Land Use, Shoreline Use, and Recreation

For land use, construction for Alternative 2 would be consistent with zoning regulations and future land use designations. Alternative 3B may have minor and temporary construction impacts to a low-density residential area along Railroad Avenue. Alternative 4 construction may require parcel rezoning or acquisitions, and residents in affected parcel 0179002255 could be displaced. No disproportionate construction land use or displacement impacts are anticipated to environmental justice populations in Alternative 3B and 4, as impacts would be commonly felt among all populations within the community.

For shoreline use, Alternative 2 does not overlap with shoreline use areas or buffers. Construction activities for Alternative 3B and 4 would occur within the shoreline designations Urban Conservancy and Residential Shoreline along with their buffer areas. Alternative 3B would introduce a new bridge, and Alternative 4 would have construction activities within existing roadways in these shoreline designated areas. No disproportionate shoreline use impacts are anticipated to environmental justice populations in Alternative 3B and 4, as impacts would be commonly felt among all populations.

For recreation, construction activities for Alternative 2 would displace the Seattle Police Athletic Association (SPAA), a popular and historic recreational facility. Construction activities for Alternative 3B would temporarily impact public access to the Duwamish River, Green River Trail, and Codiga Park; and Alternative 4 would temporarily impact public access to the east entrance of Codiga Park. No disproportionate recreation impacts are anticipated to environmental justice populations across all alternatives during construction, as recreational impacts would be commonly felt among all populations in the area.

Proposed mitigation measures are described in Section 4.4.5.

4.11.4.1.2.2 Air Quality and Greenhouse Gases

As discussed in Section 4.5, impacts to air quality and greenhouse gases will consist of emissions from fuel combustion in engines of construction equipment, fugitive dust from land disturbance activities as well as vehicle traffic on unpaved roads, minor VOCs would be generated from paving activities, and minor commuting emissions from workers traveling to the site. Standard BMPs would be implemented

to reduce impacts, including dust suppression measures, speed limits, wheel washing, load covering, and engine emission compliance.

Construction impacts to air quality and greenhouse gases would primarily be localized to each alternative, proportionate to the impact size. For example, greater surface disturbance alternatives have greater impacts and alternatives that have longer construction duration and/or more equipment requirements have greater impacts. Alternatives with more pavement area will have increased VOC impacts. Worker commuting is assumed to be similar among the construction alternatives. None of these impacts are anticipated to disproportionately affect EJ populations.

4.11.4.1.2.3 Transportation

Similar routes are anticipated to be used during construction and operations; hence, impacts are anticipated to be similar. During construction, construction vehicles would be used to access the proposed Project site. Alternative 2 and 3B routes have similar impacts, where minor impacts are anticipated towards level of service (LOS) and vehicle miles traveled (VMT) on existing roads due to construction.

4.11.4.1.2.4 Health and Safety

As mentioned in Section 4.7, if the inadvertent release and exposure of hazardous materials were to occur, the impacts would be felt by all populations, including environmental justice populations; therefore, the project would not cause any disproportionate health and safety impacts on specific populations during construction. Proposed mitigation measures would be carried out by the selected contractor in accordance with RCW 49.17 and WAC 173-303 as outlined in Section 4.7.5.

4.11.4.1.2.5 Public Services and Utilities

For all three build alternatives, there may be a need for police and sheriff, fire and emergency, sewer, electricity, solid waste and water services at the construction site. If accidents were to occur, there may be an increased need for emergency services; however, the increased need would not cause a decreased level of service in the City. Hence, no disproportionate impacts to environmental justice populations are anticipated. Stormwater runoff from ground disturbing activities could occur during construction, and the Applicant would be required to comply with state and local stormwater pollution prevention measures as per Section 4.8.4.2.4.

4.11.4.1.2.6 Cultural Resources

Project development could have disproportionate impacts on Tribes and Tribal communities. Construction activities for Alternative 2, Alternative 3B, and Alternative 4 will directly alter traffic during construction, which could impact Tribal access to U&A areas and Tribal resources; however, these impacts would be temporary and may include lane closures, traffic re-routing, and traffic delays. Additional temporary impacts may include increased noise, vibration, and dust during construction activities. If a spill were to occur during construction, it could result in minor to moderate impacts to Tribal resources and U&A areas. Impacts associated with plants and animals that provide important subsistence and medicinal resources to Tribal communities could potentially result in minor impacts on Tribal communities.

4.11.4.1.2.7 Noise

As described in Section 4.10, construction activities for Alternative 2, Alternative 3B, and Alternative 4 could temporarily increase noise levels, which would interfere with activities like speech and recreation

in noise-sensitive areas, resulting in annoyance. Temporary construction noise from the project would be felt by all populations, including environmental justice populations; therefore, the Project would not cause any disproportionate noise impacts on specific populations during construction. Mitigation measures are proposed in Section 4.10.4.

4.11.4.1.2.8 Visual Resources and Aesthetics

As described in Section 4.12, construction of the three build alternatives would result in negative impacts to visual resources and aesthetics to all populations who view them, including environmental justice populations. Of the three build alternatives, Alternative 2 will have the least impact on environmental justice populations because it is zoned as a heavy manufacturing and industrial center, and would not infringe on residentially zoned areas. Alternative 3B and Alternative 4 have mixed zoning requirements, but construction would impact residential areas for both alternatives. The construction impacts for Alternative 3B are less than that of Alternative 4.

4.11.4.2 Operations Impacts

Once operational, impacts with the potential to affect environmental justice communities could include land use, shoreline use, and recreation; noise; transportation; health and safety; and public services and utilities. Any adverse operational impacts related to geology and soils, water resources, plants and animals, air quality, and cultural resources would be anticipated to be localized to the project site or not have the potential to impact people directly, so no environmental justice community impacts are anticipated.

4.11.4.2.1 No Action Alternative

The No Action truck route extends through residential and commercial streets such as 42nd Avenue South and South 124th Street. Heavy truck traffic could bring adverse land use, shoreline and recreation, noise, and health and safety impacts as these streets are not meant for industrial level traffic, and impacts could be felt by the local residents and community.

4.11.4.2.2 Alternative 2, Alternative 3B, and Alternative 4

4.11.4.2.2.1 Land Use, Shoreline Use, and Recreation

For land use, operations of Alternative 2 and Alternative 3B truck routes would not impact residential or community areas as routes are only adjacent to manufacturing and light industrial zones. However, Alternative 4 operational impacts would be identical to construction, where acquisitions and rezoning may may displace residents. No disproportionate operational land use or displacement impacts are anticipated to environmental justice populations in Alternative 4.

For shoreline use, Alternative 2 and 4 would be consistent current or planned use of shoreline designations during operations. The presence of a new bridge in the shoreline use area for Alternative 3B may have long term impacts to shoreline use and ecological functions. No disproportionate operational shoreline use impacts are anticipated to environmental justice populations in Alternative 3B, as if any ecological function impacts were to occur and affect the public, it would be commonly felt among all populations.

For recreation, Alternative 2 and 4 would not directly alter or impact recreational areas during operations. The new bridge in Alternative 3B, as mentioned in Section4.4, would be constructed with sidewalks; and residents would be able to more easily access the Green River Trail from Codiga Park by

crossing the Duwamish River via the new bridge. No disproportionate recreational impacts are anticipated during operations to environmental justice populations.

Proposed mitigation measures are described in Section 4.4.5.

4.11.4.2.2.2 Air Quality and Greenhouse Gases

Operational impacts to air quality and greenhouse gases are primarily related to the change in vehicle miles traveled at this stage of analysis. Table 4.6-8 details the calculations for each alternative, with Alternative 2 being the lowest and Alternative 4 being the highest. No disproportionate air quality or greenhouse gas emissions impacts to EJ populations are anticipated from operation of the alternatives.

4.11.4.2.2.3 Transportation

Operations of the proposed alternatives will have no disproportionate impacts on Environmental Justice (EJ) populations. While minor impacts may occur in terms of level of service (LOS) and vehicle miles traveled (VMT) on existing roads, these impacts are expected to be minimal and similar across all alternatives, as well as across minority and low-income populations.

4.11.4.2.2.4 Health and Safety

For all truck routes, hazardous materials such as petroleum products may be transported to the BNSF intermodal facility. If a spill were to occur, this could adversely impact soils, groundwater, surface waters and is potentially hazardous to the public. The project would not cause any disproportionate health and safety impacts on specific populations; and any adverse impacts would be felt by all populations, including environmental justice populations.

4.11.4.2.2.5 Public Services and Utilities

No additional utility connections or emergency response services are anticipated for operations of the project. However, all the alternatives would result in increase of impervious surface and therefore the amount of surface water runoff is anticipated to increase with truck operations on the routes. Onsite stormwater would be collected and treated as per city, state and federal guidelines. Additional electrical utilities would be required for new street lighting associated with road improvements but would not affect infrastructure or electricity on adjacent properties. Overall, the project would not cause any disproportionate public services and utilities impacts on environmental justice populations.

4.11.4.2.2.6 Cultural Resources

Project operation could have disproportionate impacts on Tribes and Tribal communities. Operation of the facility would result in minor impacts to Tribal resources or U&A areas. Visual changes would result in viewshed impacts; however, the setting is urban and industrial so the impact would be considered minor. Operational noise may result in minor impacts to Tribal resources and U&A areas. Hazardous materials such as petroleum products may be transported to the BNSF intermodal facility on all truck routes. If a spill were to occur during operation, it could result in minor to moderate impacts to Tribal resources and U&A areas. Impacts associated with plants and animals that provide important subsistence and medicinal resources to Tribal communities could potentially result in minor impacts on Tribes and communities.

4.11.4.2.2.7 Noise

If a build Alternative is selected, trucks will no longer have to use neighborhood streets to access the multimodal facility, reducing the existing noise along routes near noise-sensitive areas. During

operations, the highest noise levels for Alternative 2, Alternative 3B and Alternative 4 would be expected in areas immediately adjacent to the proposed alternatives' truck routes as described in Section 4.10. Operational noise impacts would be felt by all populations, including environmental justice populations; therefore, the Project would not cause any disproportionate noise impacts on specific populations during operations for all alternatives.

4.11.4.2.2.8 Visual Resources and Aesthetics

As described in Section 4.12, operation of the three build alternatives would result in negative impacts to visual resources and aesthetics to all populations who view them, including environmental justice populations. Of the three build alternatives, Alternative 2 will have the least impact on environmental justice populations because it is zoned as a heavy manufacturing and industrial center, and would not infringe on residentially zoned areas. Alternative 3B and Alternative 4 have mixed zoning requirements, but operations would impact residential areas for both alternatives. Operation impacts for Alternative 3B would be substantially less than Alternative 4 if mitigation measures are applied. Alternative 4 would have the greatest impact on visual resources of the three build alternatives; however, adverse impacts would not be disproportionately high for environmental justice populations.

4.11.5 Mitigation Measures

There would be no disproportionately high and adverse impacts on environmental justice populations during construction and operations. Mitigation and standard BMPs would be implemented and would reduce the likelihood and magnitude of identified adverse impacts. These impacts, however, would not be absorbed disproportionately by minority or low-income populations, but rather by all populations within the study area.

4.11.6 Environmental Justice Determination

There are no significant unavoidable adverse impacts associated with environmental justice populations.

4.12 Visual Resources and Aesthetics

4.12.1 Affected Environment

For this section of the EIS, the affected environment, or area of visual effect (AVE), for Visual Resources and Aesthetics is generally defined as the limit of disturbance of proposed construction and the truck route for each alternative plus a half-mile buffer. The AVE was determined by physical constraints of the environment, the level of existing urban and industrial or commercial development, and the physiological limits of human sight. More information about the AVE determination is in Section 4.12.3: Methodology.

The general landscape and visual environment is considered an urban setting. Depending on the Alternative, the composition and ratio of residential areas to recreational, commercial, and industrial areas varies. The AVE for each of the four proposed alternatives are shown in detailed figures under each alternative; the AVEs overlap and share many features in common. The urban soils, vegetation, and climate are consistent across the alternatives.

4.12.1.1 Visual Character of Land Use and Landform Common to All Alternatives

The landform of the alternatives is relatively low and flat along the Duwamish River valley, with hills sloping upwards to higher ground to the northeast and southwest. I-5 and SR 599 function as visual markers of this landscape unit that divide the low-lying areas from the uplands.

4.12.1.2 Visual Character of the Natural Environment Common to All Alternatives

The central ecological feature for alternatives is the Duwamish River which generally transects the AVEs from the south east to the north. The Duwamish River banks, and Green River Trail, parks, open spaces, and residential areas are widely treed and vegetated with a mix of native and cultivated species of both deciduous and evergreen variety, offering multi-season visual variety that softens the texture and geometry of commercial, industrial, and other adjacent highly developed areas. Except for entrance areas, the full length of the western boundary of the BNSF facility is obscured from view by a variety of dense vegetation including mature coniferous and deciduous trees, shrubs, vines, and herbaceous plants.

