DRAFT ENVIRONMENTAL IMPACT STATEMENT

Alaskan Way, Promenade, and Overlook Walk

SDOT
Seattle Department of Transportation

Draft Environmental Impact Statement

Alaskan Way, Promenade, and Overlook Walk

Prepared for

Seattle Department of Transportation
Seattle, Washington

June 2015

Americans with Disabilities Act (ADA) Information

Materials can be provided in alternative formats—large print, Braille, or on computer disk for people with disabilities by contacting 206-499-8040. Persons who are deaf or hard of hearing may make requests for alternative formats through the Washington Relay Service at 7-1-1.

Civil Rights Act of 1964, Title VI Statement to the Public

The City of Seattle Department of Transportation hereby gives public notice that it is the policy of the department to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, sex, nation origin, disability, or age, be excluded from the participation in, be denied benefits of, or be otherwise subjected to discrimination under any program or activity for which the department receives federal financial assistance. Persons wishing information may call the City of Seattle Office of Civil Rights at (206) 684-4500.

City of Seattle
Edward B. Murray, Mayor

Department of Transportation
Scott Kubly, Director

June 29, 2015

Dear Affected Tribes, Interested Agencies, and Members of the Public,

The City of Seattle is proposing a series of infrastructure improvement projects along the Seattle Waterfront in response to the opportunities, transportation needs, and public objectives created by the replacement of the Alaskan Way Viaduct with a State Route (SR) 99 tunnel. The most substantial of these improvements are a set of contiguous projects collectively known as the Alaskan Way, Promenade, and Overlook Walk (AWPOW). The Seattle Department of Transportation is acting as lead agency under the Washington State Environmental Policy Act (SEPA).

Once constructed, AWPOW would create a new transportation corridor between S. King Street and Battery Street, construct new public open space along Elliott Bay, provide a major new pedestrian connection between the waterfront and Pike Place Market, and improve east-west connections between the waterfront and downtown Seattle.

This Draft Environmental Impact Statement (Draft EIS) has been prepared to evaluate the projects to inform the public and to assist decision-makers in understanding the environmental effects--both positive and negative--associated with project construction and operation. The Draft EIS focuses on potential impacts and proposed mitigation measures for the following elements of the environment:

- Transportation
- Parking
- Land Use
- Aesthetics
- Noise
- Hazardous Materials
- Public Services and Utilities
- Historic Resources
- Archaeological Resources
- Water Quality
- Vegetation and Wildlife
- Energy Resources
- Air Quality

We encourage you to comment on this Draft EIS. Instructions for submitting comments are outlined on the Fact Sheet included in this document, which also includes details of a public hearing on the Draft EIS scheduled for July 22, 2015. All comments are due by August 12, 2015.

Sincerely,

Scott Kubly, Director
Seattle Department of Transportation

Marshall Foster, Director
Seattle Office of the Waterfront

Seattle Municipal Tower
700 5th Avenue
Suite 3800
PO Box 34996
Seattle, Washington 98124-4996

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Fax: (206) 684-5180
Hearing Impaired use the Washington Relay Service (7-1-1)
www.seattle.gov/transportation

Fact Sheet

Project Name

Alaskan Way, Promenade, and Overlook Walk

Proposed Action

The City of Seattle is proposing a number of infrastructure improvement projects (collectively referred to as "Waterfront Seattle") along the Seattle waterfront. These improvements are proposed in response to the opportunities, transportation needs, and related public objectives created by the replacement of the Alaskan Way Viaduct with a new State Route (SR) 99 tunnel.

The most substantial of the planned improvements are four contiguous projects that would create a new transportation corridor between S. King Street and Battery Street, construct new public open space along Elliott Bay adjacent to the new Alaskan Way, provide a major new pedestrian connection between the waterfront and Pike Place Market, and improve east-west connections between the waterfront and downtown Seattle. The four projects are referred to collectively in this environmental impact statement (EIS) as the Alaskan Way, Promenade, and Overlook Walk, abbreviated as AWPOW. The projects are:

- The Main Corridor: A new Alaskan Way corridor from S. King Street to Pike Street, and a new Elliott Way corridor from Pike Street to Battery Street with improvements for general-purpose traffic, transit, freight, and pedestrian and bicycle facilities
- The Promenade: A continuous public open space along the waterfront
- The Overlook Walk: A new structure providing open space, view opportunities, and pedestrian connections between the waterfront and Pike Place Market
- The East-West Connections: Improvements to portions of S. Main, S. Washington, Union, and Bell Streets adjacent to the main corridor to provide better connections between the waterfront and downtown Seattle and to enhance the pedestrian experience

Project Proponent and SEPA Lead Agency

City of Seattle Department of Transportation
700 Fifth Avenue, Suite 3900
PO Box 34996
Seattle, WA 98124-4996

SEPA Responsible Official

Scott Kubly, Director
City of Seattle, Department of Transportation

Comment Period

The comment period will begin on the date the Notice of Availability is published in the State SEPA Register. Notice is anticipated to be published on June 29, 2015, and the 45-day comment period will conclude on August 12, 2015.

Date Comments Are Due

August 12, 2015

Comment Submittal and Contact Information

All written comments should be sent to:

AWPOW – Draft EIS Comments
c/o Mark Mazzola, Environmental Manager
Seattle Department of Transportation
PO Box 34996
Seattle, WA 98124-4996

Comments can be sent by email to: DEIS@waterfrontseattle.org

Comments can be provided online at: waterfrontseattle.org

Public Meetings

A public open house to provide project-related information and receive comments from the public and interested parties on the Draft EIS will be held:

Wednesday July 22, 2015
Seattle City Hall, Bertha Knight Landes Room
600 Fourth Avenue, Seattle
4:30-7:30 p.m.

A court reporter will be available to receive oral testimony.

Document Availability and Cost

The Draft EIS is available online at: waterfrontseattle.org/environmental

Printed copies of the Draft EIS and technical appendices are available for review for no cost at:

Seattle Department of Planning and Development's Public Resources Center
700 Fifth Avenue, Suite 2000, Seattle

Seattle Public Library, Central Library
1000 Fourth Avenue, Seattle

The Executive Summary, which includes a CD of the Draft EIS and technical appendices, is also available for review at the University of Washington Suzzalo Library, all City Neighborhood Service Centers, and all Seattle Public Libraries.

Printed copies of the Executive Summary are available to the public at no charge and printed copies of the Draft EIS and technical appendices are available for purchase by calling 206-499-8040. Prices for printed volumes are:

Draft EIS $50.00

Technical Appendices $50.00

Permits and Approvals

- Clean Water Act Section 402 National Pollutant Discharge Elimination System (NPDES) Construction Stormwater General Permit (Washington State Department of Ecology)
- Major Public Projects Construction Noise Variance (City of Seattle)
- Seattle Landmarks Board Approval (City of Seattle)
- Pioneer Square Preservation Board Certificate of Approval (City of Seattle)
- Pike Place Market Historical Commission Certificate of Approval (City of Seattle)

- Master Use Permit for Shoreline Substantial Development (City of Seattle)
- Street Use Permit (City of Seattle)

Authors and Principal Contributors

The List of Preparers can be found at the end of this Draft EIS.

Date of Issuance for the Draft EIS

June 29, 2015

Related Documents

Background data and materials used for this Draft EIS are listed in the References. Key documents used in this analysis include:

- Alaskan Way Viaduct Replacement Program environmental documentation, including the Draft, two Supplemental Drafts, and Final EISs with associated discipline reports
- Elliott Bay Seawall Project Draft, Final, and Supplemental Final EISs with associated discipline reports

Subsequent Environmental Review

After the Draft EIS comment period concludes, the lead agency will review and respond to comments. A Final EIS will be prepared that contain responses to the comments and potential updates to the environmental documents. The Final EIS is anticipated to be published in late 2015 or early 2016.

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Acronyms

Term	Meaning
ADA	Americans with Disabilities Act
AWPOW	Alaskan Way, Promenade, and Overlook Walk
AWVRP	Alaskan Way Viaduct Replacement Project
bgs	below ground surface
BMP	best management practice
BPA	Bonneville Power Administration
Btu	British thermal unit
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESCL	Certified Erosion and Sediment Control Lead
CESQG	conditionally exempt small quantity generator
CFR	Code of Federal Regulations
City	City of Seattle
CO	carbon monoxide
CORRACTS	Corrective Action Sites
CSCSL	Confirmed and Suspected Contaminated Sites List
CSCSL-NFA	Confirmed and Suspected Contaminated Sites List-No Further Action
CSO	combined sewer overflow
DAHP	Department of Archaeology and Historic Preservation
dB	decibel
dBA	A-weighted decibel
EBSP	Elliott Bay Seawall Project
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Endangered Species Act
FHWA	Federal Highway Administration
GHG	greenhouse gas
GIS	geographic information system
I-5	Interstate 5
I-90	Interstate 90
ICR	Independent Cleanup Report
IP	intermediate pressure
kV	kilovolt

Leq	equivalent sound pressure level
Lmax	maximum noise level
LOS	level of service
LPS	light-penetrating surface
LQG	large quantity generator
LUST	leaking underground storage tank
$\mu g/m^3$	microgram per cubic meter
mph	mile per hour
MSAT	mobile source air toxic
MTCA	Model Toxics Control Act
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NEPA	National Environmental Policy Act
NFA	No Further Action
NFRAP	No Further Remedial Action Planned
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPGIS	non-pollution-generating impervious surfaces
NPL	National Priorities List
NRHP	National Register of Historic Places
NS	no standard established
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	perchloroethylene, also known as tetrachloroethylene
PGIS	pollution-generating impervious surfaces
PM_{10}	particulate matter smaller than 10 microns in diameter
$PM_{2.5}$	particulate matter smaller than 2.5 microns in diameter
ppm	part per million
PPMHD	Pike Place Market Historical District
PPMWE	Pike Place Market Waterfront Entrance Project
PSCAA	Puget Sound Clean Air Agency
PSE	Puget Sound Energy
PSPD	Pioneer Square Preservation District
PSRC	Puget Sound Regional Council
RAATS	RCRA Administrative Action Tracking System
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington

SCL	Seattle City Light
SDOT	City of Seattle Department of Transportation
SEPA	State Environmental Policy Act
SFD	Seattle Fire Department
SL	Seattle Landmark
SMA	Shoreline Management Act
SMC	Seattle Municipal Code
SMP	Shoreline Management Program
SO_2	sulfur dioxide
SODO	south of downtown Seattle
Sound Transit	Central Puget Sound Regional Transit Authority
SPD	Seattle Police Department
SPU	Seattle Public Utilities
SQG	small quantity generator
SR	State Route
TCE	temporary construction easement
TNM	Traffic Noise Model
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
Waste Management	Waste Management of Washington, Inc.
WDFW	Washington Department of Fish and Wildlife
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation
WSF	Washington State Ferries

Executive Summary

Introduction

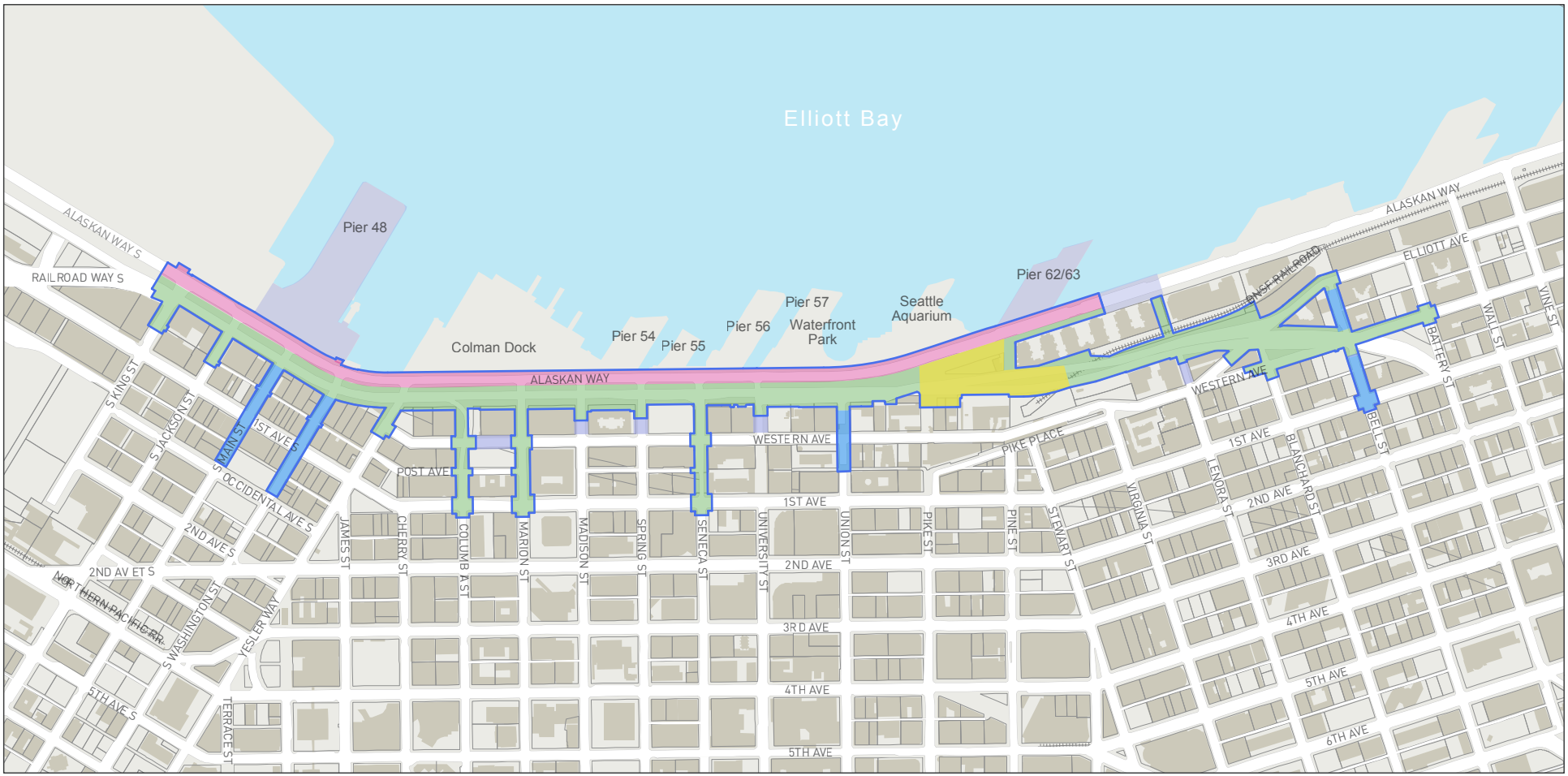
The City of Seattle is proposing a number of infrastructure improvement projects (collectively referred to as "Waterfront Seattle") along the Seattle waterfront. The improvements are proposed in response to the opportunities, transportation needs, and related public objectives created by the replacement of the Alaskan Way Viaduct with a new State Route (SR) 99 tunnel. These opportunities, needs, and objectives for the waterfront are articulated in the Waterfront Seattle Guiding Principles, which affirm the following goals:

- Create a waterfront for all
- Put the shoreline and innovative, sustainable design at the forefront
- Reconnect the city to its waterfront
- Embrace and celebrate Seattle's past, present, and future
- Improve access and mobility (for people and goods)
- Create a bold vision that is adaptable over time
- Develop consistent leadership from concept to operations

The most substantial of the Waterfront Seattle planned improvements that implement the Guiding Principles are four contiguous projects that would create a new transportation corridor between S. King Street and Battery Street, construct new public open space along Elliott Bay adjacent to the new Alaskan Way, provide a major new pedestrian connection between the Pike Place Market and the waterfront, and improve east-west connections between downtown Seattle and the waterfront. These projects are:

- The Main Corridor: A new Alaskan Way corridor from S. King Street to Pike Street, and a new Elliott Way corridor from Pike Street to Battery Street with improvements for general-purpose traffic, transit, freight, and pedestrian and bicycle facilities
- The Promenade: A continuous public open space along the waterfront
- The Overlook Walk: A new structure providing open space, view opportunities, and pedestrian connections between the waterfront and Pike Place Market
- The East-West Connections: Improvements to portions of S. Main, S. Washington, Union, and Bell Streets adjacent to the main corridor to provide better connections between the waterfront and downtown Seattle and to enhance the pedestrian experience

Because of the complementary nature of these projects, and the fact that they represent the most substantial of the planned Waterfront Seattle improvements, the City is evaluating them together in this environmental impact statement (EIS), as authorized by the State Environmental Policy Act (SEPA) under Washington Administrative Code (WAC) 197-11-060(3)(c) and the Seattle Municipal Code (SMC) 25.05.060(C)(3). The four projects are referred to collectively in this EIS as the Alaskan Way, Promenade, and Overlook Walk, abbreviated as AWPOW, and also referred to as the Action Alternative and the project. Figure ES-1 shows the footprint and general location of these projects.



0 400 800
Feet

Source: SDOT

Action Alternative
- Project Footprint
- Potential Construction Staging Area

AWPOW Projects
- Main Corridor
- Promenade
- Overlook Walk
- East-West Connections

- Parcel Boundary
- Building Footprint

Figure ES-1
Action Alternative Overview

Alaskan Way, Promenade, and Overlook Walk

Purpose and Need for the Project

Each of the four projects within AWPOW has its own distinct purpose, which is based on a set of identified needs and policy decisions and is consistent with the Waterfront Seattle Guiding Principles. The purpose and need for each of the projects are summarized below; more information is provided in Chapter 1 of this EIS.

Main Corridor

Purpose of the action: Accommodate safe, efficient, and reliable travel between the south downtown area and Belltown for general-purpose traffic, regional transit, freight, ferry traffic, pedestrians, and bicycles.

Need for the action: AWPOW responds, in part, to transportation needs created by WSDOT's replacement of the Alaskan Way Viaduct with a tunnel. Because of the elimination of the viaduct, Alaskan Way will be required to serve additional traffic demand and replace the viaduct's surface connection to Belltown. The new Alaskan Way will accommodate increased demand by vehicles, freight, pedestrians, bicyclists, and transit users, and comply with Seattle's "complete street" policy promoting safe operations for all users. This requires a corridor with speed limits similar to those of other downtown streets, signalized intersections that provide safe and convenient places to cross, generous sidewalks, and a street width as narrow as possible, given the traffic functions that the roadway must accommodate.

Promenade

Purpose of the action: Provide significant public open space adjacent to the Elliott Bay shoreline in downtown Seattle to accommodate pedestrian demand, create public amenities, and strengthen the connection between the city and its waterfront.

Looking south on Alaskan Way near Union Street

Need for the action: Currently, the waterfront is difficult to access and provides little space to accommodate pedestrian movement and gathering. Visual and physical connections to the shoreline are limited. The quality of the existing pedestrian environment is compromised by the Alaskan Way Viaduct, and will also be compromised in the future by the location of the restored Alaskan Way after construction of the Elliott Bay Seawall Project (EBSP) is completed. Collectively, these factors have resulted in a wide zone dominated by motor vehicles immediately adjacent to the city's most visited shoreline. The City's Pedestrian Master Plan identifies substantial opportunities along Alaskan Way to improve pedestrian linkages, roadway crossings, and the quality of the pedestrian environment.

Overlook Walk

Purpose of the action: Provide a grade-separated pedestrian crossing, view opportunities, and public open space between the waterfront and Pike Place Market.

Need for the action: Access between the Pike Place Market and the waterfront, two of Seattle's most popular attractions, is impeded by steep topography and at-grade street crossings; open space in this area is limited, and there are few opportunities for views. The existing viaduct provides expansive views for motorists, but these views will be eliminated when the viaduct is demolished. The heavy use of this area by the public warrants the provision of additional open space that facilitates pedestrian movement while providing opportunities for people to gather and enjoy scenic vistas.

Alaskan Way looking north from Yesler Way in 2003

East-West Connections

Purpose of the action: Improve key east-west streets adjacent to the main corridor to provide better connections between the waterfront and downtown Seattle and to enhance the pedestrian experience.

Need for the action: There is currently a lack of strong pedestrian connections between the waterfront area and the downtown Seattle street grid. At the southern end of the main corridor, access from Alaskan Way to Pioneer Square is hindered by uneven sidewalks, high curbs, and lack of facilities on east-west streets built to comply with the Americans with Disabilities Act (ADA). The central portion of the main corridor, from Seneca Street to the Pike Street Hillclimb, affords no east-west access for people with limited mobility between the waterfront and First Avenue. In the northern portion of the main corridor, the elimination of the viaduct and decommissioning of the Battery Street Tunnel provides opportunities to reconnect and enhance portions of the east-west street grid for pedestrian and bicycle use. Improvements to east-west streets in these areas would strongly support the Waterfront Seattle Guiding Principles, as well as the policies and recommendations of the City's Pedestrian Master Plan.

Community, Agency, and Tribal Involvement

Waterfront Seattle planning has involved substantial participation by elected officials, stakeholders, and community members. Since 2011, the City's public outreach program for Waterfront Seattle has included over 300 community events including public meetings, fairs, festivals, briefings, forums, and workshops. All planning and design efforts have taken place in partnership with a series of committees established by the Seattle City Council. The Central Waterfront Partnerships Committee, established in November 2009, developed the Waterfront Seattle Guiding Principles, which the Seattle City Council

affirmed by resolution in January 2011. The Central Waterfront Committee replaced the Central Waterfront Partnerships Committee in January 2011, and consisted of a wide range of volunteer community representatives and leaders appointed by the Seattle City Council. The committee developed documents in its role as the broad overseer of the design, financing, public engagement, long-term operations, and maintenance of Waterfront Seattle. These documents included the Framework Plan, the Concept Design, and the Strategic Plan, which were all published in July 2012 and supported by the Seattle City Council in August 2012. They provide guidance, goals, and strategies for implementation of Waterfront Seattle. In October 2014, the Central Waterfront Steering Committee replaced the Central Waterfront Committee in order to advise the City on implementing the Central Waterfront Concept Design and Strategic Plan.

The City began public scoping for the AWPOW EIS in compliance with SEPA in summer 2013. Scoping is the first step in the EIS process; its purpose is to narrow the focus of the EIS to significant environmental issues, to eliminate insignificant impacts from detailed study, and to identify alternatives to be analyzed in the EIS. Scoping also provides notice to the public and other agencies that an EIS is being prepared, and initiates their involvement in the process. The public was invited to submit comments by mail, email, an online comment form, or in person at a public scoping meeting, which was held at Seattle City Hall on September 9, 2013.

The City received over 200 comments during the scoping period. Most of the comments came from individuals. The remainder were from agencies; community, business, and labor organizations; and the Suquamish Tribe. Some main themes in the comments pertained to the width and number of lanes on Alaskan Way, local waterfront transit options, impacts on nearby residential properties, bicycle and pedestrian facilities and safety, and parking. Other comments requested that the EIS address fish, wildlife, and their habitats; stormwater and water quality; and hazardous materials. These comments assisted in shaping the scope and analysis found in this EIS. Appendix N, Scoping Summary, contains more information on the comments received during the scoping process.

Alternatives Evaluated

Development of Alternatives

The opportunity to reconfigure the downtown waterfront was made possible by the state of Washington’s decision in 2009 to replace the Alaskan Way Viaduct (SR 99) with a tunnel and improve the Alaskan Way surface street. The viaduct stands on City right of way, which will become available for reuse once the structure has been demolished. Together with the existing Alaskan Way surface street, this right of way creates a swath of contiguous City property along the Elliott Bay shoreline that can be used for transportation, open space, and key east-west connections, in accordance with AWPOW's purpose and need.

While removal of the viaduct opens up opportunities for use of the City right of way underneath, there are several constraints on how the space can be used, including existing topography, right of way (property) boundaries, historic features, shoreline law, roadway facilities, and pedestrian and bicycle facility goals. Given these constraints, only the No Action Alternative and Action Alternative are evaluated in this EIS. No other alternatives that could feasibly attain or approximate the proposal’s objectives, but at a lower environmental cost or decreased level of environmental degradation, were identified. More information on alternatives development is provided in Chapter 2 and Appendix M of this EIS.

No Action Alternative

Under the No Action Alternative, the AWPOW projects would not be built. However, conditions in the area would be different from those that exist at the time this EIS is published (2015). Major changes assumed to be in place under the No Action Alternative are:

- The Alaskan Way Viaduct Replacement Project (AWVRP) will be complete, with the viaduct eliminated and the SR 99 tunnel in operation. Parking that existed beneath the viaduct prior to the start of AWVRP construction is assumed to have been restored.
- The EBSP will be complete, and will include a new sidewalk inset with light-penetrating surface (LPS).
- The Pike Place Market Waterfront Entrance Project (PPMWE)[1] will be complete.

The analysis for the No Action Alternative is based on the expected conditions in 2030, which is the project design year (the year used for the assessment of future conditions). The No Action Alternative serves as the baseline against which the potential impacts of the Action Alternative are evaluated.

Upon completion of the EBSP (currently planned for 2016), Alaskan Way will be restored to the alignment that it occupied until construction began on the AWVRP and EBSP, immediately west of and generally parallel to the present alignment of the Alaskan Way Viaduct. The roadway will have two lanes serving general-purpose traffic in each direction, with an additional northbound lane to serve ferry traffic between S. King and S. Main Streets and two left-turn lanes between S. Main Street and Yesler Way. The east-west streets will generally connect to the restored roadway as they did before EBSP construction started, although the intersections of Alaskan Way with Columbia and Seneca Streets will be modified after removal of the Alaskan Way Viaduct ramps. There will be signals at all intersections. The restored Alaskan Way will not have a direct connection to Western Avenue or Elliott Avenue in Belltown. Vehicles traveling north will need to use Wall, Vine, or Broad Streets to cross the BNSF rail line and access Belltown.

Under the No Action Alternative, the City-owned right of way beneath the Alaskan Way Viaduct is assumed to be restored by the AWVRP and EBSP to its original configuration in 2010, before construction of those projects began. This configuration included parking spaces with pay stations as well as business and parking access lanes. Approximately the same number of parking spaces is assumed to be provided as were in place in 2010.

Bicycle and pedestrian facilities are assumed to generally match those existing in the corridor before EBSP construction began, but with improvements to meet ADA requirements. A sidewalk with a continuous band of LPS to improve aquatic habitat conditions will run along the western edge of the restored Alaskan Way. On the east side of Alaskan Way, an 8- to 10-foot-wide path will provide through access for bicycles and pedestrians.

Action Alternative

The Action Alternative would implement Waterfront Seattle improvements after the AWVRP, EBSP, and PPMWE have been constructed. This alternative consists of the main corridor (which includes a new Alaskan Way with new connections to Elliott and Western Avenues), the Promenade, the Overlook Walk, and the East-West Connections. Each project is briefly described below; more detailed information on their design is provided in Chapter 2.

[1] This project is now called the Pike Place MarketFront. Because the name evolved during the Draft EIS process, this document uses the term PPMWE.

Main Corridor

The main corridor would operate as part of the regional transportation system, serving some of the functions that will no longer be provided by SR 99 after the Alaskan Way Viaduct is replaced with a tunnel. It would serve both local and regional transportation needs for a wide array of users, providing access between SR 99 and downtown Seattle as well as direct access to northwest Seattle. In addition to passenger, transit, and freight vehicles, it would accommodate high levels of pedestrian and bicycle traffic and would improve connections between the waterfront and downtown Seattle. The proposed improvements would consist of:

- Construction of the new Alaskan Way between S. King Street and Pine Street, along the east side of the right of way
- Construction of a new arterial connection, called Elliott Way, which would follow the path of the existing Alaskan Way Viaduct from Alaskan Way at Pine Street up the hill into Belltown, where it would connect with Elliott and Western Avenues
- A new intersection at Pine Street (referred to as the Pine Street extension) that would connect the new Alaskan Way and new Elliott Way with the existing Alaskan Way north of Pier 62/63
- A dedicated transit lane in each direction along Alaskan Way between S. King Street and Columbia Street and on Columbia Street between Alaskan Way and First Avenue, which are both part of King County Metro's Southwest Transit Pathway improvements to address transit needs following AWVRP completion
- Northbound ferry queuing lanes between S. King Street and Yesler Way, which include double left-turn lanes between S. Main Street and Yesler Way

Improvements for pedestrians would include wider sidewalks along the east and west sides of the new Alaskan Way. Sidewalks would continue along both sides of Elliott Way, allowing pedestrians to walk from the waterfront to Belltown. Signalized pedestrian crossings would be provided at all intersections. Other pedestrian improvements would include a rebuilt Marion Street pedestrian bridge, linking First Avenue with Colman Dock across Western Avenue and Alaskan Way. At Seneca Street, the project would reconstruct the stairs, sidewalk, and parking between Alaskan Way and Western Avenue. A continuous, protected two-way bicycle facility would run along the west side of the new Alaskan Way. The facility would begin at S. King Street and continue north on the west side of Alaskan Way to about Virginia Street, where it would cross the road to join the existing path on the east side of the roadway. At the new intersection with Elliott Way, the bicycle facility would transition to separate northbound and southbound paths that would connect with existing bicycle lanes on Elliott and Western Avenues in Belltown. Along Alaskan Way, the bicycle facility would be separated from the roadway and pedestrian areas by landscaping and other means to limit potential conflicts between pedestrians, bicyclists, and motor vehicles.

The main corridor would build accommodations for both regional transit and local waterfront transit that could provide connections to waterfront-area destinations for recreational visitors, local employees, and residents.

Promenade

The Promenade would be a continuous public open space along the west side of the new main corridor from King Street to Virginia Street that would be designed for walking, sitting, gathering, and viewing the waterfront. Design features and landscaping along its length would create a series of different environments, or “places,” that would reflect the character of the surrounding areas. These places are:

- **Colman Dock Transit Hub,** an area supporting the regional transit hub in front of the Seattle Multimodal Terminal at Colman Dock

- **Historic Piers 54 through 59,** where narrow boardwalks or paths would traverse planted terraces with integrated seating
- **Aquarium Plaza,** a broad public gathering area at the intersection of the Seattle Aquarium, the Pike Street Hillclimb, and the Overlook Walk

The westernmost portion of the Promenade would include the band of LPS, cantilevered over Elliott Bay, which will be built as part of the EBSP. New, permanent railings would replace the temporary railings installed by the EBSP at the western edge of the overhang. The remainder of the Promenade would be constructed of an architectural concrete surface with decorative elements.

A linear canopy of trees would provide a buffer between the Promenade and the street. Kiosks would be located on the Promenade near the intersections of Alaskan Way with Spring, Seneca, University, and Union Streets, which would provide focal points for wayfinding, programs, and other services. Lighting along the Promenade would be designed in a layered pattern to provide visual interest and wayfinding clarity.

Overlook Walk

The Overlook Walk would occupy the existing public right of way south of Victor Steinbrueck Park, west of Pike Place Market, and northeast of the Seattle Aquarium. It would be composed of two buildings and a sloping lid that would extend southwest from the Pike Place Market, across the new Elliott Way, and down more than 100 vertical feet to the waterfront near the Seattle Aquarium and Pier 62/63. The Overlook Walk would include over an acre of public open space, provide active gathering spaces and elevated scenic viewing opportunities, create a robust and accessible pedestrian connection with multiple ways to walk between Pike Place Market and the waterfront, and provide opportunities to enhance the pedestrian experience and revitalize the area. Stairs would link the northern part of the Overlook Walk to Victor Steinbrueck Park and Elliott Way. On the southwest side of the lid, wide, amphitheater-style steps would open onto Pier 62/63.

The configuration of the Overlook Walk lid against the hillside would provide an opportunity to create two new buildings, known as Building B and Building C. These buildings would be used for public purposes and to serve transportation functions, as well as for incidental private uses. One use currently being considered for Building C is an expansion of the Seattle Aquarium. Building B, located on the east side of Elliott Way and rising above the east edge of the Overlook Walk lid, would contain approximately 23,000 square feet of interior space. Building C, located beneath the wide amphitheater steps connecting the Overlook Walk lid to the Aquarium Plaza, would contain approximately 22,000 square feet of interior space. Both buildings would have elevators, providing a fully accessible route between the waterfront and the Pike Place Market.

East-West Connections

The East-West Connections are improvements to portions of S. Main, S. Washington, Union, and Bell Streets adjacent to the main corridor to provide better connections between the waterfront and downtown Seattle and to enhance the pedestrian experience. The S. Main and S. Washington Street Improvements would replace the roadway pavement and reconstruct the sidewalks to create more pedestrian-friendly links between the waterfront and Pioneer Square. The Union Street Pedestrian Connection would construct two elevated pedestrian walkways and associated elevators and stairs along the south side of Union Street to serve as an accessible pedestrian link between the new waterfront and downtown. The Bell Street Park Extension would continue the shared street (roadway and public park space) between Elliott and First Avenues, creating a better pedestrian connection towards Elliott Way and the waterfront.

Construction Impacts and Mitigation

Construction of the Action Alternative is expected to consist of the following general activities:

- Utility removal, replacement, or relocation
- Demolition of the existing roadway and appurtenances on Alaskan Way, S. Main, S. Washington, Union, and Bell Streets
- Demolition of existing stairs and reinforcement and repair of the retaining walls at Union Street
- Ground improvement, where necessary, to stabilize soils for support
- Dewatering of excavations below the water table (generally about 5 feet below ground surface [bgs] along the waterfront) to provide a dry work area, where necessary
- Use of best management practices (BMPs) to protect water quality and reduce erosion; these may include installation of silt fencing, covering of stockpiled soil, and collection and treatment of construction stormwater runoff
- Drilling and vibratory pile driving for deep shafts to support the Overlook Walk and Elliott Way bridge structures
- Earthwork (excavation and filling) for the Pine Street extension and the section of Elliott Way between Lenora Street and the bridge over the BNSF tunnel
- Micropile driving to support structures such as the kiosks and the Marion Street pedestrian bridge
- Placement of foundation and pavement for the new Alaskan Way and Elliott Way roadways, and bicycle and pedestrian facilities
- Vibratory pile driving and micropile driving to support Union Street pedestrian structures
- Excavation, formwork construction, and concrete pumping and pouring for the Union Street pedestrian structures
- Placement of roadway foundation and pavement for S. Main, S. Washington, Union, and Bell Streets
- Installation of Promenade elements including paving, benches, kiosks, and landscaping
- Installation of street lighting, signal poles, and signage

It is anticipated that construction activities would begin with early utility work in 2017 and be completed in 2020. The construction time frame could shift depending on when the AWVRP is completed. Construction would be sequenced to build the new Elliott Way connection and the Columbia Street improvements first to provide an efficient connection to Belltown and improved transit connections in and through the corridor. The new Alaskan Way surface street would likely be constructed in segments. During construction of the Pine Street extension and the western portion of the Overlook Walk, Alaskan Way in the vicinity of Pine Street would be closed for a short period (assumed to be up to 4 months for the purposes of analysis); however, Elliott Way would be open to provide access to destinations on Alaskan Way north of Pine Street.

The No Action Alternative would not have any construction activities or impacts. The potential construction impacts of the Action Alternative are summarized in Table ES-1 and described below. Implementing mitigation measures and adhering to permit conditions would minimize or avoid the potential for adverse impacts during construction of the Action Alternative.

Table ES-1. Potential Construction Impacts

Discipline	No Action Alternative	Action Alternative
Transportation	None	Moderate Adverse Impact
Parking	None	Moderate Adverse Impact
Land Use	None	Moderate Adverse Impact
Aesthetics	None	Moderate Adverse Impact
Noise	None	Moderate Adverse Impact
Hazardous Materials	None	Minor Adverse Impact
Public Services and Utilities	None	Moderate Adverse Impact
Historic Resources	None	Minor Adverse Impact
Archaeological Resources	None	Minor Adverse Impact
Water Quality	None	Minor Adverse Impact
Vegetation and Wildlife	None	Minor Adverse Impact
Energy Resources	None	Minor Adverse Impact
Air Quality	None	Minor Adverse Impact

Transportation

Construction of the Action Alternative could impact transportation along Alaskan Way and the east-west cross streets in the corridor by increasing congestion and modifying local access to and from downtown Seattle. During the midday and non-peak commute periods, generally up to one lane in each direction could be closed periodically. However, it is anticipated that impacts on traffic operations would be relatively minor because roads would remain open for the majority of the construction period and closures would occur during periods of lower traffic volumes. Construction truck trips are not expected to substantially increase traffic volumes and delays because the number of anticipated truck trips is small in the context of overall truck use in the area.

The largest construction impact for the Action Alternative would be the closure of Alaskan Way in the vicinity of Pine Street while the Pine Street extension and western portion of the Overlook Walk are built. For purposes of this analysis, the closure is assumed to last up to approximately 4 months. During this time, vehicles would access the waterfront north of Pine Street from the south by traveling along the newly constructed Elliott Way to reach the northern portion of Alaskan Way via east-west streets. This could result in delay and congestion for all traffic, including emergency vehicles, when trains are using the at-grade crossings on these streets.

Access to businesses would be maintained to the extent feasible throughout construction; any blockages would be temporary. Pedestrians and bicyclists would be rerouted around active construction zones; sidewalks that meet minimum ADA requirements would be provided during construction on at least one side of the street in all work zones, and the existing path on the east side of Alaskan Way would remain open, with detours as necessary. Transit routes would run on interim pathways, which would likely be similar to where they were rerouted during construction of EBSP and AWVRP. Construction is not expected to impact service or sailing schedules for ferries, cruise ships, or sightseeing boats.

The City would develop a Traffic Control Plan to reduce impacts on traffic operations and to protect and control motor vehicle, pedestrian, and bicycle traffic during all phases of construction. The plan would be developed in accordance with City construction specifications and would be updated as appropriate for each construction phase.

Parking

Construction activities for the Action Alternative would temporarily impact on-street parking throughout the study area. The amount of on-street parking affected would vary by construction stage and segment and would be determined once construction and staging plans are finalized. Some businesses could have access routes or loading zones temporarily blocked, but this would only occur intermittently.

To construct the Action Alternative, a surface parking lot with approximately 60 spaces would be acquired. These off-street parking spaces represent less than 1 percent of the off-street parking supply in the area. Off-street parking outside of the project footprint would not be affected, except for minor temporary changes in access to build the improvements.

While AWPOW would reduce the overall parking supply in the project footprint, the City would maintain parking availability to the extent feasible during construction. Once construction and staging plans have been developed, the City would develop practices to manage parking during construction to ensure, to the extent feasible, that parking is convenient and accessible to waterfront businesses and their patrons. In addition, the City would continue enforcement of short-term parking limits and the use of e-Park, which provides real-time off-street parking availability information, to make the most efficient use possible of the supply of short-term parking within the project footprint.

Land Use

Construction of the Action Alternative would result in temporary impacts to most or all land uses in and adjacent to the project footprint. Impacts would be due to noise, dust, congestion, loss of parking, and temporary access changes associated with construction that could negatively affect residences, recreational users, and businesses.

The Action Alternative would require the acquisition of two full parcels: a commercial surface parking lot with approximately 60 parking spaces, and a small two-story office building (the Harborscape Professional Building) with one business. Both of these uses would be displaced. In addition, five parcels would be partially acquired for the Action Alternative, converting a total of about 0.4 acre to new City right of way. The partial acquisitions would not alter or preclude the current use of the properties. Temporary construction easements would also be needed for several properties adjacent to Alaskan Way. For these easements, the property would generally be restored to its previous condition before being returned to the property owner.

Mitigation measures and BMPs would address the construction impacts. For increased noise, traffic congestion, and aesthetic impacts, the City would implement measures as described for those disciplines. The City would work closely with property owners, businesses, and residents on communication and coordination to reduce the level of impact. The City would compensate the owners of properties acquired for right of way in accordance with Washington's relocation and property acquisition law and regulations (Revised Code of Washington [RCW] 8.26) and the City's relocation assistance policy (SMC 20.84). Just compensation for all acquisitions and easements would be determined by a qualified appraiser.

Aesthetics

Short-term construction impacts on aesthetics would result from the presence and movement of construction equipment, stockpiled construction materials and debris, screening and safety fences, and nighttime illumination. Because work would be done in segments, views would be affected for only a portion of the overall construction period, and long-distance views of visual resources to the west would not be affected. Construction on east-west streets would occur in one- to two-block segments and would primarily be visible only to viewers in the immediate vicinity. Construction of the new elevator shafts at Union Street could potentially affect long-distance views from locations on Union Street east of Post Alley for a portion of the construction period. Local visual impacts could be reduced by minimizing

construction-related light and glare and developing strategies to maintain views when locating and maintaining safety fencing and screening.

Noise

Construction noise would result from the operation of heavy equipment needed to construct various project features and structures, such as bridges, retaining walls, roads, and pedestrian and bicycle facilities. The contractor would be required to comply with the requirements of the City of Seattle Noise Control Ordinance; construction activities outside normal daytime hours would require a noise variance from the City. Maximum typical construction noise levels could reach as high as 88 dBA at the closest receiver locations.

The City would minimize construction noise at nearby noise receptors by complying with the Seattle Noise Ordinance and any variances to the ordinance that are obtained for the project.

Hazardous Materials

The Action Alternative has the potential to encounter contaminated materials such as petroleum products and metals during construction. Within the project footprint (specifically beneath Alaskan Way), there is documented soil and groundwater contamination that varies widely from location to location due to the large amount of fill material present and the area's history of industrial uses. In addition to this general contamination, nine specific sites with hazardous materials that are being overseen by the Washington State Department of Ecology (Ecology) were identified that have the potential to impact the project. Also, one of the acquired properties for the Action Alternative includes a building that would need to be demolished. The building could contain hazardous materials such as lead-based paint or asbestos-containing materials that might need to be abated before demolition begins. As a result of these conditions and the use of hazardous materials during project construction, potential construction impacts could include the exposure of workers or the public to:

- Contaminated materials contained in soil and groundwater
- Hazardous materials contained in underground storage tanks
- Hazardous materials in structures to be demolished
- Construction-related spills or releases

Impacts may also include the potential for the City to acquire hazardous materials-related liability as part of project-related property acquisition.

Mitigation for construction impacts includes the preparation and implementation of the following plans, programs, and procedures:

- Health and Safety Plan
- Hazardous Building Materials Survey and Abatement Program
- Monitoring Well Decommissioning and Protection Procedures
- Underground Storage Tank Decommissioning and Protection Procedures
- Contaminated Media Management Plan

Public Services and Utilities

Public services could be adversely impacted by traffic congestion and detours during construction of the Action Alternative. Periodic closures and restrictions on east-west streets and the approximately 4-month closure of Alaskan Way for construction of the Pine Street extension would affect access for

service providers. The City would work closely with emergency service providers to put in place appropriate measures for emergency access to and travel through construction areas to minimize impacts on response times. In addition, timely communications would be provided to all service providers with details about detours, utility disruptions, and other critical activities. The City would also:

- Coordinate with solid waste service providers to minimize impacts on solid waste collection and recycling activities
- Notify the Seattle School District of construction detours that may affect school bus routings to and through the study area
- Notify the United States Postal Service of construction detours and access changes that may affect postal deliveries and its facility at S. Jackson Street

Impacts on utilities during construction of the Action Alternative would vary depending on the depth of the utilities below grade, their material composition, and the construction excavation limits. Potential utility outages would affect business and residential customers as well as public services. The project design would comply with current City of Seattle and state of Washington regulatory requirements; the City would work closely with utility providers to ensure appropriate space planning and construction sequencing to minimize overall risks, costs, and impacts. The City would also:

- Work with utility providers to provide maintenance and emergency access to all utilities throughout construction
- Ensure that outages are minimized and that critical utilities, such as power, water, and telecommunications for emergency response and public safety, are maintained
- Contact the utility provider immediately if any inadvertent damage to the utility occurs

Historic Resources

The Action Alternative's footprint includes portions of the Pioneer Square Preservation District and is adjacent to the Pike Place Market Historical District. Nineteen individual Seattle Landmarks outside of the historic districts are also located near the project footprint. During construction, reduced access and parking, as well as construction-related noise and dust, would make it more difficult for people to patronize businesses in historic buildings and districts. However, because construction work would be done in segments, each historic property would be affected for a relatively short period. While these short-term impacts would inconvenience residents, customers, and employees who use the historic properties, the ability of owners to maintain the historic integrity of their properties is not expected to be affected.

Potential mitigation measures implemented for transportation, parking, noise, public services, and water quality during construction would help protect the historic and physical integrity of the structures and the economic viability of the properties and districts. Before constructing the Action Alternative, the City would obtain the required Certificates of Approval for work within historic districts and any alterations, even temporary ones, to landmarked buildings. Such Certificates of Approval would be needed from the Pioneer Square Preservation Board, the Pike Place Market Historical Commission, and the Seattle Landmark Preservation Board. The City would repair any damage that occurs to historic buildings as a result of AWPOW construction in accordance with the U.S. Secretary of the Interior's Standards for Rehabilitation (36 Code of Federal Regulations [CFR] 67).