The AVEs for the alternatives do not include any priority habitat for threatened or endangered species (refer to Section 4.3). Wildlife is present within AVEs of the alternatives, but not in great abundance considering the extensive development and level of human activity. Vegetation in residential areas, parks, and open spaces offer some habitat and refugia to birds and small to medium-sized mammals that are accustomed to human presence and activities. These animals may congregate on or near the river and in areas with greater proportions of vegetative cover.

4.12.1.3 Visual Character of the Community, Social, and Cultural Environments common to All Alternatives

Buildings within the AVE of the alternatives vary in their age, architectural style, and function. Industrial buildings typically have a plain façade and are one to two stories tall and have limited windows. Commercial and office buildings in this area are designed to have more visual appeal to viewers and comfort for the users of the building. Commercial and office buildings' architecture and design include many large windows and landscaping around the buildings, parking lots, and other spaces that enhance visual appeal. Commercial and office buildings are the tallest structures in the No Action Alternative

AVE; they range from one to six stories. Residential structures in this area are a mix of ages and styles. Buildings within Low Density Residential zoning are typically single stand-alone structures one to two stories tall, and building types within Medium and High-Density Residential areas can include building types like townhomes, condominiums, and apartment buildings. These buildings can be one to four stories tall. Vegetation in residential areas is inconsistent in density, height, and type, as the natural environment tends to reflect the style, needs, and preferences of the property owners.

Other structures that shape the community visual character of the alternatives include bridges across the Duwamish River. The South 102nd Street bridge is a two-lane concrete and steel bridge supported by piers placed within the Duwamish River. At South 112th Street, the Green River Trail crosses the Duwamish River via a pedestrian bridge. This bridge is constructed of steel and concrete and is supported by in-water piers towards either bank of the river. The Tukwila International Boulevard bridge is a five lane, concrete and steel bridge that spans the width of the Duwamish River without using in-water piers. The Seattle light rail is elevated on concrete platform supported tracks as high as three stories in places within the Alternative 2 AVE. The light rail crosses the Duwamish River alongside the East Marginal Way South bridge. The East Marginal Way South bridge is a three-lane, concrete and steel structure. Both the light rail bridge and the East Marginal Way South bridge span the Duwamish River without in-water piers. At South 119th Street, a wooden pedestrian bridge crosses the Duwamish. This bridge is supported by in-water piers, and is only for use by pedestrians and cyclists. The Allentown Bridge is a two lane, steel girder bridge that crosses the river at 42nd Avenue South. I-5 crosses the Duwamish river using two four-lane concrete and steel bridges, one bridge for northbound traffic and one bridge for southbound.

Infrastructure within the alternatives includes the BNSF rail lines and intermodal facility, highways and Interstate 5, the Sound Transit Link light rail, cellular towers, and overhead transmission and fiberoptic lines (Sound Transit 2025). The west boundary of the BNSF intermodal facility is densely vegetated along the security fence with a variety of mature trees, shrubs, and other plants, which acts as a visual buffer of the industrial facility from the adjacent residential areas. Furthermore, the BNSF facility is subject to a special height limitation which serves to reduce the visibility of the of the industrial area from residential areas.

The Seattle light rail is elevated on concrete platform supported tracks as high as three stories in places within the alternatives. The light rail, industrial rail, and highways are generally oriented southeast to northwest, following the path of the Duwamish River and the topography of the river valley.

4.12.1.4 No Action Alternative

The affected environment of the No Action Alternative consists of the current BNSF truck route and a half-mile buffer, Figure 4.12-1. The half-mile buffer was used for visual analysis because this distance falls within the FHWA's 'foreground' range. There would be no new construction for this alternative. A detailed description of the No Action Alternative components and routes are provided in Section 3.3.

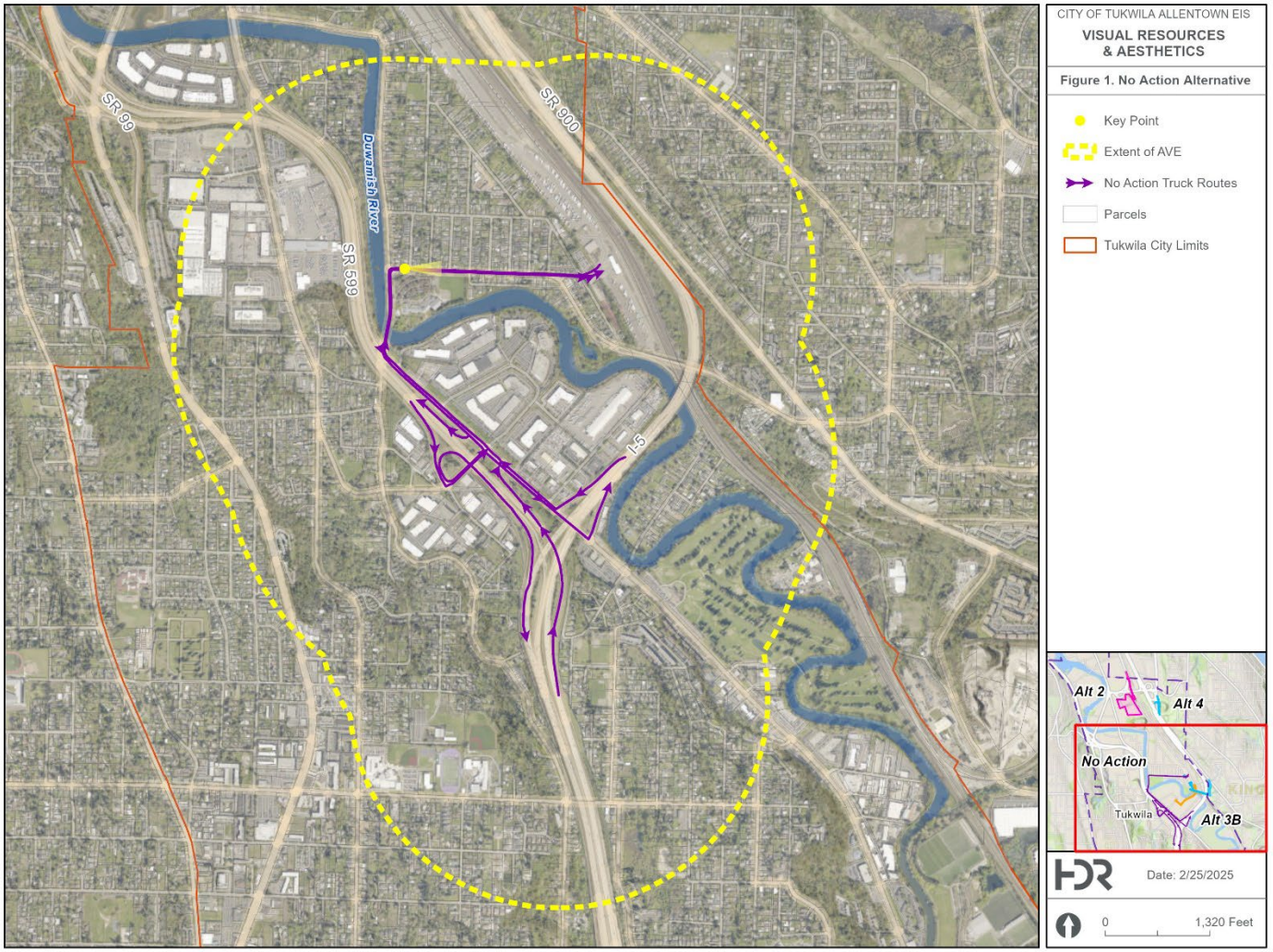


Figure 4.12-1 AVE and Key View for the No Action Alternative

4.12.1.4.1 Visual Character of Land Use and Landform for the No Action Alternative

The study area for the No Action Alternative is comprised of industrial, residential, infrastructure, and commercial areas interspersed with green spaces such as parks, and trails. The area is highly developed with infrastructure such as highways and train tracks, with the central portion of the AVE located within a Commercial/Light Industrial zone and major industrial areas are towards the north and the east of the AVE. Much of the land use in AVE for the No Action Alternative consists of residential zoning located in the cities of Tukwila and Seattle, and unincorporated King County. Detailed descriptions of the affected areas of land use, recreational areas, and shoreline use are provided in Section 4.4.

The AVE for the No Action Alternative overlaps with the land use zoning areas listed in Table 4.12-1.

Table 4.12-1 Land Use Zoning within the AVE for the No Action Alternative

Municipality	Land Use Zoning
City of Tukwila	• Heavy Industrial (HI) • Light Industrial (LI) • Manufacturing Industrial Center/ Heavy (MIC/H) • Manufacturing Industrial Center/ Light (MIC/L) • Commercial Light Industrial (CLI) • Residential Commercial Center (RCC) • Regional Commercial Mixed Use (RCM) • Mixed Use Office (MUO) • Regional Commercial (RC) • Office (O) • Neighborhood Commercial Center (NCC) • High Density Residential (HDR) • Medium Density Residential (MDR) • Low Density Residential (LDR)
City of Seattle	• Neighborhood Residential (NR1) • Mixed Zone Residential/Commercial (NC1-40 (M))
King County	• Industrial with Special District Overlay (I-SO) • Neighborhood Business with Property-specific development standards (NB-P) • Urban Residential (R-6), (R-8), (R-24) • Urban Residential with Property-specific development standards (R-12-P), (R-24-P), (R-48-P) • Urban Residential with Property-specific development standards and Special District Overlay (R-48-P-SO)

Sources: (King County 2024a; King County 2025b; City 2024b; City of Seattle 2024a)

Because the No Action Alternative is located in a river valley bordered by slopes and hills, the topography limits the viewshed to the 'foreground' distance.

4.12.1.4.2 Visual Character of the Natural Environment for the No Action Alternative

The AVE for the No Action Alternative overlaps with the green spaces and recreational areas listed in Table 4.12-2.

Table 4.12-2 Recreational Areas within the AVE for the No Action Alternative

Municipality	Recreational Areas
City of Tukwila	• Duwamish River • Green River Trail • Tukwila Community Center • Duwamish Park • Codiga Park • Riverton Park • Riverton Mini Park • Southgate Park • Tukwila Pool • Macadam Wetlands and Winter Garden • Joseph Foster Memorial Park/ Lee Philips Park • Foster Golf Links • 57th Avenue South Mini Park • Pamela Drive Open Space
King County	• Skyway Farms • West Skyway Natural Area

Sources: (City 2024d; King County 2022b)

The soils in the footprint of the No Action Alternative are classified as Urban Land that has been significantly changed from native soils and contains numerous impervious surfaces such as buildings and pavement. No prime farmland was identified in this AVE. In-depth information regarding geology and soils of the No Action Alternative can be found in Section 4.1.

4.12.1.4.3 Visual Character of the Community, Social, and Cultural Environments for the No Action Alternative

The visual character of the community, social, and cultural environments of the No Action Alternative viewshed is based on the human use and development of the landscape. The truck route for the No Action Alternative passes through the residential neighborhood of Allentown, and borders the Tukwila Community Center on the north and west. The Tukwila Community Center is an important gathering place for social and recreational activities.

4.12.1.4.4 No Action Alternative Key View

The Key View for the No Action Alternative is located on South 124th Street. Although there are higher vantage points within the AVE from which it may be possible to get a wider view, this Key View was determined because of the truck route's proximity to residential structures and the Tukwila Community Center, which is an important social and community fixture. This Key View was intended to simulate a static view from a pedestrian standing on the sidewalk outside of the Tukwila Community Center (see Figure 4.12-1).

4.12.1.5 Alternative 2: Airport Way South

The study area of Alternative 2 consists of the proposed Alternative 2 footprint, the truck route for this alternative, and a half-mile buffer, Figure 4.12-2. The half-mile buffer was used for visual analysis because this distance falls within the FHWA's 'foreground' range. Alternative 2 would entail constructing roads and a new truck yard for the BNSF intermodal facility. A detailed description of the Alternative 2

components and routes are provided in Section 3.4, and detailed descriptions of the affected areas of land use, recreational areas, and shoreline use are provided in Section 4.4.

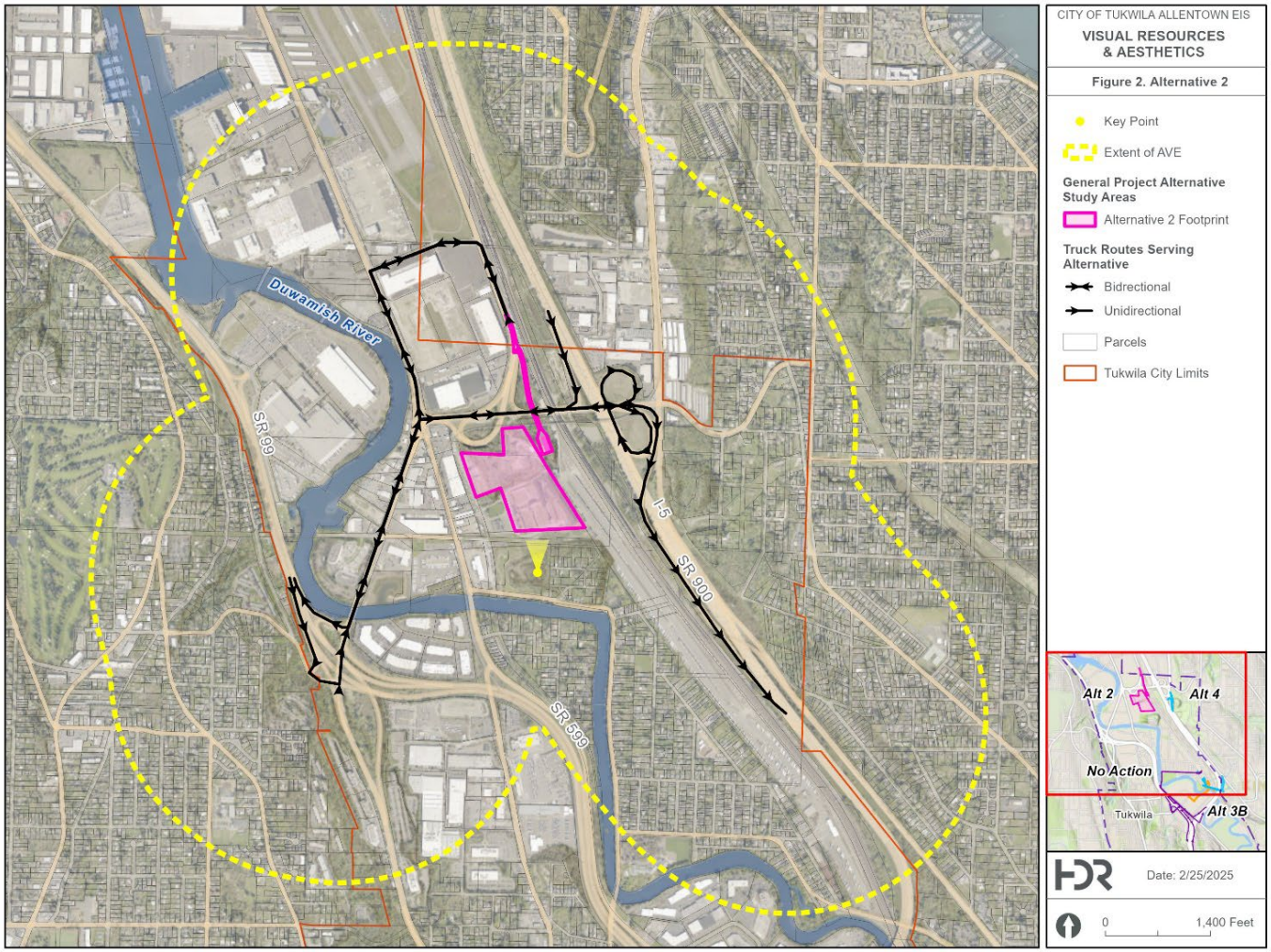


Figure 4.12-2 AVE and Key View for Alternative 2

4.12.1.5.1 Visual Character of Land Use and Landform for Alternative 2

The AVE for Alternative 2 is comprised of industrial, residential, infrastructure, and commercial areas interspersed with green spaces such as parks, and trails. The land use in the northern portion of the AVE is dominated by commercial and industrial zones within the City of Tukwila. The area is highly developed with infrastructure such as highways and train tracks, with the central portion of the AVE located within a heavy manufacturing Industrial center zone. Allentown residential areas in the south-central portion of the AVE, and residential areas in Burien, Seattle, and King County.

The AVE for Alternative 2 overlaps with the land use zoning areas listed in Table 4.12-3.

Table 4.12-3 Land Use Zoning within the AVE for Alternative 2

Municipality	Land Use Zoning
City of Tukwila	• Heavy Industrial (HI) • Light Industrial (LI) • Manufacturing Industrial Center/ Heavy (MIC/H) • Manufacturing Industrial Center/ Light (MIC/L) • Commercial Light Industrial (CLI) • Residential Commercial Center (RCC) • Office (O) • High Density Residential (HDR) • Medium Density Residential (MDR) • Low Density Residential (LDR)
City of Seattle	• Industrial and Maritime Zone (MML U/65), (MML U/85) • Neighborhood Residential (NR1), (NR2), (NR3) • Multi-family Residential (LR1 (M)) • Mixed Zone Residential/Commercial (C2-75 (M)) • Mixed Zone Residential/Commercial (NCI-40 (M))
City of Burien	• Community Commercial (CC-1), (CC-2) • Residential Multi-Family (RM-12), (RM-18), (RM-24),(RM-48) • Residential Single Family (RS-7,200)
King County	• Urban Residential (R-6), (R-8), (R-18)

Sources: (King County 2024a; King County 2024b, City 2024a; City 2024b; City of Seattle 2024a; Burien 2019)

A key landform centrally located in the AVE of proposed Alternative 2 is Duwamish Hill. Duwamish Hill is a glacial remnant (Forterra 2025). Due to its elevated position above the Duwamish River, the hill offers an excellent vantage point within the valley (City 2024d). There is a smaller hill north of Duwamish Hill that is within the Seattle Police Athletic Association (SPAA) firearms training facility. This feature has been altered from its natural form to support the activities within this industrial-zoned area, such as using the hill as a target range backstop or as source of gravel for creating berms within the facility.

4.12.1.5.2 Visual Character of the Natural Environment for Alternative 2

The central ecological features for Alternative 2 are the Duwamish River, which transects the AVE from the south to northwest, and Duwamish Hill. Tukwila Residential areas located in a south-central corridor of the Alternative 2 AVE from South 113th Street to South 125th Street. This residential corridor includes Duwamish Hill Preserve at the north, the Duwamish River, the Green River Trail, parks, and open spaces.

Within the industrially zoned areas, there are two parks that face each other across the Duwamish River (Cecil Moses Memorial Park and North Winds Weir), and the SPAA firearms training facility.

The AVE for Alternative 2 overlaps with the green spaces and recreational areas listed in Table 4.12-4.

Table 4.12-4 Recreational Areas within the AVE for Alternative 2

Municipality	Recreational Areas
City of Tukwila	• Cecil Moses Memorial Park • North Winds Weir • Duwamish River • Green River Trail • Tukwila Community Center • Duwamish Park • Codiga Park
City of Seattle	• East Duwamish Greenbelt • Benefit Playground
City of Burien	• Rainier Golf & Country Club • Hilltop Park
King County	• N/A

Sources: (City 2024d; King County 2022b)

The soils in the footprint of Alternative 2 are classified as Urban Land that has been significantly changed from native soils. No prime farmland was identified in this AVE. In-depth information regarding geology and soils of Alternative 2 can be found in Section 4.1.

The footprint of Alternative 2 has the highest percentage of vegetative landcover compared to the other alternatives because the area of the proposed truck yard would be constructed on the grounds of the current SPAA which is primarily open space. The SPAA grounds have a mix of landscaped and maintained vegetation and natural tree, shrub, and grass growth. The landcover classes for Alternative 2 are described in Table 4.12-5.

Table 4.12-5 Landcover type and percentage of the Alternative 2 Footprint

Landcover Class	Area within Project Footprint (acres)	Percentage of Alternative footprint
Bare Soil	2.23	7.9%
Grass/Low-Lying Vegetation	11.84	42.0%
Impervious Surfaces	2.98	10.6%
Open Water [Duwamish River]	0.15	0.5%
Tree Canopy	10.75	38.2%
Unclassified (Unincorporated King County)	0.23	0.8%
Total	**28.18**	**100**

Refer to Section 4.2 for full landcover context

4.12.1.5.3 Visual Character of the Community, Social, and Cultural Environments for Alternative 2

The visual character of the community, social, and cultural environments of the Alternative 2 viewshed is based on the human use and development of the landscape. The truck traffic for Alternative 2 would be routed through industrial, commercial, and manufacturing zones. The proposed truck yard for Alternative 2, however, would be constructed approximately 200 feet north of the Duwamish Hill

Preserve. The Duwamish Hill Preserve is an important cultural area in Tukwila. Duwamish Hill Preserve is managed as a public open space preserve dedicated to the conservation and enhancement of its rich Native American cultural history, ecological importance and community impact (City 2024d). Additionally, the hill is associated with the southern Puget Sound Salish oral tradition in the stories collectively known as the "Epic of the Winds" (Forterra 2025).

4.12.1.5.4 Alternative 2 Key View

The Key View for Alternative 2 is located on the north face of Duwamish Hill at approximately 140 feet in elevation overlooking the SPAA where the truck yard would be built for this alternative. This Key View was chosen for two main reasons. First, this location and bearing was chosen because of its elevation which offers a significant vantage point of the proposed alternative footprint area. Secondly, recreational, cultural, and community users of the preserve would be the most impacted by the changes to the viewshed that would result from Alternative 2. This Key View intends to simulate a static view from a pedestrian standing on the closest overlook to the proposed truck yard of Alternative 2 (see Figure 4.12-3).

Figure 4.12-3 Alternative 2 Key View (01/31/2025)

4.12.1.6 Alternative 3B: Improvements to 48th Place South

The affected environment of the Alternative 3B consists of the proposed Alternative 3B footprint, the truck route for this alternative, and a half-mile buffer, Figure 4.12-4. The half-mile buffer was used for visual analysis because this distance falls within the FHWA's 'foreground' range. Alternative 3B would entail constructing a bridge across the Duwamish River and a new truck entrance to the BNSF intermodal facility. A detailed description of the Alternative 3B components and routes are provided in Section 3.4, and detailed descriptions of the affected areas of land use, recreational areas, and shoreline use are provided in Section 4.4.

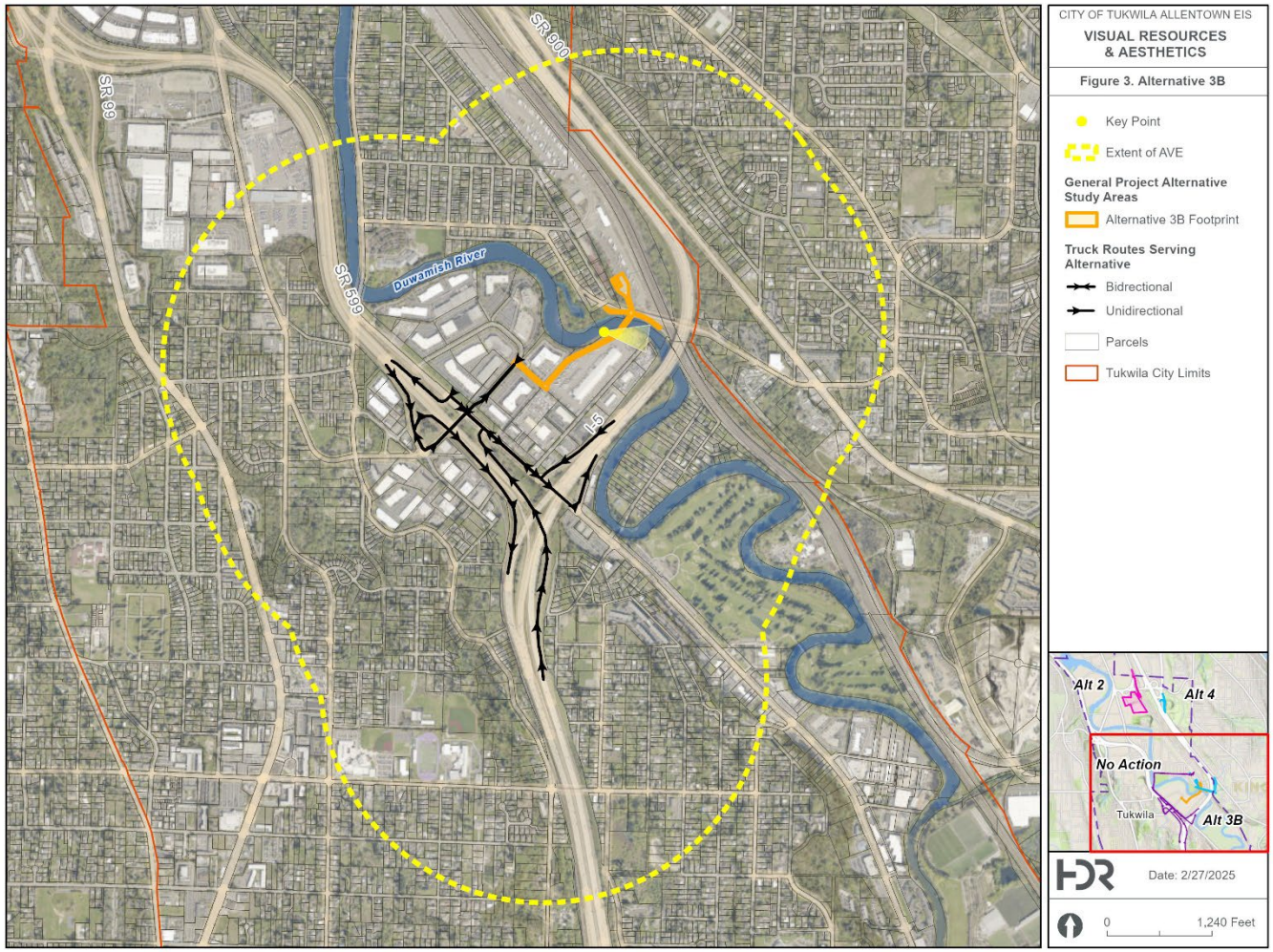


Figure 4.12-4 AVE for Alternative 3B

4.12.1.6.1 Visual Character of Land Use and Landform for Alternative 3B

The AVE for Alternative 3B is comprised of residential, industrial, infrastructure, office, and commercial areas interspersed with green spaces such as parks, and trails. Compared to the other alternatives, the AVE for Alternative 3B has the least overlap with heavy industrial or heavy manufacturing zones. The land use in the AVE is strongly characterized as residential; however, the proposed construction would primarily occur in Commercial Light Industrial and Heavy Manufacturing Industrial Centers. The truck traffic for this alternative would not be routed through residential areas; it would be relegated to light industrial areas, highways, and interstates.