Archaeological Resources

Five archaeological sites have been recorded within the Action Alternative's footprint. Three of the sites have been mitigated through recordation, and have been at least partially removed by previous projects that disturbed these sites. The other two archaeological sites are:

- A site near Pier 48, where a portion of the now buried Ballast Island is still in place and could be affected by construction of the sidewalk and bicycle facility
- A site near Union Street and Western Avenue, where a historic buried concrete wall could intersect with the pedestrian improvements at Union Street

Undetected sites may still be present in portions of the project footprint that have not been investigated for cultural resources. The greatest likelihood of encountering such materials is in the area between Pike Street and Blanchard Street, where construction depths could reach 80 feet bgs. Although regrading in this area has removed some of the native soils, the historic fill is thinner than it is along the shoreline, and deeper areas of excavation could intersect older deposits that have the potential to contain pre-contact materials. Construction activities on Union Street would be 40 to 60 feet deep due to the drilled shafts required for the pedestrian walkway connections; therefore, older archaeological deposits could also be encountered. To address the potential for project construction to impact currently undetected archaeological sites, the City would prepare an Inadvertent Discovery Plan before project construction begins. The City might also develop a plan in consultation with the Washington State Department of Archaeology and Historic Preservation (DAHP) and interested Native American tribes to conduct archaeological monitoring during some construction activities in areas having a high potential for encountering undetected archaeological resources.

Water Quality

Construction activities such as earthwork, stockpiling, material transport, concrete work and paving, storm drain utility work, use of construction machinery, and dewatering have the potential to affect water quality in Elliott Bay. These pollutants can increase turbidity, change pH, and reduce available oxygen in the water. The impacts would be temporary, would vary in intensity and duration depending on the type of construction occurring, and would be mitigated through required preventative measures. The City would prepare and implement plans pursuant to the City of Seattle Stormwater Code, Stormwater Manual, and the NPDES Construction Stormwater General Permit that describe BMPs to prevent pollution, control stormwater flows, and protect Elliott Bay during construction.

Vegetation and Wildlife

During construction of the Action Alternative, human activity and noise from construction equipment could disturb wildlife. However, wildlife species that use habitats in the study area are already adapted to high levels of noise and human activity, and construction noise and activity would not constitute a substantial increase in disturbance compared to the No Action Alternative. A Tree, Vegetation, and Soil Protection Plan would be developed to ensure the selection of appropriate protective measures during construction. These measures would identify protective measures for trees and other vegetation to be retained as well as for soil surfaces to guard against compaction and erosion. They would also include appropriate measures to minimize the risk of introduction and spread of noxious and invasive species. The City would restore and landscape the project footprint as soon as practicable during construction and would implement appropriate conservation measures and BMPs to minimize potential impacts on wildlife. No adverse impacts on vegetation and wildlife are expected as a result of construction activities.

Energy Resources

Construction activities would consume energy to manufacture materials, transport materials, and operate construction equipment. Construction would also contribute to greenhouse gas (GHG) emissions through the burning of fossil fuels to operate construction machinery and transport workers. In addition to construction activities, GHG emissions would originate from the production of concrete and steel for the project and from the project's use of electrical energy generated by fossil fuels.

The amount of energy used for AWPOW, although substantial, would be a small fraction of overall energy consumption in Seattle and is not expected to have a substantial impact on energy resources. Similarly, AWPOW is not expected to contribute significantly to overall GHG emissions or to hinder compliance with GHG reduction targets in Seattle or the state. BMPs, such as limiting idling of equipment, would contribute to improved energy efficiency during construction.

Air Quality

During construction of the Action Alternative, soil-disturbing activities, operation of heavy-duty equipment, commuting workers, and the placement of concrete and asphalt may generate emissions that would temporarily affect air quality. The total emissions and the timing of these emissions would vary depending on factors such as construction phasing and the types of equipment used.

State law requires that construction site owners and operators take reasonable precautions to prevent fugitive dust from becoming airborne. Dust may become airborne during demolition, material transport, grading, vehicle and machinery operations on and off the work site, and wind events. Controlling fugitive dust emissions could involve BMPs such as spraying exposed soil with water, covering materials, and scheduling construction activities to keep disturbed areas to a minimum.

Operational Impacts and Mitigation

Table ES-2 summarizes AWPOW's operational impacts for both the No Action and Action alternatives, which are described in more detail below. The AWVRP, EBSP, and PPMWE will be completed before AWPOW begins and are therefore assumed to be part of the future conditions for both the No Action and Action alternatives. The project would be designed to minimize or avoid the potential for adverse impacts; in addition, implementing mitigation measures and adhering to permit conditions would minimize or avoid the potential for adverse impacts.

Table ES-2. Operational Impacts and Benefits

Discipline	No Action Alternative	Action Alternative
Transportation	Minor to Moderate Adverse Impact	Moderate Benefit
Parking	No Impact	Moderate Adverse Impact
Land Use	Minor Adverse Impact	Moderate Benefit
Aesthetics	No Impact	Moderate Benefit
Noise	No Impact	Minor Adverse Impact
Hazardous Materials	Minor Adverse Impact	Minor Adverse Impact
Public Services and Utilities	Minor Adverse Impact (public services) No impact (utilities)	Minor Benefit (public services) No Impact to Minor Benefit (utilities)
Historic Resources	No Impact	Minor Adverse Impact
Archaeological Resources	No Impact	No Impact
Water Quality	No Impact	Minor Benefit
Vegetation and Wildlife	No Impact	Minor Benefit
Energy Resources	Minor Adverse Impact	Minor Benefit
Air Quality	Minor Adverse Impact	Minor Benefit

Transportation

The transportation analysis for both alternatives reflects the future conditions in 2030, the project design year, and accounts for population and employment changes and transportation improvements anticipated by that time. Under the No Action Alternative, traffic volumes are generally expected to increase by approximately 5 to 10 percent between 2017 and 2030 due to regional population and employment growth. The restored Alaskan Way roadway would not have sufficient capacity to accommodate this future travel demand. As a result, general-purpose and freight traffic would experience more congestion and delays at intersections. Pedestrian and bicycle facilities under the No Action Alternative would remain the same as in 2017; the stairs at Seneca and Union Streets would not meet ADA standards.

The primary operational impact of the Action Alternative would be to provide improved or additional facilities for motor vehicles, transit, bicyclists, and pedestrians in the study area. This would improve overall traffic operations, transit reliability, emergency service response, and pedestrian and bicyclist comfort and safety. Levels of service would improve at most intersections compared to the No Action Alternative, which would reduce delays for vehicle traffic. Travel times under the Action Alternative would also improve or remain similar to the No Action Alternative. Along the east side of the new Alaskan Way, properties that currently use City right of way to access parking or loading areas would experience changes in access. Freight access to businesses would be accommodated with on-street parking and loading zones along Alaskan Way, side streets, and alleys, but with modifications in some locations. Regional transit would benefit from improved traffic operations and dedicated transit facilities in the study area. Water transportation services and rail would not be disrupted by the Action Alternative and would likely experience safety and congestion improvements because of improved roadway operations and levels of service.

At the north end of the project footprint, the extension of Bell Street Park between Elliott and First Avenues would change the roadway configuration to become a one-way shared street (roadway and public park space). This would have a minor impact on the roadway operations on Bell Street and the adjacent roadways.

Parking

The parking supply under the No Action Alternative is expected to remain the same as under 2017 existing conditions. Population and employment growth would likely increase the demand for parking by 2030, the project's design year.

The Action Alternative would permanently remove approximately 88 on-street parking spaces along Alaskan Way, 377 parking spaces that existed in the Alaskan Way Viaduct footprint, 15 on-street spaces on Bell Street, 3 spaces on Union Street, and 1 space on S. Main Street. The loss of 484 on-street parking spaces represents approximately 26 percent of the on-street parking supply in the study area. The Action Alternative would also permanently remove 189 off-street parking spaces in the study area. The overall loss of 484 on-street parking spaces and 189 off-street parking spaces would result in a total project-related parking loss of approximately 673 parking spaces, which represents approximately 6 percent of all on- and off-street parking supply in the study area. The City would mitigate this loss by providing approximately 250 new parking spaces that are being constructed by the Pike Place Market Preservation Authority as part of the PPMWE Project. The City may also consider other measures to help minimize the parking loss impact for the Action Alternative.

It is expected that demand for both on-street and off-street parking would increase in conjunction with population and employment growth in Seattle's central business district. Because parking supply would decrease under the Action Alternative, this increase in demand for parking, coupled with the decrease in parking supply, is expected to increase the on-street and off-street parking utilization rates across all parking zones and time periods studied.

The proposed removal of on-street parking is consistent with applicable policies in Seattle's Comprehensive Plan (2005). The removal of on-street parking spaces, in conjunction with the enhanced nonmotorized and transit facilities that are part of the Action Alternative, supports overall City planning goals for reducing dependency on single-occupant vehicles in the downtown area.

Land Use

Compared to the Action Alternative, operation of the No Action Alternative would result in higher traffic congestion and less potential for beneficial redevelopment in accordance with adopted land use plans. Because Alaskan Way would not have sufficient capacity to accommodate increased travel demand in 2030, the resulting congestion could affect business patronage, and would not address City land use goals of increased connectivity and mobility. The No Action Alternative would maintain the existing non-accessible and indirect pedestrian connections between the Pike Place Market and the waterfront. It would not support local land use plans that envision a downtown waterfront with enhanced connection to the shoreline, increased public gathering space, and improved accommodations for pedestrians, bicyclists, and transit users.

The operational impacts of the Action Alternative on land use are expected to be positive because the project would result in a more accessible waterfront and increase the desirability of the area for public use and general development. Positive operational impacts are expected because the new public facilities associated with this project would enhance traffic operations, support increased walking and bicycling, improve multimodal connectivity and mobility, provide new open space and recreation opportunities, and support economic development. Although the project would not change existing zoning or land use designations, increased activity and public amenities along the waterfront could encourage beneficial redevelopment of adjacent areas in accordance with applicable zoning and development standards. The Action Alternative is expected to support the goals of state, regional, and local land use plans, many of which call for improvements along the waterfront.

Aesthetics

There would be no visual impacts or benefits under the No Action Alternative because it would be identical to the 2017 existing conditions. Operational impacts of the Action Alternative would be generally positive because the streetscape and pedestrian spaces would replace paved areas currently dedicated to parking and vehicle traffic. Elements that are expected to enhance visual quality include trees and shrubs, gathering areas with seating, and custom paving patterns and lighting. With these landscaping and urban design elements, the Action Alternative streetscape and pedestrian spaces would generally be considered an aesthetic enhancement compared to the No Action Alternative.

The new kiosk structures along the Promenade would be prominent in the historic pier section of the waterfront. At their proposed height, the kiosks could impact views along designated view corridors at Seneca, Spring, Union, and University Streets. Depending on their final design, the kiosks could be perceived to have either a positive or a negative visual impact, depending on the viewer.

The Overlook Walk and Buildings B and C would be new dominant structures in views from the waterfront and from Pike Place Market and Belltown. This change to the visual landscape could be perceived to have either a negative or a positive impact, depending on the viewer. Negative impacts from the Action Alternative could arise if tree canopies and kiosk structures were to block or interfere with scenic views along the waterfront or toward Puget Sound and the Olympic Mountains.

The Union Street Pedestrian Connection would include walkways with new public viewpoints that would provide very high-quality views of the waterfront and Elliott Bay. The new pedestrian connection would also include elevator towers that would be compatible with existing nearby development, although the towers would partially alter the views of Elliott Bay currently provided at Union Street just east of Post Alley.

Visualization of the Action Alternative from Victor Steinbrueck Park, looking south

Noise

Noise levels in the study area are currently dominated by traffic. Modeled future noise levels, calculated as A-weighted decibels expressed in terms of average sound levels (abbreviated as dBA Leq), were compared to the Federal Highway Administration's noise abatement criteria (NAC). In 2017, after the AWVRP is complete, 1,136 noise receivers in the study area are predicted to be at or above the NAC for residential land uses, with noise levels ranging from 61 to 73 dBA Leq. Under the 2030 No Action Alternative, the number of units at or above the NAC would be the same as under the 2017 existing conditions, and traffic noise levels are predicted to range from 62 to 74 dBA Leq.

Under the Action Alternative, 1,211 residential units are predicted to be at or above the NAC; noise levels would range from 58 to 72 dBA Leq during peak hours in 2030. Noise levels would increase in some locations and decrease at others because of changes in the roadway alignment compared to No Action. Overall, traffic noise levels are expected to increase by up to 5 dBA in some locations (primarily in the northern portion of the study area), and decrease by 5 to 6 dBA in other locations compared to the No Action Alternative.

Several types of mitigation measures were reviewed for their potential to reduce noise impacts where the Action Alternative would cause noise levels to increase above the NAC. All of the measures reviewed were determined to be infeasible, in conflict with project objectives, or not cost effective. Although there are no clear, reasonable, and feasible methods of reducing noise in this area, it is important to note that the overall noise levels in the corridor would be up to 12 dBA lower than the noise levels with the viaduct in operation.

Hazardous Materials

Potential operational impacts under the No Action and Action alternatives include spills or releases from vehicles traveling in the corridor, the potential to create contaminant migration corridors through the installation of utilities, and exposure of workers to contamination during maintenance activities. The potential for such impacts would be minimized or mitigated through the use of BMPs and compliance with regulations governing the handling, storage, and disposal of hazardous materials.

Public Services and Utilities

The No Action Alternative would not construct the proposed connection between Alaskan Way and Elliott Way; as a result, it would take public service providers longer to reach destinations between Belltown and Alaskan Way than under the Action Alternative. The operational impacts on public services as a result of the Action Alternative would therefore be positive. The improved roadway capacity and connection to Belltown should reduce the time required to provide public services and respond to emergencies compared to the No Action Alternative.

The Action Alternative's impacts on utility operation and maintenance are expected to be minimal, and new facilities would provide a benefit. The Action Alternative would be designed to provide maintenance access to underground utilities that meets the standard access criteria and associated vehicle loading. Therefore, no mitigation for operational impacts would be necessary.

Historic Resources

The No Action Alternative would have minimal or no impact on historic resources. The Action Alternative would have minimal adverse impacts on historic resources and could have slight benefits. The primary potential impact of the Action Alternative would be alterations to the historic character of the waterfront, which could lessen the sense of connection between the waterfront and the buildings and neighborhoods east of Alaskan Way. Proposed improvements on S. Main and S. Washington Streets could potentially have permanent impacts on some areaways. The type and extent of alterations to historic resources would be determined during final design.

The City would obtain Certificates of Approval and undergo Landmarks Adjacency Reviews, as appropriate, for all permanent impacts the Action Alternative would have on historic resources. Certificates of Approval would be needed from the Pioneer Square Preservation Board, the Pike Place Market Historical Commission, and the Seattle Landmarks Board. The Seattle Department of Neighborhoods would conduct Landmarks Adjacency Reviews for project elements located next to or across the street from designated City landmarks. These approvals and reviews would consider the compatibility of project elements, materials, and designs with the area's historic character. The City would also use urban design and place-making approaches such as landscaping, interpretation, and reuse of historical elements (seawall railing, ship's wheel ornamentation, etc.) to enhance the sense of historical connection among the waterfront structures, the roadway, and buildings on the east side of Alaskan Way.

Archaeological Resources

No operational impacts on archaeological sites are anticipated as a result of either the No Action Alternative or the Action Alternative.

Water Quality

The No Action Alternative would not result in any operational impacts or benefits to water quality. The operational impacts of the Action Alternative are expected to be beneficial. The project would reduce flow volumes to the combined sewer by diverting a portion of the stormwater runoff area from the combined sewer system to the separated storm drain system. In addition, the project would reduce the overall quantity of pollutants in stormwater runoff by converting portions of the existing pollution-generating impervious surfaces (PGIS) to non-pollution-generating impervious surfaces (NPGIS) in the footprint. Also, the project would improve the quality of discharges to Elliott Bay by treating runoff from PGIS that was previously untreated.

Vegetation and Wildlife

The No Action Alternative is not expected to affect vegetation or wildlife. The operational impacts of the Action Alternative on vegetation and wildlife would be minimal. The primary effect would be a slight increase in native vegetation and the availability of habitat for native wildlife, as well as natural recruitment of native vegetation. This could lead to some increase in the populations and densities of wildlife in the study area. Because no adverse impacts are anticipated, no mitigation measures are proposed for vegetation and wildlife.

Energy Resources

Vehicles are expected to operate more efficiently and overall energy consumption is expected to decline slightly under the Action Alternative as compared to the No Action Alternative. Because the project would improve traffic operations and travel times, as well as reduce the number of vehicle miles traveled in the corridor, the Action Alternative is also expected to slightly reduce GHG emissions compared to the No Action Alternative. No adverse effects on energy resources and GHG emissions are expected from the operation of the Action Alternative.

Air Quality

Under the No Action Alternative, congestion on Alaskan Way and east-west cross streets would result in increased emissions of air pollutants. Congestion would be reduced by the improvements under the Action Alternative. Because air emissions are directly correlated to traffic volumes and congestion, the Action Alternative is expected to result in a slight reduction in emissions of air pollutants within the study area; therefore, no mitigation is required.

Cumulative Impacts and Mitigation

Cumulative impacts are project-related environmental impacts in combination with the impacts of other past, present, and reasonably foreseeable projects in the vicinity. In other words, they are the combined individual impacts of multiple projects over time. SEPA requires the evaluation of cumulative impacts as part of the EIS analysis.

AWPOW would be constructed once the SR 99 tunnel is in operation and the viaduct is removed. Construction would occur in the midst of a busy waterfront at the same time as other capital projects, including the Seattle Multimodal Terminal at Colman Dock. The construction-related impacts of AWPOW would add to the temporary adverse construction-related impacts of those other projects. Construction-related noise, dust, and traffic congestion would be greater with all of the projects together than if only one were constructed at a time. Therefore, AWPOW would contribute to an adverse cumulative impact during construction. Mitigation would consist of measures to reduce the overall impacts of construction by coordinating with other projects and agencies to verify the effectiveness of BMPs and ensure that residents, employees, and visitors can navigate efficiently and safely through the construction area.

The operational impacts of AWPOW, combined with those of other reasonably foreseeable projects, would result in long-term improvements to transportation, aesthetics, and water quality, and would further the goals of regional and local land use and transportation plans. Overall, project operation would not contribute to adverse cumulative impacts, and no mitigation would be necessary.

Next Steps

Comments on this Draft EIS can be submitted by mail or email to:

AWPOW – Draft EIS Comments
c/o Mark Mazzola, Environmental Manager
Seattle Department of Transportation
P.O. Box 34996
Seattle, WA 98124-4996

DEIS@waterfrontseattle.org

Comments must be postmarked by August 12, 2015.

After the Draft EIS comment period concludes, the lead agency will review and respond to comments. A Final EIS will be prepared and contain responses to the comments and potential updates to the environmental documents. The Final EIS is anticipated to be published in late 2015 or early 2016.

After the Final EIS is issued, final design and permitting are expected to be completed in 2016 and 2017. Construction would begin no earlier than 2017.

1 Introduction and Purpose of the Project

1.1 Introduction to the Project

The City of Seattle is proposing a number of infrastructure improvement projects (collectively referred to as "Waterfront Seattle") along the Seattle waterfront. The improvements are proposed in response to the opportunities, transportation needs, and related public objectives created by the replacement of the Alaskan Way Viaduct with a new State Route (SR) 99 tunnel. These opportunities, needs, and objectives for the waterfront are articulated in the Waterfront Seattle Guiding Principles, which affirm the following goals:

- Create a waterfront for all
- Put the shoreline and innovative, sustainable design at the forefront
- Reconnect the city to its waterfront
- Embrace and celebrate Seattle's past, present, and future
- Improve access and mobility (for people and goods)
- Create a bold vision that is adaptable over time
- Develop consistent leadership from concept to operations

The most substantial of the planned Waterfront Seattle improvements are four contiguous projects that would create a new transportation corridor between S. King Street and Battery Street, construct new public open space along Elliott Bay adjacent to the new Alaskan Way, provide a major new pedestrian connection between the Pike Place Market and the waterfront, and improve east-west connections between downtown Seattle and the waterfront. These projects are:

- The Main Corridor: A new Alaskan Way corridor from S. King Street to Pike Street, and a new Elliott Way corridor from Pike Street to Battery Street with improvements for general-purpose traffic, transit, freight, and improved pedestrian and bicycle facilities
- The Promenade: A continuous public open space along the waterfront
- The Overlook Walk: A new structure providing open space, view opportunities, and pedestrian connections between the waterfront and Pike Place Market
- The East-West Connections: Improvements to portions of S. Main, S. Washington, Union, and Bell Streets adjacent to the main corridor to provide better connections between the waterfront and downtown Seattle and to enhance the pedestrian experience

Because of the complementary nature of these projects, and the fact that they represent the most substantial of the planned Waterfront Seattle improvements, the City is evaluating them together in this environmental impact statement (EIS), as authorized by the State Environmental Policy Act (SEPA) under Washington Administrative Code (WAC) 197-11-060(3)(c) and the Seattle Municipal Code (SMC) 25.05.060(C)(3). The four projects are referred to collectively in this EIS as the Alaskan Way, Promenade, and Overlook Walk, abbreviated as AWPOW, and also referred to as the Action Alternative or the project. Figure 1-1 shows the location of AWPOW in the context of downtown Seattle and Figure 1-2 shows the locations of the four projects within the AWPOW footprint.

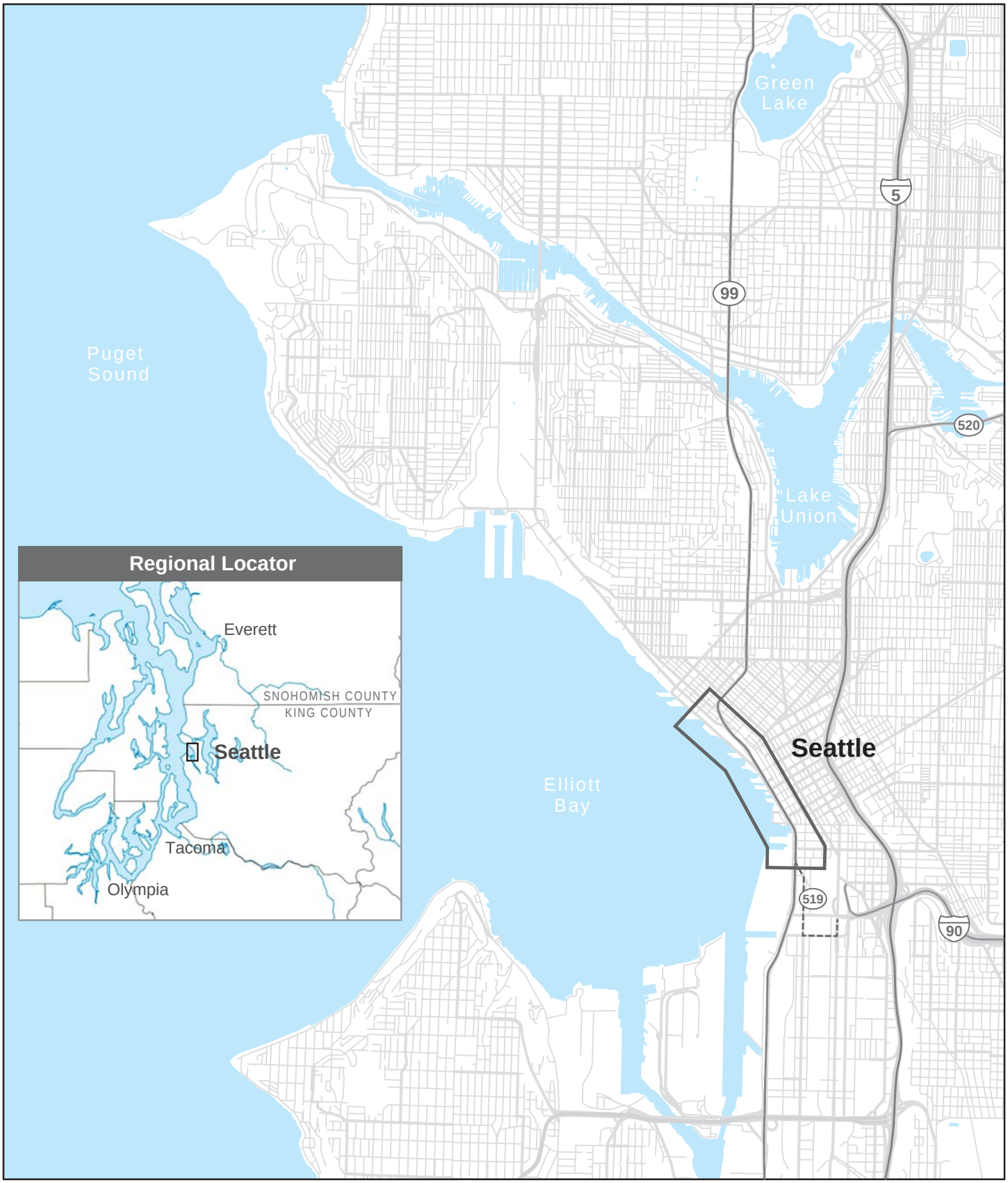
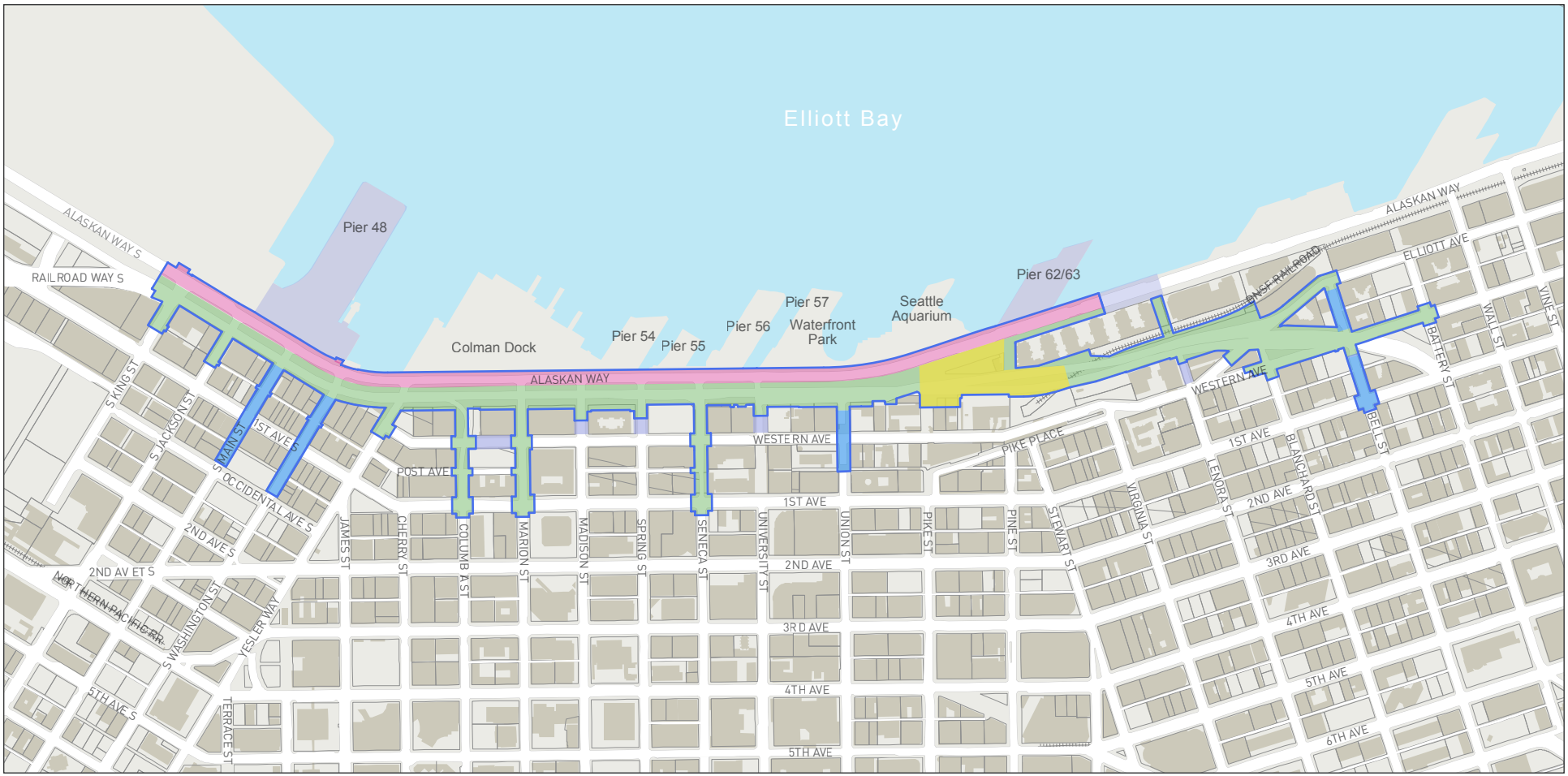


Figure 1-1
Vicinity Map

Alaskan Way, Promenade, and Overlook Walk



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Source: SDOT

Action Alternative
- Project Footprint
- Potential Construction Staging Area

AWPOW Projects
- Main Corridor
- Promenade
- Overlook Walk
- East-West Connections

- Parcel Boundary
- Building Footprint

Figure 1-2
Overview of AWPOW Projects

Alaskan Way, Promenade, and Overlook Walk

This Draft EIS evaluates the potential environmental impacts of building the Action Alternative in comparison to a No Action Alternative. Both alternatives are described in greater detail in Chapter 2. Construction of the Elliott Bay Seawall Project (EBSP), Alaskan Way Viaduct Replacement Project (AWVRP), and Pike Place Market Waterfront Entrance Project (PPMWE)[2] will be completed before AWPOW begins and are therefore part of the existing condition for both the No Action and Action alternatives.

1.2 Background

The opportunity to improve Seattle's downtown waterfront arose from a decision by the Washington State Department of Transportation (WSDOT) to replace the Alaskan Way Viaduct following the 2001 Nisqually earthquake. WSDOT's primary goals in replacing the viaduct were to protect public safety and replace essential vehicle capacity to and through downtown Seattle. However, removing the viaduct structure also enabled the City to consider solutions for the urban design and connectivity problems caused by the viaduct, whose size and proximity to the shoreline has created a barrier that limits the City's options for improving conditions for pedestrians and bicyclists, creating waterfront amenities, and improving east-west connections.

In 2001, the Federal Highway Administration (FHWA) and WSDOT, with the City as a co-lead agency, began developing the AWVRP. The AWVRP Draft EIS, published in 2004, and a Supplemental EIS, published in 2006, evaluated several alternatives for replacing the viaduct that would meet the needs of both local and through traffic currently served by the facility. These alternatives included an elevated structure similar to the present viaduct; a larger surface street in the general vicinity of present-day Alaskan Way with a connection to Elliott Avenue; and several types of tunnels. All of the alternatives assumed improvements to Alaskan Way, with amenities that included a landscaped median, a broader waterfront promenade, and bicycle facilities.

In January 2009, the governor of Washington State, the King County Executive, and the mayor of Seattle agreed to replace the central portion of the Alaskan Way Viaduct with a single, large-diameter bored tunnel and several separate infrastructure improvements (State of Washington, King County, and City of Seattle 2009). The improvements included a new waterfront surface street with connections to the downtown grid, a new connection from the waterfront to Western and Elliott Avenues, a waterfront promenade, and transit enhancements. These separate infrastructure improvements were part of the cumulative effects analysis for the preferred Bored Tunnel Alternative evaluated in the second Supplemental Draft EIS and Final EIS for the AWVRP, published in 2010 and 2011, respectively. WSDOT agreed to fund the design and construction of a new Alaskan Way and Elliott Way from approximately S. King Street to Battery Street, in part, because the new waterfront surface street would carry some of the traffic that would previously have used the viaduct. The 2009 agreement and the AWVRP Final EIS together established the basic AWPOW projects and marked the start of the City's planning process for Waterfront Seattle.

Waterfront Seattle planning has involved substantial participation by elected officials, stakeholders, and community members. Since 2011, the City's public outreach program for Waterfront Seattle has included over 300 community events including public meetings, fairs, festivals, briefings, forums, and workshops. All planning and design efforts have taken place in partnership with a series of committees established by the Seattle City Council. The Central Waterfront Partnerships Committee, established in November 2009, developed the Seattle Waterfront Guiding Principles, which the Seattle City Council affirmed by resolution in January 2011. The Central Waterfront Committee replaced the Central Waterfront Partnerships Committee in January 2011, and consisted of a wide range of volunteer

[2] This project is now called the Pike Place MarketFront. Because the name evolved during the Draft EIS process, this document uses the term PPMWE.

community representatives and leaders appointed by the Seattle City Council. The committee developed documents in its role as the broad overseer of the design, financing, public engagement, long-term operations, and maintenance of Waterfront Seattle. These documents included the Framework Plan, the Concept Design, and the Strategic Plan, which were published in July 2012 and supported by the Seattle City Council in August 2012. They provide guidance, goals, and strategies for implementation of Waterfront Seattle. In October 2014, the Central Waterfront Steering Committee replaced the Central Waterfront Committee in order to advise the City on implementing the Central Waterfront Concept Design and Strategic Plan.

Waterfront Seattle encompasses the four AWPOW projects and a few additional independent projects. These additional projects include improvements to Union Street Pier and Pier 62/63, both owned by the Seattle Parks and Recreation Department (Seattle Parks), and the new Elliott Bay Seawall, now under construction. Each of these projects has undergone, or will undergo, separate review under SEPA.

1.3 Purpose and Need for the Project

As noted in Section 1.1, AWPOW consists of four complementary projects: the main corridor, the Promenade, the Overlook Walk, and the East-West Connections. Each has its own distinct purpose, which is based on a set of identified needs and policy decisions, and is consistent with the Waterfront Seattle Guiding Principles. The purpose and need for each of the projects are described below.

1.3.1 Main Corridor

Purpose of the action: Accommodate safe, efficient, and reliable travel between the south downtown area and Belltown for general-purpose traffic, regional transit, freight, ferry traffic, pedestrians, and bicycles.

Alaskan Way looking north from Yesler Way in 2003

Need for the action: AWPOW responds, in part, to transportation needs created by WSDOT's replacement of the Alaskan Way Viaduct with a tunnel. Because the viaduct will be eliminated, Alaskan Way will be required to serve additional traffic demand and replace the viaduct's surface connection to Belltown. As described in Section 1.2 above, a new waterfront surface street with connections to Elliott and Western Avenues must fill the transportation needs remaining after the AWVRP. Because the tunnel will not have exits in downtown Seattle as the viaduct does today, Alaskan Way will need to carry much more local traffic in the future than its current capacity will allow. In addition, the project must restore access to Belltown and points north that the viaduct closure will eliminate. These needs are in addition to the current functions of Alaskan Way—serving waterfront visitors, moving freight to and from Port of Seattle facilities, providing queuing space for vehicles bound for the ferry at Colman Dock, and accommodating cruise ships at Pier 66. As a result of these factors, traffic on Alaskan Way at Yesler Way is expected to more than triple between 2010 and 2030.

In addition to general-purpose and freight needs, Alaskan Way must also serve multimodal needs. Many bicyclists use the Alaskan Way corridor for commuting or recreation, but the multimodal path on the east side of the roadway has numerous street crossings and is shared with pedestrians. In the City's Bicycle Master Plan, Alaskan Way is shown as a gap in the existing bicycle network; therefore, a separated bicycle facility is recommended as part of an overall strategy to improve connections to and within the center city. The Alaskan Way corridor is also deficient in transit service. Although one transit route existed on Alaskan Way prior to AWVRP and EBSP construction and could potentially be reinstated, no transit routes currently run along Alaskan Way, and transit users must traverse the steep east-west streets to reach bus routes on First, Second, and Third Avenues. The City's Transit Master Plan identifies Colman Dock as an important hub for transit, but notes that impediments to transfer between travel modes—in particular, the difficulty of transferring from ferries to downtown bus routes—limit its potential as an intermodal connection and may discourage walk-on ferry passengers. These deficiencies directly conflict with City policies that encourage bicycling and transit use to improve public health and the environment and to reduce reliance on automobiles.

Pedestrian movement and safety are another important need in the Alaskan Way corridor. The City has a "complete street" policy requiring that every street be designed to accommodate pedestrians. This requires a corridor with speed limits similar to those of other downtown streets, signalized intersections that provide safe and convenient places to cross, generous sidewalks, and a street width as narrow as possible, given the traffic functions that the roadway must accommodate.

1.3.2 Promenade

Purpose of the action: Provide significant public open space adjacent to the Elliott Bay shoreline in downtown Seattle to accommodate pedestrian demand, create public amenities, and strengthen the connection between the city and its waterfront.

Need for the action: Currently, the waterfront is difficult to access and provides little space to accommodate pedestrian movement and gathering. Visual and physical connections to the shoreline are limited. The quality of the existing pedestrian environment is compromised by the Alaskan Way Viaduct, and will also be compromised in the future by the location of the restored Alaskan Way after EBSP construction is completed.

On a typical day during the summer months, as many as 30,000 people visit the downtown waterfront. While the waterfront's views and attractions make it a popular destination, the viaduct has resulted in a loss of connection between the waterfront and the rest of the city that will remain after the viaduct is demolished. The wide space where the structure is currently located, historically used for parking and ferry queuing, will continue to physically separate the waterfront from downtown. Most buildings on the east side of Alaskan Way have "turned their backs" to the shoreline, with their western façades consisting primarily of loading docks, storage, and garbage and recycling collection areas.

Alaskan Way's location and configuration have also affected open space and pedestrian access along the waterfront. The presence of Alaskan Way immediately adjacent to the shoreline allows for only a narrow sidewalk along the seawall, which becomes congested during peak tourist periods. Traffic noise from Alaskan Way adversely affects the pedestrian environment. On the east side of the street, pedestrians and bicyclists share a narrow path that has little or no protection from traffic. Collectively, these factors have resulted in a wide zone dominated by motor vehicles immediately adjacent to the city's most visited shoreline. The City's Pedestrian Master Plan identifies substantial opportunities along Alaskan Way to improve pedestrian linkages, roadway crossings, and quality of the pedestrian environment.

1.3.3 Overlook Walk

Purpose of the action: Provide a grade-separated pedestrian crossing, view opportunities, and public open space between the waterfront and Pike Place Market.

Need for the action: Access between the Pike Place Market and the waterfront, two of Seattle's most popular attractions, is impeded by steep topography and at-grade street crossings; open space in this area is limited, and there are few opportunities for views.

Almost 4 million people visit the Seattle waterfront each year, and the Pike Place Market receives as many as 10 million annual visitors. These attractions are separated by only two city blocks. However, because of the steep grade in this area, opportunities for pedestrians to move directly between the market and the waterfront are limited to two sets of stairs: the Pike Street Hillclimb and a staircase ascending the undeveloped slope west of the market in the Pine Street right of way. Both stairways are steep and difficult to climb and do not provide full access for people with disabilities. Both routes require at-grade crossings of Alaskan Way to reach the waterfront. In particular, the wide crosswalk at the base of the Hillclimb is often used today by dozens of pedestrians on each traffic signal cycle. Connecting the large numbers of pedestrians using this connection directly to the waterfront promenade, without an at-grade crossing of Alaskan Way, will improve the quality of the pedestrian experience.

In addition to the poor accommodation for pedestrian travel, the area between the market and the waterfront is underutilized and is lacking in views and public open space. Victor Steinbrueck Park, with its sweeping views toward the water, is frequently very crowded, while the area in the Pine Street right of way is seldom used. The existing viaduct provides expansive views for motorists, but these views will be eliminated when the viaduct is demolished. The heavy use of this area by the public warrants the provision of additional open space that facilitates pedestrian movement while providing opportunities for people to gather and enjoy scenic vistas.

1.3.4 East-West Connections

Purpose of the action: Improve key east-west streets adjacent to the main corridor to provide better connections between the waterfront and downtown Seattle and enhance the pedestrian experience.

Need for the action: There is currently a lack of strong pedestrian connections between the waterfront area and the downtown Seattle street grid. At the south end of the main corridor, access from Alaskan Way to Pioneer Square is hindered by uneven sidewalks, high curbs, and lack of facilities in compliance with the Americans with Disabilities Act (ADA) on east-west streets; there are no visual or urban design cues linking the historic district to the waterfront area. The central portion of the main corridor, from Seneca Street to the Pike Street Hillclimb, affords no east-west access for people with limited mobility between the waterfront and First Avenue. In the northern portion of the main corridor, the elimination of the viaduct and decommissioning of the Battery Street Tunnel provides opportunities to reconnect and enhance portions of the east-west street grid for pedestrian and bicycle use. Improvements to east-west streets in these areas would strongly support the Waterfront Seattle Guiding Principles of reconnecting the city to its waterfront and improving access and mobility, as well as the policies and recommendations of the City's Pedestrian Master Plan.

1.4 SEPA Compliance and Lead Agency

The analysis in this Draft EIS was conducted to satisfy SEPA requirements, which are implemented by the City through SMC Chapter 25.05. SEPA requires a project's lead agency to consider environmental information (including project alternatives, environmental impacts, and mitigation) before deciding whether to proceed with the project. The City, as the SEPA lead agency, is responsible for carrying out SEPA's procedural requirements, including compiling and assessing information on the potentially significant adverse environmental aspects of AWPOW.

The City issued a Determination of Significance for the main corridor, Promenade, and Overlook Walk on August 9, 2013. Public scoping was conducted from August 9 to September 25, 2013, and a public scoping meeting was held on September 9, 2013.

This is a project-level EIS that encompasses all of the regulatory, transactional, and other actions necessary to complete the four AWPOW projects. As authorized by WAC 197-11-060(3)(c) and SMC 25.05.060(C)(3), the City has elected to analyze AWPOW's four "similar actions" in this single EIS.

2 Project Alternatives

This chapter describes why only the No Action and Action alternatives are evaluated in this EIS, provides a description of those alternatives, and presents an overview of how the improvements included in the Action Alternative would be constructed. The footprint of the Action Alternative is shown in Figure 2-1.

2.1 Limitations on Reasonable Alternatives

SEPA directs project proponents, when preparing an EIS, to evaluate "reasonable alternatives" to the proposal that "could feasibly attain or approximate a proposal's objectives, but at a lower environmental cost or decreased level of environmental degradation" (WAC 197-11-786). This section summarizes how AWPOW's unique location and purpose restrict the existence of reasonable alternatives and, therefore, why only the Action and No Action alternatives are evaluated in this EIS.

The limitations on the availability of other reasonable alternatives were confirmed by over a decade of prior study. The AWVRP EIS documents, developed by FHWA and WSDOT with the City as a co-lead agency, evaluated improvements to Alaskan Way, including potential connections to Elliott and Western Avenues (FHWA et al. 2004, 2006, 2009, 2010, and 2011). The AWVRP Final EIS was developed after a 2009 agreement by WSDOT, King County, and the City recommended replacing the Alaskan Way Viaduct with a bored tunnel. The 2009 agreement and the AWVRP Final EIS together established the basic AWPOW projects and design requirements for Alaskan Way and its connection to Elliott and Western Avenues. City design engineers and analysts then considered various concepts that might reduce environmental impacts while achieving AWPOW's objectives. These concepts included different roadway designs, options for regional and local transit facilities, design of bicycle facilities, and variations on the Overlook Walk design. After considering a range of concepts, the City determined that only the Action Alternative would achieve the project's objectives and provide the least environmental impact. The other concepts are therefore not evaluated further in this EIS.

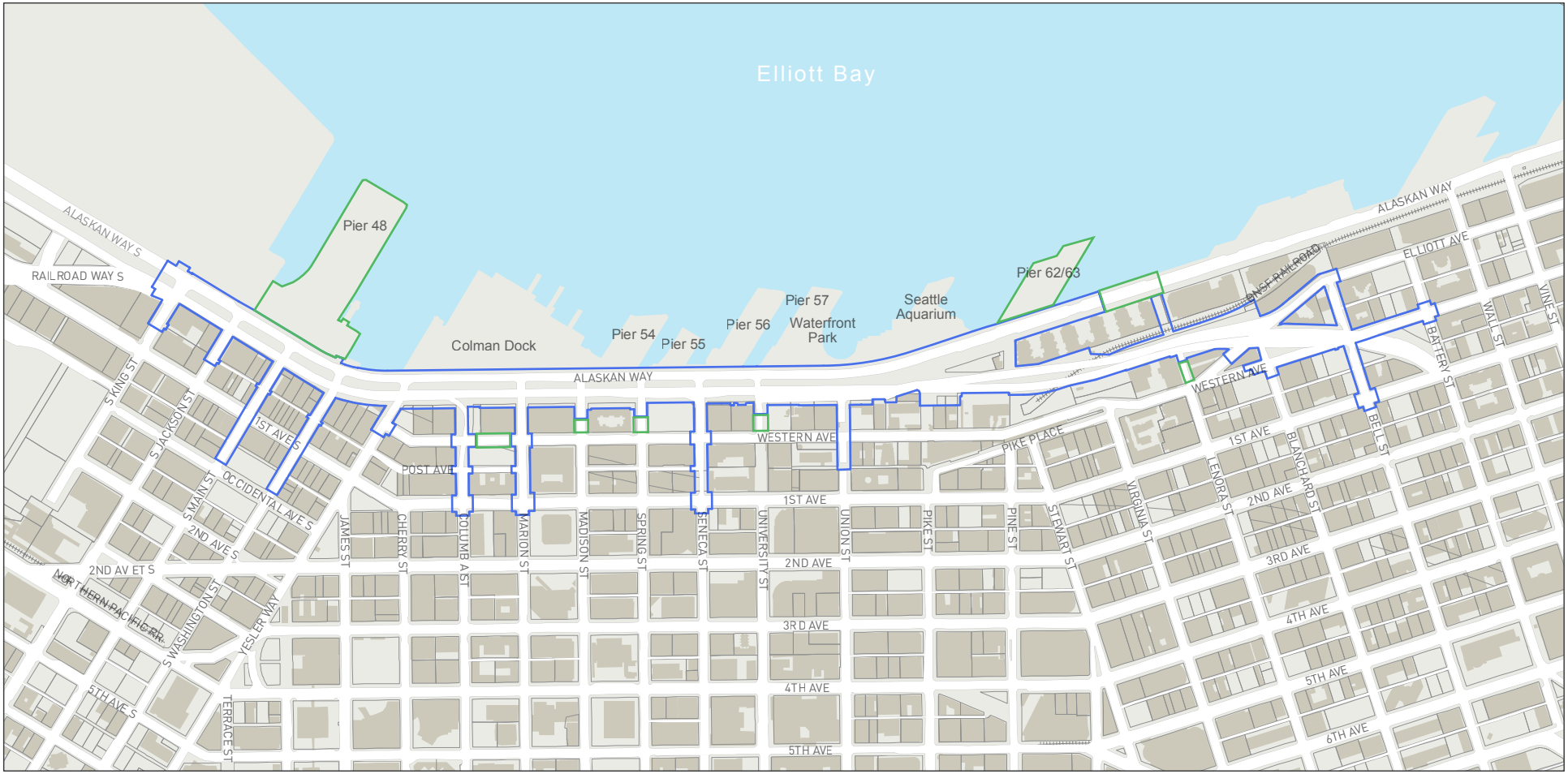
Appendix M, AWPOW Background, Supporting Environmental Analyses, and Alternatives Development, provides additional information on the Alaskan Way improvements evaluated by WSDOT, along with other concepts the City considered and additional reasons the City eliminated them from further consideration.

Topography

The Elliott Bay shoreline lies on a narrow band of relatively flat land that was created by historic filling of the area landward of the seawall. East of Western Avenue and north of Seneca Street, the land rises in a steep bluff creating approximately 100 feet of grade change between the waterfront and Pike Place Market. The difficulty of traversing this slope is one of the key challenges in reconnecting Seattle to its waterfront, a fundamental purpose of the project. Between Spring Street and Wall Street (a distance of over a mile), the slope prevents direct east-west connections for vehicles between First Avenue and the waterfront, and requires a steep ascent for pedestrians, currently by only limited connections (primarily stairways). This topography, along with other factors, limited the range of reasonable alternatives.

Right of Way Boundaries

The City's existing right of way along the Alaskan Way corridor is generally bounded by Elliott Bay to the west and by dense urban development alongside Alaskan Way and SR 99 to the east. At the southern end of the project footprint, the City's right of way is continuous from approximately S. King Street to Pike Street and from the edge of the seawall to the property boundaries on the east side of the Alaskan Way Viaduct. At approximately Pike Street, the right of way splits into two branches, with one branch angling northeast up the bluff into Belltown under the existing viaduct and the other branch continuing along the



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Source: SDOT

Action Alternative
- Project Footprint
- Potential Construction Staging Area

- Parcel Boundary
- Building Footprint

Figure 2-1
Project Footprint

Alaskan Way, Promenade, and Overlook Walk

shoreline on Alaskan Way. This has created irregular property boundaries that narrowly skirt the edges of several office and residential buildings, most of which were constructed after the viaduct was in place. Moving the location of the Alaskan Way corridor would therefore result in substantial impacts on private properties along the right of way. As a result, the only reasonable alternative considered by the City was to keep AWPOW within the existing right of way to the greatest extent feasible.

Historic Features

The project footprint passes through one historic district, is adjacent to a second historic district, and abuts a large number of buildings that are designated as Seattle Landmarks, listed in the National Register of Historic Places, or both. Federal, state, and local regulations protect these buildings and restrict development within historic districts. As a result, the project must adhere to the design standards and rules that protect these resources. The project footprint's southern end crosses the Pioneer Square Preservation District and runs next to several historic structures located along Alaskan Way, including Piers 54 through 59 on the west shoreline and several buildings on the east. As the project footprint traverses the slope beneath the Pike Place Market, it is adjacent to the Pike Place Market Historical District to the east. Other historic buildings are located along Blanchard and Bell Streets near the northern end of the project footprint. Because locating AWPOW outside of the current City right of way would have potential additional impacts on historic resources, the existence of historic features restricts the existence of reasonable alternatives.

Shoreline Location

The project footprint is substantially located in Washington State shorelands and the City's Shoreline District, regulated by the State Shoreline Management Act (SMA, RCW 90.58) and the City's Shoreline Master Program (SMP, SMC Title 23.60). The SMA strongly encourages the use of the shoreline for increased public access to publicly owned areas of the shoreline and for increased recreational opportunities for the public. The Act requires that permitted uses in the shoreline be designed in a manner to minimize any interference with the public's use of the water. Similarly, the SMP encourages development of the shoreline to provide for maximum public use and enjoyment of the shorelines and to preserve, enhance, and increase access to the water. The SMA also specifically provides that, where permitted, new streets in the shoreline be designed to improve public visual and physical access to the shoreline and provide means for the public to overcome the physical barrier created by the new streets, among other things. Thus, locating the new Alaskan Way on the east (inland) side of the existing right of way and the pedestrian and bicycle facilities, as well as open space on the west side (shoreline side of the right-of-way), is the only available configuration for the main corridor and Promenade that complies with the SMA and SMP.

Roadway Function

As discussed in Chapter 1, a new Alaskan Way surface street with connections to Western and Elliott Avenues was part of a larger system of improvements identified in the 2009 agreement among WSDOT, the City, and King County for replacing the Alaskan Way Viaduct. These separate infrastructure improvements were identified in connection with the Bored Tunnel Alternative evaluated in the second Supplemental Draft EIS and Final EIS for the AWVRP, published in 2010 and 2011, respectively. While the tunnel will provide an efficient bypass of downtown Seattle for regional traffic, it is anticipated that drivers who would previously have used the Alaskan Way Viaduct to access downtown and northwest Seattle will, in the future, primarily use Alaskan Way and its connections to access downtown, Elliott and Western Avenues, and northwest Seattle. This will result in Alaskan Way accommodating increased traffic compared to the traffic it currently accommodates in 2015. The new Alaskan Way surface street must serve the following uses:

- General-purpose traffic traveling between northwest Seattle and southbound SR 99 near the stadiums, along with other destinations south of downtown

- Traffic traveling to and from downtown Seattle from the south that would have previously used the Columbia and Seneca ramps on SR 99
- Freight traffic traveling between the Duwamish industrial area and the Ballard Interbay Northend Manufacturing and Industrial Center
- Ferry-related traffic accessing the Seattle Multimodal Terminal at Colman Dock (Alaskan Way between S. Atlantic Street and Yesler Way is designated as SR 519 and is operated by WSDOT for managing traffic to and from the ferry terminal)
- Transit serving routes that link downtown Seattle with southwest Seattle and King County (known as the Southwest Transit Pathway)

Based on the purpose and need of the Alaskan Way surface street, and the proposed project as defined in prior agreements with Washington State and King County, no reasonable alternatives exist for the proposed main corridor, except the Action Alternative.

Pedestrian, Bicycle, and Open Space Facilities

In addition to the limitations imposed by the SMA and SMP discussed above, the pedestrian, bicycle, and open space facilities were shaped by the City's overall goal for these facilities to be safe, inviting, and appealing to the broadest possible range of users, as expressed in the Pedestrian Master Plan and Bicycle Master Plan. One of the primary purposes of the Main Corridor project is to create safe, efficient, and reliable travel for pedestrians and bicycles. Therefore, the Waterfront Seattle planning process determined that creating separate facilities for various types of users in this area, with dedicated space for bicycle and pedestrian travel as well as places for people to gather and enjoy the scenery, was the only reasonable alternative. Locating the main public gathering areas and the bicycle and pedestrian travel corridors along the shoreline also reduces the potential for conflicts with vehicles at the intersections with east-west streets along the east side of the corridor.

South of Pike Street, pedestrian connections to the existing east-west street grid can be improved, after the viaduct has been removed, by enhanced pedestrian treatments, wayfinding, and measures to address the change in grade. Between Pine Street and Lenora Street, opportunities for pedestrians to move between downtown and the waterfront are currently limited to the Pike Street Hillclimb and a staircase along a steep, undeveloped slope west of the Pike Place Market. Both stairways are steep and difficult to climb, and offer limited to no opportunities for views. The slope west of the market presents the opportunity for a wide, sloping pedestrian walkway, grade-separated over the new Alaskan Way and Elliott Way, that would connect two of the City's most-visited destinations—the Pike Place Market and the waterfront —while providing new public open space with views of the waterfront. No other location or configuration of the Overlook Walk was identified to meet the project's purpose of creating public open space and view opportunities at a lower environmental cost.

2.2 No Action Alternative

Under the No Action Alternative, the AWPOW projects would not be built. However, conditions in the area would be different from those that exist at the time this EIS is published (2015). Major changes assumed to be in place under the No Action Alternative are:

- The AWVRP will be complete, with the viaduct eliminated and the SR 99 tunnel in operation. Parking that existed beneath the viaduct prior to the start of AWVRP construction is assumed to have been restored.
- The EBSP will have been completed, which include a new sidewalk inset with light-penetrating surface (LPS).
- The PPMWE will be complete.

The analysis for the No Action Alternative is based on the expected conditions in 2030, which is the project design year (the year used for the assessment of future conditions). The No Action Alternative serves as the baseline against which the potential impacts of the Action Alternative will be evaluated. Figure 2-2 depicts the No Action Alternative.

2.2.1 Main Corridor

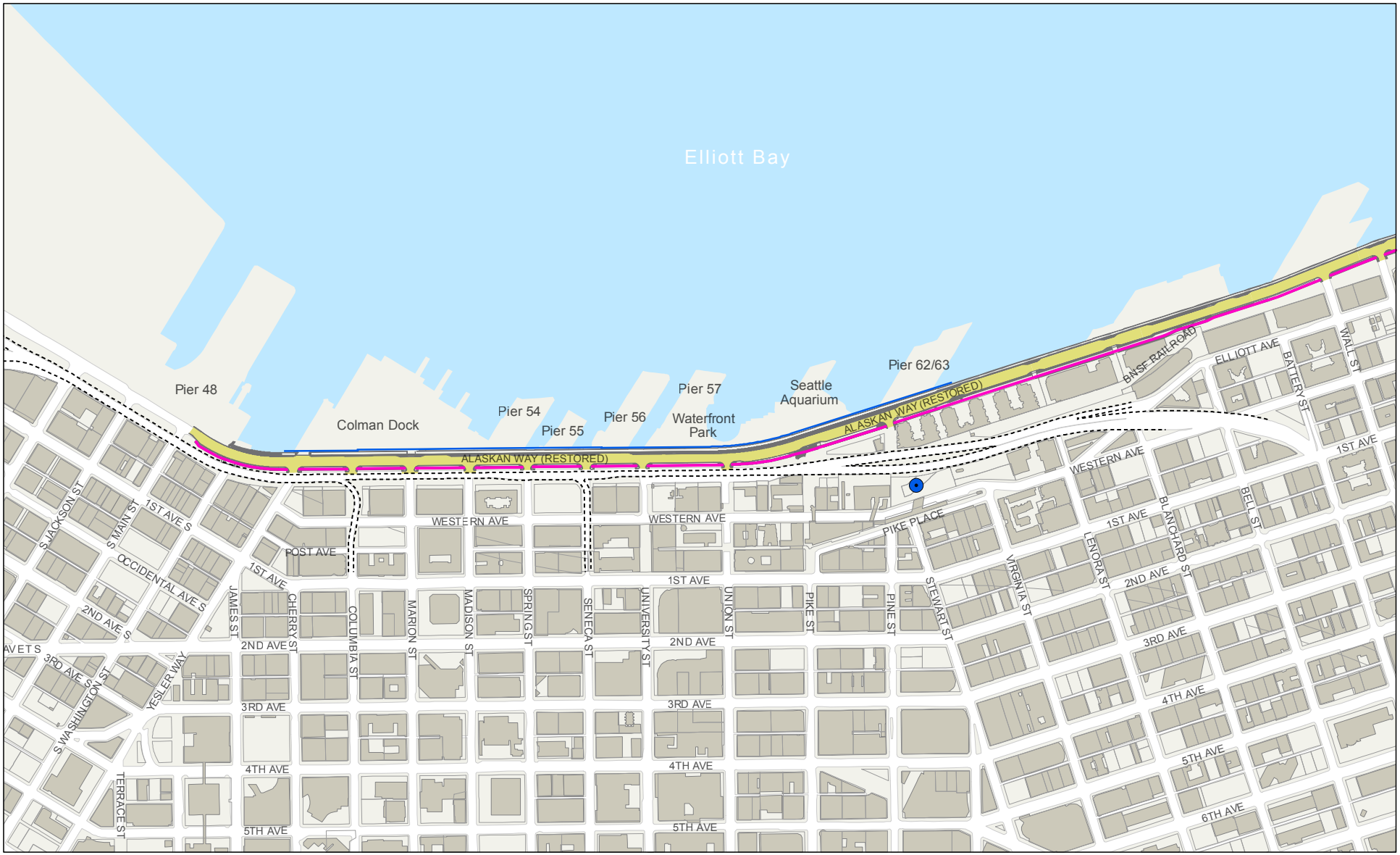
Upon completion of the EBSP (currently planned for 2016), Alaskan Way will be restored to the alignment that it occupied until construction began on the AWVRP and EBSP, immediately west of and generally parallel to the present alignment of the Alaskan Way Viaduct. The roadway will have two lanes serving general-purpose traffic in each direction. Alaskan Way between S. King Street and Yesler Way, which is designated as SR 519 at this location, will include an additional northbound lane to serve ferry traffic between S. King and S. Main Streets and two left-turn lanes between S. Main Street and Yesler Way. The east-west streets will generally connect to the restored roadway as they did before EBSP construction started, although the intersections of Alaskan Way with Columbia and Seneca Streets will be modified after removal of the Alaska Way Viaduct ramps. There will be signals at all intersections. As was the case before EBSP and AWVRP work began, the restored Alaskan Way will not have a direct connection to Western Avenue or Elliott Avenue in Belltown. Vehicles traveling north on the restored Alaskan Way would need to use Wall, Vine, or Broad Streets to cross the BNSF rail line and access Belltown.

The City-owned right of way beneath the Alaskan Way Viaduct will be restored to its original configuration in 2010, before EBSP and AWVRP construction began. This configuration includes parking spaces with pay stations as well as business and parking access lanes. Approximately the same number of parking spaces is assumed to be provided as were in place in 2010. Utilities will remain in the same locations they will occupy after completion of the EBSP and AWVRP.

2.2.2 Bicycle, Pedestrian, and Transit Facilities

Upon completion of the EBSP, bicycle and pedestrian facilities will generally match those existing in the corridor before EBSP construction began in 2013, but with improvements to meet ADA requirements. A sidewalk will run along the western edge of the restored Alaskan Way. The sidewalk will contain a continuous band of LPS to improve habitat conditions for migrating salmon. On the east side of the restored Alaskan Way, an 8- to 10-foot-wide path will provide through access for bicycles and pedestrians. The Marion Street pedestrian bridge that currently connects First Avenue with the Seattle Multimodal Terminal at Colman Dock will remain in place. Access from Pike Place Market to the waterfront would remain limited to the Pike Street Hillclimb and the steep stairs along the undeveloped slope west of the market.

Once the AWVRP is completed, transit routes that were previously on the viaduct would be rerouted onto surface streets. Bus stops along Alaskan Way that existed prior to AWVRP and EBSP construction would be restored.



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Feet

Source: King County, City of Seattle

No Action Alternative

- Alaskan Way (Restored)
- Sidewalks
- Path on east side of Alaskan Way
- Parcel Boundary
- Building Footprint
- New Seawall Face
- Existing Viaduct Removed
- Pike Place Market Waterfront Entrance (PPMWE) Building

Figure 2-2
No Action Alternative

Alaskan Way, Promenade, and Overlook Walk

2.3 Action Alternative

The Action Alternative would implement Waterfront Seattle improvements after the AWVRP, EBSP, and PPMWE have been constructed. This alternative consists of four projects: the main corridor (which includes a new Alaskan Way with new connections to Elliott and Western Avenues), the Promenade, the Overlook Walk, and the East-West Connections. Each project is described below, along with right of way acquisition needs and utility modifications. Figures 2-3 through 2-5 show the Action Alternative.

2.3.1 Main Corridor

The main corridor would operate as part of the regional transportation system, serving some of the functions that will no longer be provided by SR 99 after the Alaskan Way Viaduct is replaced with a tunnel. The main corridor would serve both local and regional transportation needs for a wide array of users, providing access between SR 99 and downtown Seattle as well as direct access to northwest Seattle. In addition to passenger, transit, and freight vehicles, it would accommodate high levels of pedestrian and bicycle traffic and would improve connections between the waterfront and downtown Seattle. The major features of the corridor are summarized below, with segment-by-segment descriptions provided in Section 2.4.

New Alaskan Way with Connections to Elliott and Western Avenues

The project would build a new Alaskan Way corridor to accommodate general-purpose traffic, regional transit, and freight traffic; allow safe, efficient turning movements and pedestrian crossings; provide areas for loading and access; and improve connections to better link the waterfront with downtown Seattle and Belltown. The proposed improvements consist of:

- Construction of the new Alaskan Way between S. King Street and Pine Street, along the east side of the right of way
- Construction of a new arterial connection, called Elliott Way, which would follow the path of the existing Alaskan Way Viaduct from Alaskan Way at Pine Street up the hill into Belltown, where it would connect with Elliott and Western Avenues
- A new intersection at Pine Street (referred to as the Pine Street extension) that would connect the new Alaskan Way and new Elliott Way with the existing Alaskan Way north of Pier 62/63
- A dedicated transit lane in each direction along Alaskan Way between S. King Street and Columbia Street and on Columbia Street between Alaskan Way and First Avenue, which are both part of King County Metro's Southwest Transit Pathway improvements to address transit needs following AWVRP completion
- Northbound ferry queuing lanes between S. King Street and Yesler Way, which include double left-turn lanes between S. Main Street and Yesler Way

Pedestrian Facilities

While the Promenade and Overlook Walk (described in separate sections below) are major pedestrian facilities in their own right, the new Alaskan Way and the new Elliott Way connection would include substantial improvements for pedestrians. A 10- to 16-foot-wide sidewalk would abut the west edge of the new Alaskan Way. On the east side of the new Alaskan Way, the project would include a 20- to 30-foot-wide sidewalk between S. King Street and Yesler Way. These sidewalks would support pedestrian movements linking the stadiums, Pioneer Square, and Colman Dock. North of Yesler Way, the sidewalk on the east side would be 14 to 20 feet wide. The sidewalk would provide improved connections with intersecting streets, and would allow greater public exposure for businesses in buildings on the east side of Alaskan Way. Landscaping would buffer the sidewalks from the street. Sidewalks would be built along the new Elliott Way, allowing pedestrians to walk from Alaskan Way to Belltown. Signalized pedestrian crossings would be provided at all intersections.

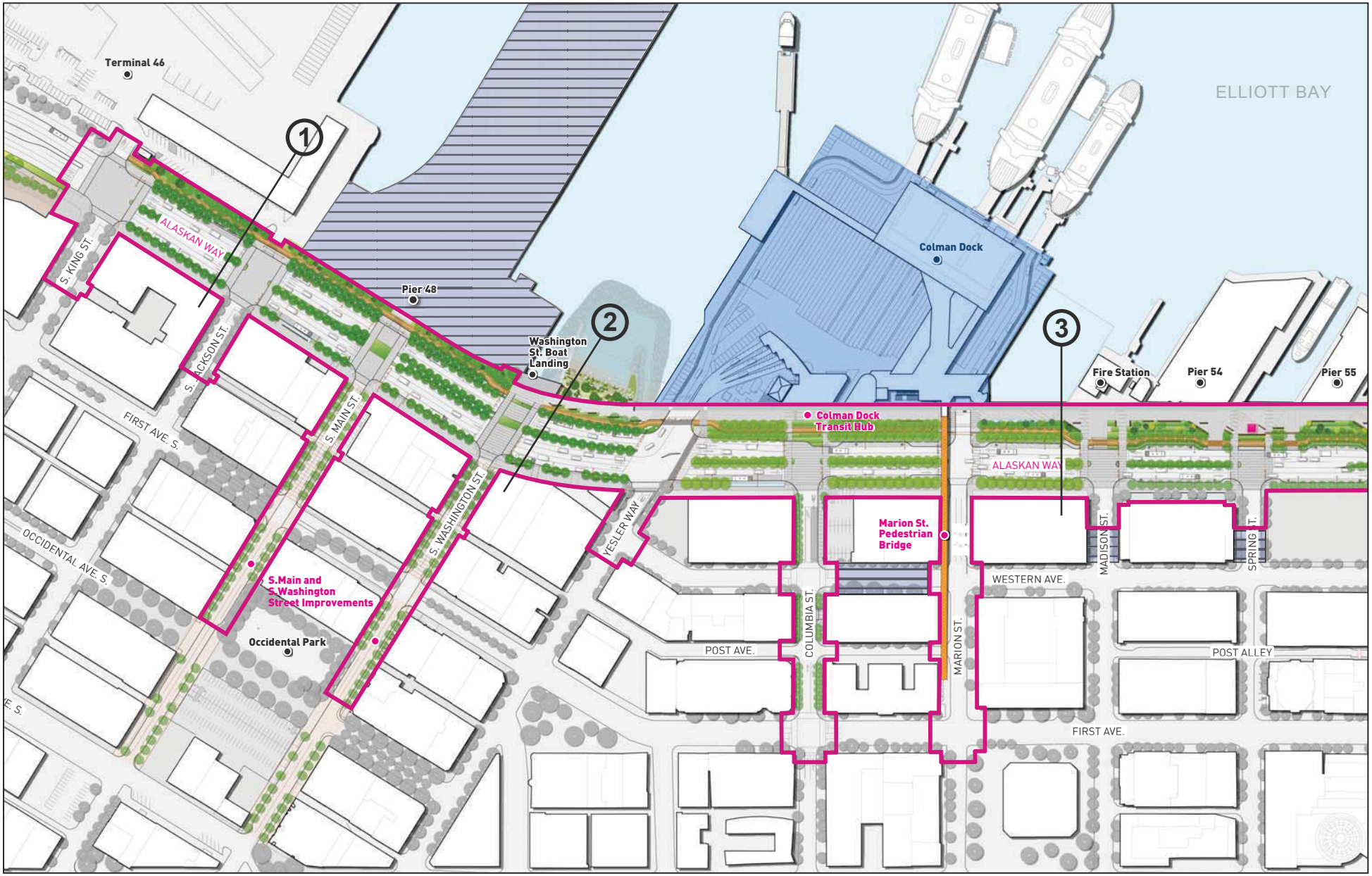
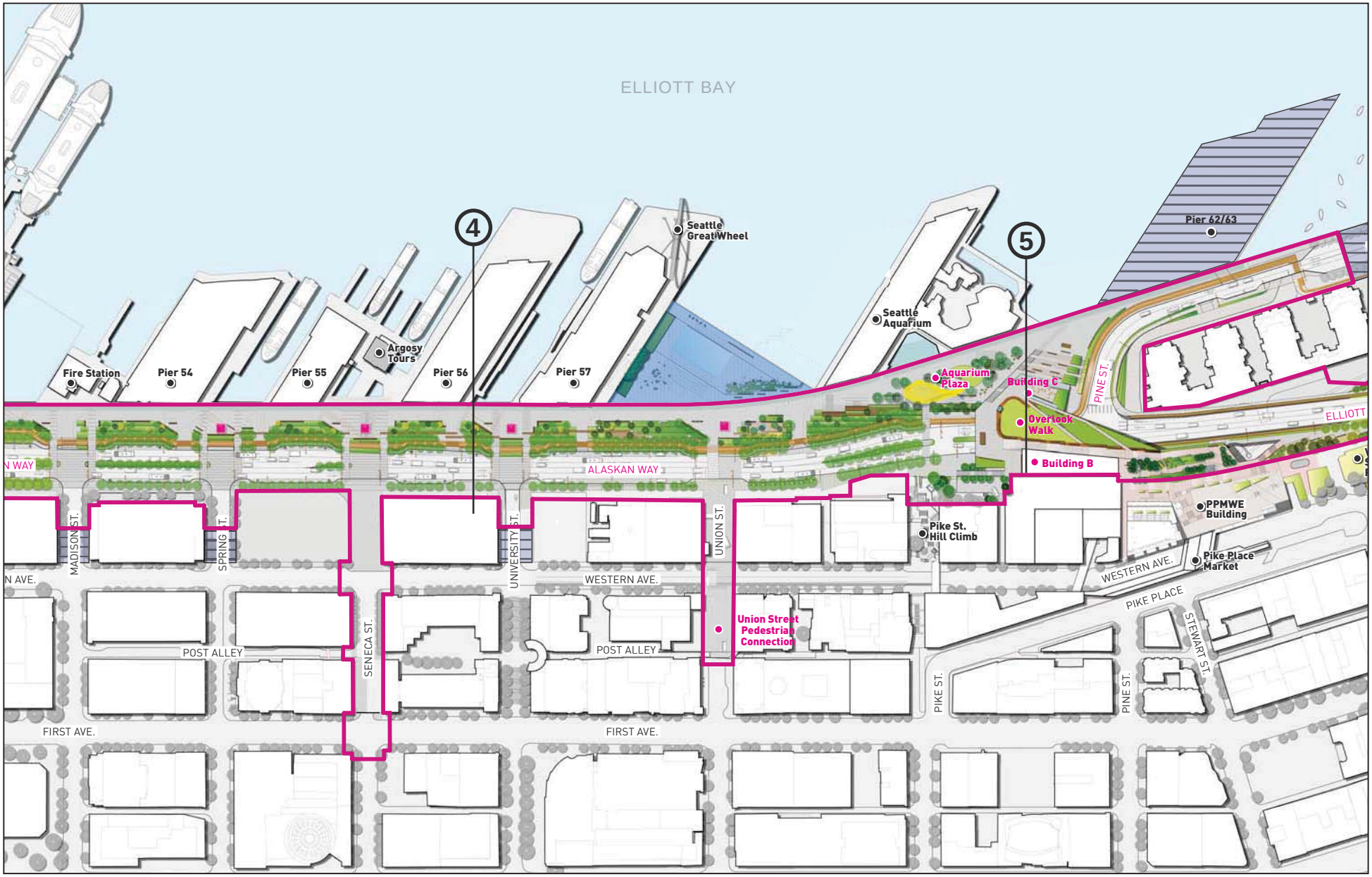


Figure 2-3
Action Alternative
S. King Street to Spring Street

Alaskan Way, Promenade, and Overlook Walk



0 50 100 200
Feet

- xxx Project Elements
- Project Footprint
- Potential Construction Staging Area
- Kiosk
- Potential Future Conditions
- xxx Existing or Future Facilities
- Pedestrian Pathway
- Cross-Section

Figure 2-4
Action Alternative
Spring Street to Pine Street

Alaskan Way, Promenade, and Overlook Walk

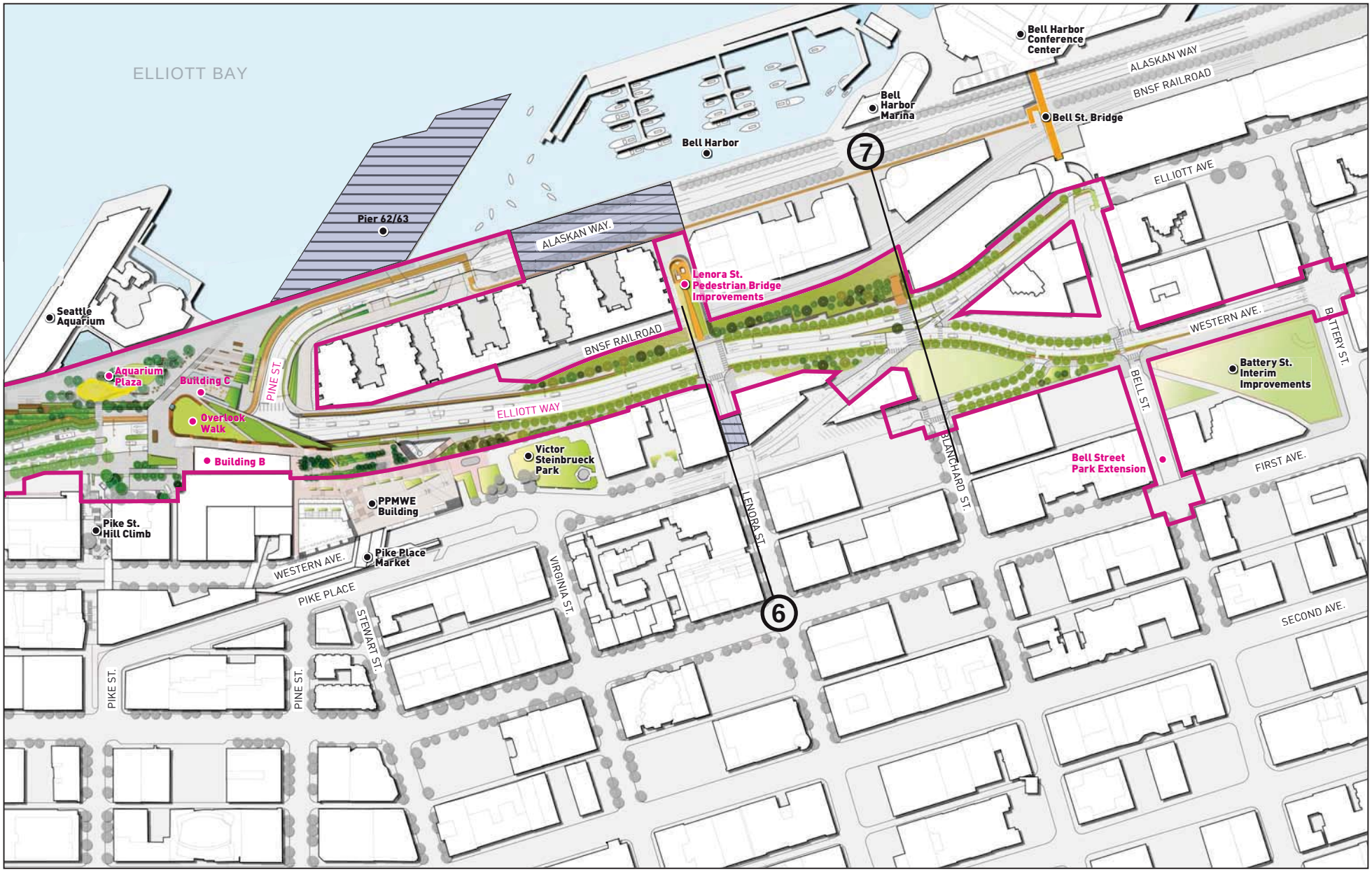


Figure 2-5
Action Alternative
Pine Street to Battery Street

Alaskan Way, Promenade, and Overlook Walk

In addition to the pedestrian improvements listed above, the project would rebuild the Marion Street pedestrian bridge, which links First Avenue with Colman Dock across Western Avenue and Alaskan Way, and construct a pedestrian plaza area at the west end of Blanchard Street.

Bicycle Facilities

A continuous, protected two-way bicycle facility would run along the new Alaskan Way and continue up Elliott Way. (The City designates facilities of this type as “protected bike lanes”; they are referred to as "protected bicycle facilities" or “bicycle facilities” in this Draft EIS.) The 12-foot-wide bicycle facility would begin on the west side of the road at S. King Street where it would provide connections to the south via the Port-side trail. The bicycle facility would run on the west side of Alaskan Way from S. Main Street to about Virginia Street, where it would cross the road to join the existing path on the east side of the roadway. At Pine Street, the bicycle facility would branch eastward to run up the Pine Street extension, where it would join Elliott Way. North of the intersection with Elliott Way, the facility would transition to two separate 6-foot-wide bicycle lanes, with the lane on the east side of Elliott Way carrying northbound bicycles and the lane on the west side of the street carrying southbound bicycles. North of Bell Street, these bicycle lanes would connect with existing lanes on Elliott and Western Avenues in Belltown.

Along the new Alaskan Way, the bicycle facility would be separated from the roadway and pedestrian areas by landscaping and other means to limit potential conflicts among pedestrians, bicyclists, and motor vehicles. Pedestrians would be permitted to cross the bicycle path at specific locations, including crosswalks, transit stops, and loading zones. Standard and specialized signals would regulate bicycle crossings at intersections along Alaskan Way.

Columbia and Seneca Street Improvements

The project would include improvements to Columbia and Seneca Streets to help connect the waterfront with downtown Seattle. Along with the presence of the viaduct ramps on Columbia and Seneca Streets, the steep gradient between the waterfront and the areas to the east has historically been an impediment to east-west travel. The removal of the viaduct ramps by the AWVRP will create space for the City to reconstruct Columbia Street with urban design features that provide a visual connection from Alaskan Way to First Avenue. The City would also install two-way transit lanes (along with one general-purpose lane) on Columbia Street as part of King County’s Southwest Transit Pathway improvements. At Seneca Street, the project would reconstruct the block between Alaskan Way and Western Avenue primarily for pedestrian and parking use. The street would continue to dead-end at the retaining wall on the west side of First Avenue; the existing stairs at this location would remain.

Local Waterfront Transit Facilities

The project would build accommodations to support new local bus service along the waterfront, including curb space for bus stops along Alaskan Way. Although transit service is not part of the project, any new transit services would complement other transit services planned to serve Alaskan Way, such as King County Metro’s RapidRide bus rapid transit service; the proposed Madison Street Corridor bus rapid transit route connecting the Seattle Multimodal Terminal at Colman Dock to First Hill; the new First Hill Streetcar line, which terminates in Pioneer Square; and the proposed City Center Streetcar line on First Avenue.

The local bus service along Alaskan Way would share the outside or curb lane with general-purpose traffic, and all stops would be at the curbside.

2.3.2 Promenade

The Promenade would be a continuous public open space along the west side of the new main corridor from S. King Street to Virginia Street that would be designed for walking, sitting, gathering, and viewing the waterfront. Design features and landscaping along its length would create a series of different environments, or "places," that would reflect the character of the surrounding areas. These places are:

- **Colman Dock Transit Hub,** an area supporting the regional transit hub in front of the Seattle Multimodal Terminal at Colman Dock. It would accommodate the heavy pedestrian, bicycle, and vehicle traffic coming through the Yesler Way, Columbia Street, and Marion Street intersections. The area's primary design features would be a grouping of trees, seating, and bicycle parking and rental facilities.
- **Historic Piers 54 through 59,** where narrow boardwalks or paths would traverse planted terraces with integrated seating. The lower terraces would be designed to collect stormwater runoff from portions of the street and from the Promenade.
- **Aquarium Plaza,** which would be a broad public gathering area at the intersection of the Seattle Aquarium, the Pike Street Hillclimb, and the Overlook Walk. In this location, the Promenade would widen because of Alaskan Way's eastward shift to transition into Elliott Way. The Aquarium Plaza would connect the Aquarium's existing buildings with the new Overlook Walk, Pier 62/63, and pedestrian facilities to the north. Public amenities could include elements such as bench seating, recreational features, and a café area with movable tables and chairs.

The westernmost portion of the Promenade would include the band of LPS, cantilevered over Elliott Bay, which will be built as part of the EBSP. New, permanent railings would replace the temporary railings installed by the EBSP at the western edge of the overhang. The remainder of the Promenade would be constructed of an architectural concrete surface that would feature exposed aggregate, grooved concrete, and metal inlays.

A linear canopy of trees would provide a buffer between the Promenade and the street. The species mix would combine native plants with non-native, non-invasive, and salt-tolerant species. Many areas have been identified as open planting areas, which would be completely pervious. Where paving is required adjacent to planting zones, a supported pavement system would provide tree roots with access to soil underneath the adjacent pavement.

Kiosks would be located on the Promenade in front of the historic pier buildings, at the intersections of Alaskan Way with Spring, Seneca, University, and Union Streets. They would provide focal points for wayfinding and other services. A typical kiosk footprint would be 16 feet by 16 feet, and the structures would be approximately 46 to 48 feet high. The kiosks would be designed to be open during the day and securely closed at night or when not in use. In their current preliminary design, shown in Figure 2-6, the upper part of a typical kiosk would be made of reflective materials arrayed in flat planes at different angles, like a faceted tower. The kiosks are intended to be beacons that are immediately recognizable and would reflect the sky and water to the people on the waterfront. They would be used to provide a variety of amenities for the traveling public, which could include the sale of food, flowers, and newspapers, and bicycle rentals, among other things.

Lighting along the Promenade would be designed in a layered pattern to provide visual interest and wayfinding clarity. The Promenade would include pedestrian-scale column luminaires, integrated into seating where possible. In some locations, LED light sources would provide low-level illumination of benches, handrails, and trees. Linear in-ground accent lighting may be installed to provide visual accents, such as at places where multiple boardwalk sections intersect.

Figure 2-6
Simulation of Kiosk Preliminary Design Looking Northwest at University Street

2.3.3 Overlook Walk

The Overlook Walk would occupy existing and new public space south of Victor Steinbrueck Park, west of Pike Place Market, and northeast of the Seattle Aquarium, as shown in Figures 2-7 and 2-8. The Overlook Walk would be composed of two buildings and a sloping lid that would extend southwest from the Pike Place Market, across the new Elliott Way, and down more than 100 vertical feet to the waterfront near the Seattle Aquarium and Pier 62/63. The Overlook Walk would include over an acre of public open space, provide active gathering spaces and elevated scenic viewing opportunities, create a robust and accessible pedestrian connection with multiple ways to travel between Pike Place Market and the waterfront, and provide opportunities to enhance the pedestrian experience and revitalize the area. At its upper easternmost end, the Overlook Walk would tie into a separate project—the PPMWE.

The Overlook Walk lid would have two long pedestrian ramps traversing the slope, two landing areas, and landscaped gardens. It would include north- and south-facing viewpoints, a children's play area, and tables and benches to provide seating at various points. Stairs would link the northern part of the Overlook Walk to Victor Steinbrueck Park and Elliott Way. On the southwest side of the lid, wide amphitheater-style steps would open onto Pier 62/63.

The configuration of the Overlook Walk against the hillside would provide an opportunity to create two new buildings, known as Building B and Building C. (The former Building A is now the PPMWE, which is a separate project.) Buildings B and C would be used for public uses and to serve transportation functions, as well as for incidental private uses. One use currently being considered for Building C is an expansion of the Seattle Aquarium.

Figure 2-7
Overlook Walk Schematic Design

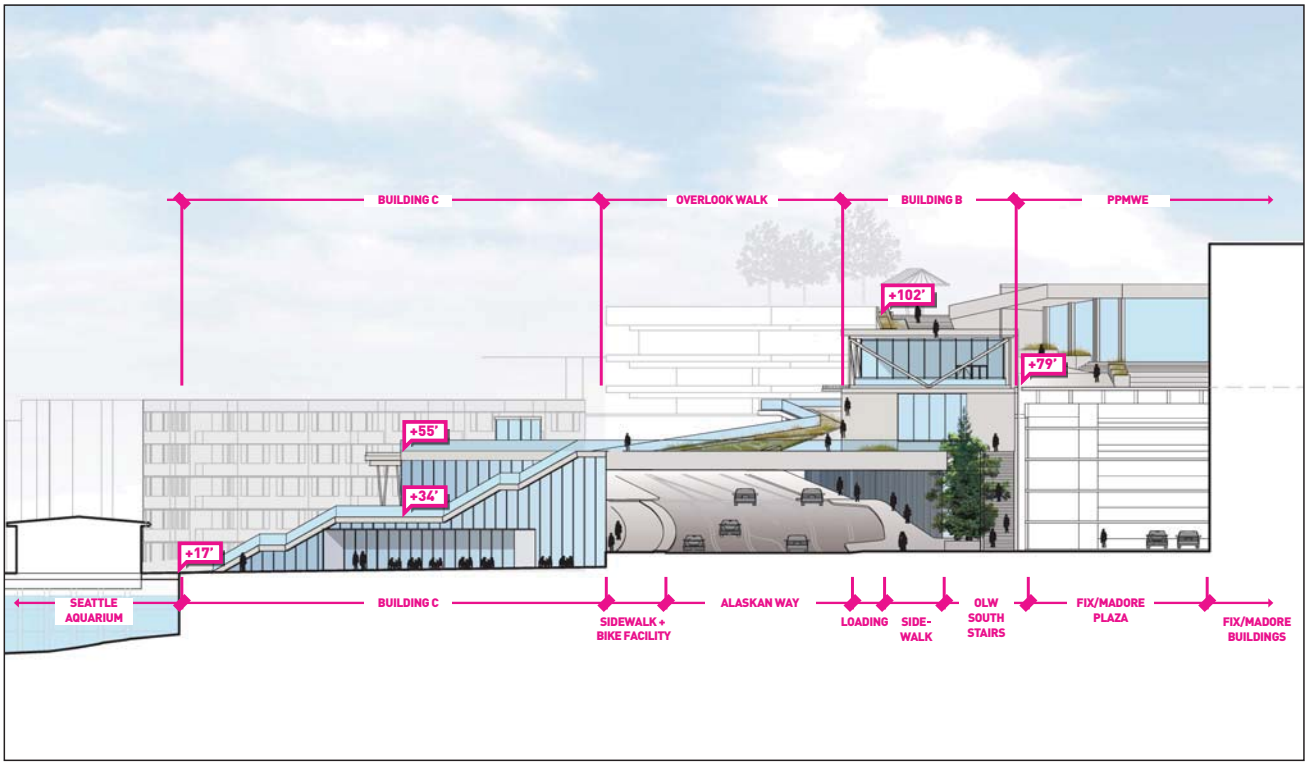


Figure 2-8
Cross-Section of Overlook Walk and Buildings B and C North of Pike Street

Building B would be located on the east side of Elliott Way, as shown on Figure 2-8. The building would rise above the east edge of the Overlook Walk lid, with windows facing onto the lid's main pedestrian ramp and gardens. Building B would contain approximately 23,000 square feet of interior space, with elevator access provided to the Overlook Walk lid, Elliott Way, and the floors of the building itself. Access would also be provided to the new PPMWE parking garage. At the southern end of Building B, a wide external staircase would descend to the level of Alaskan Way and connect to the Pike Street Hillclimb, the Fix/Madore buildings, and Aquarium Plaza.

Building C would be located beneath the wide amphitheater steps connecting the Overlook Walk lid to the Aquarium Plaza. The building would contain approximately 22,000 square feet of interior space. An elevator inside the building would allow access to the top of the amphitheater steps, where a landing would provide space for gatherings, small-scale performances, and enjoyment of views.

2.3.4 East-West Connections

S. Main and S. Washington Street Improvements

The S. Main and S. Washington Street Improvements would replace the roadway pavement and reconstruct the sidewalks to create more pedestrian-friendly links between the waterfront and Pioneer Square. Sidewalks on S. Washington Street between First Avenue S. and Occidental Avenue S., and on S. Main Street between Alaskan Way S. and Occidental Avenue S., would be widened by about 4 feet on each side of the street. The sidewalks on S. Washington Street between Alaskan Way and First Avenue S. were widened by a previous project but would be replaced because they are in poor condition. Reconstructing these sidewalks would address ADA deficiencies, as well as providing curb extensions and space to plant trees. The new trees would be planted in the widened space outside the footprint of the areaway (the space underneath the existing sidewalk adjacent to the buildings along the roadway). Because this area lies within the Pioneer Square Preservation District, improvements would be made in accordance with the Preservation District guidelines.

The roadway pavement on S. Main and S. Washington Streets would be fully replaced because it is deteriorating. The pavement replacement would allow the reconstructed sidewalks to have ADA-compliant grades and slopes. The streets would have one lane of traffic in each direction and parking lanes on both sides of the street. The 1980s-era streetcar platform and rails between Alaskan Way S. and Occidental Avenue S., which are not historic resources, would be removed. There would be minor relocations and adjustments to utilities and drains to conform to the new curb lines and surface street. The existing light poles would be protected in place.