The AVE for Alternative 3B overlaps with the land use zoning areas listed in Table 4.12-6.

Table 4.12-6 Land Use Zoning within the AVE for Alternative 3B

Municipality	Land Use Zoning
City of Tukwila	• Heavy Industrial (HI) • Light Industrial (LI) • Manufacturing Industrial Center/ Heavy (MIC/H) • Manufacturing Industrial Center/ Light (MIC/L) • Commercial Light Industrial (CLI) • Residential Commercial Center (RCC) • Regional Commercial Mixed Use (RCM) • Mixed Use Office (MUO) • Regional Commercial (RC) • Office (O) • Neighborhood Commercial Center (NCC) • High Density Residential (HDR) • Medium Density Residential (MDR) • Low Density Residential (LDR)
King County	• Neighborhood Business with Property-specific development standards (NB-P) • Urban Residential (R-6), (R-24) • Urban Residential with Property-specific development standards (R-24-P)

Sources: (King County 2024a; King County 2024b, City 2024b; City 2024a)

4.12.1.6.2 Visual Character of the Natural Environment for Alternative 3B

The central ecological features for Alternative 3B are the Duwamish River, which transects the AVE from the southeast to north, and Codiga Park. Codiga Park is located on a bend of the Duwamish River and would be adjacent to the new bridge for proposed Alternative 3B. The Duwamish River is a destination for local sport fishers, and Codiga Park offers convenient river access for this activity. The park is a partially restored tidal wetland that provides shelter and food for wildlife like ospreys, great blue herons, bald eagles, and juvenile salmon (City 2024d).The AVE for Alternative 3B overlaps with the green spaces and recreational areas listed in Table 4.12-7.

Table 4.12-7 Recreational Areas within the AVE for Alternative 3B

Municipality	Recreational Areas
City of Tukwila	• Duwamish River • Green River Trail • Tukwila Community Center • Codiga Park • Riverton Park • Riverton Mini Park • Southgate Park • Tukwila Pool • Macadam Wetlands and Winter Garden • Joseph Foster Memorial Park/ Lee Philips Park • Foster Golf Links • 57th Avenue South Mini Park • Pamela Drive Open Space
King County	• West Skyway Natural Area

Sources: (City 2024d; King County 2022b)

The soils in the footprint of Alternative 3B are classified as Urban Land and Urban Land-Alderwood complex (12-35 percent slopes) that have been significantly changed from native soils and contain numerous impervious surfaces such as buildings and pavement. No prime farmland was identified in this AVE. In-depth information regarding geology and soils of Alternative 3B can be found in Section 4.1.

The footprint of Alternative 3B would be primarily within areas of existing disturbance and impervious surfaces (Table 4.12-8).

Table 4.12-8 Landcover type and percentage of the Alternative 3B Footprint

Landcover Class	Area within Project Footprint (acres)	Percentage of Alternative footprint
Bare Soil	0.02	0.7%
Grass/Low-Lying Vegetation	0.14	4.9%
Impervious Surfaces	2.19	76.3%
Open Water [Duwamish River]	0.11	3.8%
Tree Canopy	0.41	14.3%
Unclassified (Unincorporated King County)	0	0.0%
Total	**2.87**	**100**

Refer to Section 4.2 for full landcover context

4.12.1.6.3 Visual Character of the Community, Social, and Cultural Environments for Alternative 3B

The visual character of the community, social, and cultural environments of the Alternative 3B viewshed is based on the human use and development of the landscape. The truck traffic for Alternative 3B would be routed through Commercial Light Industrial and Manufacturing Industrial Center/ Heavy zoned areas. While the truck traffic would not be physically within residential areas, it would be visible from locations along the Green River Trail and from the southeast side of Codiga Park. The Green River Trail is adjacent to commercial and light industrial activities throughout most of Alternative 3B with views across the river of residential and recreational areas.

4.12.1.6.4 Alternative 3B Key View

Several Key Views were considered for Alternative 3B, as shown in Figure 4.12-5. The view from Trail 1 was selected as the Key View for this alternative because of its proximity to the proposed construction of Alternative 3B and for the wider viewshed that this position and bearing permitted compared to the other locations. The 'Trail 1' location was also selected to be the Key View for this alternative because the viewshed of users of the Green River Trail would be most affected by the proposed bridge. Figure 4.12-6 represents the vantage of the Alternative 3B Key View; this image intends to simulate a static view from a pedestrian approaching the proposed bridge.

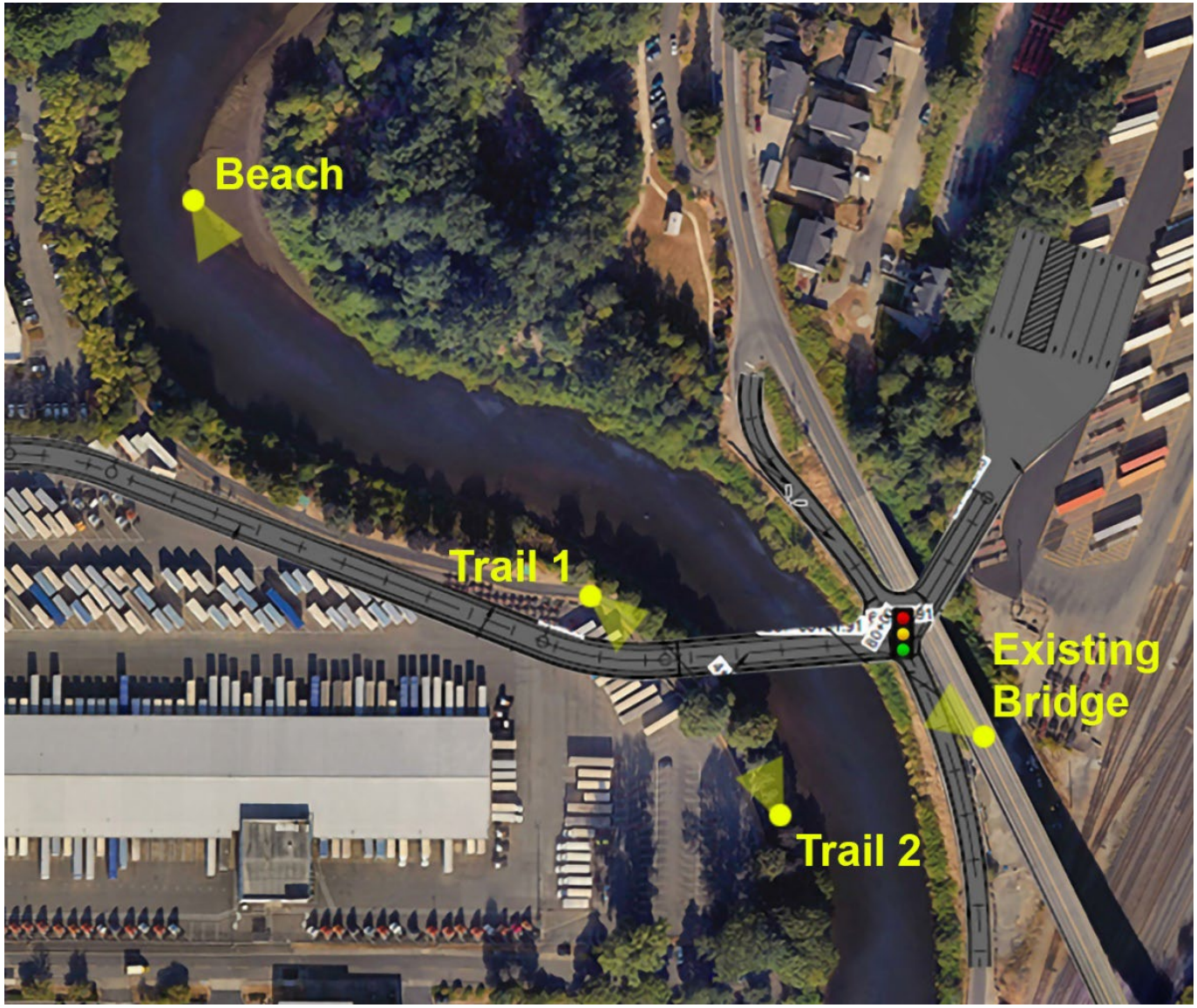


Figure 4.12-5 Key Views and 2D modelled approximation of Alternative 3B

Figure 4.12-6 Current Key View from Trail 1 Location (November 6, 2024)

4.12.1.7 Alternative 4: New Bridge from SR-900 (MLK Jr Way) to South 129th Street

The affected environment of the Alternative 4 consists of the proposed Alternative 4 footprint, the truck route for this alternative, and a half-mile buffer, Figure 4.12-7. The half-mile buffer was used for visual analysis because this distance falls within the FHWA's 'foreground' range. Alternative 4 would entail constructing new truck entrance at the south end of the BNSF intermodal facility, new access roads connecting SR 900 to South 129th Street at the south end of the alternative, and connecting SR 900 to I-5 towards the north end of the alternative. A detailed description of the Alternative 4 components and routes are provided in Section 3.4, and detailed descriptions of the affected areas of land use, recreational areas, and shoreline use are provided in Section 4.4.