Union Street Pedestrian Connection

The Union Street Pedestrian Connection, located on Union Street from Alaskan Way to just east of Post Alley, would serve as a universally accessible pedestrian link between the new waterfront and downtown. This two-block portion of Union Street currently has access problems stemming from approximately 60 vertical feet of grade change across two retaining walls that are traversed by two steep, hard-to-find staircases.

The Union Street Pedestrian Connection would construct two elevated pedestrian walkways and associated elevators and stairs in the right-of-way along the south side of Union Street. One walkway would begin at the top of the retaining wall just east of Post Alley and extend

Union Street Pedestrian Connection Schematic Design between Alaskan Way and Western Avenue

over Post Alley to a dual bank of elevators to be installed at the southeast corner of Union Street and Western Avenue. This elevator bank would be adjacent to an existing Enwave Seattle (formerly the Seattle Steam Company) facility located at this corner. Pedestrian-activated signals would be installed at the Union Street and Western Avenue intersection. The second walkway would extend from the southwest corner of the Union Street and Western Avenue intersection to a single elevator to be installed on the eastern side of Alaskan Way, adjacent to the existing Public Storage building.

Stairs would be integrated into the two elevated pedestrian walkways. The walkways would vary in width from about 8 feet to about 24 feet, providing space for social gathering and lookouts. The improvements include lighting that would operate during nighttime hours to illuminate the pathway. The elevator towers would be illuminated to provide wayfinding for individuals at night.

The Union Street roadway would be reconstructed from Alaskan Way to the retaining wall on the west side of Western Avenue, and from Western Avenue to Post Alley. The reconstruction would incorporate street-level pedestrian improvements including portions of widened and rebuilt sidewalks. At the intersection of Union Street and Western Avenue, the Western Avenue parking lanes would be replaced with curb extensions to create a shorter pedestrian crossing. Curb ramps would also replace the existing curb returns, and the elevation of Western Avenue would be raised slightly through the intersection to reduce curb heights and the size of adjacent curb ramps. This would create a smoother transition for pedestrians crossing the intersection.

Bell Street Park Extension

The City of Seattle constructed Bell Street Park between Fifth and First Avenues in 2013 and 2014. The Bell Street Park Extension would continue this shared street (roadway and public park space) two blocks farther west, between Elliott and First Avenues. On these blocks, Bell Street would be converted to include a wide public space with landscaping and trees on both sides of the street. The street would be rebuilt without curbs, and vehicular areas would be paved at the same grade as pedestrian areas. The public space would feature gathering and seating areas. Street lights would be installed to increase the nighttime ambient lighting as well as to provide improved pedestrian lighting along the street.

North side of Bell Street Park, looking east from the corner of Bell Street and Third Avenue

South side of Bell Street Park, looking east from the corner of Bell Street and Second Avenue

Bell Street itself would have one lane of traffic. The traffic lane would be westbound between First and Western Avenues. Between Western Avenue and Elliott Avenue, the traffic lane could be either eastbound or westbound, depending on how the City of Seattle adjusts the street grid following completion of the AWVRP. Traffic on Bell Street would not be able to cross Western Avenue.

Traffic on Western Avenue would continue to be northbound only. Vehicles would not be able to turn right onto Bell Street but might be able to turn left onto Bell Street, depending on the direction of travel selected for Bell Street between Western and Elliott Avenues. Traffic control measures would likely be installed at the Bell Street and Western Avenue intersection to allow pedestrians to safely cross Western Avenue. Crosswalks would be located at each intersection corner.

Similar to the existing Bell Street Park, there would be limited parking and loading zones along Bell Street to help create a park-like setting.

2.3.5 Right of Way Acquisition

The project design for AWPOW was developed to keep the proposed new features within existing City property and rights of way to the greatest extent feasible. However, the project would require the partial acquisition of approximately five properties and full acquisition of two properties. The two full acquisitions are a commercial building at 1528 Alaskan Way and a small public off-street parking lot at 1529 Alaskan Way.

The City would also need to acquire easements to temporarily use private property during project construction. Use of such temporary construction easements would not remove existing buildings or loading docks, although access to some loading docks might be temporarily modified as a result of the easements.

2.3.6 Utilities

AWPOW would relocate, construct, or modify several major utility facilities within the project footprint. Numerous utilities currently run along Alaskan Way, either underground or supported on the Alaskan Way Viaduct, including electrical transmission lines, gas mains, water mains, sewer mains, telecommunications lines, and a steam line. A number of these utilities will be relocated as part of the AWVRP and EBSP. The work to be performed on major utility facilities would include:

- Relocating the portion of Seattle City Light's (SCL) eastern 13.8-kilovolt (kV) distribution duct bank along Alaskan Way between S. Washington Street and Pine Street
- Relocating the portion of SCL's Transmission Line 4 that runs beneath the Alaskan Way Viaduct footprint between Union and Blanchard Streets
- Constructing a joint telecommunications duct bank along Alaskan Way so that existing communications lines can be relocated underground and the existing timber poles can be removed; the new joint duct bank would have space for other companies to add facilities along Alaskan Way
- Constructing or reconstructing some of Puget Sound Energy's (PSE) gas distribution lines and services
- Relocating fire hydrants to locations compatible with AWPOW's main corridor
- Constructing a new water main along Elliott Way
- Constructing new water distribution lines to serve AWPOW elements such as irrigation systems, kiosks, and water fountains
- Constructing sewer system upgrades along Alaskan Way

- Constructing a complete storm drain collection system of pipes and catch basins in the main corridor and as part of the Promenade and Overlook Walk; some of the existing stormwater mains may be incorporated into this system
- Relocating a 30-inch storm drain near Alaskan Way and Western Avenue

2.4 Action Alternative Main Corridor Features by Segment

This section describes the proposed main corridor configuration in six segments, moving from south to north, between S. King Street and Battery Street (Figures 2-9 through 2-15).

2.4.1 S. King Street to Yesler Way

This segment of the proposed main corridor must accommodate traffic to and from SR 99, regional transit that serves communities south of downtown Seattle, through traffic, access to Port of Seattle facilities, and ferry queuing. As a result, it would have a wider cross-section than segments farther north.

The new Alaskan Way surface street would tie into the existing Alaskan Way at S. King Street. Between S. King Street and S. Main Street, the typical cross-section would have four through lanes northbound and three through lanes southbound, with a landscaped center median (see Figure 2-9). The two inner lanes in each direction would carry general-purpose traffic. The outer curbside lanes would be dedicated to regional transit and the additional northbound lane would be dedicated to ferry traffic queuing. Southbound traffic would have left-turn lanes at S. Jackson Street and S. King Street. Westbound vehicles on S. King Street and S. Jackson Street would be able to turn left or right onto Alaskan Way. Traffic on S. Main Street and S. Washington Street would only be able to turn right for northbound travel on Alaskan Way. Access for service vehicles to the Port of Seattle facilities and Terminal 48 would be allowed via curb cuts on the west side of Alaskan Way.

The sidewalks in this segment of Alaskan Way would be between 20 and 30 feet wide (measured from curb to property line) on the east side and 16 feet wide on the west side. The greater width of the sidewalk on the east reflects the fact that Pioneer Square is the primary pedestrian attraction in this portion of the corridor. The west side of Alaskan Way would have landscaping elements, but not the full features of the Promenade farther north, because this area is bordered by a fenced Port of Seattle property. A vegetated buffer would separate the west sidewalk from the protected bicycle facility to its west. The width of the median would vary from 9 feet at S. Jackson Street to 28 feet at S. Main Street; the narrower sections would accommodate southbound turn pockets, while the wider sections would allow sufficient space for a landscaped refuge area at pedestrian crossings. The relatively wide sidewalks and median in this area would help to visually offset the width of the roadway by buffering pedestrians and bicyclists from traffic.

Between S. Main Street and Yesler Way, the travel lanes would be the same as described above, but a second northbound lane would be added for ferry queuing next to the first queuing lane (see Figure 2-10). The sidewalk on the east side would narrow from 30 feet at S. Main Street to 20 feet at Yesler Way, reflecting the shift of pedestrian focus from the east side of Alaskan Way to the west side. The west side of Alaskan Way would have an 8-foot-wide sidewalk, buffered by landscaping from the bicycle facility to its west. The 28-foot median at S. Main Street would transition down to 16 feet at S. Washington Street, and would narrow to approximately 3 feet at Yesler Way to accommodate travel, transit, ferry queuing, and turn lanes. Westbound vehicles on S. Washington Street and Yesler Way would only be able to turn right for northbound travel on Alaskan Way. Vehicles exiting the ferries at Yesler Way would be routed southbound on Alaskan Way.

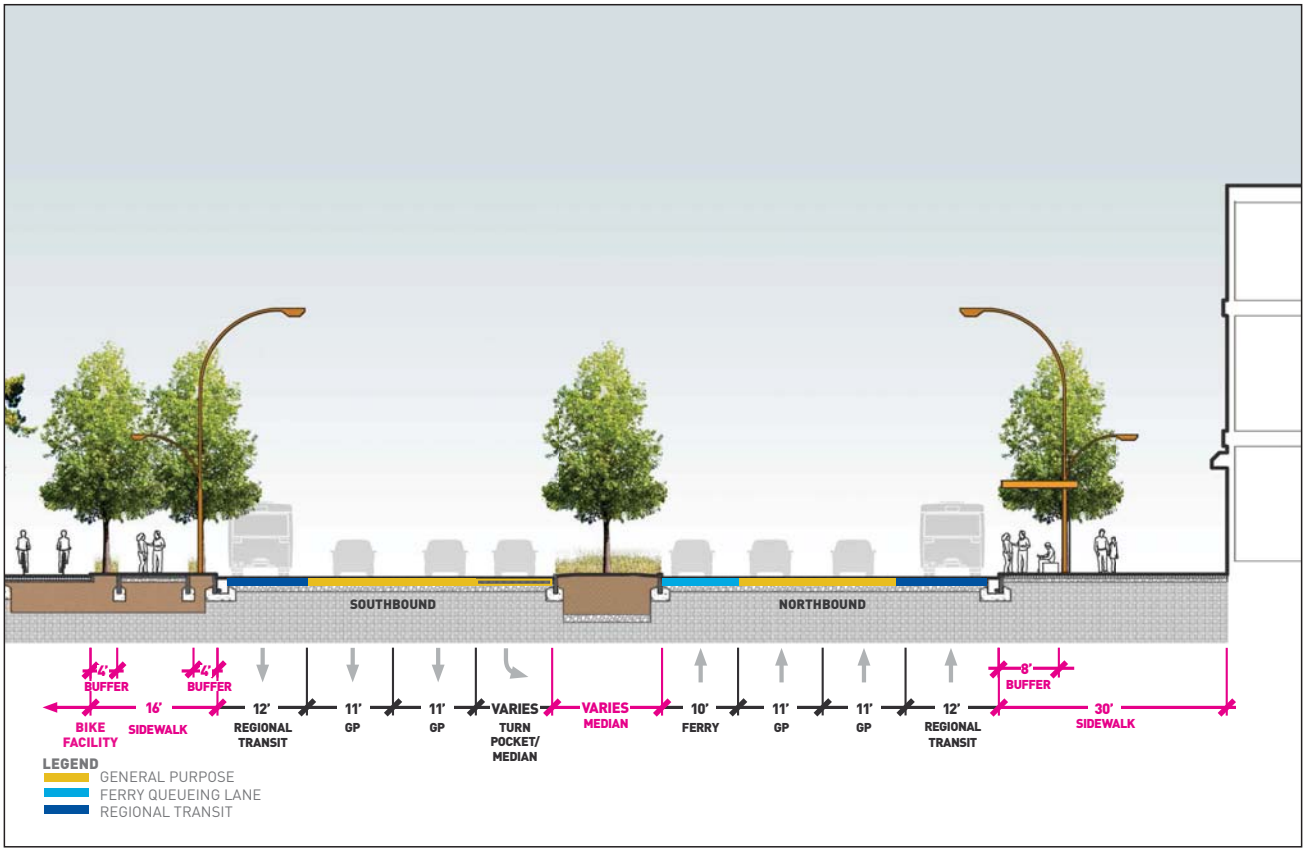


Figure 2-9
Cross-section 1
S. King Street to S. Main Street

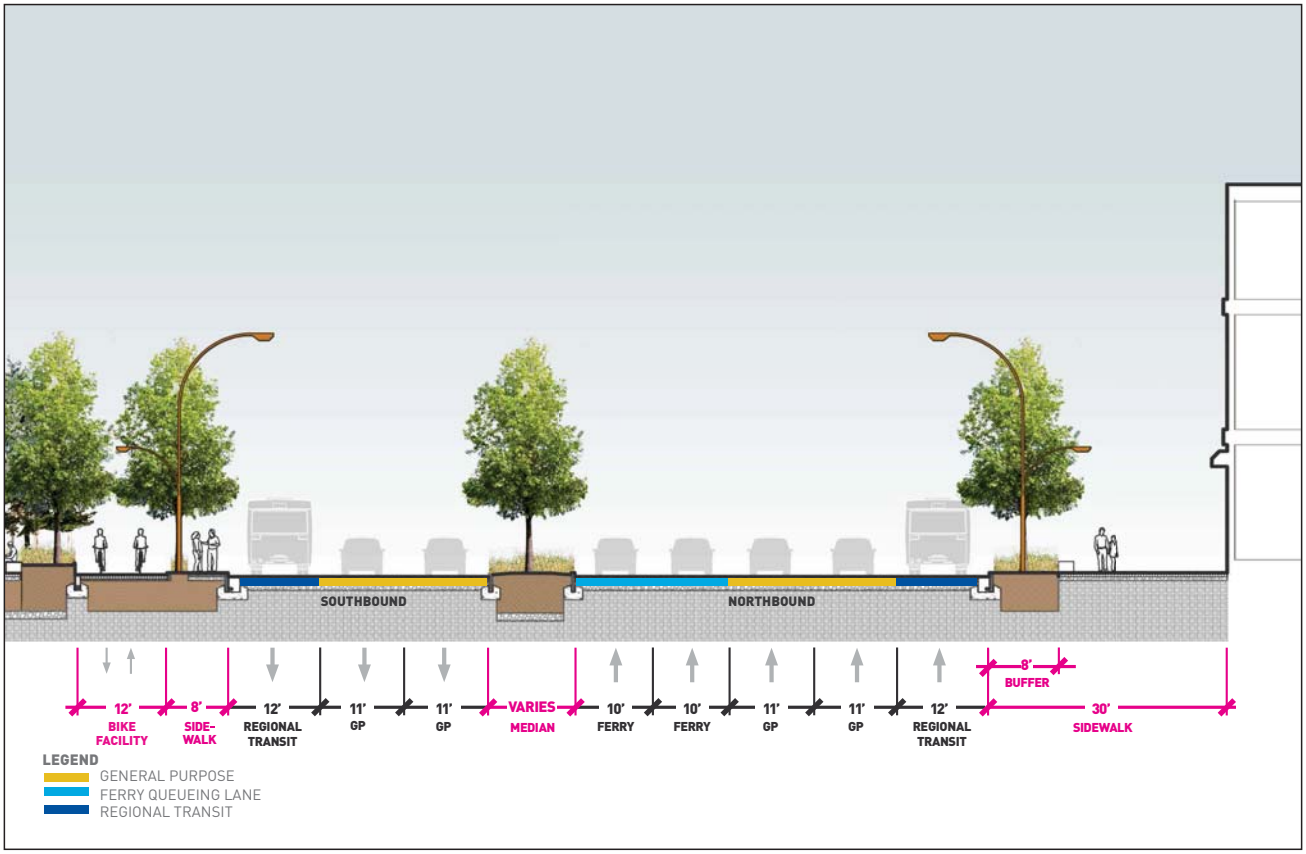


Figure 2-10
Cross-section 2
S. Main Street to Yesler Way

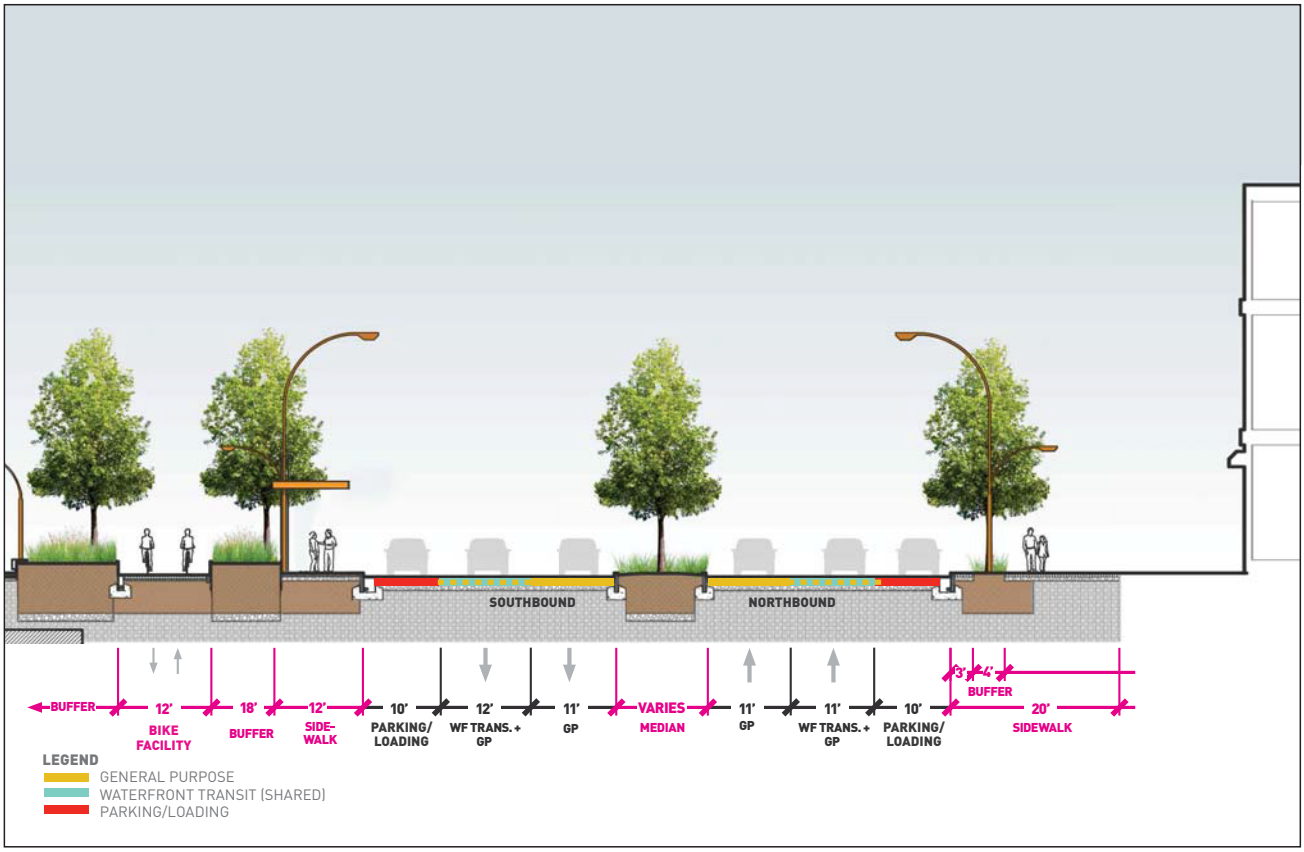


Figure 2-11
Cross-section 3
Columbia Street to Spring Street

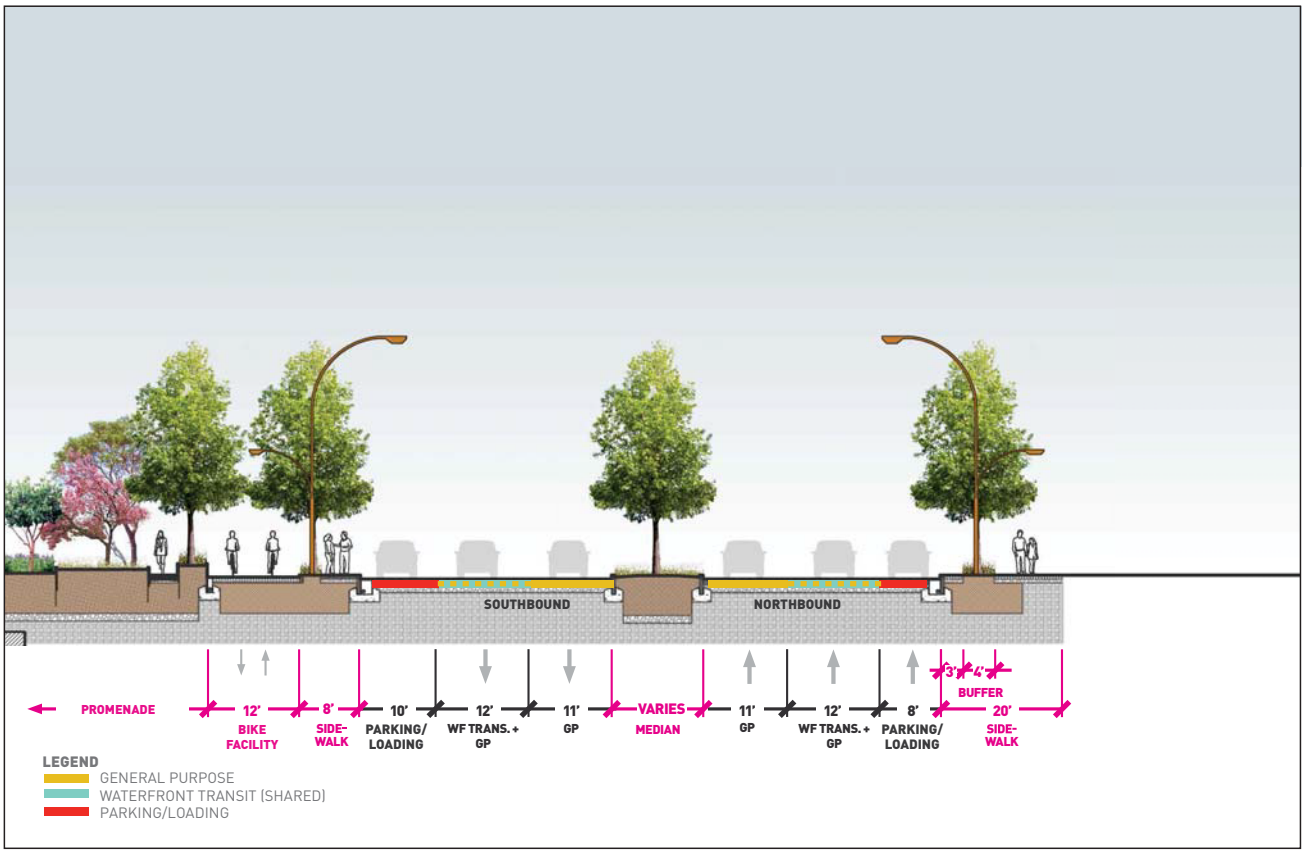


Figure 2-12
Cross-section 4
Spring Street to Union Street

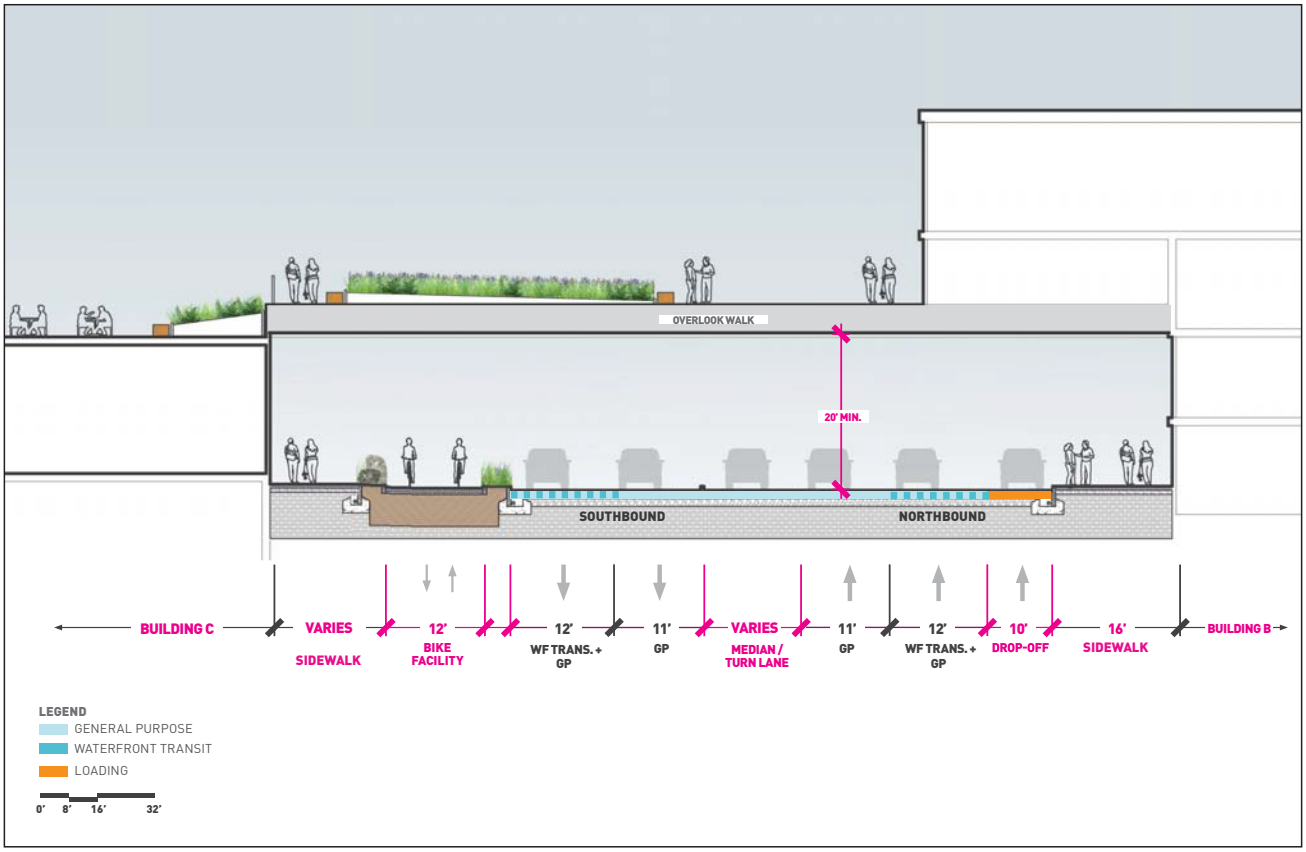


Figure 2-13
Cross-section 5
Pike Street to Pine Street

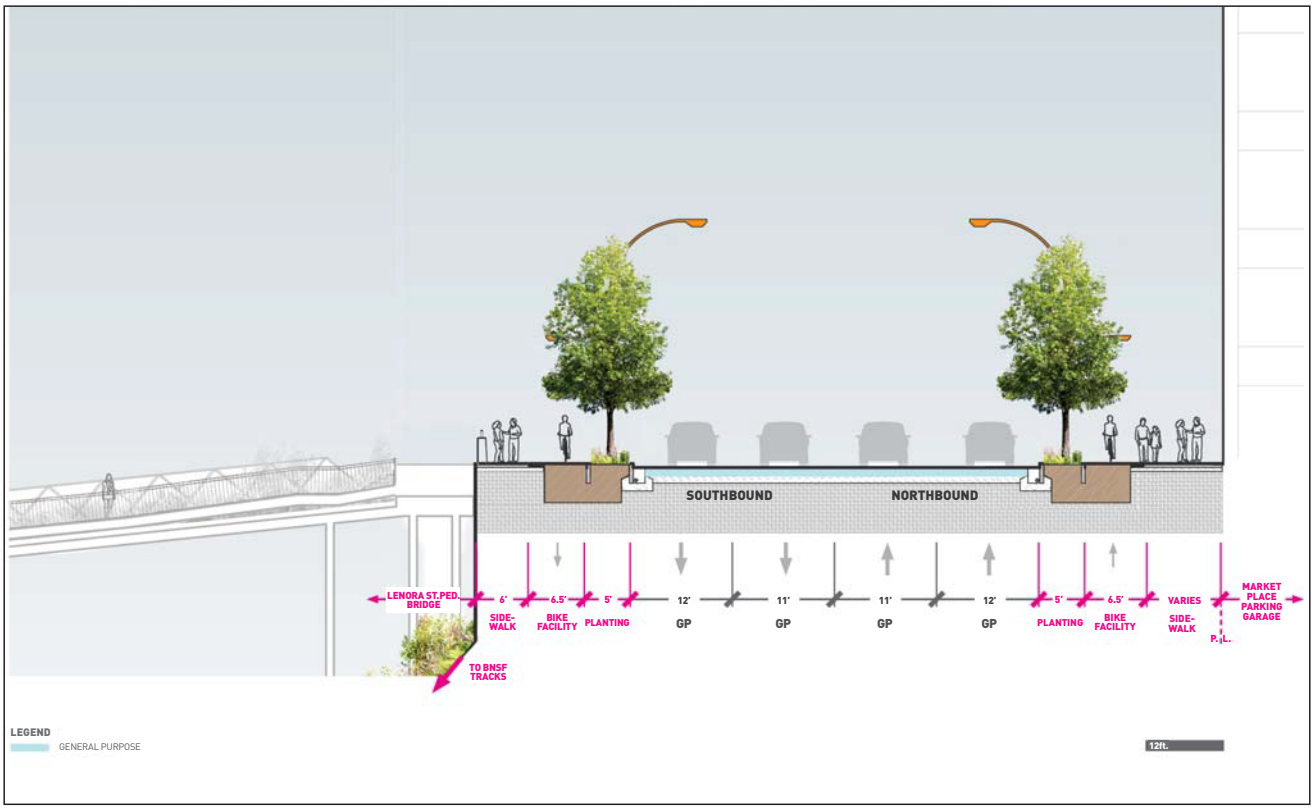


Figure 2-14
Cross-section 6
Elliott Way at Lenora Street

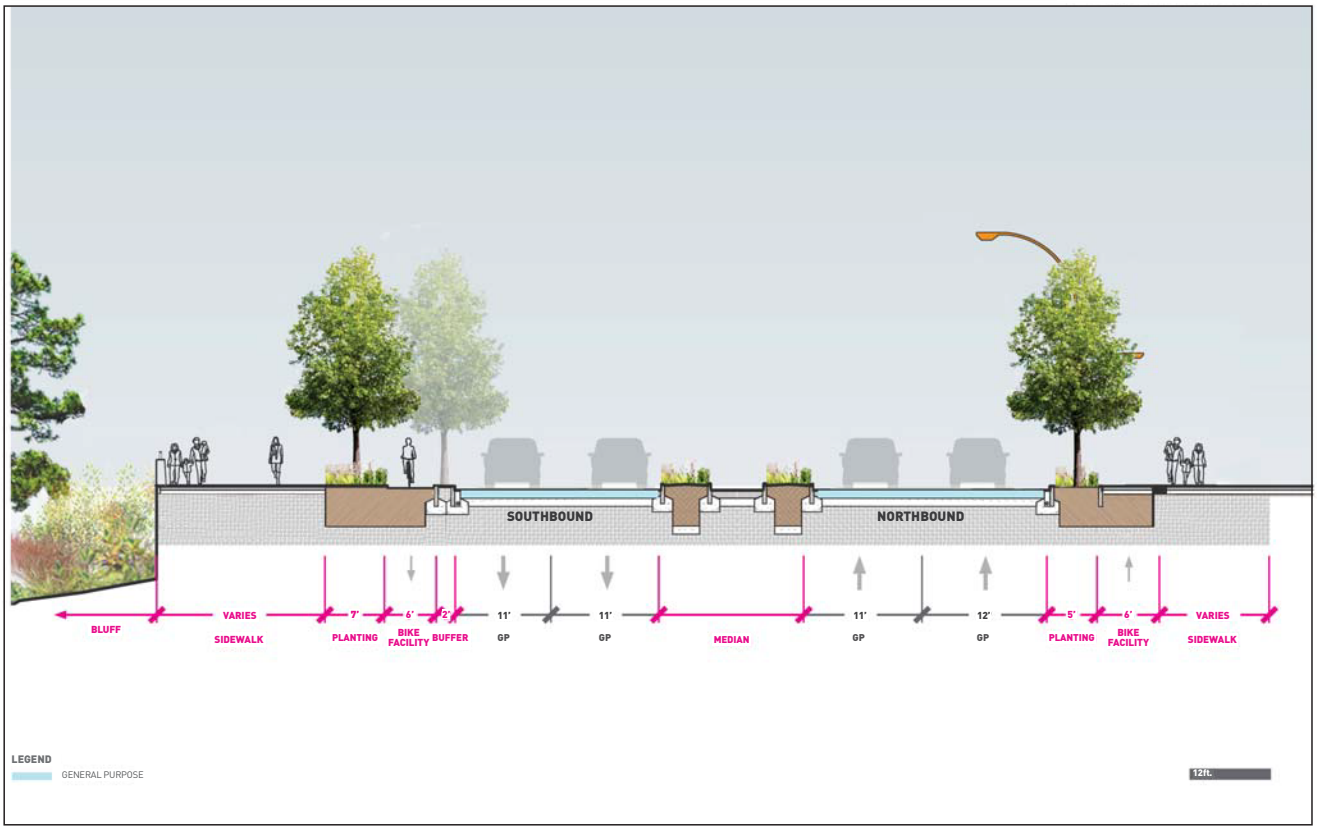


Figure 2-15
Cross-section 7
Elliott Way at Blanchard Street

2.4.2 Yesler Way to Spring Street

Figure 2-11 above shows a typical mid-block cross-section for Alaskan Way between Yesler Way and Spring Street. Between Yesler Way and Columbia Street, Alaskan Way would begin to narrow. The ferry access and queuing lanes would end at Yesler Way, turning left into the vehicle waiting area for the Seattle Multimodal Terminal at Colman Dock. This would leave two general-purpose travel lanes and one transit-only lane in each direction, plus a southbound left-turn lane at Yesler Way that is transit-only. Where a median is present, the width would vary from 8 to 12 feet. A regional transit stop would be located on the east side of Alaskan Way just south of Columbia Street. No parking or loading would be permitted in this block. The sidewalks would range between 16 and 20 feet wide on the east side and would be 12 feet wide on the west side. To increase safety and maintain efficient ferry traffic operations, pedestrians would only be able to cross Alaskan Way on the north side of the Yesler Way-Alaskan Way intersection.

The regional transit lanes along Alaskan Way would continue eastward onto Columbia Street to connect to other transit routes that use the Third Avenue transit corridor. After the AWVRP removes the viaduct off-ramp, AWPOW would rebuild Columbia Street between Alaskan Way and First Avenue to continue serving regional transit. The rebuilt street would consist of three lanes, landscaped with trees. The two outer lanes would be used by buses. General-purpose vehicles would be limited to westbound travel in the center lane but would be allowed to enter the westbound transit lane to make right-hand turns.

Between Columbia Street and Spring Street, the new Alaskan Way would have two general-purpose travel lanes in each direction and a 12-foot-wide landscaped median, which would narrow at some locations to provide turn pockets. The roadway would also include loading lanes on each side of Alaskan Way between Columbia Street and Marion Street to facilitate ferry passenger drop-off and pick-up without impeding traffic. Between Madison Street and Spring Street, these lanes would be used for both parking and loading. Sidewalks would be 16 to 20 feet wide on the east side of Alaskan Way and 8 to 12 feet wide on the west side. A planted buffer west of the western sidewalk would separate the roadway from the bicycle facility.

The existing Marion Street pedestrian bridge from First Avenue to the Seattle Multimodal Terminal at Colman Dock would be replaced with a new, wider bridge over Alaskan Way, with stairs and an elevator providing access to the east side of Alaskan Way. A left-turn pocket on southbound Alaskan Way would be provided for access to Marion Street; westbound traffic from Madison Street would be able to turn left or right onto Alaskan Way. Traffic leaving the ferry dock would be able to travel directly eastbound across Alaskan Way onto Marion Street.

2.4.3 Spring Street to Union Street

This would be the narrowest segment of the new Alaskan Way, roughly matching the width of the existing street. The narrower width reflects the fact that traffic volumes are lower on this part of Alaskan Way and fewer turn pockets are required. This creates an opportunity for increased public open space along the shoreline. Alaskan Way would have two general-purpose lanes, with full-time parking and loading spaces on both sides of the street (see Figure 2-12). There would be a left-turn pocket from southbound Alaskan Way onto Spring Street and a center median within the southern crosswalk of the Seneca Street intersection. North of Seneca Street, there would be no turn pockets and no median. Westbound traffic on Seneca Street and University Street would be able to turn left or right onto Alaskan Way. Sidewalks on Alaskan Way would range from 14 to 16 feet wide on the east side and would be 10 feet wide on the west side, with a planted buffer separating the sidewalk from the bicycle facility. Curb cuts would allow service vehicles to access the piers on the west side of Alaskan Way.

Between Western Avenue and Alaskan Way, Seneca Street would become a pedestrian-oriented zone, although on-street parking would be maintained and service vehicle access would be allowed via curb cuts on either end of the block. The street would be landscaped with trees and may have decorative pavement treatments.

2.4.4 Union Street to Pine Street

In this segment, the new Alaskan Way would turn eastward from its current alignment and rise in elevation to begin its transition to the new Elliott Way. Between Union and Pike Streets, there would be two through travel lanes in each direction and a narrow landscaped median, with parking and loading on the west side of Alaskan Way and a loading zone on the east side. The median would end about half a block north of Pike Street, where an at-grade pedestrian crossing would be built at the base of the Pike Street Hillclimb. North of this location, the roadway would rise at a grade of less than 7 percent as it crosses beneath the new Overlook Walk (described in detail below). The Overlook Walk would maintain a 20-foot minimum vertical clearance above the travel lanes to accommodate oversized vehicles. Sidewalks in this area would be approximately 16 feet wide on the east side and 8 feet wide on the west side. The bicycle facility would continue on the west side of the road under the Overlook Walk until Pine Street (see Figure 2-13).

Beneath the northern end of the Overlook Walk, the new Elliott Way would intersect with a new westward extension of Pine Street, which would curve to connect to the existing Alaskan Way north of Pier 62/63. The new Pine Street intersection would be approximately 20 feet higher in elevation than the new Alaskan Way south of Pine Street, due to the need for the new Elliott Way to pass over the BNSF rail line directly north of Pine Street. The Pine Street extension would have a general-purpose lane in each direction, and would be designed to allow large trucks bound for the cruise ship terminal to navigate the curve. The bicycle facility would follow the south side of the new Pine Street extension to the west side of the existing Alaskan Way, crossing at the existing Alaskan Way at about Virginia Street to connect to the existing path on the east side of Alaskan Way. An approximately 8-foot-wide sidewalk and a 4-foot-wide planted buffer would be constructed on the north side of the new Pine Street extension.

Access to the Public Market Parking Garage could potentially be relocated from its current location on the western face of the garage to the southern face of the building. This change could also provide service access to the Fix/Madore condominium buildings south of the garage.

2.4.5 Pine Street to Lenora Street

North of the new Pine Street extension and east of the Waterfront Landings Condominiums, the new Elliott Way would be built on an elevated structure to cross over the BNSF rail line with a minimum vertical clearance of 23.5 feet above the tracks. The roadway would closely follow the existing alignment of the Alaskan Way Viaduct, but would be approximately 15 to 20 feet lower; this elevation difference may require modifications to portions of BNSF's retaining walls east of the rail line. From this point, Elliott Way would continue up and slightly eastward to meet the existing grade along the southwest side of Victor Steinbrueck Park. The roadway would then continue at-grade to Lenora Street.

This entire section of the new Elliott Way would have two lanes in each direction, with a one-way protected bicycle facility on either side of the road (see Figure 2-14). There would also be a sidewalk and planted buffer on either side of the road, with a width of up to 12 feet on the east side of Elliott Way and approximately 6 to 10 feet on the west side.

Access to the Waterfront Landings Condominiums would be provided from the existing Alaskan Way just north of the new Pine Street extension, and would connect into the existing surface road on the south side of the condominiums. Access would be preserved to the condominium garage on the south side of the building, to building entrances and loading areas on the east side of the building, and to the BNSF tunnel portal east of the building. To allow access for emergency vehicles in this area, there would be at least a 14-foot vertical clearance between the new Elliott Way and the pavement below.

2.4.6 Lenora Street to Battery Street

After crossing the BNSF rail line, the new Elliott Way would intersect at-grade with Lenora Street. At this location, Lenora Street rises steeply to the east; to the west, it becomes a pedestrian bridge that crosses over the BNSF line and connects to the existing Alaskan Way via an elevator. The eastern span of the Lenora Street pedestrian bridge, which is approximately 5 feet lower than the proposed Elliott Way, would be modified to intersect with Elliott Way via a new stair and ramp connection. Coordination with the Port of Seattle, which owns the pedestrian bridge, would be needed to develop a detailed design for the bridge modifications or partial replacement.

In the area between Lenora and Bell Streets, the new Elliott Way would form a "bow-tie" intersection with the one-way couplet of Western and Elliott Avenues. In the vicinity of Blanchard Street, the northbound lanes of Elliott Way would transition into northbound Western Avenue, while most of the southbound lanes of Elliott Avenue would transition into the southbound lanes of Elliott Way (see Figure 2-15).

Bicycle facilities would be provided on both sides of Elliott Way, connecting with existing bicycle lanes on Elliott and Western Avenues north of the bow-tie intersection. Sidewalks would be approximately 14 feet wide on the east side and a minimum of 10 feet wide on the west side of Elliott Way, reflecting the pedestrian environment's change in focus from the waterfront to destinations in Belltown.

2.5 Construction Methods for the Action Alternative

This section describes the construction methods that the City currently anticipates using for the Action Alternative. Because of the dynamic nature of construction, the sequencing, extent, and timing of construction activities would vary to some degree from what are described here. However, this description represents a reasonable scenario that allows an understanding of the range of potential methods that could be used as the project is being built.

In general, construction would be timed and sequenced to minimize impacts on nearby residents and businesses. It is expected that at least two lanes of Alaskan Way (one in each direction) would remain open during morning and afternoon peak traffic hours, except for a full closure for the period necessary to construct the new Pine Street extension and the western portion of the Overlook Walk. This full closure of Alaskan Way would extend approximately one block between the Seattle Aquarium and Pier 62/63. During this closure of Alaskan Way, at least two lanes of Elliott Way (one in each direction) would be open during morning and afternoon peak traffic hours to provide a north-south route. Clearly signed detour routes would be provided around construction areas.

Throughout construction, the City would maintain access to private property to the maximum extent feasible, and would notify property owners in advance of activities that might temporarily limit access. In addition, the City would coordinate with affected property owners and support outreach activities to minimize the potential impacts of construction.

2.5.1 Construction Sequencing

Construction is planned to begin with utility work, which could begin in 2017 before the Alaskan Way Viaduct is demolished. Other construction activities would begin in any given area once the viaduct demolition is complete. Construction of AWPOW is anticipated to be completed by about mid-2020. The construction time frame could shift depending on when the AWVRP is completed. Construction activities would be sequenced to achieve two primary early goals:

- Complete the new Elliott Way connection to allow traffic to travel between Alaskan Way and Elliott and Western Avenues. This connection is currently provided by the Alaskan Way Viaduct; restoring it as soon as possible after this portion of the viaduct is demolished would help alleviate traffic congestion.