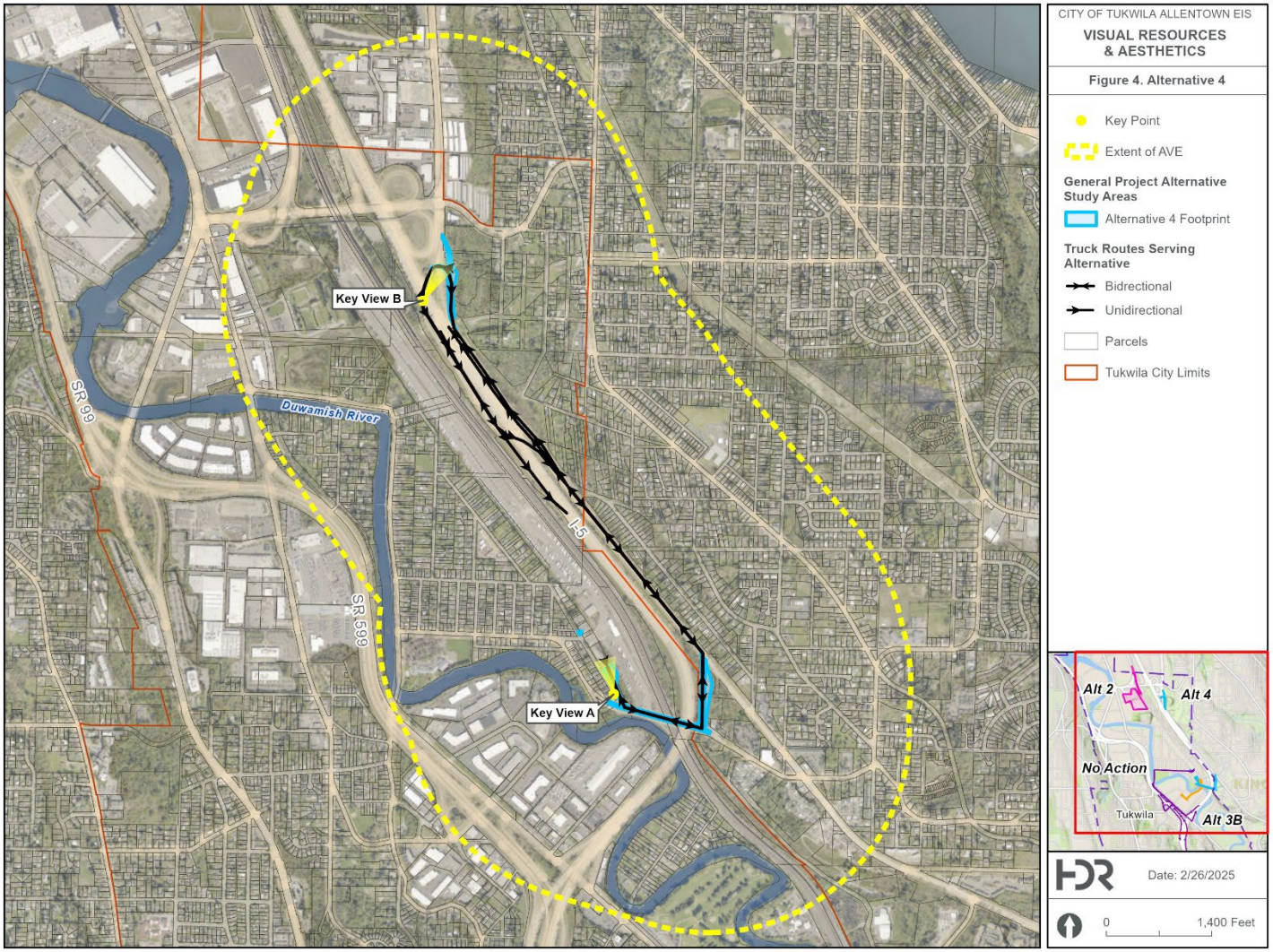


Figure 4.12-7 AVE and Key Views for Alternative 4

4.12.1.7.1 Visual Character of Land Use and Landform for Alternative 4

The AVE for Alternative 4 is comprised of residential, industrial, infrastructure, office, commercial, and mixed-use areas interspersed with green spaces such as parks, and trails. The southwest side of proposed Alternative 4's truck route primarily borders Manufacturing Industrial Center/ Heavy zones; whereas the northeast side of the truck route primarily borders residential areas. Truck traffic for proposed Alternative 4 would be routed through industrial, commercial, and manufacturing zones, and through residential zones and green spaces. The proposed footprint for the Alternative 4 truck access into the BNSF facility would be constructed on land currently zoned as low density residential where there is an occupied residence.

The AVE for Alternative 4 overlaps with the land use zoning areas listed in Table 4.12-9.

Table 4.12-9 Land Use Zoning within the AVE for Alternative 4

Municipality	Land Use Zoning
City of Tukwila	• Heavy Industrial (HI) • Light Industrial (LI) • Manufacturing Industrial Center/ Heavy (MIC/H) • Manufacturing Industrial Center/ Light (MIC/L) • Commercial Light Industrial (CLI) • Residential Commercial Center (RCC) • Office (O) • High Density Residential (HDR) • Medium Density Residential (MDR) • Low Density Residential (LDR) • Regional Commercial Mixed Use (RCM)
City of Seattle	• Industrial and Maritime Zone (MML U/65) • Neighborhood Residential (NR1), (NR2), (NR3) • Multi-family Residential (LR1 (M)) • Mixed Zone Residential/Commercial (NCI-40 (M))
King County	• Neighborhood Business (NB) • Neighborhood Business with Property-specific development standards (NB-P) • Urban Residential (R-6), (R-8), (R-12), (R-24) • Urban Residential with Property-specific development standards (R-12-P), (R-24-P), (R-48-P) • Urban Residential with Property-specific development standards and Special District Overlay (R-48-P-SO)

Sources: (King County 2024a; King County 2024b; City of Seattle 2024a; City 2024a; City 2024b)

4.12.1.7.2 Visual Character of the Natural Environment for Alternative 4

The portion of the AVE within the city of Tukwila is heavily developed for industrial and commercial uses. The central ecological features for Alternative 4 are Duwamish River, which transects the AVE from the south to northwest, and the green space areas on the east and northeast side of the proposed new access roads. Heavy industrial/ manufacturing and commercial zones run through the core of Alternative 4's AVE, following the direction of the Duwamish River valley. Residential areas include the

neighborhood of Allentown in the west-central area of the AVE, and the majority of the AVE to the south, east, and northeast of Alternative 4's proposed truck route.

The proposed access area for Alternative 4 is adjacent to Codiga Park and the West Skyway Natural Area. Other green spaces and recreational areas that overlap with the AVE for Alternative 4 are listed in Table 4.12-10.

Table 4.12-10 Recreational Areas within the AVE for Alternative 4

Municipality	Recreational Areas
City of Tukwila	• Duwamish River • Green River Trail • Tukwila Community Center • Duwamish Park • Codiga Park • Foster Golf Links • 57th Avenue South Mini Park • Pamela Drive Open Space
King County	• Skyway Farms • West Skyway Natural Area

Sources: (City 2024d; King County 2022b)

The soils in the footprint of Alternative 4 are classified as Alderwood-Everett-Urban Land complex, Urban Land, Urban Land-Alderwood complex, and Urban Land-Beausite complex. No prime farmland was identified in this AVE. In-depth information regarding geology and soils of Alternative 4 can be found in Section 4.1.

The footprint of Alternative 4 would be both within areas of existing disturbance and areas that would require ground disturbance in treed or vegetated areas (Table 4.12-11).

Table 4.12-11 Landcover type and percentage of the Alternative 4 Footprint

Landcover Class	Area within Project Footprint (acres)	Percentage of Alternative footprint
Bare Soil	0.03	0.5%
Grass/Low-Lying Vegetation	0.53	8.0%
Impervious Surfaces	1.73	26.3%
Open Water	0.00	0.0%
Tree Canopy	1.84	28.0%
Unclassified (Unincorporated King County)	2.46	37.4%
Total	**6.59**	**100.2**

Note: Total percentage is greater than 100% due to rounding individual percentages. Refer to Section 4.2 for full landcover context

4.12.1.7.3 Visual Character of the Community, Social, and Cultural Environments for Alternative 4

The visual character of the community, social, and cultural environments of the Alternative 4 viewshed is based on the human use and development of the landscape. Along with Codiga Park and the Duwamish River/Green River Trail, the Tukwila Community Center is an important gathering place for social and recreational activities.

4.12.1.7.4 Alternative 4 Key Views

Proposed Alternative 4 has two Key Views, one in the south portion, and one in the north. Key View A is located on 51st Street Place South, with a northern bearing which viewshed includes the area of the proposed new truck entrance area. Key View B is on Martin Luther King Jr. Way South, on the overpass that crosses I-5. The bearing for this Key View is east towards the area of the proposed new truck access road. These Key Views were chosen because they would have the best vantage points of new construction area, where construction and operation impacts would have the most effect on visual resources. Both Key Views for Alternative 4 are analyzed as static Key Views ; Key View A simulates the standing view of a pedestrian, and Key View B is a static position on an elevated roadway looking towards a vegetated hill where construction would occur (Figure 4.12-7).

4.12.2 Relevant Plans Policies and Regulations

The relevant plans, policies, regulations, and guidance consulted when analyzing the potential impacts of the proposed Alternatives are described in Table 4.12-12:

Table 4.12-12 Relevant Plans, Policies, and Regulations

Law, Regulation, or Guidance	Description
Federal	
NEPA 23 CFR 771	According to the CEQ implementing regulations, environmental analysis is to consider impacts on urban quality, historic and cultural resources, and the design of the built environment.
Guidelines for the Visual Impact Assessment of Highway Projects (FHWA-HEP-15-029)	These guidelines respond to NEPA and other federal requirements related to the visual character of lands.
Section 4(f) of the Department of Transportation Act of 1966. Chapters 400, 455, and 457.	This act declared the national policy to make special effort to preserve the natural beauty of the countryside and public park and recreation sites, wildlife and waterfowl refuges, and historic sites.
Section 106 of the National Historic Preservation Act (1976)	This act requires the definition of criteria of adverse effects to include analysis of the introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
State	
State Environmental Policy Act (SEPA) WAC 197-11 and WAC 468-12	SEPA requires that all major actions sponsored, funded, permitted, or approved by state and/or local agencies undergo planning to ensure environmental considerations such as impacts related to aesthetics and visual quality are given due weight in decision making.
Growth Management Act (GMA)	Requires all cities and counties in Washington to adopt development regulations that protect critical areas, including shorelines and their visual access.

Law, Regulation, or Guidance	Description
Washington State Shoreline Master Program. WAC 173-26-191	Shoreline master programs are both planning and regulatory tools. Master programs balance and integrate the objectives and interests of local citizens, they address the full variety of conditions on the shoreline, and they consider and, where necessary to achieve the objectives of chapter 90.58 RCW, influence planning and regulatory measures for adjacent land. Master programs address conditions and opportunities of specific shoreline segments by classifying the shorelines into "environment designations" as described in WAC 173-26-211.
Local	
City of Tukwila Comprehensive Plan (2015)	A comprehensive plan is a broad statement of community goals and policies that direct the orderly and coordinated physical development of a city into the future. It reflects current community goals and needs, anticipates change, and provides specific guidance for future legislative and administrative actions. It reflects the results of public involvement, technical analysis, and the judgment of decision makers.
King County Critical Areas Ordinance (King County Code [KCC] 21A)	This ordinance was developed under the directives of the GMA to designate and protect critical areas and to assist in conserving the value of property, safeguarding the public welfare, and providing protection for these areas.
King County Open Space Plan (2022)	This plan provides a framework guiding King County in the planning, development, stewardship, and management of its complex system of 200 parks, 175 miles of regional trails, and 206,000 acres of open space.
City of Tukwila Environmentally Critical Areas TMC 18.45	The purpose of TMC Chapter 18.45 is to protect the environment, human life and property; to designate and classify ecologically critical areas including but not limited to regulated wetlands and watercourses and geologically hazardous areas and to protect these critical areas and their functions while also allowing for reasonable use of public and private property. These regulations are prepared to comply with the Growth Management Act.
Tukwila Zoning Code Title 18 TMC	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.
City of Seattle Environmentally Critical Areas SMC 25.09	The purpose of Chapter 25.09 to provide for and promote the health, safety and welfare of the general public, and to not create or otherwise establish or designate any particular person, or class, or group of persons who will or should be especially protected or assisted by the terms or provisions.

Law, Regulation, or Guidance	Description
Seattle Zoning Code Title 23 SMC	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.
Zoning, City of Burien Municipal Code (BMC) Title 19	This code encourages land use decision making, promotes orderly development, provides adequate public facilities and services, promotes public safety by regulating development of lands containing physical hazards, and minimizes adverse environmental impacts of development.

4.12.3 Methodology

The area of visual effect (AVE) is determined by the physical constraints of the environment and the physiological limits of human sight (FHWA 2015). The common constraints when determining the visual analysis for the alternatives of the proposed Project are landform, land cover, location (topographic position), proximity, and light.

Landform provides perspective for a viewer, and it obscures views. Land cover is critical for determining the physical constraints of the environment. Vegetation and structures can become obstacles obscuring views, and the level of regional development and human activities in the area inform the perceived impact of new construction. In addition to physical constraints of the environment, location, proximity and light are instrumental in defining the physiological limits of what viewers can see.

Location is defined as the topographic position. Key Views are usually selected for a project because they are either critical or representative of the visual character of either the environment or the project. Description of the Key Views for each alternative are found under the Affected Environment, Section 4.12.1. Proximity of the viewer to an object is defined using three distinct distance zones: foreground, middle ground, or background. Because of the topography, extensive level of development in the study areas, and because the engineering designs for the proposed alternatives are only preliminary and for conceptual purposes, the areas of visual effects have been defined as a half-mile buffer around each alternative and its proposed truck route. The FHWA defines the foreground as being 0.25 to 0.5 mile away from the viewer (FHWA 2015); Key View locations and bearings were selected for each proposed alternative to be within the foreground proximity, and to be in a position where the landform and land cover would provide the best vantage point for critical analysis of the proposed actions.

Light is another factor that can alter viewer perception of objects. For this proposed Project, the largest perception shift for the alternatives would be between night and day, and the analysis for each alternative considers the visual concerns that may shift with the level of natural light. The nearest certified International Dark Sky Park to the proposed Project would be Cottonwood Canyon State Park in Oregon (DarkSky 2024). Because this designated Dark Sky Park is approximately 165 miles from the proposed Project, the alternatives will not be analyzed for their effect on Dark Sky resources.

There are three types of viewsheds that could be considered for viewshed analysis: static, dynamic, and restricted. Static viewsheds are based only on landform, and land cover plays a major role in restricting

viewsheds. Dynamic viewsheds are more complicated and are based on what travelers on a road may see. Due to the preliminary nature of the engineering designs and the landform, land cover, and extensive development of the study areas, only static or restricted viewsheds will be discussed in this analysis.

For the proposed Project, character compatibility and sensitivity are used to determine the degree of impacts to aesthetics and visual resource. The FHWA's Visual Character Compatibility Matrix will be used to determine the compatibility of impact for each alternative; the matrix is summarized below in Table 4.12-13.