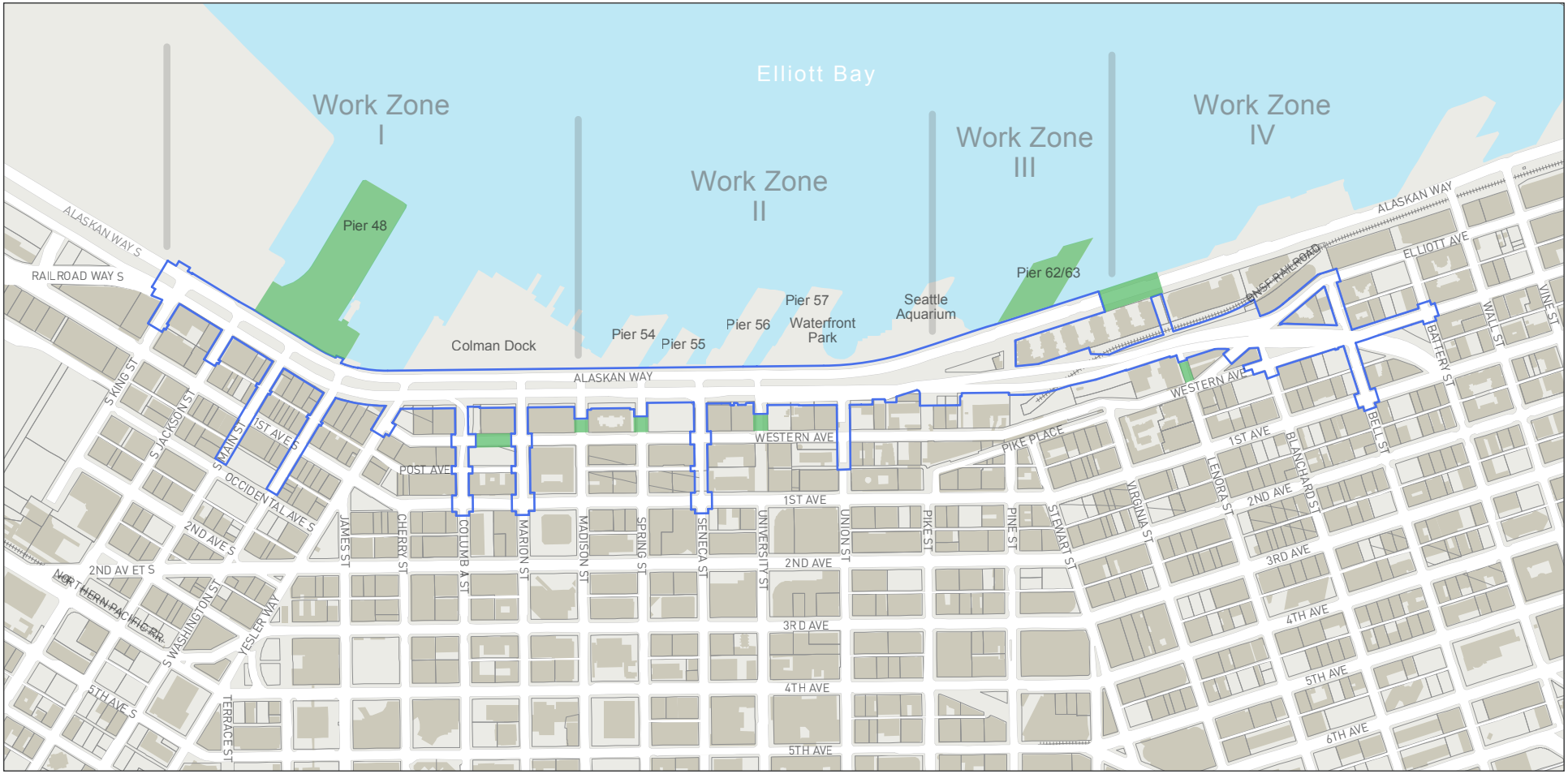
- Create the interim transit pathway on Columbia Street between Alaskan Way and First Avenue to provide reliable transit connections during construction.

AWPOW construction is anticipated to be divided into four zones, identified as Work Zones I, II, III, and IV. These zones would apply to most construction activities, but utility work would be independent of them. The approximate boundaries of these zones are described below and shown in Figure 2-16.

- Work Zone I would extend from the southern project limits to Madison Street. Work in this zone would include construction of the new Alaskan Way, the Promenade, the S. Main and S. Washington Street improvements, Columbia Street improvements, and replacement of the Marion Street pedestrian bridge.
- Work Zone II would extend from the Madison Street intersection to Pike Street, and would include construction of the new Alaskan Way, the Promenade, Seneca Street, and the Union Street Pedestrian Connection.
- Work Zone III would extend from Pike Street northward to the end of the bridge over the BNSF rail line, about a block south of Lenora Street. This zone would include construction of the new Alaskan Way as it climbs from Pike Street to Pine Street, the Promenade, the Pine Street extension to the west, Buildings B and C, the Overlook Walk lid, and the portion of Elliott Way from Pine Street over the BNSF rail line on a new bridge.
- Work Zone IV would extend from the end of the bridge over the BNSF rail line to the northern project limits. Work in this zone would include construction of Elliott Way from the north side of the BNSF rail line to where it intersects Elliott and Western Avenues. Work would also include reconstruction of the pedestrian bridge and overlook at the west end of Lenora Street and the Bell Street Park Extension.

The sequence of construction activities has not yet been finalized due to the dynamic nature of other projects in the area and because project design is not yet complete. The currently preferred construction sequence is to simultaneously begin building the portion of Elliott Way that crosses the BNSF rail line (in Work Zone III) and begin work at Columbia Street (in Work Zone I). Construction would then generally proceed north from S. King Street in Work Zone I and north from where Elliott Way crosses the BNSF rail line in Work Zone IV. This construction sequence would allow early traffic connections between Western and Elliott Avenues and Alaskan Way via the new Elliott Way, as well as transit connections between Columbia Street and Alaskan Way.

The East-West Connections do not depend on the construction sequencing along Alaskan Way and Elliott Way, and could be built at any time during the overall construction time frame. The Union Street Pedestrian Connection might be constructed in phases.



0 400 800

Feet

Source: SDOT

Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Parcel Boundary
- Building Footprint

Note: Construction staging will also occur within the project footprint.

Figure 2-16
Action Alternative Work Zones and Potential Construction Staging Areas

Alaskan Way, Promenade, and Overlook Walk

2.5.2 Construction Activities

AWPOW construction is expected to consist of the following general activities:

- Utility removal, replacement, or relocation
- Demolition of the existing roadway and appurtenances on Alaskan Way, and S. Main, S. Washington, Union, and Bell Streets
- Demolition of existing stairs and reinforcement and repair of the retaining walls at Union Street
- Ground improvement, where necessary, to stabilize soils for support
- Dewatering of excavations below the water table (generally about 5 feet below ground surface [bgs] along the waterfront) to provide a dry work area, where necessary
- Use of best management practices (BMPs) to protect water quality and reduce erosion; these may include installation of silt fencing, covering of stockpiled soil, and collection and treatment of construction stormwater runoff
- Drilling and vibratory pile driving for deep shafts to support the Overlook Walk and Elliott Way bridge structures
- Earthwork (excavation and filling) for the Pine Street extension and the section of Elliott Way between Lenora Street and the bridge over the BNSF tunnel
- Micropile driving to support structures such as the kiosks and the Marion Street pedestrian bridge
- Placement of foundation and pavement for the new Alaskan Way and Elliott Way roadways, and bicycle and pedestrian facilities
- Vibratory pile driving and micropile driving to support Union Street pedestrian structures
- Excavation, formwork construction, and concrete pumping and pouring for the Union Street pedestrian structures
- Placement of roadway foundation and pavement for S. Main, S. Washington, Union, and Bell Streets
- Installation of Promenade elements including paving, benches, kiosks, and landscaping
- Installation of street lighting, signal poles, and signage

Table 2-1 lists typical construction equipment and the types of activities in which the equipment is used.

The construction of the new Alaskan Way corridor within Work Zones I and II could occur in sections ranging from one to several blocks in length. Within each section, the new Alaskan Way would be built first, and traffic would then be transferred from the restored Alaskan Way to the new Alaskan Way. Work would then begin on the section of the Promenade adjacent to the newly constructed section of Alaskan Way. Meanwhile, roadway reconstruction would begin on the next section to the north.

Construction of the S. Main and S. Washington Street Improvements and the Union Street Pedestrian Connection would occur in one-block to two-block sections. In Work Zone I, construction activities associated with the removal and repaving of sidewalks and streets for the S. Main and S. Washington Street Improvements are primarily expected to be within about 3 feet of the surface. If areaways are found to need rehabilitation, the contractor would fill or rehabilitate the areaways in accordance with the City of Seattle's direction and the Pioneer Square Preservation District's requirements. Construction activities associated with filling or rehabilitating areaways could extend as much as 10 feet below the surface, but this would depend on the depth of the affected areaway.

In Work Zone II, construction activities for the Union Street Pedestrian Connection would include heavy equipment for excavation, drilling shafts, vibratory pile driving, formwork, and concrete pouring to construct foundations. Foundations for the walkways, elevators, and stairs would be needed because the soil near the surface is loose soft fill. Drilled shafts are being considered to support the walkways and stairwells. Micropiles could be used to support the elevator shafts. These foundations could be up to 60 feet deep. Cranes, hoists, and lifts would be used to support construction of the Union Street pedestrian structures. In addition, minor excavation and grading would be needed for the new roadway, landscaping, lighting installations, and drainage.

Work in Zones III and IV would include construction of bridge structures (piers, columns, girders, and concrete deck) and retaining walls to support the new roadway. Also, abutments supporting the north side of the bridge over the BNSF rail line would be constructed, as well as earth fill and retaining walls for the Pine Street extension. Support for these large structures would be provided by drilled shafts, which could be up to 80 feet deep in some areas. Where shafts cannot be installed by drilling, vibratory methods could be used.

Table 2-1. Typical Construction Equipment and Uses

Equipment	Typical Use
Air compressor	Pneumatic tool power and general maintenance
Backhoe	General construction
Concrete pump	Placement of concrete
Concrete saw	Concrete removal and utility access
Crane	Materials handling, removal, and replacement
Excavator	General construction and materials handling
Forklift	Staging area work and hauling of materials
Generator	General construction work
Haul truck	Materials delivery and transport of fill and excess soil
Jackhammer	Pavement removal
Loader	General construction and materials handling
Paver	Roadway paving
Pump	General construction use and excavation dewatering
Pneumatic tools	Miscellaneous construction work
Service truck	Repair and maintenance of equipment
Tractor trailer truck	Material removal and delivery
Utility truck	General project work
Vibratory equipment	Slope stabilization and installation of support piles

Work in Zone III would begin with ground improvement to provide a stable foundation for the new piers and walls. The general work sequence would then be to construct the elevated roadway, including bridge girders and decks; complete the foundations of Buildings B and C; construct the Overlook Walk lid; open Elliott Way; and complete the Pine Street extension. Work on the Promenade north of Pine Street would begin once the Pine Street extension is open to traffic.

Work in Zone IV along Elliott Way and Elliott and Western Avenues would include street restoration, sidewalk construction, bicycle facility construction, and installation of street lighting and signal poles. On Elliott Avenue near Bell Street, work would include changes in channelization of the bicycle facility. Construction activities on Bell Street would generally be within 3 to 5 feet of the surface for minor excavation and grading associated with the new roadway, landscaping, lighting installations, and drainage.

2.5.3 Construction Staging

The project would generally use areas within or near the project footprint for construction staging and storing materials and equipment. Temporary construction offices, such as trailers, could also be used in these areas. Most construction staging would occur within the main part of the project footprint. However, the City is exploring the use of other areas for construction staging to help ensure that sufficient space will be available to cover all anticipated staging needs. These potential construction staging areas are shown in Figure 2-16. There may be interest in using Pier 48 and Pier 62/63 as potential construction staging areas due to their proximity to project construction activities. Pier 48 is owned by WSDOT and cannot be used for staging without WSDOT's permission. Pier 62/63 is owned by the City of Seattle, but its potential use as a staging area may be limited due to structural concerns. All staging areas that are used would generally be restored, if necessary, to their pre-construction condition or better.

2.5.4 Construction Timing and Road Closures

Construction would occur year-round and is likely to include multiple shifts, especially in Work Zone III where construction activities are most complex. The contractor would need to comply with the City's noise regulations and obtain any necessary variances from the City during construction.

In general, at least two lanes (one in each direction) on Alaskan Way or Elliott Way would be open during morning and afternoon peak traffic hours throughout construction, although one or more lanes could be temporarily closed at other times to provide access for construction equipment and utility installations.

Approximately one block of Alaskan Way between the Seattle Aquarium and Pier 62/63 would be closed for the period necessary to construct the new Pine Street extension and the western portion of the Overlook Walk. Northbound traffic on Alaskan Way destined for points north of the closure would need to detour onto Elliott Way and then use an east-west street to access the portion of Alaskan Way north of the closure. After the closure, points on Alaskan Way north of Pine Street would be accessible via the new Pine Street extension. The City would work with the Port of Seattle to identify adequate time frames for this work to minimize impacts during the cruise ship season.

2.5.5 Worker Parking and Access

The contractor is expected to establish a job site office, which could be located in existing office space along the waterfront or elsewhere within the project footprint. While a limited number of construction workers would park at the job site office, other construction workers may use transit to access the work site or may park within or near the construction footprint. Section 3.6 of this EIS provides more information on anticipated parking conditions during AWPOW construction.

2.5.6 Construction Traffic and Haul Routes

Construction would generate traffic to transport materials and equipment to the work site and to remove demolition debris and excess soil. The majority of material transport for AWPOW construction would be by truck, augmented by the possible occasional use of barges. The contractor will determine the best construction methods as permitted by the City and in conformance with the project construction plans. Preliminary estimates indicate that, on average, there would be 7 to 27 round-trip truck trips per work zone per work day, with a peak of 66 daily round trips at the peak of construction in Work Zone III. Because Alaskan Way is a major freight corridor, this is not expected to constitute a major increase in truck traffic. City streets that could be used as haul routes include Alaskan Way, Elliott Avenue, Western Avenue, Mercer Street, Broad Street, Edgar Martinez Drive, and East Marginal Way.

3 Transportation and Parking

This chapter describes the existing transportation network and parking conditions in the vicinity of the project footprint and analyzes the potential impacts AWPOW would have on these conditions. This analysis evaluates the potential impacts of the Action Alternative in comparison to the No Action Alternative. The transportation elements evaluated are traffic, freight, pedestrian and bicycle facilities, public transportation, water transportation services, rail, and emergency services. The parking analysis evaluates parking supply and utilization for existing and future conditions with and without AWPOW. Potential avoidance, minimization, and mitigation measures have been identified for transportation and parking construction and operational impacts.

Appendix A (Transportation Discipline Report), Appendix B (Parking Discipline Report), and Appendix L (East-West Connections Environmental Review) to this Draft EIS describe the study methodology, data collection, analysis, and conclusions supporting the information presented in this chapter.

Transportation

3.1 Overview of the Transportation Analysis

The methodology for this transportation analysis was approved by a multi-agency review committee facilitated by the City of Seattle that consisted of the City, WSDOT, Washington State Ferries (WSF), King County Metro, and the Port of Seattle. After establishing the limits of the transportation study area (described in Section 3.2.1) and gathering data about existing conditions, transportation analysts developed forecasts of how traffic volumes are likely to change in the future by using computerized travel demand models. These models account for population and employment changes and transportation improvements that are expected to be in place by 2030, the AWPOW design year. Analysts then input the forecasted traffic volumes into traffic operations models and ran those models to predict how traffic would operate on specific streets or intersections in 2030 with and without the project improvements.

This transportation analysis uses two quantitative metrics to evaluate traffic operations: level of service (LOS) and travel time. LOS is measured on a scale ranging from A to F, in which A represents freely flowing traffic and F represents severe congestion. LOS ratings are based on the ratio of actual traffic volumes to the traffic capacity of the roadway or intersection being studied; LOS deteriorates as facilities approach or exceed their capacity. Each LOS level corresponds to a certain range of delay (the average time that vehicles are slowed down or stopped at an intersection). The City of Seattle defines LOS E as the lowest acceptable LOS on arterial streets. Travel time measures the level of congestion in the study area by taking into account the delay travelers experience over a distance longer than a single block.

The transportation analysis qualitatively evaluates several other transportation elements, which include freight, pedestrians and bicyclists, public transportation, water transportation services, rail, and emergency services. After impacts had been assessed, analysts considered the appropriateness of potential mitigation measures.

3.2 Affected Environment for Transportation

The affected environment consists of the transportation conditions that are expected to exist in the study area before AWPOW construction starts in 2017, when the AWVRP, EBSP, and PPMWE are complete and before AWPOW construction begins. The 2017 existing conditions serve as the basis against which conditions projected for 2030, the project design year, will be compared.

3.2.1 Transportation Study Area and Roadway Network

The transportation study area identified for this analysis is shown on Figure 3-1. It consists generally of the project footprint extended south along Alaskan Way to S. Dearborn Street, north along Alaskan Way to Broad Street, and east between Columbia and University Streets to Western Avenue. The eastern study area boundary as a whole was not extended to include First Avenue because the project is not expected to increase traffic volumes on First Avenue compared to the No Action Alternative.

Fifteen intersections were evaluated as part of the 2017 existing conditions analysis, as shown in Figure 3-1. Three of the intersections, intersections 6, 8, and 19, are controlled only by stop signs; these are referred to as unsignalized intersections. Intersections 7, 10, and 11 have pedestrian-activated signals (referred to as pedestrian half signals), which remain green for traffic on the major street until activated by a pedestrian; the minor streets are stop-controlled. The remaining nine intersections have full signals and are referred to as signalized intersections.

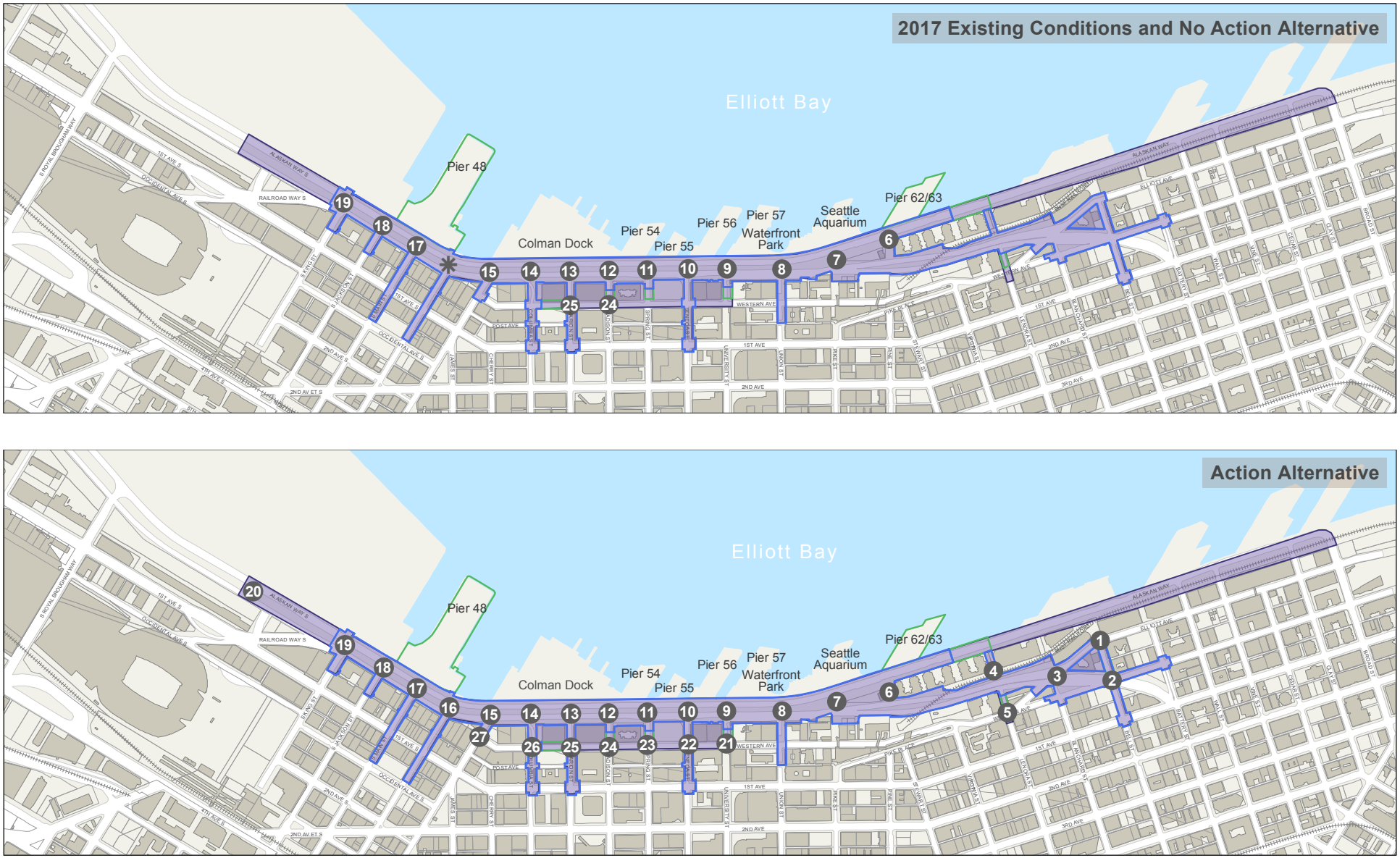
By 2017, when AWPOW construction is expected to begin, the roadway network within the study area will consist of the southern access to the SR 99 tunnel, principal and minor arterial streets, and local streets. The majority of the roadway network in the transportation study area will consist of arterial roadways. Arterial roadways are the foundation of the city's transportation network, designated as the major thoroughfares for trucks, automobiles, and transit vehicles. Many of the roadways, including Alaskan Way, Elliott Avenue, Western Avenue, Columbia Street, and S. Jackson Street, are defined as principal arterials, meaning that they serve as primary routes for vehicle trips between urban centers and as connections to the regional transportation network. Other roadways in the study area are defined as minor arterials, which distribute traffic from the principal arterials to local streets. Minor arterials in the study area include Spring Street and Yesler Way.

Alaskan Way, in conjunction with the SR 99 tunnel, is planned to replace the functions of the Alaskan Way Viaduct after the viaduct is demolished. SR 99 is an important local and regional highway that provides an alternative route to Interstate 5 (I-5). Some local traffic diversion from the SR 99 tunnel to Alaskan Way is anticipated because the tunnel will not provide access to and from the downtown area. The new Alaskan Way is intended to operate as part of a system, providing transportation functions that the tunnel cannot provide, such as access to the downtown core and northwest Seattle. Between S. King Street and Yesler Way, Alaskan Way in 2017 will have two northbound through lanes, one northbound ferry holding lane, and two southbound through lanes. At Yesler Way there will also be a transit-only southbound left-turn lane. From Yesler Way to Madison Street, Alaskan Way will have two northbound and two southbound lanes. A path for bicycles and pedestrians will follow the east side of the roadway.

3.2.2 Traffic Volumes

This transportation analysis presents traffic volumes for the PM peak hour (the time period when traffic is highest on Alaskan Way, between approximately 4:30 p.m. and 5:30 p.m.) and for average daily traffic. The 2017 traffic volumes used in this analysis are the same as those reported in the EBSP Transportation Discipline Report (SDOT 2012) for Preferred Alternative C in 2017. As described in the EBSP Transportation Discipline Report, the analysis used summer conditions, when traffic is highest, to provide a conservative analysis. Traffic volumes and lane channelization used in the 2017 existing conditions analysis are shown in Figure 3-2.

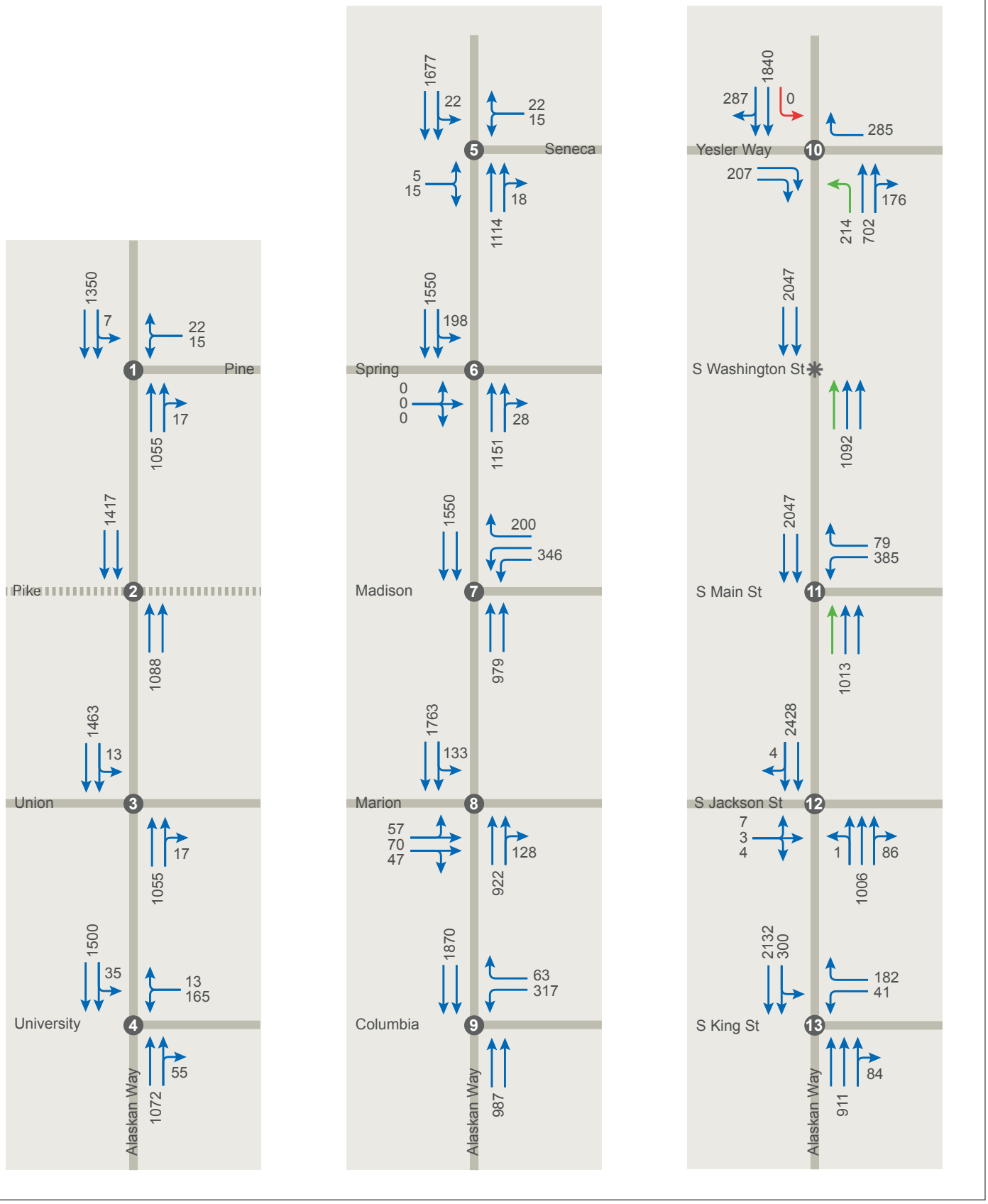
During the PM peak hour, traffic volumes on Alaskan Way are considerably higher southbound than northbound. Between S. King Street and S. Jackson Street, southbound volumes are more than twice those traveling northbound (approximately 2,430 vehicles southbound compared to 1,100 vehicles northbound). Between Pike and Pine Streets, there are approximately 1,420 southbound vehicles and approximately 1,100 northbound vehicles during the PM peak hour (SDOT 2012).



Note:
There is a different number of intersections analyzed in the 2017 Existing Conditions and 2030 No Action Alternative compared to the 2030 Action Alternative because the Existing Conditions and No Action Alternative were developed to analyze the impacts from the EBSP and did not include the new and reconfigured intersections north of Pike Place Market (intersections 1-5 in the Action Alternative) or the revised and impacted intersections in the south end of the study area (intersections 16 and 20). In addition, in order to analyze all of the AWPOW related impacts along Western Avenue, the Action Alternative analyzed five additional intersections along Western Avenue compared to the number of intersections that were analyzed for the EBSP along Western Avenue.

Figure 3-1
Transportation Study Area and Intersections

Alaskan Way, Promenade, and Overlook Walk



Data Source:
Elliott Bay Seawall Project

- General Purpose Traffic
- Ferry Only
- Transit Only
- Pedestrian Crossing
- Not Analyzed

Figure 3-2
2017 Lane Configurations and Volumes (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk

Daily traffic volumes in 2017 will be higher in the southern part of the study area than those in the northern portion. This is because of the major transportation hub at Colman Dock, as well as the fact that Alaskan Way will become the primary route into downtown Seattle from the southern portal of the SR 99 tunnel. Average daily volumes are estimated to be approximately 23,000 vehicles between Pine and Pike Streets and approximately 32,000 vehicles between S. Jackson Street and S. King Street (SDOT 2012).

3.2.3 Traffic Operations

Intersection Operations

Figure 3-3 and Table 3-1 show the anticipated PM peak hour LOS and delay for each of the 15 intersections evaluated for 2017 conditions. The following three intersections are expected to operate at LOS F in the PM peak hour:

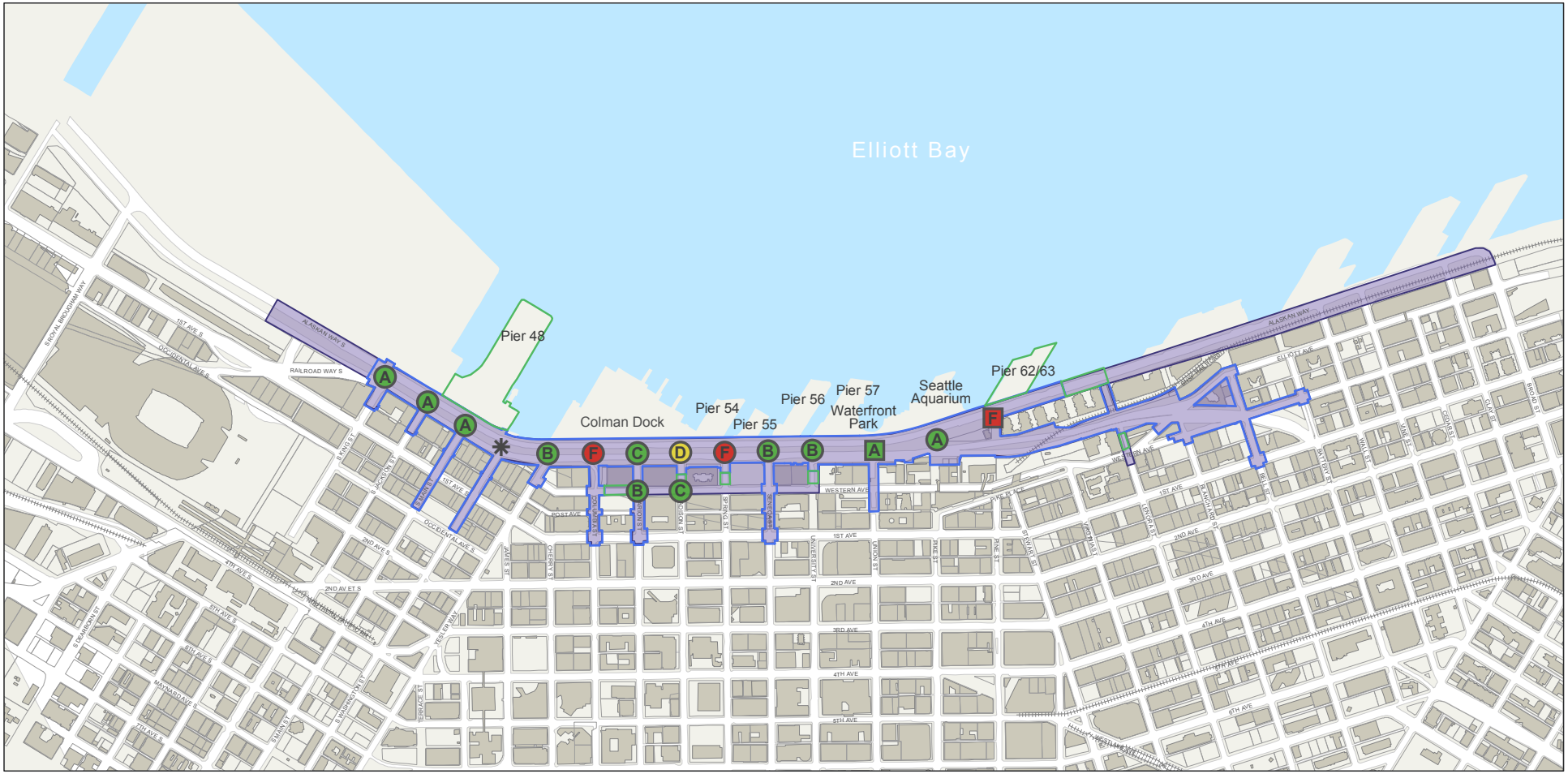
- Alaskan Way and Pine Street
- Alaskan Way and Spring Street
- Alaskan Way and Columbia Street

East-west traffic approaching many of the signalized intersections on Alaskan Way is expected to experience greater delays than those shown for the overall intersection LOS because the overall intersection delay is the weighted average delay of all the individual movements (SDOT 2012). Therefore, some side street approaches may experience substantial delays even if the intersection LOS does not indicate congestion. However, because traffic volumes are higher on Alaskan Way than on any of the side streets, only a relatively small percentage of vehicles would experience these greater delays.

The traffic operations model suggests that there would be substantial queuing in the southbound lanes at the intersection of Alaskan Way and Spring Street. This intersection includes a pre-timed (i.e., not pedestrian actuated) half signal for pedestrians crossing Alaskan Way, which results in substantial delays (LOS F) for southbound vehicles, but little delay (LOS A) for northbound vehicles. The model estimates that the resulting southbound queuing and stop-and-go traffic along Alaskan Way could extend as far north as Lenora Street. This congestion would limit the ability of vehicles to access Alaskan Way, meaning that some would need to use alternative routes. The traffic operations model determined that approximately 20 percent of the vehicles would not be able to access the corridor and would use routes outside of the study area to reach their destinations. Because of this diversion, overall LOS and delay on Alaskan Way appear better than they would if all of the vehicles that wanted to enter the corridor were able to do so. The stop-controlled movements along Pine Street are forecast to have substantial delays due to the limited gaps in traffic along Alaskan Way. The signal-controlled intersection of Alaskan Way at Columbia Street is forecast to operate at LOS F overall.

Travel Time Analysis

The anticipated 2017 PM peak hour travel times along Alaskan Way are shown on Figure 3-4 and in Table 3-2. Northbound travel times between Yesler Way and Pike Street are expected to be considerably shorter than southbound travel times for the same roadway segment. This difference is largely attributed to the substantial delay and queuing of southbound vehicles caused by the pedestrian half signal at the Alaskan Way and Spring Street intersection.



0 500 1,000
Feet

GIS Source: King County, City of Seattle
Data Source: Elliott Bay Seawall Project

Action Alternative

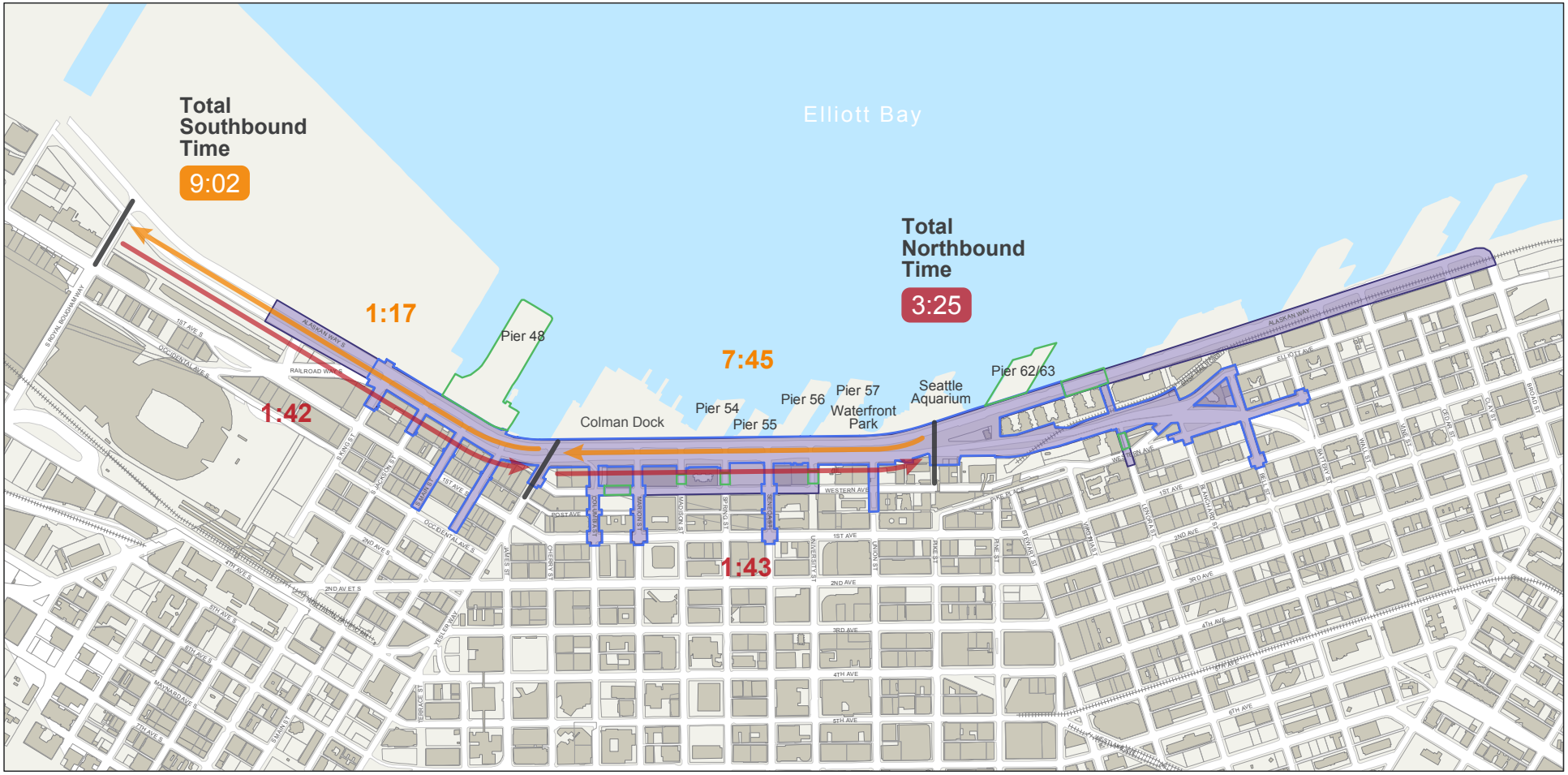
- Transportation Discipline Study Area
- Project Footprint
- Potential Construction Staging Area
- Signalized Intersection
- Unsignalized Intersection
- LOS A-C
- LOS D
- LOS E
- LOS F or Worse
- Not Analyzed In This Alternative

- Parcel Boundary
- Building Footprint

Note:
There is a different number of intersections analyzed in the 2017 Existing Conditions and 2030 No Action Alternative compared to the 2030 Action Alternative because the Existing Conditions and No Action Alternative were developed to analyze the impacts from the EBSP and did not include the new and reconfigured intersections north of Pike Place Market (intersections 1-5 in the Action Alternative) or the revised and impacted intersections in the south end of the study area (intersections 16 and 20). In addition, in order to analyze all of the AWPOW related impacts along Western Avenue, the Action Alternative analyzed five additional intersections along Western Avenue compared to the number of intersections that were analyzed for the EBSP along Western Avenue.

Figure 3-3
2017 Existing Conditions Intersection Operations (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk



0 500 1,000
Feet

GIS Source: King County, City of Seattle
Data Source: Elliott Bay Seawall Project

Action Alternative
- Transportation Discipline Study Area
- Project Footprint
- Potential Construction Staging Area
- Southbound
- Northbound
- x:xx Travel Time

- Parcel Boundary
- Building Footprint

Note:
There are different travel time segments analyzed in the 2017 Existing Conditions and 2030 No Action alternatives compared to the 2030 Action Alternative because the Existing Conditions and No Action alternatives were developed to analyze the impacts from the EBSP and used separate termini to understand impacts. There is also an additional travel time segment for the 2030 Action Alternative in the north portion of the study area to address travel time impacts to the new or reconfigured intersections on Elliott Way.

Figure 3-4
2017 Existing Conditions Travel Times (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk

Table 3-1. 2017 Existing Conditions PM Peak Hour Intersection Level of Service and Delay

			2017 Existing Conditions PM Peak Hour	
ID[1]	Intersection	Traffic Control	LOS	Delay (seconds)[2]
6	Alaskan Way and Pine Street	Unsignalized	F	142
7	Alaskan Way and Pike Street	Pedestrian Half Signal	A	7
8	Alaskan Way and Union Street	Unsignalized	A	4
9	Alaskan Way and University Street	Signalized	B	17
10	Alaskan Way and Seneca Street	Pedestrian Half Signal	B	16
11	Alaskan Way and Spring Street	Pedestrian Half Signal	F	>200
12	Alaskan Way and Madison Street	Signalized	D	54
13	Alaskan Way and Marion Street	Signalized	C	27
14	Alaskan Way and Columbia Street	Signalized	F	83
15	Alaskan Way and Yesler Way	Signalized	B	18
17	Alaskan Way and S. Main Street	Signalized	A	10
18	Alaskan Way and S. Jackson Street	Signalized	A	5
19	Alaskan Way and S. King Street	Unsignalized	A	10
24	Western Avenue and Madison Street	Signalized	C	23
25	Western Avenue and Marion Street	Signalized	B	17

[1] The intersections in this table are not numbered consecutively because they are a subset of the intersections modeled for 2030 conditions. For more information, please see Figure 3-1 and the traffic operations discussion in Section 3.4.2.

[2] The average delay for all vehicles is reported for signalized intersections. The delay of the worst stop-controlled approach is reported for unsignalized intersections.

Source: SDOT 2012

Table 3-2. 2017 Existing Conditions Travel Times (Minutes:Seconds)

Roadway Segment	2017 PM Peak Hour Travel Time
Southbound	
Pike Street to Yesler Way	7:45
Yesler Way to S. Royal Brougham Way	1:17
Northbound	
Yesler Way to Pike Street	1:43
S. Royal Brougham Way to Yesler Way	1:42

Source: SDOT 2012

3.2.4 Freight

The City of Seattle's Freight Mobility Strategic Action Plan (2005a) identifies Alaskan Way as a major truck street, which indicates that it accommodates a significant amount of freight movement. Alaskan Way provides connections from Port of Seattle shipping and intermodal facilities south of and within the study area to Terminal 91 and other Port facilities north of the study area. Alaskan Way is also the dedicated route for oversized vehicles between SODO and the Ballard/Interbay Northend Manufacturing and Industrial Center. Major truck streets providing east-west connections to Alaskan Way include S. Royal Brougham Way to the south and Broad Street to the north.

The Freight Mobility Strategic Action Plan describes all arterial streets in the city as freight routes, although arterials are not subject to the same criteria for street design, traffic management, and pavement design and repair as major truck streets. Columbia and S. Jackson Streets are considered principal arterials and would be expected to accommodate some east-west freight traffic. Minor east-west arterials, such as Yesler Way, Marion Street, Madison Street, and Spring Street, would likely carry minimal amounts of freight traffic.

Freight truck traffic is expected to comprise approximately 4 percent of the total daily traffic on Alaskan Way in 2017. During the PM peak hour, freight traffic is typically lower because shippers attempt to schedule trips outside of peak travel periods. Travel time and intersection delay on Alaskan Way, Western Avenue, and east-west streets in the study area are anticipated to be the same for freight traffic as for general-purpose traffic.

3.2.5 Pedestrian Facilities

Pedestrian facilities in the study area in 2017 will consist of:

- A sidewalk approximately 8.5 to 20 feet wide on the west side of Alaskan Way for the entire length of the waterfront (SDOT 2012). Sidewalks would be widest between Yesler Way and Pike Street and narrowest south of Yesler Way and north of Pike Street.
- A sidewalk approximately 9 to 18 feet wide on the east side of Alaskan Way between Pike and Virginia Streets.
- A path approximately 8 to 10 feet wide on the east side of Alaskan Way that allows for two-way off-street travel by all types of nonmotorized users. South of the study area, the path transitions to a sidewalk and bicycle lanes that extend to S. Spokane Street. North of the study area, the Elliott Bay Trail extends from the Olympic Sculpture Park to Myrtle Edwards Park and allows for two-way travel by all types of nonmotorized users.
- The following east-west pedestrian connections:
  - At-grade, ADA-accessible, signalized crossings of Alaskan Way; crossing widths across Alaskan Way would average approximately 48 feet, increasing to approximately 56 feet south of Yesler Way.
  - Sidewalks along S. Main and S. Washington Streets, which have ADA deficiencies.
  - The Marion Street pedestrian bridge, which extends from First Avenue, over Western Avenue and Alaskan Way, to the Seattle Multimodal Terminal at Colman Dock.
  - Steps at Seneca Street, located between First Avenue and Post Alley, which connect the waterfront area with the higher-elevation downtown area.
  - Steps at University Street, located between Western Avenue and First Avenue, which connect the waterfront area with the higher-elevation downtown area.
  - Stairs at Union Street, consisting of two separate stairways located between Alaskan Way and First Avenue that connect the waterfront area with the higher-elevation downtown area.
  - The Pike Street Hillclimb—a set of stairs that connects the Pike Place Market and the waterfront at Pike Street, and includes an elevator between Western Avenue and Alaskan Way.
  - The Lenora Street elevator and stairs, which connect Alaskan Way with Lenora Street just west of Western Avenue.
  - Sidewalks along Bell Street between Elliott and First Avenues.