Table 4.12-13 FHWA Visual Character Compatibility Matrix

		AVE Visual Character		
		Natural Environment	Cultural Environment	Project Environment
Project Visual Character	Project Scale	Is the project scale compatible or incompatible with the visual character of the natural, cultural, and project environments? Will the project scale contrast or not contrast with these environments?		
	Project Form	Is the project form compatible or incompatible with the visual character of the natural, cultural, and project environments? Will the project form contrast or not contrast with these environments?		
	Project Materials	Are the project materials compatible or incompatible with the visual character of the natural cultural and project environments? Will the project materials contrast or not contrast with these environments?		
	Project Visual Character	In summary, will the project's visual character be compatible or incompatible with the visual character of the existing natural, cultural, and project environments? Will the project's visual character contrast or not contrast with these environments? Has the memorability or vividness of the landscape or project area been altered? How has it changed?		

Source: (FHWA 2015)

Additionally, viewer sensitivity is analyzed for each proposed alternative by using the FHWA's Impacts to Visual Quality Matrix (Table 4.12-14):

Table 4.12-14 Impacts to Visual Quality Matrix

		Viewer Sensitivity	
		Exposure	Awareness
Impacts to Visual Compatibility	Natural Harmony	How have changes in exposure and awareness affected the experience of natural harmony in the AVE? Have changes caused by the project been adverse, beneficial, or neutral to the experience of natural harmony in the AVE?	
	Cultural Order	How have changes in exposure and awareness affected the experience of cultural order in the AVE? Have the changes caused by the project been adverse, beneficial, or neutral to the experience of cultural order in the AVE?	
	Project Coherence	How have changes in exposure and awareness affected the experience of project coherence in the AVE? Have the changes caused by the project been adverse, beneficial, or neutral to the experience of project coherence in the AVE?	
	Visual Quality	How have changes in exposure and awareness affected the experience of overall visual quality in the AVE? Have the changes caused by the project been adverse, beneficial, or neutral to the experience of the overall visual quality in the AVE?	

Source: (FHWA 2015)

The visual attributes of the proposed Project's major structures and common features are described and documented below in relation to the criteria outlined in this methodology.

4.12.4 Impacts Analysis

In this subsection, the proposed Alternatives are analyzed in turn in respect to Visual Resources and Aesthetics. The impacts are evaluated by using the definitions listed in Table 4.12-15.

Table 4.12-15 Impact Magnitude and Description

Magnitude of Impact	Description
No Impact	The proposed Project would be fully consistent with the intent of applicable visual resources and aesthetics plans and policies.
Minor	The proposed Project would result in short-term temporary impacts, or minimal long-term impacts to visual resources and aesthetics.
Moderate	The proposed Project would result in long-term or permanent impacts to aesthetics or visual resources, but mitigation can be applied to reduce the impact to be less than significant.
Significant	The proposed Project would cause long-term, permanent, or irreversible inconsistencies with applicable aesthetics or visual resources plans and policies, or to the natural, cultural, or community visual character of the AVE .

4.12.4.1 *No Action Alternative*

4.12.4.1.1 Construction Impacts

Construction impact analysis is **not applicable** because the No Action Alternative is the current operating condition of the BNSF Intermodal Facility and the truck transportation route.

4.12.4.1.2 Operations Impacts

The continuing operation of the No Action Alternative would have a **moderate** impact on visual resources. In terms of project scale and visual character, the presence of heavy truck traffic is not consistent with the visual character of the cultural environment along South 124th Street which is zoned for residential and recreational areas. Residents have frequent exposure to the sight of large trucks along South 124th Street which disrupts the natural harmony of the visual characteristics of the residential and recreational aspects of the AVE. Headlights from frequent truck traffic at night would continue to have a negative impact to residents along South 124th Street. The frequent exposure of heavy vehicles in this area has a negative impact on the overall visual quality in the No Action Alternative.

4.12.4.2 *Alternative 2: Airport Way South*

4.12.4.2.1 Construction Impacts

Construction of proposed Alternative 2 would create **moderate** negative changes in visual contrast and scenic quality in the AVE. Construction would require leveling and other groundwork which entails removing local vegetation to build roadways, an overpass with abutments, and an approximately 26-acre, paved, truck staging area for the BNSF facility. Temporary infringements to the current aesthetics would include fugitive light from portable sources, particularly at night. Potential mitigation for this impact is described in Section 4.12.5. The land where Alternative 2 would be built is zoned as a heavy manufacturing and industrial center. The project scale and form are visually compatible with the zoned land use, but construction would negatively impact the current visual character of the landform and natural environment.

4.12.4.2.2 Operations Impacts

Alternative 2 would have a **significant** negative impact on the visual character of the AVE. The greatest visual changes for Alternative 2 would result from the alteration of the landform from a hill to a level area for truck use. Structures associated with the new BNSF access roads and truck yard, such as the tunnel and abutment, retaining walls, and the one-story entrance building within the proposed BNSF truck yard would be built, removing topography and vegetation and replacing it with paved surfaces. The proposed Project would change the form, line, color and texture elements of the current visual resources.

The proposed Alternative 2 would be located on land that has been zoned as Manufacturing Industrial Center/ Heavy (MIC/H) which allows for widescale development. The area where the truck yard for the BNSF facility would be sites is currently used as a firearms training center for the SPAA. Even though the area is zoned as heavy industrial, the SPAA facility grounds are landscaped, and the shooting ranges are bordered by a mix of native and cultivated trees and shrubs that create wind breaks and visual screening. The current visual characteristics has park-like qualities such as a barbeque pavilion, a horseshoe pit, and open spaces. Alternative 2 would create a strong contrast to the current visual character of the AVE during the day and possibly at night. The design of the proposed truck yard is still in the conceptual stages, but parking lot or safety lighting, if included in the design, could create a strong nighttime contrast to the current viewshed.

Potential mitigation for impacts relating to Alternative 2 are described in Section 4.12.5.

4.12.4.3 *Alternative 3B: Improvements to 48th* Place South

4.12.4.3.1 Construction Impacts

Construction of proposed Alternative 3B would create **minor** negative changes in visual contrast and scenic quality in the AVE. Construction for this alternative would be temporary and infringements to the current aesthetics would include disturbance of some existing vegetation and the generation of fugitive light from portable sources, particularly at night. Potential mitigation for this impact is described in Section 4.12.5.

4.12.4.3.2 Operations Impacts

Alternative 3B would have a **moderate** negative impact on the visual character of the AVE that, through mitigation, could be reduced to minor impacts. The greatest visual changes for Alternative 3B would result from the presence of a new bridge crossing the Duwamish River, connecting the Gateway Business Center to the south end of the BNSF intermodal facility. Figure 4.12-8 is a digital rendering of how the Alternative 3B bridge could appear to viewers from the Key View on the Green River Trail. The "Beach" view in Figure 4.12-5 was not used as the Key View for Alternative 3B because field teams determined that the new bridge would not be visible from that location in the bend of the river. Because a preferred alternative has not yet been selected for the proposed Project, the design and specifications of the bridge shown in Figure 4.12-8 are not based on detailed engineering plans; the rendering is for conceptual purposes only.

Figure 4.12-8 Digital Rendering of Alternative 3B from Key View Trail 1

From the digital rendering, the scale of the proposed bridge is compatible with the visual character of the Project Environment. The bridge design and size would be consistent with other bridges within the Alternative 3B AVE, and would be consistent with the visual character of commercial and industrial areas. The Allentown Bridge also spans the Green River Trail and Duwamish River and truck traffic travels adjacent to a cultural resource: the Tukwila Community Center, a popular hub for recreation and community activities. The bridge proposed for Alternative 3B would fit similar characteristics to the Allentown Bridge. However, unlike the Allentown Bridge and the Tukwila Community Center, the bridge for Alternative 3B would provide a physical separation of truck traffic from user access to Codiga Park. At this early stage of design, lighting needs on or under the bridge for safety on the Green River Trail is unknown. New lighting at this location could have a negative effect on the nighttime aesthetics.

Potential mitigation for impacts relating to Alternative 3B are described in Section 4.12.5.

4.12.4.4 *Alternative 4: New Bridge from SR-900 (MLK Jr Way) to South 129th* Street

4.12.4.4.1 Construction Impacts

Construction of proposed Alternative 4 would create **moderate** negative changes in visual contrast and scenic quality in the AVE. Construction would require leveling, retaining walls, and other ground work which entails removing local vegetation to build roadways. Temporary infringements to the current aesthetics would include fugitive light from portable sources, particularly at night. Potential mitigation for this impact is described in Section 4.12.5. The land where Alternative 4 would be built is zoned as a high and low-density residential and green space (West Skyway Natural Area). The project scale and form are not visually compatible with the zoned land use, and construction would negatively impact the current visual character of the landform and natural environment.

4.12.4.4.2 Operations Impacts

Alternative 4 would have a **significant** negative impact on the visual character of the AVE. The greatest visual changes for Alternative 4 would result from the alteration of the land use and of the landform in the northern portion of the alternative. Structures associated with the new BNSF access roads and truck access, such as road exit/enter ramps, retaining walls, and the one-story entrance building within the proposed BNSF truck access area would be built, removing topography and vegetation and replacing it with paved surfaces or cut-back areas. The proposed Project would change the form, line, color and texture elements of the current visual resources.

The southern portion of proposed Alternative 4 would be located on land that has been zoned as low-density residential and green space. The area where the truck yard for the BNSF facility would be sited is currently the location of an occupied residence. Removing the residence to construct and operate a new truck entrance and noise wall would create a strong visual contrast to the current visual character of the AVE during the day and possibly at night. The design of the proposed truck entrance is still in the conceptual stages, but parking lot or safety lighting, if included in the design, could create a strong nighttime contrast to the current viewshed.

Potential mitigation for impacts relating to Alternative 4 are described in Section 4.12.5.

4.12.4.5 *Summary of Operational Impacts per Alternative*

A summary of the impacts for Visual Resources and Aesthetics for the proposed Project Alternatives is presented in Table 4.12-16.

Table 4.12-16 Impact Summary Table

Alternative	Phase	Magnitude of Impact to Visual Resources
No Action	Construction	N/A
	Operation	Moderate
2	Construction	Moderate
	Operation	Significant
3B	Construction	Minor
	Operation	Moderate
4	Construction	Moderate
	Operation	Significant

4.12.5 Mitigation Measures

4.12.5.1 *No Action Alternative*

The No Action Alternative represents the current operating conditions of the BNSF-related heavy vehicle traffic through the Allentown neighborhood of Tukwila. Feasible mitigation measures are presented in this EIS as Alternatives 2, 3B, and 4.

4.12.5.2 *Alternative 2: Airport Way South*

Alternative 2 would have adverse impacts on the landform, visual experience, and likely nighttime lighting. Possible mitigation could include minimization measures such as using downward directional/shaded lighting during construction and operation. For parking lot lighting, further minimization could be accomplished by using motion-activated lights so that illumination is not constant.

The views of the proposed truck yard from the Key View could be minimized by including an attractive security wall on the south and west sides of the truck yard, combined with tall and dense vegetation that would obscure the view of the truck yard from the Key View. For additional minimization, berms can be formed around the outside of the south and west sides of the truck yard that mimic natural hills. Tall and dense landscaping on these features would result in greater minimization of negative impacts to the viewshed.

4.12.5.3 *Alternative 3B: Improvements to 48th* Place South

The Moderate impacts to Visual Resources from implementing Alternative 3B would occur as a result of constructing a new bridge across the Duwamish River. This impact could be mitigated with compensation such as designing a more aesthetically pleasing structure with enhanced design rather than using a more utilitarian design. An attractive bridge design could become an architectural landmark for the City that adds visual interest rather than detracts from the surroundings.

Negative visual impacts can also be mitigated with minimization measures such as replacing vegetation that was removed with new shrubs and trees that would obscure views of the bridge from the Green River Trail and from Codiga Park. If lighting is part of the new bridge design, nighttime visual impacts can be mitigated with the use of downward, shaded, and motion-activated lighting.

4.12.5.4 *Alternative 4: New Bridge from SR-900 (MLK Jr Way) to South 129th* Street

The impacts to Visual Resources for Alternative 4 would be significant. Potential mitigation for the impacts could include minimization measures such as constructing attractive, rather than solely utilitarian, noise walls and retaining walls, establishing landscaping that obscures constructed features, and by using downward and shaded nighttime lighting.

4.12.6 Significant Unavoidable Adverse Impacts

The impacts analyzed for the Visual Resources and aesthetics section that were determined to be Significant would be avoidable by selecting another Alternative. As there is no preferred alternative for this analysis, the impacts must be weighed against each other equally rather than in relation to a "standard". Each of the Alternatives presented in this analysis have trade-offs; they affect the resources in different ways and to different degrees. The purpose of this Environmental Impact Statement is to find an alternate solution to the current operating conditions of the traffic related to the BNSF facility. A solution that will reduce truck traffic in residential and recreational areas could have potential impacts on visual resources in other areas within Allentown.

5 Cumulative Impacts

This section analyzes potential impacts from past, present, and reasonably foreseeable future actions (RFFAs) combined with the Proposed Alternatives. A Preferred Action has not yet been decided upon for the Allentown Truck Re-route Project, and as a result, the level of engineering design for the alternatives reflects a conceptual stage. Thus, cumulative impacts to most resources are discussed qualitatively.

5.1 Methodology

The boundaries of the study areas vary by resource. Cumulative effects should be evaluated in terms of the specific resource, ecosystem, and human community being impacted. To determine the size of the study area, each environmental resource was analyzed to determine the extent to which the environmental effect from the proposed alternatives could be reasonably detected and the geographic area impacted was defined. The study areas boundaries are applied equally within each resource for each of the proposed Alternatives.

Past, present, and RFFAs were identified within each study area as projects that could potentially interact or have a close causal relationship with the proposed Alternatives. Present actions that are considered include those that have existing and/or ongoing disturbance. Past and present actions are included in the affected environment descriptions as they are part of the existing environment. RFFAs are those actions that are scheduled for development within the Resource study areas from February 2025 through 2028.

5.1.1 Reasonably Foreseeable Future Actions (RFFA)

RFFAs identified within the resource study areas that were evaluated for their potential to affect the cumulative impacts of the proposed Project are described in Table 5.1-1. The RFFAs described in Table 5.1-1 would all occur on previously developed land and would be located within existing road or utility rights-of-way (ROW), and/or are in areas zoned for Industrial use (WSDOT 2025). Furthermore, all of the RFFAs in Table 5.1 1 are actions that have been determined to fall under environmental Categorical Exclusions (CE) (WSDOT 2025). In Washington, categorical exclusions are actions that federal agencies have determined do not have significant adverse environmental impacts. These exclusions are defined under 40 CFR 1508.4 and 23 CFR 771.117.

Table 5.1-1 RFFAs within the Study Areas of the Analyzed Resources

STIP[1] ID	Agency	Description	Location	Project Length/Area	Start Date
RTA-113	Sound Transit	Boeing Access Rd Infill Station. New light rail station. Project includes a new parking facility up to 300 spaces and nonmotorized improvements such as sidewalks and on-demand bicycle parking	In the vicinity of S. Boeing Access Road, East Marginal Way S., and I-5 in north Tukwila	up to 300 spaces	2025
TUK-62	Tukwila	42nd Ave S Bridge Replacement. Replace the existing 42nd Ave S steel truss bridge. The replacement will require preliminary engineer design, right-of-way, and construction phases. The new structure will meet current road and bridge design standards. The replacement structure configuration will be two through-lanes, possibly a turn pocket, and include sidewalks.	42nd Avenue Bridge	0.1 mile	2025
TUK-65	Tukwila	South 144th Street Bridge Sidewalks The project entails replacing approximately 320 feet of raised bridge deck on the S 144th street bridge with 6-foot-wide sidewalks, which will be separated from the traffic lanes by a crash tested barrier and a pedestrian railing. Sharrows will also be added to the traffic lanes for bicycle traffic. 51st Ave S- 53 Ave S	51st Ave S- 53 Ave S	0.06 mile	2026
TUK-66	Tukwila	Interurban Avenue S Overlay Complete pavement repairs, overlay, and curb and gutter repair.	E Marginal Way S - S 143rd Street	2.25 miles	2026
TUK-68	Tukwila	Boeing Access Road Overlay. Grind and overlay roadway, replace concrete overlay of bridge deck over BNSF railway.	East Marginal Way South-Martin Luther King Jr Way South	0.56 mile	2026

[1]STIP= Statewide Transportation Improvement Program

5.2 Cumulative Impact Analysis

5.2.1 Geology and Soils

5.2.1.1 Study Area Description

The study area for geology and soils includes the footprint for Alternatives 2, 3B, and 4. and the general vicinity of the No Action Alternative.

5.2.1.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for geology and soils is highly developed from past and present actions and is primarily comprised of Urban Soils and impermeable surfaces. The RFFAs within this study area have been determined to not have any significant environmental impacts to geology and soils.

5.2.1.3 Cumulative Effects

5.2.1.3.1 No Action Alternative

Under the No Action Alternative, the proposed Project would not be developed and the associated impacts to geology and soil resources would not occur. Because there would be no construction or new disturbance of land, cumulative impacts to geology and soil resources under the No Action Alternative would be less than those under the other alternatives. Cumulative impacts to this study area from past, present, and RFFAs, including the 42nd Avenue South bridge replacement (TUK-62) are anticipated to be **minor**, long-term, and localized.

5.2.1.3.2 Alternative 2

Under Alternative 2, there would be moderate impacts from alterations to the surface geology, topography, and soils. None of the RFFAs in Table 5.1 1 would occur within the Alternative 2 study area for geology and soils. Therefore, cumulative impacts to the geology and soils study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **moderate**, permanent, and localized.

5.2.1.3.3 Alternative 3B

Under Alternative 3B, there would be moderate impacts from alterations to the surface geology, topography, and soils. None of the RFFAs in Table 5.1 1 would occur within the Alternative 3B study area for geology and soils. Therefore, cumulative impacts to the geology and soils study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be **moderate**, permanent, and localized.

5.2.1.3.4 Alternative 4

Under Alternative 4, there would be moderate impacts from alterations to the surface geology, topography, and soils. None of the RFFAs in Table 5.1 1 would occur within the Alternative 4 study area for geology and soils. Therefore, cumulative impacts to the geology and soils study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **moderate**, permanent, and localized.

5.2.2 Water Resources

5.2.2.1 Study Area Description

The study area for water resources encompasses the area within 300 feet of the edges of the long-term proposed Project footprint, which is defined as the physical footprint of the truck access routes that

would result in permanent impacts on water resources. This distance was selected to match the typical largest applicable potential buffer width for wetlands within the City of Tukwila, the City of Seattle, and unincorporated King County.

5.2.2.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for water resources is highly developed from past and present actions. The RFFAs within this study area have been determined to not have any significant environmental impacts to water resources.

5.2.2.3 Cumulative Effects

5.2.2.3.1 No Action Alternative

Under the No Action Alternative, the proposed Project would not be developed and the associated impacts to water resources would not occur. Because there would be no construction or new disturbance of wetlands, groundwater, or surface water, cumulative impacts to water resources under the No Action Alternative would be less than those under the other alternatives. Cumulative impacts to this study area from past, present, and RFFAs, including the 42nd Avenue South bridge replacement (TUK-62) are anticipated to be **minor**, temporary, and localized.

5.2.2.3.2 Alternative 2

Under Alternative 2, there would be significant impacts to wetlands, moderate impacts to water quality, and minor impacts to groundwater and floodplains. Therefore, cumulative impacts to the water resources study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **significant**, permanent, and localized.

5.2.2.3.3 Alternative 3B

Under Alternative 3B, there would be significant impacts to streams, moderate impacts to water quality, and minor impacts to groundwater and floodplains. Therefore, cumulative impacts to the water resources study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be moderate to **significant**, permanent, and localized.

5.2.2.3.4 Alternative 4

Under Alternative 4, there would be moderate impacts to wetlands and water quality, and minor impacts to floodplains and groundwater. Therefore, cumulative impacts to the water resources study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **moderate**, permanent, and localized.

5.2.3 Plants and Animals

5.2.3.1 Study Area Description

Plants and animals present in the Project vicinity were divided into three study areas: wetlands, aquatic species and habitat, and terrestrial species and habitat. Each study area includes the footprint for the respective alternative (No Action Alternative, Alternative 2, Alternative 3B, or Alternative 4) and for the specified adjacent areas that could be affected by Project activities.

5.2.3.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for the plant and animal resources is highly developed from past and present actions; the land uses in this area are primarily zoned as residential, commercial, and industrial interspersed with

urban parks and green spaces. The RFFAs within this study area have been determined to not have any significant environmental impacts to plant and animal resources.

5.2.3.3 Cumulative Effects

5.2.3.3.1 No Action Alternative

Under the No Action Alternative, the proposed Project would not be developed and the associated impacts to plant and animal resources would not occur. Because there would be no construction or new disturbance of land, cumulative impacts to plant and animal resources under the No Action Alternative would be less than those under the other alternatives. Cumulative impacts to this study area from past, present, and RFFAs, including the 42nd Avenue South bridge replacement (TUK-62) are anticipated to be **minor**, temporary, and localized.

5.2.3.3.2 Alternative 2

Under Alternative 2, there would be minor to moderate impacts to plant and animal resources from construction activities. Operational activities for Alternative 2 would have no to minor impacts to plant and animal resources. Therefore, cumulative impacts to the geology and soils study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **moderate**, permanent, and localized

5.2.3.3.3 Alternative 3B

Under Alternative 3B, there would be minor to moderate impacts to plant and animal resources during the construction phase, and there would be moderate to mitigated significant impacts to wetlands and aquatic habitats for plant and animal resources. Therefore, cumulative impacts to the plant and animal study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be **moderate to mitigated significant**, permanent, and localized.

5.2.3.3.4 Alternative 4

Under Alternative 4, there would be minor moderate impacts to plant and animal resources during the construction phase, and there would be moderate to mitigated significant impacts to wetlands and aquatic habitats for plant and animal resources. Therefore, cumulative impacts to the plants and animals study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **moderate to mitigated significant**, permanent, and localized.

5.2.4 Land Use, Shoreline Use, and Recreation

5.2.4.1 Study Area Description

The study area for the Land Use, Shoreline Use, and Recreation resources is defined as the footprint, the truck traffic routes (excluding highways), and a 200-foot buffer for each of the proposed Alternatives to evaluate impacts to adjacent properties.

5.2.4.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for land use, shoreline use, and recreation is highly developed from past and present actions and is primarily comprised commercial, industrial, and residential areas interspersed with urban parks and green spaces. The RFFAs within this study area have been determined to not have any significant environmental impacts to land use, shoreline use, and recreation.

5.2.4.3 Cumulative Effects

5.2.4.3.1 No Action Alternative

Under the No Action Alternative, the proposed Project would not be developed and the associated impacts to land use, shoreline use, and recreation resources would be based upon the current operating conditions of the current truck route. The No Action Alternative routes truck traffic through residential areas, and is adjacent to recreational areas, resulting in significant impacts that are the impetus of this EIS. Cumulative impacts to this study area from past, present, and RFFAs, are anticipated to be **significant**, long-term, and localized.

5.2.4.3.2 Alternative 2

Under Alternative 2, there would be significant impacts on recreation resources during the construction phase, but no impacts to shoreline use or general land use. After construction and applied mitigation, however, operational impacts to study area would be reduced to minor or no impact. Therefore, cumulative impacts to the land use, shoreline use, and recreation study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **minor to moderate**, permanent, and localized

5.2.4.3.3 Alternative 3B

Under Alternative 3B, there would be moderate impacts on land use, shoreline use, and recreation during both the construction and operational phases. The completion of the new bridge and the connectivity it could bring to recreational areas would result in a minor beneficial impact. Therefore, cumulative impacts to the study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be **minor to moderate**, permanent, and localized.

5.2.4.3.4 Alternative 4

Under Alternative 4, there would be significant impacts to land use as residentially zoned parcels would be razed and would need to be rezoned as industrial. Impacts to shoreline use and recreation minor to moderate and temporary under Alternative 4. Due to the magnitude of the proposed alternative, cumulative impacts to the land use study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **significant**, permanent, and localized.

5.2.5 Air Quality and Greenhouse Gas

5.2.5.1 Study Area Description

The study area for evaluating impacts on air quality is within and near the Project site that could be affected by construction and operation activities on the Project site. The Project site is in the Allentown district of the City of Tukwila, Washington within King County. For the evaluation of climate and greenhouse gases, the study area is discussed in terms of regional air quality, as changes in climate are realized more broadly. Immediately adjacent properties to the BNSF facility are a sliver of undeveloped land and Interstate I-5 to the east; rail lines, overpass roads, and undeveloped land to the north; a shooting range, residential and commercial property to the west; and rail lines, overpass roads and the Duwamish River to the south.

5.2.5.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for air quality and greenhouse gases is highly developed from past and present actions. There is considerable existing roadway traffic in the study area. The RFFAs within this study area have been determined to not have any significant environmental impacts to air quality and greenhouse gases.

5.2.5.3 Cumulative Effects

5.2.5.3.1 No Action Alternative

Under the No Action Alternative, the proposed current BNSF truck route would continue operating under current conditions. Because there would be no construction or new disturbance of land which could result in minor, temporary air quality impacts, No Action Alternative would have fewer impacts to air quality than the other alternatives. However, construction activities unrelated to this alternative would still occur as planned and permitted within the study area. Therefore, cumulative impacts to the air quality and greenhouse gas study area from past, present, and RFFAs are anticipated to be **minor**, temporary, and localized.