Pedestrian volumes in the study area in 2017 are expected to be highest during the summer months and higher on weekend days than on weekdays. Based on counts taken in 2012, north-south pedestrian activity is anticipated to be highest near Piers 54, 55, and 56, with between 17,500 and 19,200 pedestrians per weekday (City of Seattle 2012). Between Pier 57 and Pike Street at Pier 59, weekday pedestrian volumes are expected to be between 14,500 and 15,500 (City of Seattle 2012). North of the intersection of Pike Street and Alaskan Way (where the Pike Street Hillclimb is located), pedestrian activity is expected to be less than the areas farther south, with slightly over 7,000 pedestrians per weekday (City of Seattle 2012).

During summer weekend days, pedestrian activity is expected to be significantly higher than on summer weekdays, with between 32,500 and 34,500 pedestrians using the area between Pier 54 and Pier 59 at the Pike Street crossing (City of Seattle 2012). North of Pier 59, it is anticipated that 22,250 pedestrians would travel along the waterfront (City of Seattle 2012). For both weekdays and weekends, the majority (80 percent) of pedestrian activity along the waterfront is anticipated to occur during daytime hours (6:00 a.m. to 7:00 p.m.).

3.2.6 Bicycle Facilities

City regulations permit bicycles to share the roadway with motorized vehicles and to use sidewalks along Alaskan Way. Bicycle facilities that are expected to be available in the study area in 2017 are:

- Roadways within the study area
- Sharrows (shared-lane markings) on Yesler Way between Western Avenue and Alaskan Way and on Western Avenue between Yesler Way and Bell Street
- A bicycle lane on Western Avenue between University Street and Bell Street
- Sidewalks that will exist along the west side of Alaskan Way
- The path on the east side of Alaskan Way

Bicycle use of these facilities in 2017 is expected to be similar to what it was in 2010 and 2012, when the City collected data on the use of bicycles in the waterfront area. The data indicate that many bicyclists use the study area for commuting and recreation, especially during the summer. Bicyclists travel in the roadway and on the path along the east side of Alaskan Way. Bicycle volumes on the path are higher than those on Alaskan Way (City of Seattle 2012). A large number of bicyclists use east-west crossings of Alaskan Way at Spring Street (between 1,000 and 1,500 bicyclists per day), University Street (450 to 1,100 bicyclists per day), and Union Street (750 to 1,000 bicyclists per day).

The path along the east side of Alaskan Way allows for two-way, off-street use by all types of nonmotorized users. The diversity of user types can result in variable speeds and unpredictable movements, which increases the risk of conflicts between different users of the path. In addition, the path crosses 13 street intersections on the east side of Alaskan Way. Intersection crossings result in more opportunities for conflicts between automobiles and bicyclists due to increased exposure.

Data from 2010 and 2012 suggest that many bicyclists using Alaskan Way are commuting to and from work. Accordingly, bicycle volumes are higher during the week than the weekend, and AM and PM bicycle volumes during the week are similarly high (City of Seattle 2012; SDOT 2012). Conditions in 2017 are expected to follow similar patterns.

3.2.7 Public Transportation

The following three King County Metro transit routes will operate on Alaskan Way in 2017:

- Route 16, providing connections between Northgate Mall and King Street Station with a stop on Alaskan Way at Marion Street near Colman Dock
- Route 66, connecting Northgate Mall, the University District, and the King Street Station with a stop on Alaskan Way at Marion Street near Colman Dock
- Route 99, providing connections between the Olympic Sculpture Park and the International District via Alaskan Way with stops near Colman Dock, the Seattle Aquarium, and the cruise ship terminal

Other nearby transit services outside of the study area that provide service in downtown Seattle include streetcar, commuter train, light rail, monorail, and additional bus routes. These transit services provide both local and regional connections between Seattle and other areas of the Puget Sound region. Third Avenue is the primary transit spine through downtown, with both local and regional bus routes. The First Hill Streetcar service, provided by Sound Transit, terminates just outside the study area at First Avenue and S. Jackson Street. Light rail services are also provided by Sound Transit just outside the study area, with stations located on Third Avenue at James, Seneca, and University Streets. Commuter rail service provided by Sound Transit is accessed at King Street Station, just outside of the study area at S. Jackson Street and Third Avenue.

3.2.8 Water Transportation Services

In 2017, Washington State ferries, the King County Water Taxi, tour and area travel vessels, and cruise ships are expected to operate similarly to today.

Washington State Ferries

WSF operates two ferry routes from the Seattle Multimodal Terminal at Colman Dock at Pier 52, located along Alaskan Way between Madison Street and Yesler Way. The main entrance to Colman Dock for vehicles and bicyclists is through the tollbooth at Yesler Way. A pedestrian bridge from First Avenue and Marion Street leads directly into the ferry passenger terminal, and pedestrians can also enter the terminal from Alaskan Way between Marion Street and Columbia Street. Public parking is not available at Colman Dock, but there are passenger loading areas and taxi stands on Alaskan Way in front of the pier. Off-site private parking is also available. King County Metro Routes 16, 66, and 99 would provide service to or near Colman Dock.

Vehicles exit from the Seattle Multimodal Terminal at Colman Dock at both Marion Street and Yesler Way. The Bainbridge Island ferry route has 23 dockings each weekday and 22 dockings each Saturday and Sunday; the Bremerton route has 15 daily dockings. If two ferries are docked at the same time, vehicles from the Bremerton ferry are directed to the Yesler Way exit and vehicles from the Bainbridge Island ferry are directed to the Marion Street exit. Two ferries dock at the same time approximately 10 times per day, as reported by WSF staff. When one ferry is present, drivers are usually allowed to choose which exit to use. Because the Marion Street exit provides less storage area than the Yesler Way exit (approximately 300 feet at the Marion Street exit and approximately 1,000 feet at the Yesler Way exit), ferry personnel direct vehicles to Yesler Way if ferry unloading operations are delayed at the Marion Street exit. Vehicles exiting at Marion Street have direct access into downtown Seattle, while the Yesler Way exit only allows a right turn onto southbound Alaskan Way. If vehicles are only allowed to exit at Yesler Way, many motorists will make the first available left turn at S. King Street.

Following the completion of AWVRP and EBSP, one lane dedicated to ferry queuing will be provided from S. Jackson Street to Yesler Way on northbound Alaskan Way. As summarized above, the modeled LOS in 2017 during the PM peak hour will be LOS B (18 seconds delay) at the intersection of Alaskan Way and Yesler Way, and LOS C (27 seconds delay) at the intersection of Alaskan Way and Marion Street.

King County Water Taxi

King County operates water taxi service and facilities from downtown Seattle to West Seattle and Vashon Island. The service is based on Pier 50, which is adjacent to Colman Dock at Yesler Way. No parking is provided at the pier, but there will continue to be loading zones nearby for dropping off and picking up passengers in front of Colman Dock.

The water taxi vessels carry up to 150 passengers and 18 bicycles (SDOT 2012). The Vashon Island water taxi runs only on weekdays, with three round trips in the morning and three in the afternoon. The West Seattle water taxi generally operates 7 days a week from April through October, with 19 round trips on weekdays and 12 on weekends; weekday peak period service operates year-round. Additional trips are provided on Fridays only in the evenings and for special events.

Victoria Clipper

The Victoria Clipper service, operated by Clipper Navigation, is located on Pier 69, on Alaskan Way between Clay and Vine Streets. The passenger-only route operates year-round with service to Victoria, British Columbia. The number of trips depends on the time of year and ranges from one round trip in the winter to three round trips in the summer. From May through September, Clipper Navigation also operates one round trip daily to the San Juan Islands. The boat used on the San Juan Islands route holds 239 passengers, and the boats used on the Victoria route hold from 293 to 330 passengers (SDOT 2012). There are multiple nearby parking structures as well as taxi loading zones in front of Pier 69.

Argosy Cruises

Argosy Cruises operates from Piers 55 and 56, located on Alaskan Way between Spring Street and Seneca Street. Four boats moor at Piers 55 and 56. Cruise operations are most active from June to August with up to 15 cruises per day, from 9:00 a.m. to 9:00 p.m. From April to May and September to October there are approximately seven cruises on each weekday and nine trips on weekend days. During the winter months (November to March), there are two cruises on weekdays, three on Sundays, and four on Saturdays. Winter operations start at noon and operate until 2:30 p.m. on weekdays, 9 p.m. on Saturdays, and 4 p.m. on Sundays. There are a number of nearby parking lots, and loading zones are provided for passengers in front of the pier.

Bell Street Pier Cruise Terminal

The Port of Seattle's Bell Street Pier Cruise Terminal is located at Pier 66. The terminal has one cruise ship berth, which serves the Norwegian Cruise Line and Oceania Cruises, and a two-story building for passengers. The Bell Street Pier garage, located across the street at Alaskan Way and Wall Street, provides secure parking with 1,511 spaces for public use. The garage provides complimentary shuttle service to the terminal, but passengers also walk from the garage to the terminal by using the Bell Street pedestrian bridge, crossing to the west side of Alaskan Way, and walking two blocks south.

Pier 66 served an estimated 852,000 passengers in 2013, as the Port of Seattle reported in its online 2013 Cruise Folio (Port of Seattle 2013). The majority of sailings occur on Saturday or Sunday, but Oceania Cruises sail once a month on weekdays. In addition to these sailings, Pier 66 occasionally hosts cruise ships from other cruise lines that have Seattle as a port of call; these dockings can occur during weekdays.

3.2.9 Freight and Passenger Rail

The study area serves both freight and passenger rail. BNSF operates the main railroad line through Seattle. The rail line enters a 1-mile tunnel just north of King Street Station, emerging at approximately Virginia Street between Alaskan Way and Western Avenue. North of the tunnel, at-grade crossings are located east of Alaskan Way at Wall, Vine, Clay, and Broad Streets. An average of 31 freight trains per day operate on the BNSF line, traveling at speeds up to 30 miles per hour (mph).

Passenger rail service includes three Amtrak routes along the BNSF rail line, resulting in eight passenger trains operating along the BNSF line daily in each direction.

Sounder commuter rail service, operated by Sound Transit and Amtrak, also uses the BNSF rail line in the study area. The Seattle to Everett route operates four round trips on weekdays (southbound service to Seattle in the morning and northbound service to Everett in the evening) and provides weekend service for events at Safeco Field and CenturyLink Field.

3.2.10 Emergency Services

Emergency services in the study area are expected to operate similarly in 2017 as under current conditions. Seattle Fire Station 5, located on Pier 52 just north of the Seattle Multimodal Terminal at Colman Dock, is the primary station serving the study area. It provides service to both the downtown core as well as to boats in Elliott Bay.

Other emergency service vehicles, such as ambulances, also serve the waterfront. The restored Alaskan Way will be wide enough to allow sufficient through movements for emergency vehicles, as reported in the EBSP Transportation Discipline Report (SDOT 2012). However, it is anticipated that substantial traffic at some intersections in 2017 may create congestion on Alaskan Way that could adversely affect emergency response times.

3.3 Construction Impacts and Mitigation Measures for Transportation

3.3.1 Construction Impacts of the No Action Alternative

No construction activities would occur under the No Action Alternative; therefore, this alternative would have no construction impacts on transportation.

3.3.2 Construction Impacts of the Action Alternative

As described in Section 2.5.1, AWPOW construction would be sequenced to achieve the two primary early goals of completing the new Elliott Way and creating the interim transit pathway on Columbia Street. Construction is then expected to proceed in segments of two to five blocks in length. In each segment, utilities would generally be constructed first, followed by the new roadway and then the Promenade, with traffic being routed from the restored Alaskan Way roadway to the newly constructed roadway before Promenade construction begins in the same segment. Construction of several such segments could occur simultaneously. Construction of improvements on the east-west streets such as S. Main, S. Washington, Union, and Bell Streets could occur independently of the construction on Alaskan Way, and could occur simultaneously or at different times.

Traffic Volumes

General-purpose traffic volumes during construction are expected to be similar to 2017 existing conditions. The estimated AWPOW-related construction truck trips (up to 27 daily trips on average and up to 66 daily trips during peak construction periods) are not expected to substantially increase traffic volumes and delays because the number of anticipated truck trips is small in the context of overall truck use in the area. In addition, construction truck trips are likely to be scheduled primarily during off-peak hours (midday, evenings, and weekends).

Traffic Operations

The largest construction impact for AWPOW would be the closure of Alaskan Way in the vicinity of Pine Street while the Pine Street extension is built. For purposes of this analysis, the closure is assumed to last approximately 4 months. During this time, vehicles accessing the waterfront north of Pine Street from the south would be required to travel along the newly constructed Elliott Way to Wall, Vine, Clay, or Broad Streets to reach the northern portion of Alaskan Way. Southbound vehicles on Elliott Avenue

would continue to access the northern segment of Alaskan Way via Wall, Vine, Clay, or Broad Streets; vehicles destined for Alaskan Way south of Pine Street would continue along Elliott Way to the waterfront.

This closure of Alaskan Way could create congestion and delay on east-west streets that allow access to the northern portion of Alaskan Way because of increased traffic from vehicles that would otherwise have used Alaskan Way to access the northern portion of Alaskan Way from the south. This impact would increase when trains (particularly long freight trains) use the at-grade rail crossings at Wall, Vine, Clay, and Broad Streets. Gate closures for freight trains at the at-grade crossings typically last between 1 and 5.5 minutes. Trains blocking these east-west streets would increase travel times, including for emergency vehicles, to the northern segment of Alaskan Way because these east-west connections would be the only access points for this area during the closure.

During construction of the main portion of the new Alaskan Way, as each new roadway segment is completed, traffic would be rerouted from the restored roadway to the newly constructed Alaskan Way, and back onto the restored roadway in the next segment. Minor delays could occur as a result of reduced speeds as vehicles move between the restored and new Alaskan Way. However, utility and other underground installations may impact the ability to maintain this approach throughout construction. During the midday and non-peak commute periods, up to one lane in each direction could be closed periodically. Lane closures are anticipated to increase congestion and travel times, but these impacts would occur during periods of lower traffic volumes.

Temporary roadway closures during AWPOW construction could occur in other locations in the study area, such as on Seneca Street during the construction of pedestrian improvements. These closures would likely occur in the evenings or on weekends to minimize impacts on traffic. During closures, travel time and delay at intersections could increase, but impacts would be lower than if the closures took place during peak periods due to lower vehicle volumes during these off-peak periods.

Additional sources of potential traffic delay during construction include:

- Visual distraction from construction activities
- Traffic diversion from Alaskan Way and east-west connections, such as Columbia, Seneca, and Marion streets, to surface streets in the central business district
- Construction trucks entering and leaving the work zone and staging areas

Access to businesses would be maintained throughout construction. While localized construction activities could temporarily block access, this would occur only intermittently and for short periods of time. During these times, the use of side streets may be required to assist the movement of freight and supplies to local businesses.

Freight

AWPOW's impacts on freight movement would be similar to those described for general-purpose traffic. During the road closure near the Pine Street extension, freight vehicles needing to access the northern segment of Alaskan Way would be required to detour around the closure. This could increase travel times and congestion on Elliott Way and on Broad Street, which is designated as a major truck street, during the closure.

In other parts of the study area, there could be limited closures of the roadway during construction. Access to businesses would be maintained on side streets to assist movement of freight and supplies to local businesses, which would minimize impacts on freight vehicles. During closures or lane reductions, travel time and delay could increase for freight vehicles. Trucks with oversized loads require an escort and typically travel between 10:00 p.m. and 5:00 a.m., during the time that road closures for AWPOW could occur. During road closures, a commercial vehicle enforcement officer and City of Seattle Traffic Control would need to coordinate to schedule the movement of oversized loads.

Access to the Port of Seattle's Terminal 46 is located on Alaskan Way at S. King Street. Construction of Alaskan Way and driveway accesses could require intermittent detours in this area or brief closures of entrance points to Terminal 46. This could cause an increase in delays for freight vehicles accessing this location, but it is anticipated that such delays would be limited. Construction activities near Terminal 46 would be coordinated with the Port to minimize impacts on freight transportation and distribution.

Pedestrian and Bicycle Facilities

When necessary during construction, pedestrians would be rerouted around active construction zones, which could lengthen pedestrian trips and travel times. However, the impact would be minor in any one location because construction is expected to occur in segments along the project footprint.

The path on the east side of Alaskan Way would remain open during construction. The path would be rerouted away from active construction zones, which could impact pedestrian and bicycle travel times; again, the short segments in which construction would occur would minimize this impact.

During the closure of Alaskan Way to construct the new Pine Street extension, pedestrians and bicyclists would be able to use the 16-foot-wide sidewalk along the west side of Alaskan Way. This would reduce impacts on pedestrians and bicyclists during the closure. The protected bicycle facility on Elliott Way that is proposed as part of AWPOW would be completed before the closure of Alaskan Way, allowing bicyclists an alternative route to bypass the closure area.

During replacement of the Marion Street pedestrian bridge, pedestrian impacts would be minimal. Pedestrians may be rerouted to a temporary pedestrian bridge directly adjacent to the permanent bridge, but they would have direct access over Alaskan Way into Colman Dock throughout construction.

Public Transportation

During AWPOW construction, transit routes would run on interim pathways, which would likely be similar to where they were rerouted during construction of EBSP and AWVRP. King County Metro Routes 16, 66, and 99 would operate on First Avenue. Construction could increase transit travel times and change or complicate access to transit stops. Transit routes could experience some delay if construction caused traffic from Alaskan Way to divert onto nearby streets; however, substantial diversion is not anticipated because Alaskan Way (or Alaskan Way and Elliott Way) would remain open to general-purpose traffic throughout construction. Transit service provided by King County Metro could be rerouted onto the new Alaskan Way after the completion of the new transit lanes at the southern end of the project footprint and the improvements to Columbia Street, where the permanent pathway for King County Metro routes serving West Seattle, Ballard, and southwest King County will be located.

Water Transportation Services

AWPOW construction is not expected to impact service or sailing schedules for Washington State ferries, the King County Water Taxi, or Argosy Cruises. Access to these facilities would be maintained throughout construction. As each new roadway segment is completed, traffic would be rerouted from the restored roadway to the newly constructed Alaskan Way, and back onto the restored roadway in the next segment, which would allow ferry storage lanes to be maintained throughout construction.

Dockings and operations of the Victoria Clipper at Pier 69 and the Bell Street Pier Cruise Terminal would not change as a result of AWPOW construction. However, access to these facilities from the south would be affected by the closure of Alaskan Way at Pine Street to construct the Pine Street extension. Northbound traffic on Alaskan Way bound for the cruise ship terminal would be required to detour north around the closure and would likely use Wall Street to connect back to Alaskan Way near Pier 69. Increased traffic volumes caused by this diversion could create additional congestion and delay on east-west streets that allow access to the northern portion of Alaskan Way; this could increase travel times for vehicles destined for the terminals and parking garages.

Rail

AWPOW construction is not expected to impact rail services or facilities. BNSF restricts construction in the railroad right of way to pre-arranged track closure windows. Construction near the BNSF rail line would occur only during these pre-arranged time periods.

Emergency Services

During construction, emergency vehicles may experience delays in response time as they travel through or detour around active construction areas. Road closures or lane reductions would increase congestion and delay in the study area, and therefore would impact response times. The largest impact would be from the closure of Alaskan Way for construction of the Pine Street extension, which would require emergency vehicles from Fire Station 5 to detour to Wall Street if responding to an emergency in the northern segment of Alaskan Way. Emergency services could also be provided from the north during the closure, but would still be subject to intermittent blockage by at-grade train crossings; these crossings can last from 1 to 5.5 minutes.

3.3.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

The City would develop a Traffic Control Plan to reduce impacts on traffic operations and to protect and control motor vehicle, pedestrian, and bicycle traffic during all phases of construction. The plan would be developed in accordance with City construction specifications and would be updated as appropriate for each construction phase. The plan would outline specific impact-reducing measures, including the following:

- Clearly marked detours for motor vehicles, developed in coordination with other agencies and adjacent construction projects, to provide alternative routes for access to the waterfront and to avoid active construction areas
- Accommodations for vehicles that require loading zone access to properties for services such as business deliveries, taxi and bus service, and garbage pickup
- Use of flaggers, uniformed police officers, barricades, signing, or other traffic control devices
- Designated construction haul routes to minimize impacts of construction traffic on other roadways
- Accommodations for oversized freight vehicles to travel through construction zones, if necessary, during road closures
- Clearly marked pedestrian and bicycle access routes as well as proposed locations of detour signage and other wayfinding elements; accessible routes to be within a reasonable distance of temporarily closed trails, bridges, and other pathways
- Transit stop closures, alternative transit stop locations, and interim transit routes developed and publicized in coordination with King County Metro
- Arrangements for access, including parking, passenger drop-off and pick-up, and deliveries, to Colman Dock, King County Water Taxi, Victoria Clipper, Argosy Cruises, and the Bell Street Cruise Terminal
- Arrangements for emergency access to and travel through construction areas to minimize impacts on emergency response times, developed in coordination with emergency response providers

The City would maintain access to private property to the maximum extent feasible, and would notify property owners in advance of activities that might temporarily limit access. In addition, the City would coordinate with businesses affected by construction to provide wayfinding information for customers and support other outreach activities to minimize the potential adverse impacts of construction.

Because AWPOW construction would not impact rail services, no mitigation measures would be necessary with respect to those services.

3.4 Operational Impacts and Mitigation Measures for Transportation

This section compares how the transportation system would operate under both the No Action and Action alternatives in order to identify project-related impacts and any needed mitigation measures. The analysis for both alternatives reflects future conditions in 2030, the project design year. As with 2017 existing conditions, quantitative traffic analyses for 2030 were developed only for the PM peak hour because this period has the highest traffic volumes in the corridor. To provide a conservative estimate, traffic volume forecasts were based on summer conditions when traffic is expected to be highest.

3.4.1 Operational Impacts of the No Action Alternative

Roadway Network

The roadway configuration and the 15 study area intersections for the No Action Alternative would be the same as the 2017 existing conditions described in Section 3.2.1. Figure 3-1 shows the study intersections for the No Action Alternative.

Traffic Volumes

Traffic volumes in the study area are generally expected to increase by approximately 5 to 10 percent between 2017 and 2030 due to regional population and employment growth. The anticipated 2030 lane configuration and PM peak hour traffic volumes for the No Action Alternative are shown in Figure 3-5.

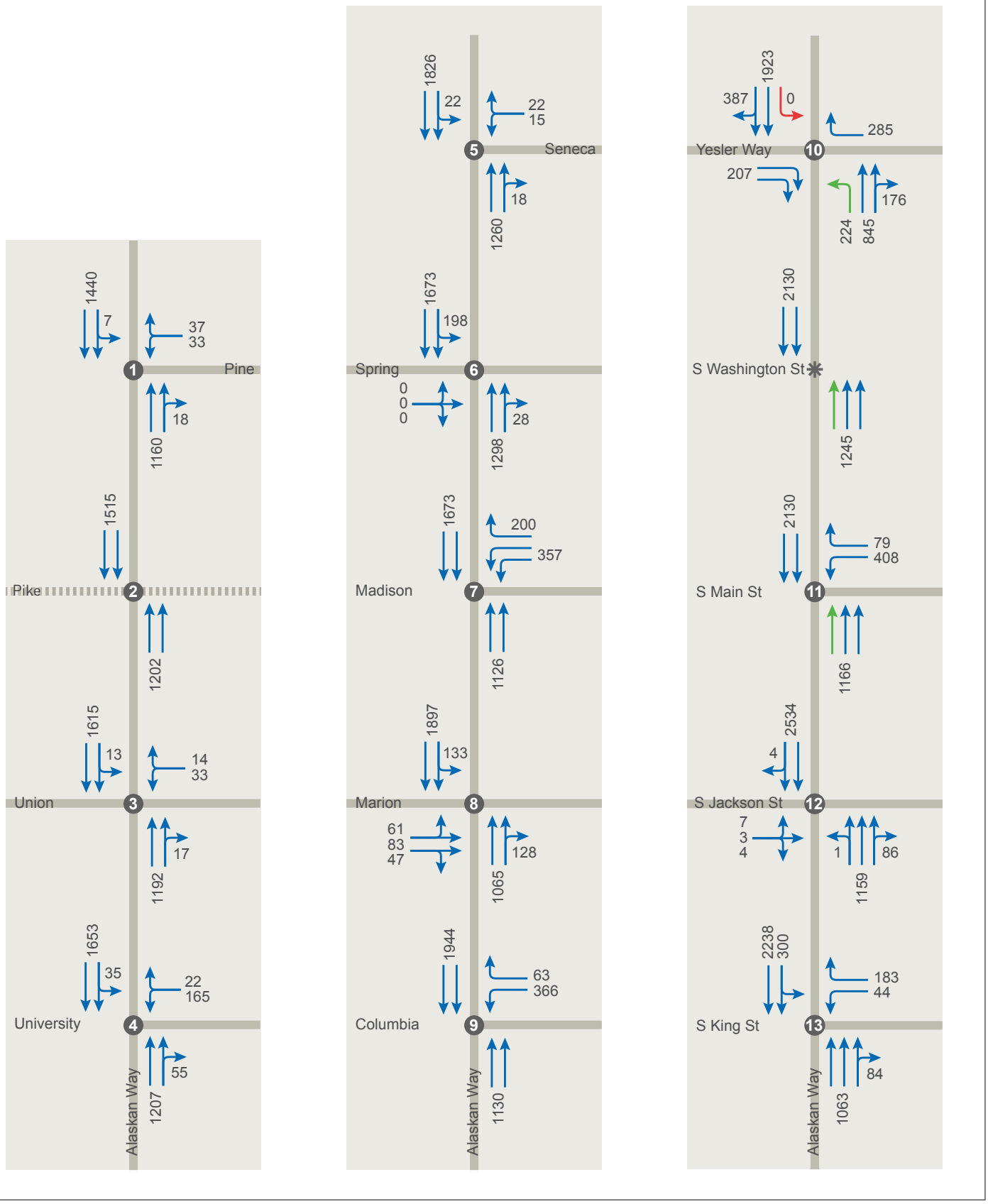
As in 2017, PM peak hour traffic volumes on Alaskan Way in 2030 under the No Action Alternative are expected to be considerably higher southbound than northbound. Approximately 2,540 vehicles would travel southbound on Alaskan Way between S. King Street and S. Jackson Street compared to 1,250 vehicles northbound (SDOT 2012). Southbound traffic volumes in the PM peak hour would also be higher in the northern portion of the study area, with approximately 1,515 southbound vehicles and 1,180 northbound vehicles using Alaskan Way between Pike Street and Pine Street (SDOT 2012).

Daily traffic volumes in the southern end of the study area would be higher than those in the northern end because of two reasons: 1) the existing traffic-generating facilities in this area (e.g., Colman Dock), and 2) because Alaskan Way will become the primary route into downtown Seattle from the southern portal of the SR 99 tunnel. Average daily volumes are estimated to be approximately 34,000 vehicles between S. Jackson and S. King Streets and approximately 24,000 vehicles between Pike and Pine Streets (SDOT 2012).

Traffic Operations

Intersection Operations

Figure 3-6 and Table 3-3 show the PM peak hour intersection operations in 2030 under the No Action Alternative. For comparison purposes, Table 3-3 also shows the corresponding intersection operations for 2017 existing conditions. The study area is expected to experience more congestion in 2030 than in 2017 as a result of regional population and employment growth. The same three intersections that would operate at LOS F in 2017 (Alaskan Way at Columbia, Spring, and Pine Streets) are expected to operate at LOS F in 2030, but they would experience substantially more delays because of the higher traffic volumes.



Data Source:
Elliott Bay Seawall Project

- General Purpose Traffic
- Ferry Only
- Transit Only
- Pedestrian Crossing
- Not Analyzed

Figure 3-5
No Action Alternative
Lane Configuration and
Traffic Volumes (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk

0 500 1,000
Feet

GIS Source: King County, City of Seattle
Data Source: Elliott Bay Seawall Project

Action Alternative

- Transportation Discipline Study Area
- Project Footprint
- Potential Construction Staging Area
- Signalized Intersection
- Unsignalized Intersection
- LOS A-C
- LOS D
- LOS E
- LOS F or Worse
- Not Analyzed In This Alternative

- Parcel Boundary
- Building Footprint

Note:
There is a different number of intersections analyzed in the 2017 Existing Conditions and 2030 No Action alternatives compared to the 2030 Action Alternative because the Existing Conditions and No Action alternatives were developed to analyze the impacts from the EBSP and did not include the new/reconfigured intersections north of Pike Place Market (intersections 1-5 in the Action Alternative) or the revised/impacted intersections in the south end of the study area (intersections 16 and 20). In addition, to analyze all of the AWPOW related impacts along Western Avenue, the Action Alternative analyzed five additional intersections along Western Avenue compared to the number of intersections that were analyzed for the EBSP along Western and 1st Avenue.

Figure 3-6
2030 Intersection Operations (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk

Table 3-3. No Action PM Peak Hour Intersection Level of Service and Delay

			2017 Existing Conditions PM Peak Hour		2030 No Action PM Peak Hour	
ID[1]	Intersection	Traffic Control	LOS	Delay (sec)	LOS	Delay (sec)[2]
6	Alaskan Way and Pine Street	Unsignalized	F	142	F	>200
7	Alaskan Way and Pike Street	Pedestrian Half Signal	A	7	A	9
8	Alaskan Way and Union Street	Unsignalized	A	4	A	4
9	Alaskan Way and University Street	Signalized	B	17	C	31
10	Alaskan Way and Seneca Street	Pedestrian Half Signal	B	16	C	31
11	Alaskan Way and Spring Street	Pedestrian Half Signal	F	>200	F	>200
12	Alaskan Way and Madison Street	Signalized	D	54	E	57
13	Alaskan Way and Marion Street	Signalized	C	27	C	27
14	Alaskan Way and Columbia Street	Signalized	F	83	F	132
15	Alaskan Way and Yesler Way	Signalized	B	18	C	21
17	Alaskan Way and S. Main Street	Signalized	A	10	B	10
18	Alaskan Way and S. Jackson Street	Signalized	A	5	A	6
19	Alaskan Way and S. King Street	Unsignalized	A	10	B	12
24	Western Avenue and Madison Street	Signalized	C	23	C	23
25	Western Avenue and Marion Street	Signalized	B	17	B	17

[1] The intersections in this table are not numbered consecutively because they are a subset of the intersections modeled for 2030 conditions. For more information, please see Figure 3-1 and the traffic operations discussion in Section 3.4.2.

[2] The average delay for all vehicles is reported for signalized intersections. For unsignalized intersections, delay is reported for the worst-operating stopped approach.

sec = seconds

Source: SDOT 2012

Similar to 2017 conditions, the traffic operations model suggests that in 2030 under the No Action Alternative, there would be substantial queuing in the southbound lanes at the intersection of Alaskan Way and Spring Street as a result of the pre-timed half signal for pedestrians crossing Alaskan Way. This signal would cause substantial delays (LOS F) for southbound vehicles, but little delay (LOS A) for northbound vehicles, leading to southbound queuing and stop-and-go traffic along Alaskan Way that could extend as far north as Lenora Street. As under 2017 conditions, this queuing would limit vehicles from accessing Alaskan Way, and cause some to take alternative routes. Approximately 30 percent of the vehicles expected to use Alaskan Way would not be able to access the corridor, compared to 20 percent of vehicles under 2017 existing conditions. Because of this diversion, intersection operations on Alaskan Way appear better than they would if all of the vehicles were able to enter the corridor.

Travel Time Analysis

Figure 3-7 and Table 3-4 show the anticipated PM peak hour travel times along Alaskan Way in 2030 under the No Action Alternative. For comparison purposes, Table 3-4 also shows the corresponding travel times for 2017 existing conditions. Travel times under the No Action Alternative would be similar to or longer than travel times estimated for 2017 because of traffic volume increases between 2017 and 2030. The most substantial delay would be for southbound travel between Pike Street and Yesler Way, which would take about 50 seconds longer under the No Action Alternative than in 2017. As in 2017, northbound travel times between Yesler Way and Pike Street are expected to be shorter than southbound travel times for the same roadway segment. The difference is largely attributed to the delay and queuing of southbound vehicles caused by the pedestrian half signal at Alaskan Way and Spring Street, as described above (SDOT 2012).

Table 3-4. 2017 Existing and No Action Travel Times during the PM Peak Hour (Minutes:Seconds)

Roadway Segment	2017 Existing Conditions PM Peak Hour	2030 No Action PM Peak Hour
Southbound		
Pike Street to Yesler Way	7:45	8:35
Yesler Way to S. Royal Brougham Way	1:17	1:17
Northbound		
Yesler Way to Pike Street	1:43	1:45
S. Royal Brougham Way to Yesler Way	1:42	1:46

Source: SDOT 2012

Freight

Under the No Action Alternative, Alaskan Way would continue to serve as a key freight corridor through downtown Seattle. However, its efficiency for moving freight would be adversely affected by increased surface street congestion. Freight vehicles would experience the same increased southbound travel times as general-purpose vehicles in the southern portion of the study area during the PM peak hour. This impact would be lessened to some degree because freight traffic is often scheduled for non-peak periods. Access to local businesses and loading docks is anticipated to be similar to 2017 existing conditions.

Pedestrian Facilities

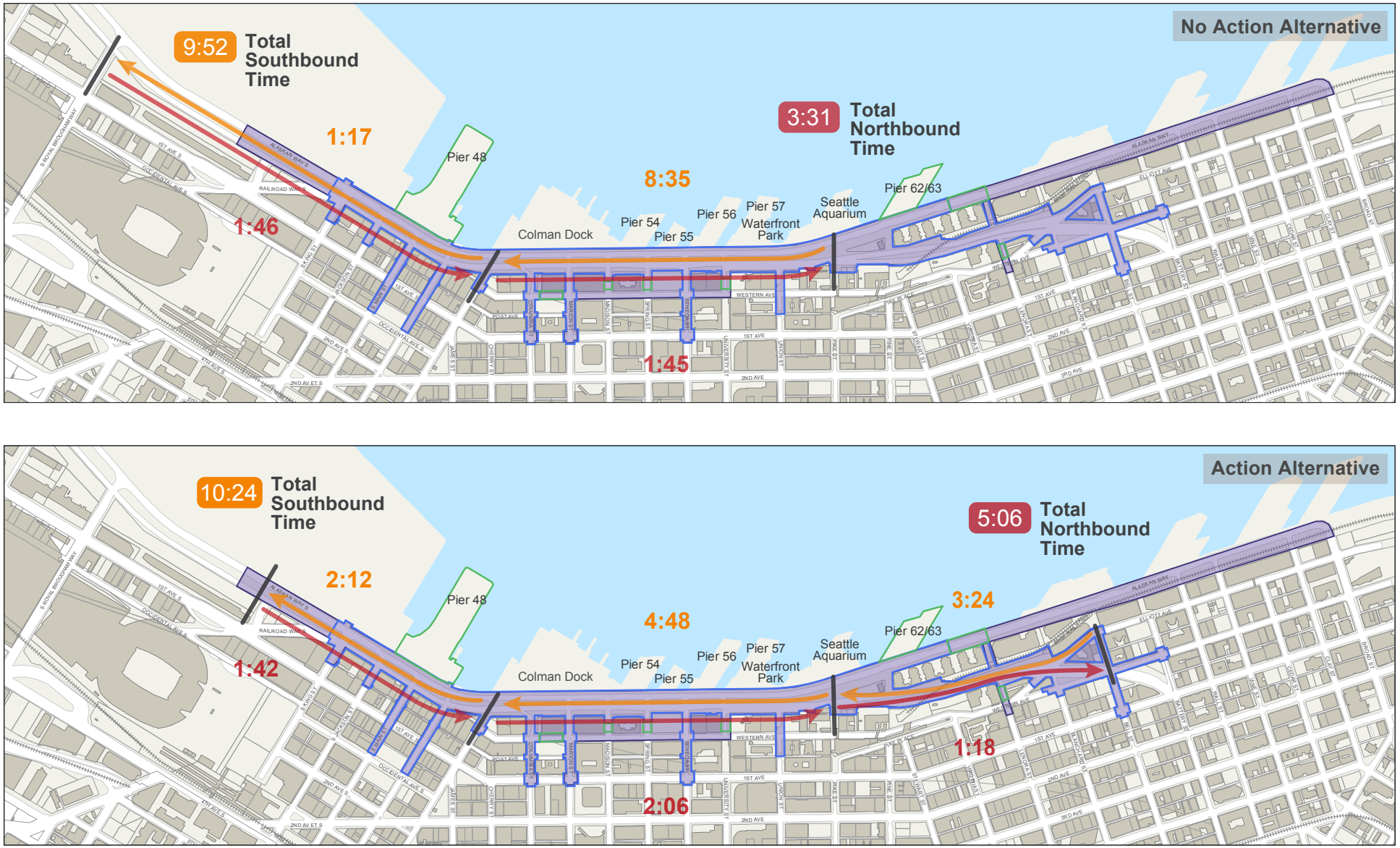
Pedestrian facilities under the No Action Alternative along Alaskan Way would be the same as under the 2017 existing conditions, with sidewalks on both sides of Alaskan Way and a path along the east side. Crosswalks would be provided along Alaskan Way; the average crossing width would be approximately 48 feet, with the maximum crossing width of 56 feet located south of Yesler Way.

As under 2017 existing conditions, pedestrian connections north of Seneca Street between the waterfront and the higher elevation areas of downtown Seattle would be provided at the Pike Street Hillclimb, the steps at University Street and Union Street, and the Lenora Street elevator and staircase. The steps at Seneca Street, at-grade connections to downtown Seattle south of Seneca Street, and the Marion Street pedestrian bridge would all remain the same as under 2017 existing conditions. The Seneca Street stairs and the Union Street stairs would not meet ADA standards.

Pedestrian activity along the waterfront is expected to be somewhat higher under the No Action Alternative than under 2017 existing conditions because of population and employment growth in the downtown Seattle area. The sidewalk on the west side of Alaskan Way would likely experience additional pedestrian congestion during the summer months and during special events or festivals along the waterfront.

Bicycle Facilities

Bicycle facilities under the No Action Alternative would be the same as under the 2017 existing conditions. As with pedestrian traffic, it is expected that bicycle use in the study area would increase from 2017 existing conditions as a function of population and employment growth. The projected increase in both traffic volumes and nonmotorized use on the waterfront could result in the potential for increased conflicts between nonmotorized users and vehicular traffic within the study area, particularly for bicyclists on the path along the east side of Alaskan Way with its 13 street intersection crossings.



0 500 1,000
Feet

GIS Source: King County, City of Seattle
Data Source: Elliott Bay Seawall Project

Action Alternative

- Transportation Discipline Study Area
- Project Footprint
- Potential Construction Staging Area
- Southbound
- Northbound
- x:xx Travel Time

- Parcel Boundary
- Building Footprint

Note:
There are different travel time segments analyzed in the 2017 Existing Conditions and 2030 No Action alternatives compared to the 2030 Action Alternative because the Existing Conditions and No Action alternatives were developed to analyze the impacts from the EBSP and used separate termini to understand impacts. There is also an additional travel time segment for the 2030 Action Alternative in the north portion of the study area to address travel time impacts to the new or reconfigured intersections on Elliott Way.

Figure 3-7
2030 Travel Times (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk

Public Transportation

The No Action Alternative would include public transit service similar to that under the 2017 existing conditions. It is anticipated that the demand for transit services in the study area would increase because of population and employment growth in downtown Seattle. This increase could result in the need for service expansion in the study area.

Water Transportation Services

Access to all water transportation services would be similar in 2030 to conditions in 2017. The primary difference between 2017 existing conditions and the No Action Alternative would be the increase in congestion on Alaskan Way. This congestion would result in slightly more delays to intersection operations near Colman Dock, although the LOS at Yesler Way and Marion Street would remain at acceptable levels during the PM peak hour. Similarly, King County Water Taxi passengers could experience some delay in accessing the terminal. Operations for the Victoria Clipper, Argosy Cruises, and the Bell Street Cruise Terminal would be the same as under 2017 existing conditions; however, additional congestion on Alaskan Way would result in less available capacity to accept the influx of traffic associated with embarking and disembarking passengers at these facilities.

Rail

The No Action Alternative would not change the operation of passenger or freight rail in the study area.

Emergency Services

Access to and parking at Fire Station 5 would be the same as anticipated for 2017. However, the projected increases in traffic volumes, intersection delays, and travel times would result in some degree of adverse impact on emergency response times within the study area.

3.4.2 Operational Impacts of the Action Alternative

Roadway Network

The Action Alternative would build a new Alaskan Way corridor primarily in the right of way that is vacated by the viaduct removal, with new connections to Elliott and Western Avenues, improved pedestrian and bicycle facilities, and enhanced connections to existing east-west streets. Compared to the No Action Alternative, the improvements would provide additional traffic capacity in the southern portion of the study area and better connectivity with Belltown and points to the north. Figure 3-1 displays the study intersections evaluated for the Action Alternative. A total of 27 intersections (12 more intersections than the No Action Alternative) were evaluated to account for the Action Alternative's changes to the roadway design and to determine the potential for traffic congestion on nearby streets, including Western Avenue.

The new Alaskan Way would have between three and five lanes of northbound traffic and three lanes of southbound traffic between S. King Street and Columbia Street. The northbound lanes would consist of two general-purpose lanes, one or two ferry queuing lanes, and one transit-only lane; the southbound lanes would consist of two general-purpose lanes and one transit-only lane. North of Columbia Street, Alaskan Way would consist of four general-purpose lanes. Left- and right-turn lanes would be provided at some intersections, including S. King Street, S. Jackson Street, Yesler Way (a transit left-turn-only lane), Marion Street, and Spring Street. Parking and loading spaces would be provided on both sides of the roadway between Columbia Street and Pine Street, except for the west side of the block between Pike and Pine Streets. Elliott Way, a new connection to Belltown and areas north of downtown Seattle, would have two general-purpose lanes northbound and southbound. All intersections along the new Alaskan Way would be signalized according to Seattle Department of Transportation (SDOT) standards.

With the extension of Bell Street Park between Elliott and First Avenues, these two blocks would become one-way with a shared street (roadway and public park space). This would have a minor impact on the roadway operations on Bell Street and the adjacent roadways. As with the 2017 existing conditions,

traffic on Bell Street would be required to turn at each intersection. Traffic on this local access roadway would not be able to cross Western Avenue.

Traffic Volumes

This section describes the PM peak hour and daily traffic volumes forecasted for 2030 under the Action Alternative. As with the 2017 existing conditions and the No Action Alternative, the forecasts were based on summer conditions, when traffic is expected to be highest. The 27 intersections studied for the Action Alternative in 2030 are shown on Figure 3-1. The lane configuration and PM peak hour traffic volumes that are expected to exist in 2030 for the Action Alternative are shown in Figure 3-8.

Under the Action Alternative, traffic volumes on Alaskan Way during the PM peak hour would be similar northbound and southbound; this is a change from under 2017 existing conditions and the No Action Alternative, where southbound volumes would be higher. The change would occur because the new Elliott Way connection would allow a more direct route between the waterfront and areas to the north, which would alter traffic distribution in the area. Between S. King and S. Jackson Streets, approximately 1,900 vehicles would travel southbound during the PM peak hour, and approximately 1,810 vehicles would travel northbound. Between Pike and Pine Streets, there would be approximately 1,365 southbound vehicles and approximately 1,345 northbound vehicles during the PM peak hour.

As under the No Action Alternative, daily traffic volumes in the southern portion of the study area would be higher than in the northern portion for two reasons: 1) the existing traffic-generating facilities in this area (e.g., Colman Dock), and 2) because Alaskan Way will become the primary route into downtown Seattle from the southern portal of the SR 99 tunnel. Average daily volumes between S. Jackson and S. King Streets are estimated to be approximately 34,000 vehicles, which is the same as under the No Action Alternative. Between Pike and Pine Streets, the average is estimated to be approximately 25,000 vehicles, which is slightly higher than under the No Action Alternative because of the direct connection available to the north via Elliott Way.