5.2.5.3.2 Alternative 2, Alternative 3B, and Alternative 4

Under Alternatives 2, 3B, and 4, there would be minor, temporary impacts to air quality during construction. Once an alternative is selected as the preferred alternative and the project design is formalized, additional studies would be required to determine quantitatively, not just qualitatively, the magnitude of impacts the preferred alternative would have on air quality resources. Therefore, cumulative impacts to the air quality study area from the past, present, and RFFAs, cannot be fully assessed at this conceptual level of project design. Qualitative analysis indicates that there is a potential for adverse effects to air quality resources, however, until a full traffic study is completed the cumulative effects cannot be appropriately quantified.

5.2.6 Transportation

5.2.6.1 Study Area Description

The study area encompasses routes with key roadways and intersections that connects the local freeway network to the BNSF facility. The proposed alternatives in this study (No Action Alternative, Alternative 2, Alternative 3B and Alternative 4) are reconfigurations of the existing BNSF yard, which would also modify the existing truck routes currently used by trucks to travel to the facility. For construction impacts, the study area consists of the roads and intersections that construction vehicles would use to access the proposed Project site. For operational impacts, the study area consists of roads and intersections used by trucks moving to and from the BNSF facility to access the proposed alternative footprints.

5.2.6.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for transportation resources is highly developed from past and present actions. The RFFAs within this study area have been determined to not have any significant environmental impacts to transportation resources.

5.2.6.3 Cumulative Effects

5.2.6.3.1 No Action Alternative

Under the No Action Alternative, the proposed the BNSF truck route would continue to operate under current conditions. The community population and traffic volume would continue to grow at its current rate, and level of service, vehicle miles traveled, and pavement condition would be impacted proportionately to that usage. Cumulative impacts to this study area from past, present, and RFFAs are anticipated to be **minor**, long-term, and localized.

5.2.6.3.2 Alternative 2

Under Alternative 2, there would be minor impacts to level of service, vehicle miles traveled, and pavement condition during the operational phase. As the community continues to grow, cumulative impacts to the transportation study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **minor**, long-term, and localized.

5.2.6.3.3 Alternative 3B

Under Alternative 3B, there would be minor impacts to level of service, vehicle miles traveled, and pavement condition during the operational phase. As the community continues to grow, cumulative impacts to the transportation study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be **minor**, long-term, and localized.

5.2.6.3.4 Alternative 4

Under Alternative 4, there would be significant impacts to level of service, moderate impacts to vehicle miles traveled, and minor impacts to pavement condition during the operational phase. As the community continues to grow, cumulative impacts to the transportation study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **moderate to significant**, long-term, and localized.

5.2.7 Health and Safety

5.2.7.1 Study Area Description

The study area for the environmental health and safety analysis is a 0.5-mile radius from the footprint of each alternative. A 0.5-mile search radius was used to match the ASTM-defined search radius for state-listed contaminated sites.

5.2.7.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for Health and Safety is highly developed from past and present actions. The RFFAs within this study area have been determined to not have any significant environmental impacts to health and safety.

5.2.7.3 Cumulative Effects

5.2.7.3.1 No Action Alternative

Under the No Action Alternative, the proposed the BNSF truck route would continue to operate under current conditions. The No Action Alternative routes truck traffic through residential area, and is adjacent to recreational areas resulting in moderate impacts. Cumulative impacts to this study area from past, present, and RFFAs, are anticipated to be **moderate**, long-term, and localized.

5.2.7.3.2 Alternative 2, Alternative 3B, and Alternative 4

Under Alternatives 2, 3B, and 4, there would be moderate impacts to health and safety during both the construction phase and the operational phase of the selected alternative. Cumulative impacts to the health and safety study area from the past, present, and RFFAs, combined with the actions proposed for the selected alternative, would be **moderate**, long-term, and localized.

5.2.8 Public Services and Utilities

5.2.8.1 Study Area Description

The study area for the public services and utilities analysis is the service areas of the public service agencies and utility providers in relation to proposed Project build alternatives and the No Action Alternative.

5.2.8.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for public services and utilities is highly developed from past and present actions. The RFFAs within this study area have been determined to not have any significant environmental impacts to these resources.

5.2.8.3 Cumulative Effects

5.2.8.3.1 No Action Alternative

Under the No Action Alternative, the proposed the BNSF truck route would continue to operate under current conditions. There would be no construction or change in route, conditions, or current level of impact on public services and utilities. **No impact** is anticipated for cumulative effects to this study area from past, present, and RFFAs.

5.2.8.3.2 Alternative 2, Alternative 3B, and Alternative 4

Under Alternatives 2, 3B, and 4, there would be moderate impacts to stormwater during both the construction phase and the operational phase of the selected alternative. Impacts to public services and utilities such as police and sheriff, fire, domestic water, sewer, electricity, and solid waste are anticipated to be minor for the construction phase and moderate during the operational phase of the selected alternative. Cumulative impacts to the public services and utilities study area from the past, present, and RFFAs, combined with the actions proposed for the selected alternative, would be **moderate**, long-term, and localized.

5.2.9 Cultural Resources

5.2.9.1 Study Area Description

The study area for cultural resources consists of the footprint for Alternatives 2, 3B, and 4, and surrounding areas that would be affected by construction of the proposed action.

5.2.9.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for cultural resources is highly developed from past and present actions. The RFFAs within this study area have been determined to not have any significant environmental impacts to these resources.

5.2.9.3 Cumulative Effects

5.2.9.3.1 No Action Alternative

Under the No Action Alternative, the BNSF truck rout would continue to operate under current conditions. Because there would be no construction or new disturbance of land, cumulative impacts to cultural resources under the No Action Alternative would be less than those under the other alternatives. There are no anticipated cumulative impacts to this study area from past, present, and RFFAs.

5.2.9.3.2 Alternative 2

Alternative Study Area 2 has a very high likelihood to impact multiple historic built-environment resources that are either eligible for the NRHP individually or contribute to the potential SPAA Historic District. Cumulative impacts to the cultural resources study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **significant**, permanent, and localized.

5.2.9.3.3 Alternative 3B

Under Alternative 3B there is a potential for adverse impacts to S&WW/PSS/SLS&E/NP (Property ID 708606). These impacts would be temporary and not have the potential to impact the character-defining features of the railway segment. Cumulative impacts to the cultural resources study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be **minor**, temporary, and localized.

5.2.9.3.4 Alternative 4

Under Alternative 4 there is a potential for adverse impacts to S&WW/PSS/SLS&E/NP (Property ID 708606). These impacts would be temporary and not have the potential to impact the character-defining features of the railway segment. Cumulative impacts to the cultural resources study area from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **minor**, temporary, and localized.

5.2.10 Noise

5.2.10.1 Study Area Description

The noise study area for construction and operational noise is an area extending 500 feet from the No-Action truck route and the route alternatives. This corresponds to the typical study area extents of a Federal Highway Administration (FHWA) traffic noise study.

5.2.10.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for Noise is highly developed from past and present actions. The RFFAs within this study area have been determined to not have any significant environmental impacts to this resource.

5.2.10.3 Cumulative Effects

5.2.10.3.1 No Action Alternative

Under the No Action Alternative, the proposed Project would not be developed, and the associated impacts of noise would be based upon the current operating conditions of the current truck route. The No Action Alternative routes truck traffic through residential areas, and is adjacent to recreational areas resulting in significant impacts that are the impetus of this EIS. Cumulative impacts to this study area from past, present, and RFFAs, are anticipated to be **significant**, long-term, and localized.

5.2.10.3.2 Alternative 2

Under Alternative 2, there would be mitigated moderate impacts from noise. The area where Alternative 2 would be is currently police training gun range which generates noise as well. At this time, it is not clear how the noise generated from the BNSF facility would differ from the current noise impacts, but cumulative impacts from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, are anticipated to be **mitigated moderate**, long-term, and localized.

5.2.10.3.3 Alternative 3B

Under Alternative 3B, there would be moderate impacts from noise on neighboring residential and commercial areas. Cumulative impacts from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, are anticipated to be **moderate**, long-term, and localized.

5.2.10.3.4 Alternative 4

Under Alternative 4, there would be significant impacts from noise on neighboring residential areas. The entrance area to the BNSF facility would be moved farther to the south, closer to residential structures. Cumulative impacts from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, are anticipated to be **significant**, long-term, and localized.

5.2.11 Environmental Justice

5.2.11.1 Study Area Description

To determine the presence of EJ populations in the affected environment, a 0.5-mile radius was applied to the No Action Alternative, Alternative 2, Alternative 3B, and Alternative 4 to form study areas for each of the alternative. The 0.5 mi radius was determined by recommended guidance from WSDOT (2014).

Census tracts were used to analyze the presence of EJ populations in the alternatives' study areas. Tract data was selected because it provides a stable set of geographic units for the presentation of statistical data, and they contain a larger population size compared to other statistical boundaries used by the U.S. Census Bureau (USCB 2022).

The U.S. Census Bureau was used to pull census tract level percentages of minority and low-income populations. Percentages for City of Tukwila and King County were also listed for comparison. The American Community Survey (ACS) five-year, 2018-2022 dataset was used for this analysis. Minority data was pulled from the Race and Ethnicity ACS Demographic and Housing Estimates table (Table ID: DP05), and low-income data was pulled from the Poverty Status in the Past 12 Months table (Table ID: S1701). For the purposes of this analysis, an alternative or census tract is classified as having EJ populations if their minority and low-income population percentages are equal to or higher than the City of Tukwila and King County.

5.2.11.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for Environmental Justice is relatively uniform in terms of minority populations and resident income level between all four alternatives. The RFFAs within this study area have been determined to not have any significant environmental impacts to minority or low-income communities in the Environmental Justice study area.

5.2.11.3 Cumulative Effects

5.2.11.3.1 No Action Alternative, Alternative 2, Alternative 3, and Alternative 4

There would be no disproportionately high and adverse impacts on environmental justice populations during construction and operations of any selected alternative for this proposed Project. Mitigation and standard BMPs would be implemented and would reduce the likelihood and magnitude of identified adverse impacts. These impacts, however, would not be absorbed disproportionately by minority or low-income populations, but rather by all populations within the study. There are no additional cumulative impacts from the past, present, or RFFAs that would disproportionately affect minority or low-income populations.

5.2.12 Visual Resources and Aesthetics

5.2.12.1 Study Area Description

The study area for visual resources and aesthetics, or area of visual effect (AVE), is generally defined as the limit of disturbance of proposed construction and the truck route for each alternative plus a half-mile buffer. The AVE was determined by physical constraints of the environment, the level of existing urban and industrial or commercial development, and the physiological limits of human sight.

5.2.12.2 Past, Present, and Reasonably Foreseeable Future Actions

The study area for visual resources and aesthetics is highly developed from past and present actions. The study area is considered to have an urban landscape. The RFFAs within this study area have been determined to not have any significant environmental impacts to visual resources and aesthetics.

5.2.12.3 Cumulative Effects

5.2.12.3.1 No Action Alternative

Under the No Action Alternative, the proposed Project would not be developed and the associated impacts to visual resources would continue under current conditions. Because the AVE of this alternative is within residential areas, the operation of this alternative has a moderate impact on visual resources. Cumulative impacts to this study area from past, present, and RFFAs are anticipated to be **moderate**, long-term, and localized.

5.2.12.3.2 Alternative 2

Under Alternative 2, there would be moderate impacts to visual resources during the construction phase, and significant impacts during the operation phase from alterations to the topography and landcover. Cumulative impacts to the visual resources AVE from the past, present, and RFFAs, combined with the actions proposed for Alternative 2, would be **significant**, permanent, and localized.

5.2.12.3.3 Alternative 3B

Under Alternative 3B, there would be minor impacts to visual resources during the construction phase, and moderate impacts during the operation phase from alterations landcover and the addition of the proposed bridge as a new infrastructure feature. Cumulative impacts to the visual resources AVE from the past, present, and RFFAs, combined with the actions proposed for Alternative 3B, would be **moderate**, permanent, and localized.

5.2.12.3.4 Alternative 4

Under Alternative 4, there would be moderate impacts to visual resources during the construction phase, and significant impacts during the operation phase from alterations to land use, landcover, topography, and the addition of a new infrastructure such as industrial buildings and noise walls. Cumulative impacts to the visual resources AVE from the past, present, and RFFAs, combined with the actions proposed for Alternative 4, would be **significant**, permanent, and localized.

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7 Appendices

Appendix A: Public Comments and Response to Public Comments

Appendix B: Plan Sheets For the Alternatives

Appendix C: Wetland and Stream Technical Report

Appendix D: Allentown EIS Intersection Study

Appendix E: Precontact, Ethnographic, and Historic Context for Cultural Resources within the Study Area