Traffic Operations

Intersection Operations

Figure 3-6 and Table 3-5 show the PM peak hour intersection operations for the 2030 No Action and Action alternatives. The number of intersections evaluated differs between the No Action Alternative and the Action Alternative because the No Action Alternative LOS results were based on analysis done for the EBSP, which evaluated only 15 of the 27 intersections studied for AWPOW. The additional intersections studied for AWPOW and shown on Figure 3-1 are:

- The new or reconfigured intersections that AWPOW would create north of Pike Place Market (intersections 1 to 5)
- Intersections 16 and 20 in the southern end of the study area, which either did not provide a direct connection in the EBSP configuration (intersection 16) or were outside the EBSP study area (intersection 20)
- Five additional intersections along Western Avenue (intersections 21, 22, 23, 26, and 27), which were evaluated to obtain a more complete understanding of how AWPOW would affect traffic operations in the study area

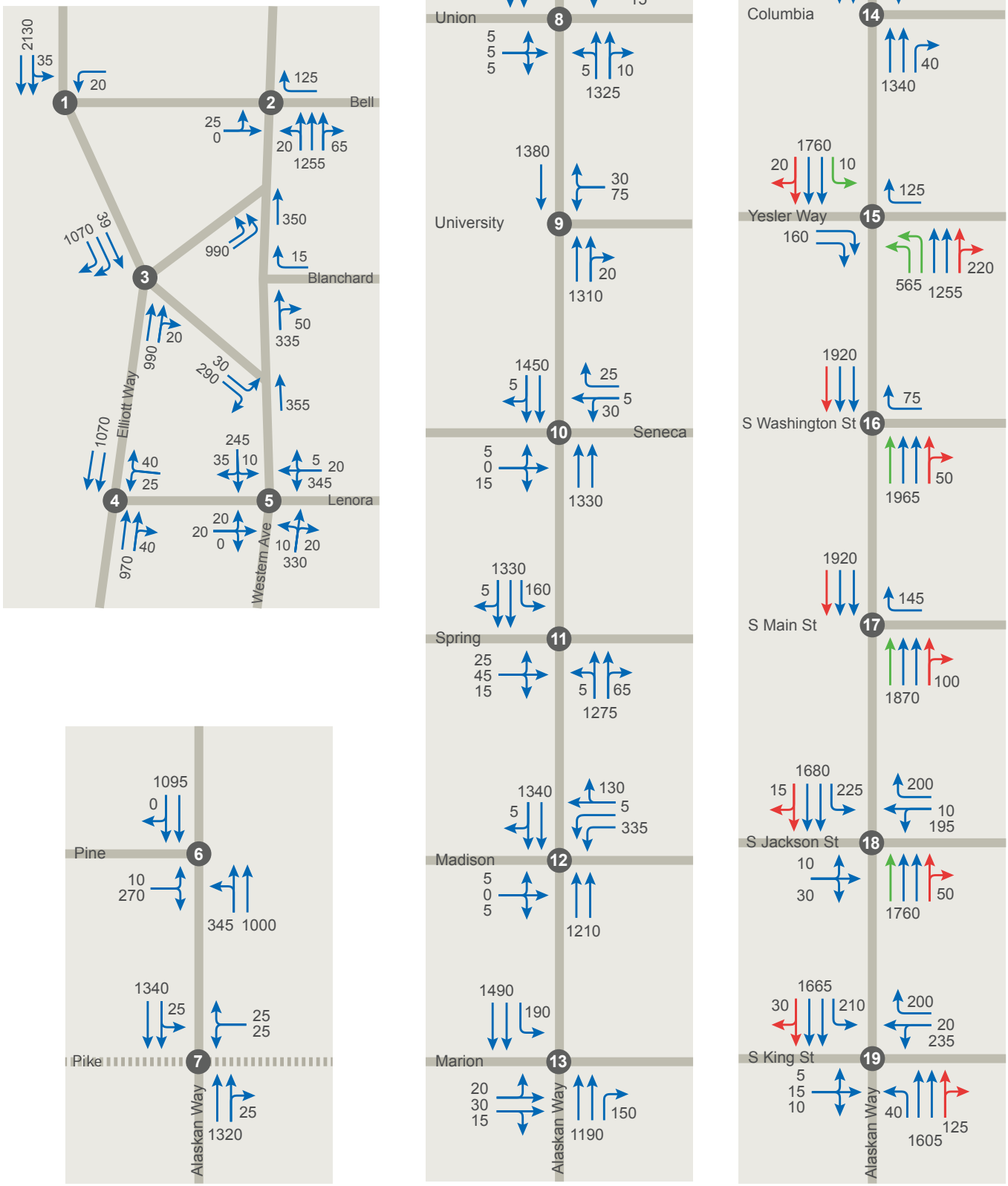


Figure 3-8
Action Alternative Lane Configuration and Traffic Volumes (PM Peak Hour)

Alaskan Way, Promenade, and Overlook Walk

Table 3-5. PM Peak Hour Intersection Level of Service and Delay for Action and No Action Alternatives

	Intersection	No Action Alternative Traffic Control	Action Alternative Traffic Control	2030 No Action Alternative PM Peak Hour[2]		2030 Action Alternative PM Peak Hour[3]	
				LOS	Delay (sec)[4]	LOS	Delay (sec)[4]
1	Elliott Avenue and Bell Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		A	5
2	Western Avenue and Bell Street	Not evaluated for No Action.	Unsignalized	Not evaluated for No Action.		C	23
3	Elliott Avenue, Western Avenue, and Blanchard Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		B	12
4	Elliott Avenue and Lenora Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		A	6
5	Western Avenue and Lenora Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		C	31
6	Alaskan Way and Pine Street	Unsignalized	Signalized	F	>200	C	29
7	Alaskan Way and Pike Street	Pedestrian Half Signal	Signalized	A	9	A	7
8	Alaskan Way and Union Street	Unsignalized	Signalized	A	4	A	2
9	Alaskan Way and University Street	Signalized	Signalized	C	31	A	6
10	Alaskan Way and Seneca Street	Pedestrian Half Signal	Signalized	C	31	A	4
11	Alaskan Way and Spring Street	Pedestrian Half Signal	Signalized	F	>200	B	13
12	Alaskan Way and Madison Street	Signalized	Signalized	E	57	C	20
13	Alaskan Way and Marion Street	Signalized	Signalized	C	27	D	36
14	Alaskan Way and Columbia Street	Signalized	Signalized	F	132	F	98
15	Alaskan Way and Yesler Way	Signalized	Signalized	C	21	C	34
16	Alaskan Way and S. Washington Street	Not evaluated because No Action roadway design did not provide direct access from S. Washington Street to Alaskan Way.	Signalized	Not evaluated because No Action roadway design did not provide direct access from S. Washington Street to Alaskan Way.		C	31
17	Alaskan Way and S. Main Street	Signalized	Signalized	B	10	D	39
18	Alaskan Way and S. Jackson Street	Signalized	Signalized	A	6	D	52
19	Alaskan Way and S. King Street	Unsignalized	Signalized	B	12	F	152
20	Alaskan Way and S. Dearborn Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		D	48
21	Western Avenue and University Street	Not evaluated for No Action.	Unsignalized	Not evaluated for No Action.		E	45

Table 3-5. PM Peak Hour Intersection Level of Service and Delay for Action and No Action Alternatives

	Intersection	No Action Alternative Traffic Control	Action Alternative Traffic Control	2030 No Action Alternative PM Peak Hour[2] LOS	2030 No Action Alternative PM Peak Hour[2] Delay (sec)[4]	2030 Action Alternative PM Peak Hour[3] LOS	2030 Action Alternative PM Peak Hour[3] Delay (sec)[4]
22	Western Avenue and Seneca Street	Not evaluated for No Action.	Unsignalized	Not evaluated for No Action.		F	131
23	Western Avenue and Spring Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		B	14
24	Western Avenue and Madison Street	Signalized	Signalized	C	23	C	23
25	Western Avenue and Marion Street	Signalized	Signalized	B	17	B	17
26	Western Avenue and Columbia Street	Not evaluated for No Action.	Signalized	Not evaluated for No Action.		C	22
27	Western Avenue and Yesler Way	Not evaluated for No Action; included in the Action Alternative to document all impacts from AWPOW.	Unsignalized	Not evaluated for No Action; included in the Action Alternative to document all impacts from AWPOW.		F	87

[1] The number of intersections evaluated differs between the No Action Alternative and the Action Alternative because the No Action Alternative LOS results were based on analysis done for the EBSP, which only evaluated 15 of the 27 intersections studied for AWPOW. See Appendix A for more information.

[2] SDOT 2012

[3] Parametrix analysis

[4] The average delay for all vehicles is reported for signalized intersections. For unsignalized intersections, delay is reported for the worst-operating stopped approach.

sec = seconds

Under the Action Alternative, all intersections on Alaskan Way would be fully signalized. This is a substantial change from the No Action Alternative, where three intersections along Alaskan Way were unsignalized and three additional intersections had only pedestrian half signals. Signalizing all of the intersections along Alaskan Way and adding left-turn storage lanes would improve operations at most intersections along Alaskan Way compared to the No Action Alternative. Four intersections along Western Avenue (intersections 2, 21, 22, and 27) were assumed to remain unsignalized.

The northern portion of Alaskan Way is forecast to operate acceptably (LOS E or better) under the Action Alternative, while the southern portion would still experience some congestion (see Figure 3-6). As under 2017 existing conditions and the No Action Alternative, operations in the southern portion of the study area are affected by traffic accessing and exiting Colman Dock. Two of the intersections on Alaskan Way that were forecast to operate at LOS F under No Action (Spring and Pine Streets) would improve under the Action Alternative to LOS B and C, respectively. The intersection of Alaskan Way and Columbia Street would operate at LOS F under both alternatives, although the Action Alternative would reduce the delay at this location. The two unsignalized intersections along Western Avenue in the southern portion of the study area are also forecast to operate at LOS F during the PM peak hour. Because these intersections were not modeled for the No Action Alternative, it is not possible to determine whether these LOS results are due to AWPOW's impacts.

The only signalized intersection where LOS under the Action Alternative would fall to unacceptable levels compared to the No Action Alternative is at Alaskan Way and S. King Street, where the LOS is predicted to drop from B to F. The different LOS results between the No Action and Action alternatives at this intersection are due to variances between the traffic operations model inputs used for the two

alternatives. The pedestrian half signal at Spring Street that resulted in congestion and queuing for southbound vehicles under the No Action Alternative would be replaced in the Action Alternative by a full signal. As described under traffic operations in Section 3.4.1, the congestion caused by the pedestrian half signal would divert approximately 30 percent of southbound traffic from Alaskan Way, causing other intersections in the corridor to appear to operate better than would be the case if all vehicles were able to enter the corridor. As a result, it is more likely that, under actual conditions, the Alaskan Way and S. King Street intersection would have a similar level of congestion under both the No Action and Action alternatives.

Travel Time Analysis

Figure 3-7 and Table 3-6 show the anticipated PM peak hour travel times along Alaskan Way in 2030 under the No Action and Action alternatives. The roadway segments used to evaluate travel time are different between the alternatives because the No Action Alternative analysis is based on the EBSP EIS. The southernmost travel time segment for the Action Alternative ends at S. Dearborn Street, while the corresponding segment for the No Action Alternative ends at S. Royal Brougham Way, approximately ¼ mile farther south. As a result, these travel time segments cannot be directly compared. However, both alternatives use the same travel time segment between Yesler Way and Pike Street. A third segment was added for the Action Alternative in the northern portion of the study area to provide travel time information for the new Elliott Way connection.

Southbound travel times between Pike Street and Yesler Way are expected to be substantially reduced under the Action Alternative as compared to the No Action Alternative. This is largely because the Action Alternative would remove the southbound bottleneck located along Alaskan Way at Spring Street. Northbound travel times in 2030 would be similar between the No Action and Action alternatives.

Table 3-6. PM Peak Travel Times for No Action and Action Alternatives (Minutes:Seconds)

Roadway Segment[1]	2030 No Action Alternative[2]	2030 Action Alternative[3]
Southbound		
Bell Street to Pike Street	-	3:24
Pike Street to Yesler Way	8:35	4:48
Yesler Way to S. Royal Brougham Way	1:17	-
Yesler Way to S. Dearborn Street	-	2:12
Northbound		
S. Royal Brougham Way to Yesler Way	1:46	-
S Dearborn Street to Yesler Way	-	1:42
Yesler Way to Pike Street	1:45	2:06
Pike Street to Bell Street	-	1:18

[1] Different travel time segments were studied for the No Action Alternative and the Action Alternative in some locations.
[2] SDOT 2012
[3] Parametrix analysis

Freight

Freight mobility along Alaskan Way is expected to improve under the Action Alternative compared to the No Action Alternative. Improved LOS at several intersections and faster southbound travel times along Alaskan Way would allow truck traffic to move more efficiently. The additional lanes in each direction for ferry and transit traffic south of Columbia Street would allow freight vehicles to avoid interruptions from bus stops and ferry queuing in this part of the corridor. These improvements would benefit freight transport to, from, and between the manufacturing and industrial centers in Ballard/Interbay and Duwamish, along with Port of Seattle facilities and local businesses within the study area.

Loading zones would be provided on both sides of Alaskan Way between Marion Street and Pike Street, as well as on Marion and Madison Streets, to accommodate freight loading and unloading to nearby businesses. North of Columbia Street, freight traffic would use loading and parking zones to access businesses. South of Columbia Street, freight loading and unloading would be accommodated on side streets. There would be a median along much of Alaskan Way between S. King Street and Pine Street, which could affect how freight vehicles access businesses because it restricts left-turn movements for large vehicles.

Freight access to some private properties would change because a sidewalk would be constructed within the City's right of way along the east side of Alaskan Way. Some properties that previously used or crossed the City right of way mid-block to access parking or loading docks on their property would need to alter their access to either the north or south ends of the block. The change in access could potentially change how private property owners use the space between their buildings and the City's right of way. Some businesses may not be able to accommodate as many vehicles on their property because of the access changes.

Freight access to some private properties on Bell Street between Elliott and First Avenues may also change slightly because of the conversion to a one-way roadway. However, impacts on freight would be minor because the street does not currently serve a high volume of traffic due to its configuration as a non-through street. The improvements made as part of the Bell Street Park Extension would not result in significant changes to traffic operations through the corridor.

Pedestrian Facilities

The improvements planned as part of the Action Alternative are expected to increase pedestrian traffic in the study area. These increases would be accommodated by the addition of the Promenade, with its open expanse for gathering along the waterfront and pedestrian pathway, as well as by the substantially wider sidewalk on the east side of Alaskan Way. Crosswalks would be provided on each leg of all intersections in the study area except Yesler Way, which would not have a crossing on its south leg.

Pedestrian crossing distances would vary between 46 feet and 96 feet along the corridor depending on the width of Alaskan Way. Crossing distances would be longer than under the No Action Alternative in the portion of the study area south of Spring Street because of transit, ferry queuing, and turn lanes in this area. The median between S. King Street and Pine Street would help address this increase by providing a refuge area for pedestrians. North of Spring Street, crossing distances would be similar to those under the No Action Alternative.

All pedestrian crossings would be clearly delineated to improve pedestrian safety and comfort. Additional pedestrian safety and comfort improvements would include curb treatments, signage and wayfinding, and lighting. The design of the Action Alternative bicycle facilities (discussed in the following section) would also improve pedestrian safety by reducing the risk of bicycle and pedestrian conflicts as compared to the No Action Alternative. Pedestrians would be protected by signalized crosswalks and separated pedestrian and bicycle facilities.

In addition to the proposed facilities along the new Alaskan Way, several improvements would be made on east-west streets to support increased pedestrian traffic. The sidewalks along S. Main and S. Washington Streets in Pioneer Square would be widened and reconstructed to address ADA deficiencies. New or enhanced pedestrian connections between the waterfront and downtown Seattle at some of the steeper and currently less accessible cross streets would include:

- Constructing a new stairway and elevator at the Marion Street pedestrian bridge
- Constructing two new elevated walkways with associated stairs and elevators on Union Street between Alaskan Way and Western Avenue, and between Western Avenue and Post Alley
- Constructing a new grade-separated connection between the waterfront and the Pike Place Market at the Overlook Walk

The Overlook Walk would have wide stairs, ramps, and grassy slopes to allow pedestrians to negotiate the elevation change between the waterfront and Pike Place Market. All of the ramps would have a maximum 5 percent grade for ADA accessibility. Stairs and elevators would provide access to different levels of the Overlook Walk between Pike Place Market and the Aquarium Plaza. Additionally, at the north end of the project footprint, Bell Street Park would be extended between Elliott and First Avenues to provide a shared street and public park space with landscaping, new lighting, and safer street crossings.

Bicycle Facilities

It is anticipated that bicycle activity, similar to pedestrian activity, would increase along the waterfront as a result of AWPOW. The Action Alternative would provide a dedicated, two-way protected bicycle facility on the west side of Alaskan Way and one-way protected bicycle facilities along Elliott Way. The facilities would be designed to enhance safety for bicyclists by minimizing conflicts with vehicles and pedestrians. Safety features would include a sidewalk and landscape buffer, raised planters and other features separating bicycle and pedestrian facilities, and the use of traffic signals (including bicycle-specific signals), signage, and road markings.

Compared to the path along the east side of Alaskan Way in the No Action Alternative, the new facility would increase safety for bicyclists, pedestrians, and motor vehicles. There would be fewer bicycle-vehicle conflicts because the bicycle facility would be located on the west side of Alaskan Way, which would reduce the number of intersection crossings from 13 to 2. The two intersection crossings would be located at Yesler Way and Marion Street. There would also be fewer bicycle-pedestrian conflicts because the facility would provide physical separation between modes through the use of designated signalized crosswalks, raised planters, and other features. It is possible that some bicyclists would choose to use the roadway instead of the designated bicycle facility, but the majority of riders are expected to use the designated facility because it would be safer and more convenient for commuters as well as recreational riders.

Public Transportation

In addition to the likely increase in demand for transit services in the study area because of population and employment growth, demand is expected to increase as a result of AWPOW and other planned improvements on the waterfront. The Action Alternative would provide northbound and southbound transit-only lanes on Alaskan Way from the southern end of the study area to Columbia Street, along with two-way transit-only lanes on Columbia Street between Alaskan Way and First Avenue. A southbound transit-only left-turn lane would also be provided on Alaskan Way at Yesler Way. These facilities would improve transit operations for King County Metro bus routes serving West Seattle, Ballard, and southeast King County. New bus stops on Alaskan Way and Columbia Street and a multimodal hub at Colman Dock would also be included as part of AWPOW, and would improve the experience of transit users in the study area.

The Alaskan Way roadway design would provide accommodations for a future local bus transit service for the waterfront. Although such service is not part of the project and has not been formally proposed, it could serve points between the Olympic Sculpture Park and Pioneer Square, with potential connections to Seattle Center. If implemented, this service would complement other transit services planned in and near the study area, such as the proposed Madison Street rapid trolley bus route, the new First Hill Streetcar line, the proposed City Center Streetcar line on First Avenue, and the proposed Third Avenue Transit Corridor improvements.

Water Transportation Services

The Action Alternative would include two dedicated lanes for ferry queuing on northbound Alaskan Way between S. Washington Street and the main entrance to Colman Dock at Yesler Way. One dedicated lane would be provided between S. King Street and S. Washington Street. This configuration would be an improvement over the No Action Alternative, which provides only one dedicated lane for ferry traffic

between S. Jackson Street and Yesler Way. The added lane capacity would increase overall holding capacity for ferry vehicles and improve operations on Alaskan Way during times when ferry traffic is high. The intersections of Alaskan Way with Yesler Way and Marion Street would continue to operate at acceptable levels.

Pedestrians and bicyclists would access the King County Water Taxi terminal and the Seattle Multimodal Terminal at Colman Dock from Alaskan Way or by using the new pedestrian bridge from First Avenue along Marion Street. Access to the terminals would improve under the Action Alternative because of AWPOW's improvements to pedestrian and bicycle facilities. Curbside space for taxis and passenger drop-off and pick-up would continue to be provided on Alaskan Way in front of the ferry terminal building. Drop-off and pick-up would also improve under the Action Alternative compared to the No Action Alternative because of reduced travel times and roadway congestion.

Access to the Argosy Cruises terminal by all modes would improve under the Action Alternative compared to the No Action Alternative. Congestion and delay at nearby intersections would be reduced, and improvements to nonmotorized facilities would also improve pedestrian safety and comfort for passengers accessing the Argosy terminal.

The new Elliott Way connection would allow through traffic to bypass the section of Alaskan Way that serves the Victoria Clipper terminal and the Bell Street Pier Cruise Terminal. This would reduce congestion in the northern portion of Alaskan Way, which would be beneficial for traffic bound for the terminals and would help alleviate traffic congestion caused by cruise ship dockings, which occur primarily on Saturdays. Operations at the new intersection of Alaskan Way and Pine Street would be slightly worse during cruise ship dockings (LOS C) than when cruise ships are not docked (LOS B), but are still expected to remain at acceptable levels. Appendix A includes more information on this analysis.

Rail

The addition of the Elliott Way connection is expected to reduce the number of vehicles, pedestrians, and bicyclists using at-grade rail crossings compared to the No Action Alternative. Elliott Way would provide a grade-separated crossing for all of these modes, eliminating the need for through traffic to cross the rail line at-grade between Wall Street and Broad Street.

Emergency Services

The center medians along Alaskan Way under the Action Alternative could affect emergency vehicle access and operations. Emergency response vehicles would be required to make U-turns along the corridor to reach destinations on the opposite side of the street. U-turns would be possible at all intersections. Roadway operations and intersection LOS on Alaskan Way would generally improve under the Action Alternative; therefore, emergency vehicles would likely experience shorter response times as a result of the project. Access and parking at Fire Station 5 would be the same under both the Action and No Action alternatives.

3.4.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

This section describes the potential mitigation measures that were considered for transportation impacts resulting from operation of the Action Alternative. Because the analysis did not identify any adverse impacts for freight, pedestrian facilities, bicycle facilities, public transportation, water transportation, rail, or emergency services, mitigation measures were considered only for traffic operations.

The new Alaskan Way was designed to balance the demands for all modes of travel (passenger vehicles, freight, pedestrians, bicyclists, and transit) while minimizing impacts on each mode to the highest extent possible. Operations at most intersections would be similar to or better than those for the No Action Alternative, even with higher volumes of traffic. Intersections that would operate at LOS F under the Action Alternative would only experience these levels of congestion during the peak periods of the day;

vehicles traveling during off-peak hours would experience less congestion. Additional lanes to improve LOS at these intersections were considered, but would have caused additional impacts on pedestrian, bicycle, and transit facilities by eliminating these resources, reducing them to an unacceptable size, or increasing pedestrian crossing times and distances to unacceptable levels. Because the main corridor has been designed to achieve an optimum balance among different modes of travel, no other avoidance, minimization, or mitigation measures are proposed.

Parking

This section of Chapter 3 documents the study of parking resources that was conducted for AWPOW.

3.5 Affected Environment for Parking

The affected environment consists of the parking supply, demand, and utilization that are expected to exist in the study area in 2017, when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. This is referred to as the 2017 existing conditions. The parking supply comprises all publicly available on-street and off-street parking spaces in the study area described below, whether publicly or privately owned and available at no cost or for a fee. Parking demand is defined as the number of parking spaces that are occupied at a given time. Parking utilization is defined as the percentage of parking spaces that are occupied in a defined area.

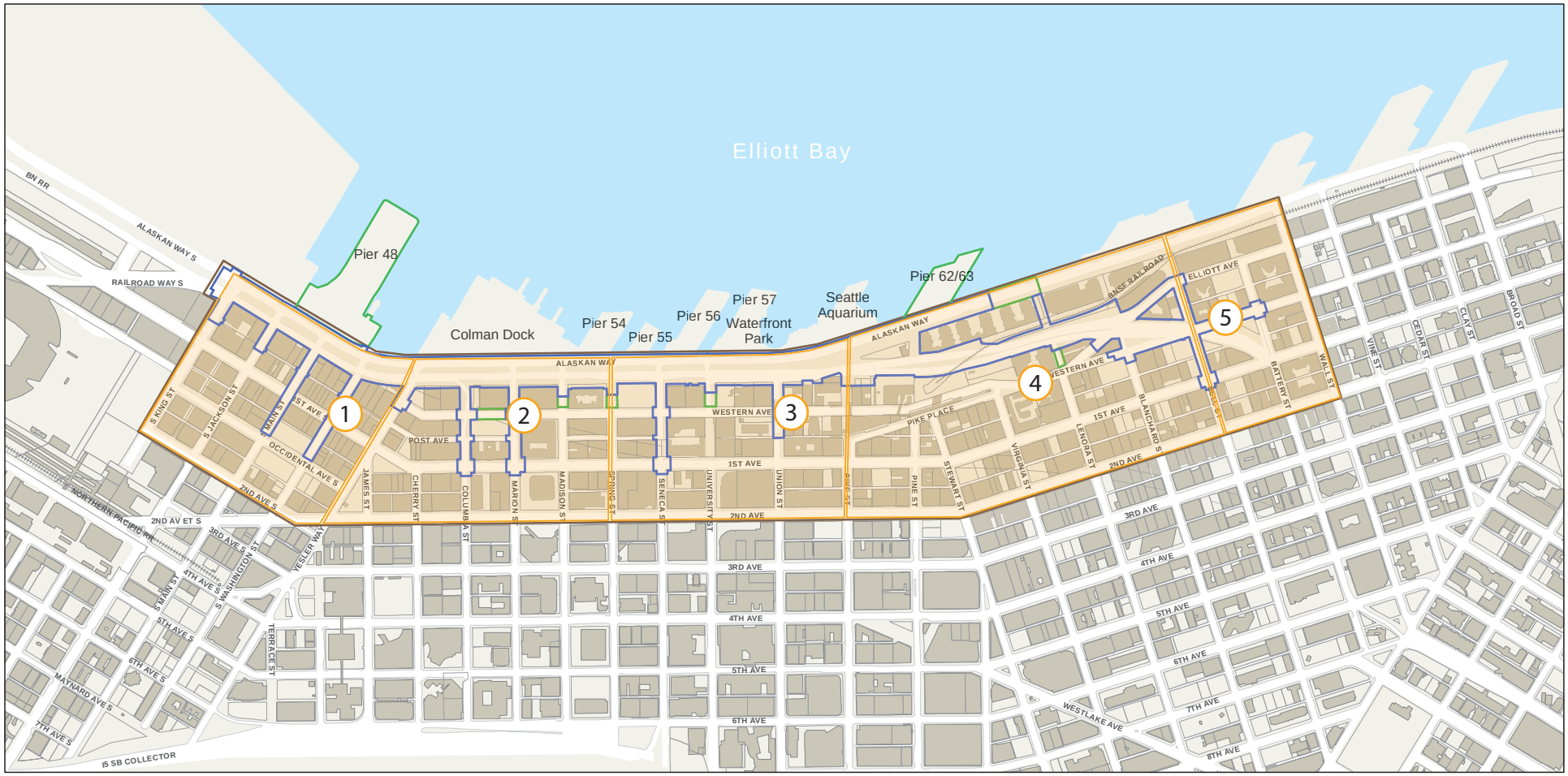
Because AWVRP and EBSP construction has eliminated some on-street parking spaces in the study area, the description of the 2017 existing conditions for on-street parking supply in the affected areas was based on data gathered in August 2010. At that time, all of the public parking spaces located on Alaskan Way and under the Alaskan Way Viaduct were still in place. This approach provides a reasonable analysis of AWPOW's parking impacts independent of other ongoing projects. For all remaining streets within the study area, the 2017 existing conditions description for on-street parking supply was based on data gathered in spring 2014. For the off-street parking analysis, 2013 parking supply and utilization data were used because off-street parking supply has not changed as a result of AWVRP and EBSP construction.

3.5.1 Parking Study Area

The study area selected for the AWPOW parking analysis is the area bounded by S. King Street to the south, Second Avenue to the east, Wall Street to the north, and Alaskan Way to the west. Figure 3-9 shows the boundary of the parking study area. This area, which ranges between about ⅛ of a mile (660 feet) and ¼ mile (1,320 feet) from the project footprint, is the distance most people would be willing to walk to their destinations after parking, accounting for such factors as the trip purpose, topography, the walking environment, and available time. Although people are often willing to walk farther for special events than they are for more common activities, the study area boundaries were established for the most typical and predominant daily activities for the area, such as patronizing restaurants and visiting waterfront attractions, rather than considering well-attended but less frequent events, such as concerts or sporting events.

On-street parking spaces on both sides of S. King Street, Second Avenue, Wall Street, and Alaskan Way were included in the study area. For the off-street parking, only the off-street parking lots and garages fully within the study area boundary were included.

Because the study area contains a wide range of land uses, including business, residential, and recreational land uses, parking demand and utilization vary among different parts of the study area. To develop a more detailed analysis of parking supply, demand, and utilization, the study area was divided into five sub-areas (zones). These zones, numbered 1 through 5 from south to north, are shown in Figure 3-9. Their boundaries are based on the parking zone boundaries used in the EBSP analysis (SDOT 2012), but have been expanded to the east to include the entire AWPOW parking study area.



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GIS Source: King County, City of Seattle
Data Source: Parametrix

Action Alternative
- Parking Study Area
- Project Footprint
- Parking Study Zones
- Potential Construction Staging Area

- Parcel Boundary
- Building Footprint

Figure 3-9
Parking Study Area

Alaskan Way, Promenade, and Overlook Walk

3.5.2 Parking Supply

The parking supply for 2017 existing conditions consists of parking spaces within the study area that are of the following types:

- On-street spaces along Alaskan Way and in the Alaskan Way Viaduct footprint (these spaces are assumed to have been replaced after the viaduct's demolition and before AWPOW construction begins)
- All other on-street spaces within the study area
- Off-street parking spaces available for public use
- On-street passenger and commercial loading spaces identified within each zone

The parking spaces in the Alaskan Way Viaduct footprint that are considered part of the 2017 existing conditions are City-owned pay spaces reserved for short-term parking. In some instances, unstriped areas of right of way located within the Alaskan Way Viaduct footprint have historically been used for parking and loading by private businesses; these areas will no longer be available for such use. Access to some of these unstriped areas is achievable under existing conditions because there is no sidewalk in many places within the Alaskan Way Viaduct footprint.

Elsewhere in the study area, on-street parking varies from short-term paid parking with 15-minute limits to unmetered spaces with no time limits (i.e., south of S. Jackson Street). Users of off-street lots available for public use are generally required to pay lot-specific rates; time limits and rates are posted at each lot.

On-street and Off-street Parking

There are a total of 1,829 on-street parking spaces and 8,917 off-street parking spaces available for public use in the study area. Table 3-7 summarizes the parking supply by zone. The parking zones cover the following areas:

- Zone 1 includes the southern portion of Pioneer Square and is in proximity to Colman Dock and the sports stadiums. This zone has the smallest parking supply (805 spaces) and is the only zone with more on-street parking spaces than off-street parking spaces.
- Zone 2 includes the northern portion of Pioneer Square and Colman Dock, and starts the transition into the waterfront area. It has the largest parking supply of the five zones, with 2,915 spaces. The majority (89 percent) of parking spaces in Zone 2 are off-street parking spaces.
- Zone 3 includes the area at the heart of Seattle's waterfront, including Piers 54 through 57 and the Seattle Aquarium. This area is heavily used by tourists, recreational users, and commuters. Zone 3 has 2,364 total parking spaces, including the largest supply of parking in the Alaskan Way Viaduct footprint, but overall has a relatively small supply of on-street parking (255 spaces).
- Zone 4 includes a number of prominent destinations, including the Seattle Aquarium and Pike Place Market. Parking in this area is used by both local residents and tourists. There are 2,731 parking spaces in Zone 4, including the largest supply of parking spaces on Alaskan Way, as well as overall on-street parking (593 parking spaces).
- Zone 5 covers Belltown and includes fewer tourist-oriented uses than the other zones. There are 1,931 parking spaces in Zone 5; this zone has the smallest supply of on-street parking (225 spaces).

Table 3-7. Parking Supply

Zone	On-Street Parking Supply				Off-Street Parking Supply[3]	Total Parking Supply
	Alaskan Way[1]	Viaduct Footprint[1]	All Other On-Street Supply[2]	Total On-Street Supply		
1	34	131	256	421	384	805
2	13	104	218	335	2,580	2,915
3	9	142	104	255	2,109	2,364
4	86	0	507	593	2,138	2,731
5	21[4]	0	204	225	1,706	1,931
Total	**163**	**377**	**1,289**	**1,829**	**8,917**	**10,746**
Percent of Total	1.5%	3.5%	12.0%	17.0%	83.0%	

[1] SDOT 2012

[2] SDOT 2014a

[3] PSRC 2013

[4] Parking supply counts from the EBSP were scaled to account for the difference in zone-boundary size between the EBSP and this parking analysis.

Loading Zone Spaces

Table 3-8 summarizes the existing loading zone spaces in the study area. A total of 167 loading zone spaces are available in the study area, and are relatively evenly distributed throughout the five parking study zones. There are a limited number of loading zone spaces on Alaskan Way; most loading zone spaces (83 percent) are located on other streets. Throughout the study area, loading zone spaces are used for various purposes including commercial loading, passenger drop-off, and taxi loading.

Table 3-8. Loading Zone Spaces in Study Area

Zone	On-Street Loading Zone Spaces		Total Loading Zone Spaces
	Alaskan Way[1]	All Other Streets[2]	
1	0	35	**35**
2	6	29	**35**
3	5	18	**23**
4	5	38	**43**
5	12[3]	19	**31**
Total	**28**	**139**	**167**

[1] SDOT 2012

[2] SDOT 2014a

[3] Visual inspection confirmed that all 12 loading zone spaces included in EBSP's Zone 5 supply were located within this parking study's Zone 5 boundary.

3.5.3 Parking Utilization

Tables 3-9 and 3-10 summarize the on-street and off-street parking utilization observed in Zones 1 through 5 across the time periods studied for the 2017 existing conditions. Appendix B provides more detailed discussions of utilization for each parking type and by time period. SDOT sets an on-street target range of 70 to 85 percent; at higher levels of utilization, it generally becomes difficult for a motorist to find an on-street parking space. This range is consistent with Seattle Municipal Code requirements to manage paid parking areas so that one or two parking spaces are available per block face. If the threshold of 85 percent for on-street parking utilization is exceeded, it is assumed that the motorists who would otherwise park on-street in that parking study area zone would either use on-

street parking in an adjacent study area parking zone, search further for an on-street parking space in the same parking study area zone, or use off-street parking.

Table 3-9. Overall On-Street Parking Utilization

Zone	Parking Spaces	Weekday Utilization (%)						Weekend Utilization (%)					
		10 a.m.	12 p.m.	2 p.m.	4 p.m.	6 p.m.	Average	10 a.m.	12 p.m.	2 p.m.	4 p.m.	6 p.m.	Average
1	421	52	70	69	56	53	**60**	35	39	49	62	99	**57**
2	335	55	72	65	56	62	**62**	24	66	72	56	67	**57**
3	255	29	85	90	80	87	**74**	26	91	91	90	90	**78**
4	593	67	75	63	62	55	**64**	91	85	74	74	64	**77**
5	225	21	49	43	62	76	**50**	26	48	39	60	59	**46**
Total	**1,829**	**51**	**74**	**70**	**61**	**64**	**64**	**49**	**67**	**66**	**68**	**76**	**65**

Note: The utilization number shown in the "Total" row is the total number of parking spaces used in all zones for the given time period.
Sources: SDOT 2012, 2014b

Table 3-10. Off-Street Parking Utilization

Zone	Parking Spaces	Weekday Utilization (%)[1]			Weekend Utilization (%)[2]		
		AM Peak (8:30 a.m. to 11:30 a.m.)	Afternoon Peak (1:00 p.m. to 3:30 p.m.)	Average	AM Peak (8:30 a.m. to 11:30 a.m.)	Afternoon Peak (1:00 p.m. to 3:30 p.m.)	Average
1	384	78	87	**83**	48	80	**64**
2	2,580	62	70	**66**	32	81	**57**
3	2,109	57	65	**61**	41	67	**54**
4	2,138	56	68	**62**	41	75	**58**
5	1,706	46	62	**54**	42	36	**39**
Total	**8,917**	**57**	**68**	**63**	**39**	**69**	**54**

Note: The utilization number shown in the "Total" row is the total number of parking spaces used in all zones for the given time period.
Sources:

[1] PSRC 2013

[2] Weekend utilization calculations derived from PSRC (2013) and SDOT (2012) data

As shown in Table 3-9, the total average utilization for on-street parking is similar on weekdays and weekends. On weekdays, total parking utilization is higher during the middle of the day than in the morning or evening; on weekends, it is higher during the evening than in the morning. Specific findings by zone are as follows:

- Parking in Zone 1 is moderately utilized during all of the observed time periods except at 6 p.m. on the weekend, when utilization is 99 percent.
- Parking utilization in Zone 2 is highest at 12 p.m. during weekdays and 2 p.m. on the weekend (72 percent) and lowest on the weekend at 10 a.m. (24 percent). The high utilization at 2 p.m. on the weekend in Zone 2 reflects the high demand for tourist and recreational ferry travel.
- Parking utilization in Zone 3 is low at 10 a.m. on both weekdays and weekends, but approaches capacity during the rest of the day on both weekdays and weekends. Zone 3's high utilization rate likely reflects the mix of tourist, recreational, and business-related parking that exists in this area.
- Parking utilization in Zone 4 ranges between 55 and 75 percent on weekdays and between 64 and 91 percent on weekends, with the highest parking utilization occurring at 10 a.m. on weekends.

The high utilization of parking in Zone 4 on the weekend likely reflects that the parking spaces in this area serve a number of popular tourist destinations.

- Parking utilization in Zone 5 is low to moderate across all time periods on weekdays and weekends, with the exception of weekdays at 6 p.m., when utilization is at 76 percent. This lower level of utilization likely reflects the limited number of tourist-oriented destinations in Zone 5.

Table 3-10 above summarizes weekday and weekend off-street parking utilization within the study area. Average utilization by zone ranges from 54 to 83 percent on weekdays and from 39 to 64 percent on weekends. During weekdays and weekends, total parking utilization for all zones is higher during the afternoon peak period than the morning peak period. The average utilization for off-street parking is highest in Zone 1, although the off-street parking supply is much lower in Zone 1 than in all other zones.

3.5.4 Available Parking Supply

Table 3-11 shows the available parking supply, which is the number of parking spaces in the study area that are unused on weekdays and weekends during the morning and afternoon time periods. These time periods were selected because data existed for both on-street and off-street parking during these time frames. The morning peak includes on-street data that were collected at 10 a.m. and off-street data that were collected between 8:30 a.m. and 11:30 a.m. The afternoon peak includes on-street data that were collected at 2 p.m. and off-street data that were collected between 1:00 p.m. and 3:30 p.m. A minimum of 590 on-street spaces and 2,880 off-street spaces were available during each time period. Overall, Zone 1 had the smallest supply of available parking spaces, which is mainly because it had the smallest supply of off-street parking spaces.

Table 3-11. Available Parking Supply

	Weekday Morning		Weekday Afternoon		Weekend Morning		Weekend Afternoon	
Zone	On-Street[1]	Off-Street[2]	On-Street[1]	Off-Street[2]	On-Street[1]	Off-Street[2]	On-Street[1]	Off-Street[2]
1	206	83	131	51	278	202	219	78
2	154	986	117	765	258	1,745	90	489
3	201	897	15	731	201	1,249	15	701
4	267	939	213	694	130	1,265	130	542
5	178	922	131	643	158	989	137	1,095
Total	**1,006**	**3,827**	**607**	**2,884**	**1,025**	**5,450**	**592**	**2,904**

Sources:

[1] SDOT 2012, 2014a, 2014b

[2] PSRC 2013

3.5.5 City Plans and Policies Applicable to Parking

Various City plans and their associated policies provide a framework for how parking supply is managed in Seattle. These plans and policies are implemented by City regulations that govern parking requirements and rates. The Seattle Comprehensive Plan is the central document that establishes the City's policies regarding parking as an aspect of overall land use. Appendix B provides a detailed discussion of plans, policies, and regulations related to parking; key City policies pertaining to parking are described below.

The Transportation Element of the Seattle Comprehensive Plan highlights the City's goal of promoting safe and convenient access and travel for all users, including pedestrians, bicyclists, transit riders, and people of all abilities, as well as freight and motor vehicle drivers. Some policies in the Transportation Element are designed to achieve increased travel choices through the development of strategies to manage both transportation and parking demand. The plan highlights how parking spaces should be prioritized in comparison with other curb-space uses. In business and commercial areas, transit stops

have the highest priority, followed by passenger and commercial vehicle loading, and then by parking and vehicle capacity. Goal TG18 of the Seattle Comprehensive Plan notes that mobility is the primary purpose of the street system, while Policy T42 directs the City to: "During construction or implementation of new transportation projects, consider replacing short-term parking only when the project results in a concentrated and substantial amount of on-street parking loss."

The Land Use Element of the Comprehensive Plan also describes how off-street parking reforms fit into the vision for the City's access and travel goals. The City has determined that the quantity, design, and location of parking supply influence the scale, shape, and cost of development; therefore, the City regulates the size, design, and location of parking facilities in an effort to encourage the use of alternative modes of transportation. Because off-street parking is generally provided by the private sector, the City can affect off-street parking through modifications to its Land Use Code. Some of the parking-related reforms outlined in the Land Use Element include:

- Removing minimum parking requirements and setting the maximum amount of parking in designated urban centers, such as downtown Seattle
- Reducing off-street parking requirements for new developments to encourage more use of transit and nonmotorized modes, as well as reduce reliance on automobiles
- Regulating the location of off-street parking and imposing size restrictions on parking facilities, including private off-street lots (City of Seattle 1999)
- Supporting alternative modes of transportation that reduce the use of single-occupant vehicles

3.6 Construction Impacts and Mitigation Measures for Parking

3.6.1 Construction Impacts of the No Action Alternative

No construction activities for AWPOW would occur under the No Action Alternative; therefore, there would be no construction impacts on parking.

3.6.2 Construction Impacts of the Action Alternative

Construction activities for the Action Alternative would temporarily impact on-street parking throughout the study area. The amount of on-street parking affected would vary by construction stage and segment and would be determined once construction and staging plans are finalized. Some businesses could have access routes or loading zones blocked, but this would only occur intermittently.

To construct the Action Alternative, a surface parking lot with approximately 60 spaces would be acquired. This property is located where the Overlook Walk would be constructed, just south of the Pine Street extension. These off-street parking spaces represent less than 1 percent of the off-street parking supply in the area. Further details about this property are provided in Section 4.2.2 and the Land Use Discipline Report (Appendix C). Off-street parking spaces outside of the project footprint would not be affected, except for minor temporary changes in access to build the improvements.

3.6.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

While AWPOW would reduce the overall parking supply in the project footprint, the City would maintain parking availability to the extent feasible during construction. Once construction and staging plans have been developed, the City would develop practices to manage parking during construction to ensure, to the extent feasible, that parking is convenient and accessible to waterfront businesses and their patrons. In addition, the City would continue enforcement of short-term parking limits and the use of e-Park, which provides real-time off-street parking availability information, to make the most efficient use possible of the supply of short-term parking within the project footprint.

3.7 Operational Impacts and Mitigation Measures for Parking

3.7.1 Operational Impacts of the No Action Alternative

Parking Supply

The parking supply in the study area under the No Action Alternative is expected to remain the same as under 2017 existing conditions, which are shown above in Table 3-7. Demand for both on-street and off-street parking within the study area is expected to increase by 2030 in conjunction with population and employment growth in Seattle's central business district. Because parking supply would remain constant under the No Action Alternative, this increase in demand is expected to also increase the on-street parking utilization rates across all zones and time periods in the study area. There are no current predictions for the scale of this increased on-street parking demand or utilization rates.

Loading Zone Spaces

The No Action Alternative would not change the existing (2017) passenger and commercial loading zone spaces, which are shown above in Table 3-8.

3.7.2 Operational Impacts of the Action Alternative

Parking Supply

The Action Alternative would permanently remove all parking that existed in the Alaskan Way Viaduct footprint (377 spaces) and much of the on-street parking on Alaskan Way (88 spaces). In addition, approximately 15 on-street spaces on Bell Street, 3 spaces on Union Street, and 1 space on S. Main Street would be removed to accommodate pedestrian improvements. This results in a total on-street parking loss of 484 spaces. The Action Alternative would also permanently remove 189 off-street parking spaces in the study area. Table 3-12 summarizes the parking supply for the Action Alternative and the No Action Alternative, and the net change between the two.

Table 3-12. On-Street and Off-Street Parking Supply under the No Action and Action Alternatives

	No Action Alternative						Action Alternative						Net Change[3]					
Zone	Alaskan Way[1]	Viaduct Footprint[1]	All Other On-Street[2]	Total On-Street	Total Off-Street	Total	Alaskan Way[1]	Viaduct Footprint[1]	All Other On-Street[2]	Total On-Street	Total Off-Street	Total	Alaskan Way[1]	Viaduct Footprint[1]	All Other On-Street[2]	Total On-Street	Total Off-Street	Total
1	34	131	256	421	384	805	0	0	255	255	384	639	-34	-131	-1	-166	0	-166
2	13	104	218	335	2,580	2,915	17	0	218	235	2,580	2,815	4	-104	0	-100	0	-100
3	9	142	104	255	2,109	2,364	35	0	101	136	2,109	2,245	26	-142	-3	-119	0	-119
4	86	0	507	593	2,138	2,731	2	0[4]	507	509	1,949	2,458	-84	0	0	-84	-189[4]	-273
5	21	0	204	225	1,706	1,931	21	0	189	210	1,706	1,916	0	0	-15	-15	0	-15
Total	**163**	**377**	**1,289**	**1,829**	**8,917**	**10,746**	**75**	**0**	**1,289**	**1,345**	**8,728**	**10,073**	**-88**	**-377**	**-19**	**-484**	**-189**	**-673**

[1] SDOT 2012

[2] SDOT 2014a

[3] Negative numbers indicate instances in which there is a loss in parking supply.

[4] The two parking lots under the viaduct, located from Lenora to Blanchard and Blanchard to Bell Streets, were included in the off-street inventory. Therefore, when removed as part of the Action Alternative, these lots are counted as a reduction in the total off-street parking supply.

The parking spaces that existed in the Alaskan Way Viaduct footprint would be replaced by the new Alaskan Way roadway, sidewalks, bicycle facilities, Promenade, and plantings. The new Alaskan Way would have no on-street parking south of Columbia Street in order to accommodate ferry queuing lanes and transit-only lanes. Between Columbia Street and Pike Street, much of the on-street curb space would be designated as loading zones for buses, taxis, and passenger pick-ups and drop-offs at Colman Dock and Piers 55 through 59; additional curb space would be designated for loading zones to provide freight access to businesses on Alaskan Way.

All zones in the study area would lose on-street parking spaces. Overall, the loss of 484 on-street parking spaces represents approximately 26 percent of the on-street parking supply in the study area. These spaces, added to the 189 parking spaces the City would acquire from private off-street lots, result in a total project-related loss of 673 parking spaces, which represents approximately 6 percent of the total parking supply (on-street and off-street) in the study area. Impacts by zone are summarized below.

- Zone 1 would lose 166 on-street parking spaces, the highest for any zone. Because of the limited supply of off-street parking in this zone, motorists seeking parking during the midday peak period, when demand is highest, may need to travel several blocks farther to find available parking within this zone or a neighboring zone.
- Zone 2 would lose 100 on-street parking spaces. During weekday and weekend midday periods, when demand is at its peak in this zone, motorists may need to park off-street within this zone or travel several blocks farther to find available on-street or off-street parking.
- Zone 3 would lose 119 on-street parking spaces. As with Zone 2, it experiences the highest demand during midday periods, and the loss of on-street parking might require motorists to park off-street within this zone or travel several blocks farther to find available on-street or off-street parking.
- Zone 4 would lose 84 on-street parking spaces and 189 off-street parking spaces. The off-street parking loss would be from the existing parking lot just south of the Pine Street extension where the Overlook Walk would be constructed, and two parking lots currently under the viaduct footprint from Lenora to Blanchard and Blanchard to Bell Streets. The off-street parking spaces that would be removed represent approximately 2 percent of the total off-street parking supply in the study area. On weekend mornings, when demand is highest in this zone, motorists may need to park off-street or travel several blocks farther to find available on-street or off-street parking.
- Zone 5 would lose approximately 15 on-street parking spaces, which would have a minimal impact on Zone 5 utilization rates. However, as on-street parking spaces are removed from adjacent zones, it is likely that utilization rates for on-street and off-street spaces in Zone 5 would increase.

In addition to the loss of off-street and on-street spaces described above, the sidewalk constructed within the City's right of way along the new Alaskan Way would change how some private properties access their parking. Some properties along the east side of Alaskan Way that previously crossed the City right of way mid-block to access parking or loading docks on their property would need to alter their access to either the north or south ends of the block. The access modification could potentially change how private property owners use the space between their buildings and the City's right of way. Some businesses may not be able to accommodate as many vehicles on their property because of the access changes. Also, informal parking in the City right of way along the east side of Alaskan Way would no longer be possible once the sidewalk is constructed.

Loading Zone Spaces

Table 3-13 summarizes the net change in loading zone spaces between the No Action Alternative and the Action Alternative by study area zone. The Action Alternative would shift the locations of loading zone spaces along Alaskan Way. Zones 2 and 3 would gain loading zone spaces, while Zones 4 and 5 would lose loading zone spaces on Alaskan Way. On side streets, the number of loading zone spaces

would remain the same in Zones 1, 2, 4, and 5. In Zone 3, one loading zone on Union Street would be displaced.

Table 3-13. On-Street Loading Zone Spaces under the No Action and Action Alternatives

	No Action Alternative			Action Alternative			Net Change[1]		
Zone	Alaskan Way[2]	All Other On-Street[3]	Total On-Street	Alaskan Way[2]	All Other On-Street[3]	Total On-Street	Alaskan Way[2]	All Other On-Street[3]	Total On-Street
1	0	35	35	0	35	35	0	0	0
2	6	29	35	7	29	36	1	0	1
3	5	18	23	18	17	35	13	-1	12
4	5	38	43	3	38	41	-2	0	-2
5	12	19	31	0	19	19	-12	0	-12
Total	**28[4]**	**139**	**167**	**28**	**138**	**166**	**0**	**-1**	**-1**

[1] Negative numbers indicate instances in which there is a loss in parking supply.

[2] SDOT 2012

[3] SDOT 2014a

[4] Visual inspection confirmed that all 12 loading zone spaces included in EBSP's Zone 5 supply were located within this parking study's Zone 5 boundary.

Impacts on Parking during High Attendance Events

During high attendance events, such as festivals or events in the study area or at the nearby stadiums, parking demand would increase, and finding available parking may be more challenging or may cost more than under normal conditions. People are often willing to walk farther for special events; therefore, parking supply in the study area could be supplemented by major parking facilities located just beyond the study area, including the Safeco Field Garage, CenturyLink Event Center Garage, Union Station Garage, North Lot (CenturyLink Field), Impark Parking, Home Plate Parking, and others. Event attendees would also be encouraged to use bus and rail service and to carpool to the study area during events.

The potential also exists for some high attendance events at the stadiums to generate more parking demand than can be accommodated nearby. This could result in stadium attendees parking in the study area, which would reduce parking supply, particularly in Zones 1 and 2. During these times, waterfront visitors may need to park farther from their destinations or could spend additional time searching for parking. However, these situations are expected to occur infrequently.

Influences on Parking Demand by Other Modes

The Action Alternative would provide improved nonmotorized facilities, including substantial pedestrian and bicycle facilities such as the Promenade and Overlook Walk. It would also include improved transit facilities in the form of dedicated transit lanes and bus stops, which would support transit routes in the study area. The enhanced availability of transit and nonmotorized facilities under the Action Alternative would provide waterfront visitors with additional choices in how they travel to the study area. This could result in changes to the relative use of vehicle, transit, and nonmotorized modes of travel. A shift to transit and nonmotorized modes would reduce parking demand in the study area, thereby minimizing the impacts of parking loss associated with the Action Alternative.

Consistency with City of Seattle Parking Policies

Current City plans and policies include strategies to encourage the use of transit and nonmotorized modes of travel, and to discourage the use of single-occupant vehicles. This emphasis is reflected in City policies that prioritize other uses of street space over parking, and a movement in policy direction toward imposing maximum (rather than minimum) parking requirements on new development. As discussed above, Policy T42 of the Seattle Comprehensive Plan's Transportation Element states that it is the City's general policy to replace short-term parking only when the project results in a concentrated

and substantial amount of on-street parking loss. The removal of parking that would occur under AWPOW, in conjunction with enhanced nonmotorized and transit facilities that are included in the project, is consistent with this policy direction and supports overall City planning goals for reducing dependency on single-occupant vehicles in the downtown area.

3.7.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

AWPOW would eliminate 484 on-street parking spaces and 189 off-street parking spaces, resulting in a total project-related parking loss of 673 spaces, which represents approximately 6 percent of all on- and off-street parking supply in the study area. Although City policies do not require mitigation of this parking loss, the City would provide approximately 250 new parking spaces that will be constructed as part of the PPMWE. This building will be constructed by the Pike Place Market Preservation Authority in partnership with the City of Seattle, with the City conveying the property for the building at no cost to the Pike Place Market Preservation Authority, as well as contributing $34 million from local sources for its construction. As a result and pursuant to a covenant with the City, the Pike Place Market Preservation Authority will operate the approximately 250 new parking spaces for short-term public parking at current on-street parking rates.

The City would also consider the following measures to help further minimize the parking loss impact:

- Modifying on-street parking policies and practices, such as varying rates by time of day, to make parking more consistently available for short-term customers
- Providing enforcement of short-term parking limits to make the most efficient use of the supply of short-term parking for customers of study area businesses
- Continuing the use of e-Park, which is an electronic guidance system displaying real-time parking availability information, and providing wayfinding to nearby off-street parking spaces
- Working with transit agencies to increase awareness of transit routes and facilities in the area and to encourage visitors to use alternative modes of transportation

4 Land Use

This chapter identifies existing land uses and zoning in the vicinity of the project footprint and provides an overview of the plans and policies that guide current and future development. This is followed by a discussion of AWPOW's potential impacts during construction and operation, including an evaluation of property acquisitions needed for the project, the potential impacts on nearby properties during construction and operation, and consistency with adopted plans and policies. This chapter also describes possible measures to avoid, minimize, or mitigate any potential impacts. More details are provided in Appendix C, Land Use Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS.

4.1 Affected Environment

The affected environment consists of the land use patterns and zoning that will exist within the study area in 2017, when the AWVRP, EBSP, and PPMWE are complete and before AWPOW construction begins. This is referred to as the 2017 existing conditions. The area studied for this land use analysis covers an area large enough to encompass expected project construction and operational impacts, which transects five neighborhood plan areas (as shown in Figure 4-1):

- Greater Duwamish Manufacturing and Industrial Center
- Pioneer Square Neighborhood
- Commercial Core Neighborhood
- Belltown Neighborhood
- Downtown Urban Center Neighborhood (contains the Pioneer Square, Commercial Core, and Belltown Neighborhood planning areas within its larger urban center planning area)

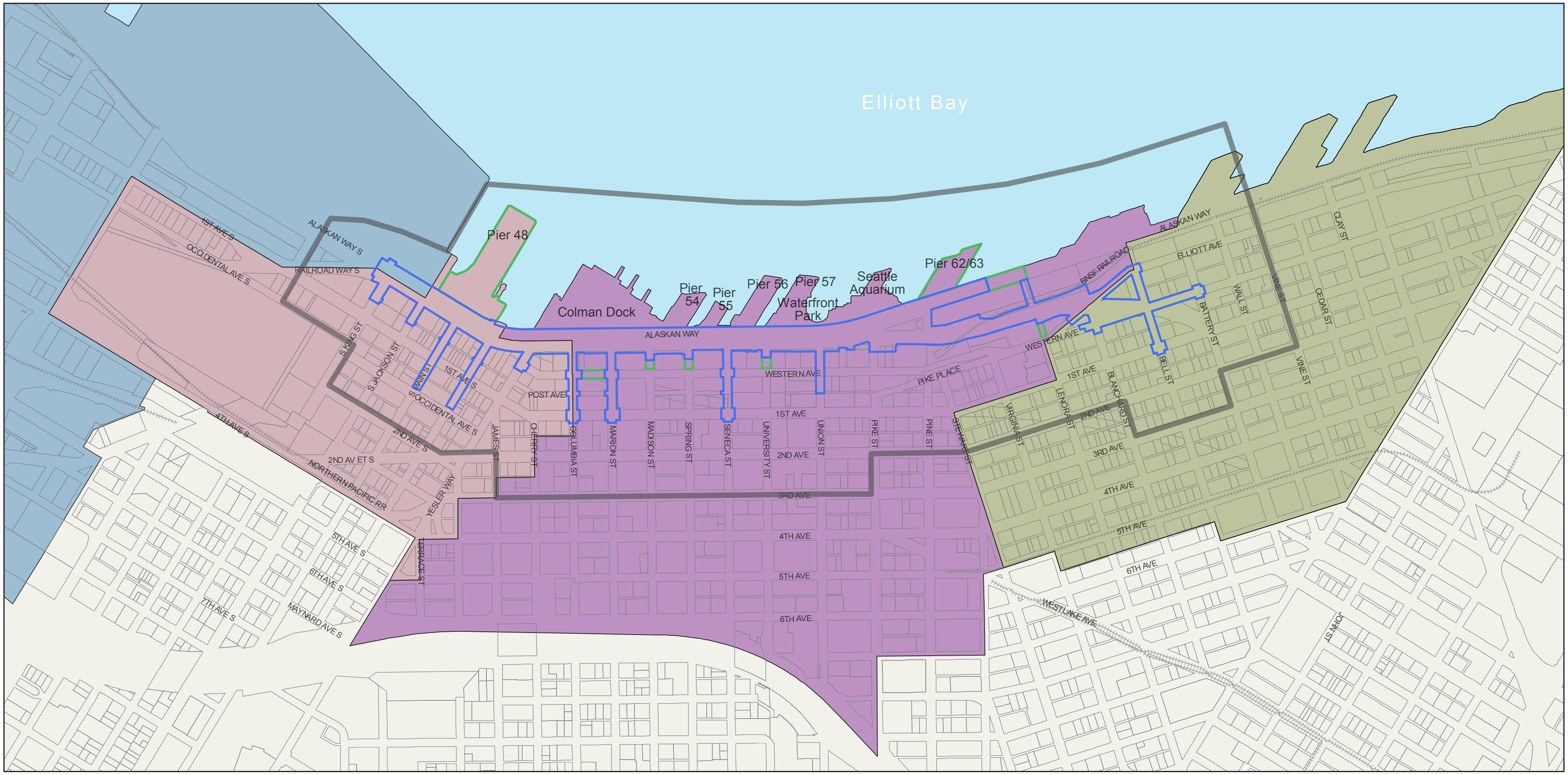
The land use patterns and zoning that exist today in the study area are expected to remain generally the same in 2017. Although the Alaskan Way Viaduct will have been removed, the land upon which it stood will still be owned by the City and designated for transportation use. Accordingly, this section describes the current land use conditions and zoning classifications that apply to land in the AWPOW study area and specifies applicable land use policies.

4.1.1 Existing Land Use

As shown in Figure 4-2, the study area contains a variety of land uses. Along the west side of Alaskan Way at the waterfront, land uses include Port of Seattle facilities (Terminal 46); a vacant pier (Pier 48); the Seattle Multimodal Terminal at Colman Dock; King County Water Taxi; tourism-related retail, restaurants, and recreational facilities (the Seattle Great Wheel at Pier 57, Waterfront Park, Seattle Aquarium, and Pier 62/63); and the Bell Harbor Marina. The land uses for the study area parcels on the east side of Alaskan Way are a mix of parking, condominiums, apartments, community services, office buildings, vacant land (one parcel), commercial uses, and industrial uses. South of Yesler Way, Alaskan Way is SR 519, a state facility that connects Interstate 90 (I-90) to the Port of Seattle and Colman Dock. Parking is also a land use within the study area but it is discussed separately in Sections 3.5 through 3.7 of this Draft EIS.

4.1.2 Existing Zoning

The types of land uses allowed in a given area are determined by the parcel zoning classification established by the City. The zoning classification of parcels in the study area is shown in Figure 4-3. North of Columbia Street, the land along Alaskan Way is zoned Downtown Harborfront 1 or 2. The upland areas adjacent to Alaskan Way are mostly zoned Downtown Mixed Commercial or Downtown Mixed Residential. Farther east are the Downtown Office Core and Downtown Retail Core designations. Pioneer Square and Pike Place Market each have their own mixed-use zoning designations, with land



Source: King County, City of Seattle

Action Alternative

Project Footprint

Potential Construction Staging Area

Neighborhoods in the Study Area

Greater Duwamish

Pioneer Square

Commercial Core

Belltown

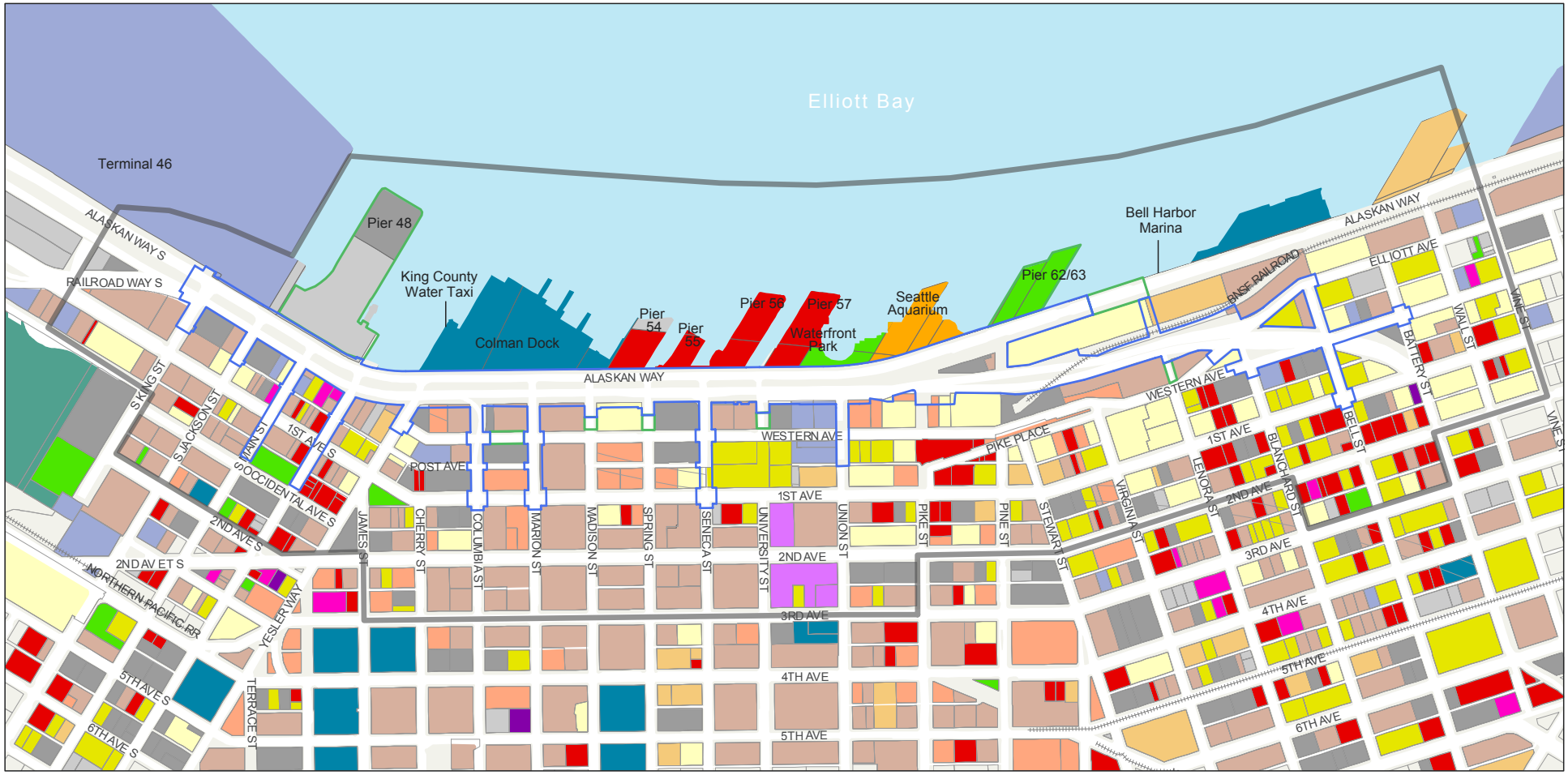
Note: Only a small portion of the
Greater Duwamish Neighborhood is shown on this figure.

Parcel Boundary

Study Area

Figure 4-1
Land Use Study Area

Alaskan Way, Promenade, and Overlook Walk



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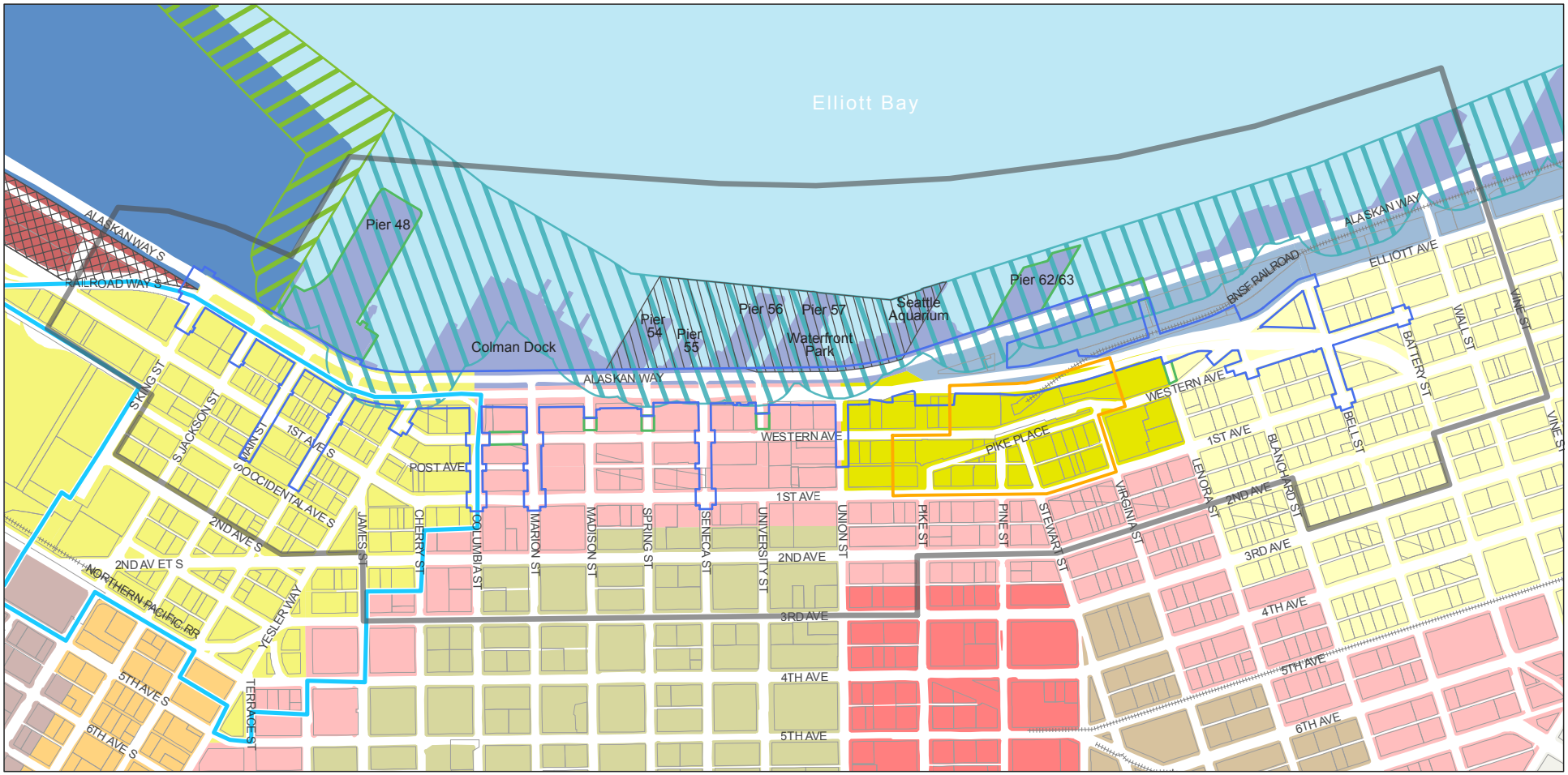
Source: King County, City of Seattle

Action Alternative
- Project Footprint
- Potential Construction Staging Area
- Study Area
- Parcel Boundary

- Apartment
- Condominium
- Hotel/Motel
- Commercial
- Office Building
- Industrial
- Parking
- Art Gallery/Museum
- Church/Religious Services
- Governmental Services
- Community Services
- Historic Property
- Park/Open Space
- Sport Facility
- Vacant
- Education

Figure 4-2
Existing Land Use

Alaskan Way, Promenade, and Overlook Walk



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Source: City of Seattle

Action Alternative
- Project Footprint
- Potential Construction Staging Area
- Study Area
- Parcel Boundary

Shoreline Environment
- Urban Harborfront
- Urban Industrial
- Urban Harborfront Historic Character Area

Special District
- Stadium Area Transition Overlay District
- Pioneer Square Preservation District
- Pike Place Public Market Historical District

City of Seattle Zoning
- Downtown Harborfront 1
- Downtown Harborfront 2
- Downtown Mixed Commercial
- Downtown Mixed Residential
- Downtown Office Core 1
- Downtown Office Core 2
- Downtown Retail Core
- General Industrial 1
- Industrial Commercial
- International District Mixed
- International District Residential
- Pike Market Mixed
- Pioneer Square Mixed

Figure 4-3
Existing Zoning

Alaskan Way, Promenade, and Overlook Walk

uses subject to approval by the Pike Place Market Historical Commission and the Pioneer Square Preservation Board, respectively. A small portion of property at the south end of the study area is zoned for industrial or industrial commercial development.

4.1.3 Shoreline Designations

A substantial portion of the study area is within the Shoreline District, which is an overlay district that applies its own development standards in addition to those of the underlying zoning designations. The Shoreline District implements the Seattle Shoreline Master Program (SMP), which is described in more detail in Appendix C. The SMP designates a number of "shoreline environments" within the Shoreline District, each with its own allowable uses and development standards. As shown in Figure 4-3, the majority of the shoreline in the study area is designated Urban Harborfront, with a small area designated Urban Industrial at the south end. Piers 54 through 59 (the Seattle Aquarium) are within the Urban Harborfront Historic Character Area, a sub-area within the Urban Harborfront, which regulates development on these historic piers. In the case of irreconcilable conflicts between the regulations of the Shoreline District and the underlying zoning designations, the shoreline regulations will apply, with some exceptions (SMC 23.60.14.B.1).

4.1.4 Special Districts

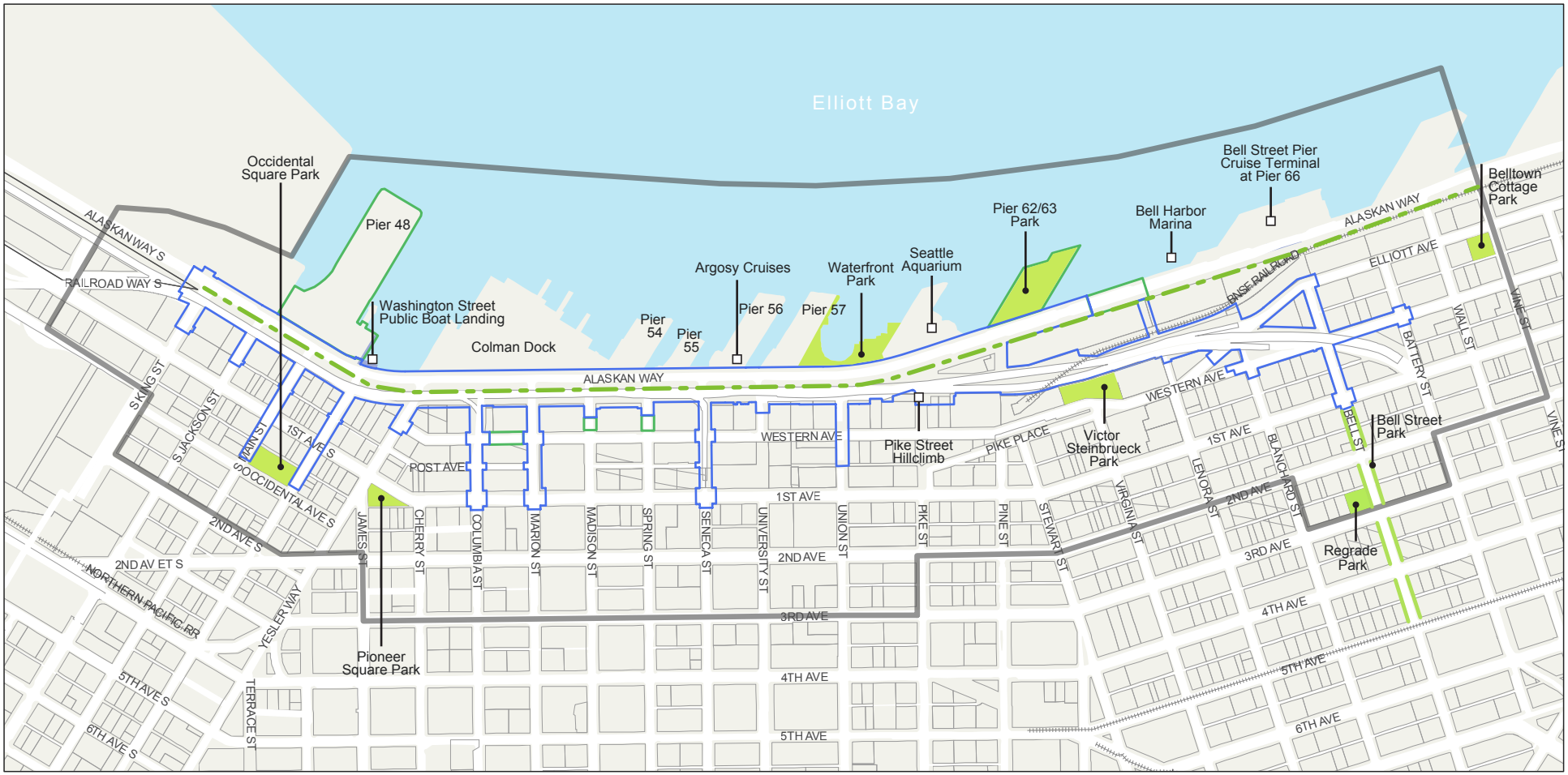
Special districts are established by the Land Use Code to conserve and enhance Seattle's unique setting, preserve areas of historical or architectural merit, and accomplish the City's policy objectives, among other goals (SMC 23.59.010). They impose additional development standards as an overlay to the underlying zoning. The districts applicable to AWPOW, as shown in Figure 4-3, are:

- Pioneer Square Preservation District (SMC 23.66)—The Pioneer Square Preservation District was established as both a national historic district and a local preservation district in 1970. The local preservation district is protected by an ordinance and design guidelines focused on preserving its unique historic and architectural character. A Certificate of Approval from the Pioneer Square Preservation Board is required for new business or service, and for physical changes to buildings, landscape, and public rights of way within the district.
- Pike Place Market Historical District (SMC 25.24)—The citizens of Seattle voted to establish the Pike Place Market Historical District in 1971 to preserve the market's physical and social character. The Market Historical Commission manages design and use changes within the District in accordance with the Pike Place Market Historical Commission Revised Guidelines; a Certificate of Approval from the Commission is required for such changes.
- Stadium Transition Area Overlay District (SMC 23.74)—The Stadium Transition Area Overlay District includes CenturyLink Field and Safeco Field and the area around these sports facilities. The District is intended "to contribute to a safer pedestrian environment for those attending events and permits a mix of uses, supporting the pedestrian-oriented character of the area as well as the surrounding industrial zone, while minimizing conflicts with industrial uses" (SMC 23.73.002).

4.1.5 Parks and Recreational Facilities

The study area contains a number of parks and recreational facilities that are appreciated by visitors to Pioneer Square, the waterfront, and Pike Place Market. The facilities shown on Figure 4-4 are:

- Occidental Square Park
- Washington Street Boat Landing
- Pioneer Square Park
- Argosy Cruises
- Waterfront Park



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Source: City of Seattle

Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Study Area
- Parcel Boundary
- Parks
- Recreational Facilities
- Path on east side of Alaskan Way

Figure 4-4
Parks and Recreational Facilities

Alaskan Way, Promenade, and Overlook Walk

- Seattle Aquarium
- Pike Street Hillclimb
- Pier 62/63 Park
- Path on the east side of Alaskan Way
- Victor Steinbrueck Park
- Bell Harbor Marina
- Bell Street Pier Cruise Terminal at Pier 66
- Bell Street Park
- Regrade Park (dog park)
- Belltown Cottage Park

4.1.6 Applicable Laws and Plans

Land use and development in the study area are guided by a number of state, regional, and City land use laws and plans. These documents establish the planning framework used to manage growth and ensure that individual projects are consistent with an overall vision. This section provides an overview of the laws and plans applicable to AWPOW. Table 4-1 provides a list of the documents that outline land use planning goals and their general goals. Appendix C provides more detailed information, including specific policies relevant to AWPOW.

State Laws and Plans

The Shoreline Management Act (SMA; Revised Code of Washington [RCW] 90.58.020), which addresses shoreline land use, focuses on shoreline use, environmental protection, and public access. The City of Seattle implements the SMA through its SMP, discussed below.

Washington's Relocation Assistance law (RCW 8.26) establishes a uniform policy for the fair and equitable treatment of persons displaced as a direct result of public works programs of the state and local governments. AWPOW must comply with this policy when acquiring property for the project.

Regional Plans

The Puget Sound Regional Council (PSRC) is engaged in regional transportation, economic development, and growth management planning for central Puget Sound through the long-range strategy envisioned in VISION 2040 (PSRC 2008) and a 30-year transportation action plan outlined in Transportation 2040 (PSRC 2010). VISION 2040 provides a regional framework for long-range transportation planning that integrates freight, ferries, highways, local roads, transit, bicycles, and walking. The plan's focus is to contain growth, concentrate new employment into urban centers, and link the centers with a high-quality multimodal transportation system. Transportation 2040 is an action plan for transportation in the central Puget Sound region that is designed to support the implementation of VISION 2040. The plan outlines a long-term template for how this region should invest in transportation to accommodate rising travel demand.

Table 4-1. Summary of the Primary Goals of Adopted Land Use Laws and Plans

	Primary Goals of Land Use Plans						
	Increased Multimodal Connectivity and Mobility	Economic Development	Management of Urban Growth	Environmental Protection	Public Access to the Shoreline	Open Space and Recreation	Adequate Public Facilities and Services
State Laws and Plans							
Washington State Shoreline Management Act		X		X	X	X	
Regional Plans							
PSRC VISION 2040	X	X	X	X		X	X
PSRC Transportation 2040	X	X	X	X			X
City of Seattle Plans							
Seattle Comprehensive Plan	X	X	X	X	X	X	X
Seattle Land Use Code		X	X	X	X	X	X
Seattle Shoreline Master Program		X		X	X		
Seattle Environmentally Critical Areas Code			X	X			
SDOT Transportation Strategic Plan	X	X	X	X			X
City of Seattle Center City Circulation Report and Center City Access Strategy	X	X	X				X
Seattle Transit Master Plan	X	X	X				X
Seattle Freight Mobility Strategic Action Plan	X	X					X
Seattle 2014 Bicycle Master Plan	X					X	X
Seattle Pedestrian Master Plan	X	X				X	X
Neighborhood Plans							
Greater Duwamish Manufacturing and Industrial Center Plan	X	X	X				X
Pioneer Square Neighborhood Plan		X				X	X
Commercial Core Neighborhood Plan	X	X	X			X	X
Belltown Neighborhood Plan	X	X	X				
Downtown Urban Center Neighborhood Plan	X	X	X		X	X	

Note: The Waterfront Seattle Guiding Principles, Framework Plan, Concept Design, and Strategic Plan are being used to develop AWPOW so that the project is consistent with adopted land use laws and plans.

City of Seattle Plans

The City of Seattle Comprehensive Plan—Toward a Sustainable Seattle is a 20-year plan that provides the framework for how Seattle should grow (City of Seattle 2005). The City is currently updating the Comprehensive Plan, and expects the process to be completed by June 2015. The Seattle Comprehensive Plan's Land Use, Transportation, and Economic Development Elements contain goals and policies that are relevant to AWPOW. Regulations for the Land Use Code (SMC Title 23) and Street and Sidewalk Use (SMC Title 15) would ensure that AWPOW projects are consistent with allowable uses and implement the City's Comprehensive Plan. In addition, the City's Environmentally Critical Areas Code (SMC 25.09) governs areas of Seattle that provide critical environmental functions, such as shoreline habitat and geologic hazard areas, to protect these areas and ensure public safety while allowing for reasonable development.

The City of Seattle SMP (SMC Title 23.60) guides and regulates development of the shorelines in order to protect the ecosystems of the shoreline areas; encourage water-dependent uses; provide for maximum public use and enjoyment of the city shorelines; and preserve, enhance, and increase views of the water and access to the water. The City is currently in the process of updating the SMP.

The City also has a variety of plans related to various modes of transportation that affect the AWPOW study area. These include:

- SDOT Transportation Strategic Plan: Describes the actions SDOT will take in this 20-year functional work plan to accomplish the goals and policies of the Seattle Comprehensive Plan.
- City of Seattle Center City Circulation Report and Access Strategy: Reviews the major transportation projects planned for downtown Seattle, provides recommendations for how they can work together as an integrated system, and develops projects to fill identified gaps in the system; the goal is to create a vibrant and inviting city core.
- Seattle Transit Master Plan: Identifies key corridors linking urban villages and establishes performance standards for transit service, including various modes (rail and streetcar, rapid bus service, and standard bus service) and facilities (station design and capital infrastructure, including enhanced bicycle and pedestrian connections to transit).
- Seattle Freight Mobility Strategic Action Plan: Recommends a list of actions that the City will implement to maintain efficient freight movement in a manner consistent with the Comprehensive Plan and the Transportation Strategic Plan, including grade separations, signage, and street improvements.
- Seattle Bicycle Master Plan: Seeks to facilitate the use of bicycles as a safe, convenient, and attractive option for a large number of people by increasing ridership, improving safety, creating a network of bicycle facilities, providing access for all, and creating a welcoming environment for bicyclists.
- Seattle Pedestrian Master Plan: Contains policies, programs, projects, and design criteria to enhance pedestrian safety, comfort, and access in support of a vision to help Seattle become the most walkable city in the nation.

Neighborhood Plans

Neighborhood plans are strategic plans to address growth within each neighborhood while maintaining the neighborhood's character and livability, and providing open space and affordable housing to residents. AWPOW is located in five neighborhood planning areas, each with a distinct land use composition and character. These planning areas are the Greater Duwamish Manufacturing and Industrial Center, Pioneer Square, Commercial Core, Downtown Urban Center, and Belltown. The plans for each neighborhood set out a vision and planning objectives to guide future development. Appendix C contains more detail on the neighborhood plans.

Waterfront Seattle—Guiding Principles, Framework Plan, Concept Design, and Strategic Plan

Waterfront Seattle is the name for the City of Seattle's vision for a number of infrastructure improvement projects along Seattle's downtown waterfront. It covers 26 city blocks from Pioneer Square to Belltown in downtown Seattle, and includes the improvements proposed for AWPOW. Several committees established by the Seattle City Council have guided the waterfront planning process since 2009. First, the Central Waterfront Partnerships Committee developed the Waterfront Seattle Guiding Principles, which were affirmed by the Seattle City Council in 2011 (Resolution 31264). These principles, which apply to AWPOW, are:

- Create a waterfront for all
- Put the shoreline and innovative, sustainable design at the forefront
- Reconnect the city to its waterfront
- Embrace and celebrate Seattle's past, present, and future
- Improve access and mobility (for people and goods)
- Create a bold vision that is adaptable over time
- Develop consistent leadership from concept to operations

After the development of the Guiding Principles, the Central Waterfront Committee (which replaced the Central Waterfront Partnerships Committee) developed documents in its role as the broad overseer of the design, financing, public engagement, long-term operations, and maintenance of the project. These documents included the Framework Plan, the Concept Design, and the Strategic Plan, which were published in July 2012 and supported by the Seattle City Council in August 2012 (Resolution 31399). These documents, described below, provide guidance, goals, and strategies for implementation of Waterfront Seattle.

In October 2014, the Central Waterfront Committee was replaced by the Central Waterfront Steering Committee (Resolution 31543). The Central Waterfront Steering Committee was established to advise the City on implementing the Central Waterfront Concept Design and Strategic Plan.

Framework Plan

The Waterfront Seattle Framework Plan outlines the strategies and concepts used to develop the Waterfront Seattle Concept Design (City of Seattle 2012a). It established the vision for the future of Seattle's central waterfront from the broader City scale to the site-specific Waterfront scale. Its three main concepts are:

1. Re-centering Seattle around Elliott Bay (City scale)
2. Re-connecting neighborhoods to the waterfront (Center City scale)
3. Creating compelling destinations and journeys along the water's edge (Waterfront scale)

The plan's concepts guided the planning and design development of the AWPOW projects. The plan proposes a continuous public waterfront, which includes a new surface street, pedestrian promenade, bicycle path, and a series of open spaces for the public (City of Seattle 2012a).

Concept Design

The Waterfront Seattle Concept Design developed and illustrates the design concepts for the waterfront, including AWPOW, and describes the ways in which the new waterfront will be used (City of Seattle 2012b).

Strategic Plan

The Strategic Plan for Realizing the Waterfront Seattle Vision presents an Action Plan—a series of steps and a timeline to implement Waterfront Seattle from 2012 through 2018. There are proposed actions related to AWPOW, such as Action #22, "Construct new Alaskan Way, Elliott Way, pedestrian promenade, parks and open spaces," scheduled to be implemented between 2016 and 2018 (City of Seattle 2012c).

4.2 Construction Impacts and Mitigation

4.2.1 Construction Impacts of the No Action Alternative

Under the No Action Alternative, there would be no construction activity and, therefore, no construction impacts on land use.

4.2.2 Construction Impacts of the Action Alternative

AWPOW construction could impact most or all land uses in the study area in different ways. The following potential construction impacts could affect land use as well as other disciplines:

- Businesses that rely on drive-by or walk-up access, and businesses that rely on the traffic of passersby, would be temporarily affected by changes in access caused by construction.
- Changes in access to residences would cause an inconvenience during the period in which those properties are affected, although access in some form would be provided at all times.
- An increase in traffic congestion around work zones, road closures, traffic diversions, and detour routes could disrupt deliveries, movement of freight, and customer access to businesses.
- Construction equipment, fencing, or scaffolding could affect the visibility of businesses in the active construction area, and the clutter of construction could make the area less appealing to potential visitors.
- Noise levels in areas of active construction could be intermittently high, resulting in higher ambient noise levels for land uses in proximity to the construction zone. In general, the loudest construction activities would be limited to daylight hours.
- Brief interruptions in utility service associated with construction could occur, both scheduled and accidental, which could affect business operations in the study area.

These impacts are discussed in Chapters 3 (Transportation and Parking), 5 (Aesthetics), 6 (Noise), and 8 (Public Services and Utilities). Specific construction-related land use impacts are discussed below, including impacts related to property acquisition, easements and staging areas, park and recreational facilities, and economic activity.

Property Acquisitions, Displacements, and Relocations

Construction of the Action Alternative would redevelop approximately 36 acres of land, most of which is existing City right of way that is currently used for transportation. AWPOW would require the full acquisition of two parcels:

- Parcel 54 is a commercial surface parking lot with approximately 60 parking spaces.
- Parcel 55 contains a small two-story office building, called the Harborscape Professional Building, with one business.

These parcels are listed in Table 4-2 and also shown in Figure 4-5. Both of these uses would be displaced. No other businesses and no residences would be displaced as a result of construction.

Table 4-2. Full and Partial Property Acquisitions

Project Parcel Number	King County Parcel Number	Partial (P) or Full (F) Acquisition	Existing Zoning	Percentage of Parcel Acquired
16	766620-2630	P	Downtown Harborfront 1	2
24	266620-2565	P	Pioneer Square Mixed	0.3
54	766620-2380	F	Downtown Harborfront 2	100
55	766620-2381	F	Downtown Harborfront 2	100
98	197620-0300	P	Pike Market Mixed	20
99	257028-0000	P	Pike Market Mixed	27
100	659835-0000	P	Pike Market Mixed	2

Source: Waterfront Seattle Draft Right of Way as of June 13, 2014

The commercial parking lot (Parcel #54) may not find a comparable place to relocate near its current location. The construction impact of the loss of the parking spaces is discussed in Section 3.6.2 and the Parking Discipline Report (Appendix B).

The Harborscape Professional Building (Parcel #55) has 6,460 square feet of office space and was built in 1947. According to the King County Assessor's data, the office building classification is Class C. It is expected that the businesses displaced from this building would find comparable office space within Seattle, if not within the same neighborhood. Online office market research for the Seattle central business district in the second quarter of 2014 found that there were 131 Class C office buildings with 231,171 square feet of vacant office space (Colliers International 2014).

As listed in Table 4-2, five partial parcel acquisitions also would be needed for the Action Alternative. For most of these partial acquisitions, the size of the acquisition for the project would represent a small percentage of the total parcel size. The largest partial acquisition would be approximately 27 percent of the total parcel area.

Temporary Construction Easements and Staging Areas

The project would require a number of temporary construction easements (TCEs) and staging areas. A TCE is a right acquired from the owner of real property to temporarily use or control that real property for the purpose of construction. Many of the TCEs would consist of strips of private property along Alaskan Way to accommodate roadway construction. Once construction is complete, the easements would end and the property would return to the owner. The largest potential staging areas would be located on Pier 48 in the southern part of the study area and Pier 62/63 in the northern end; although the City has not determined whether these areas would be used for staging, their large area and lack of structures are conducive to this purpose. There would also be smaller staging areas throughout the project footprint. The TCEs and potential staging areas are shown in Figure 4-5.

The TCEs and the staging areas within the project footprint would be active construction areas, and the land uses immediately adjacent to them would experience construction-related impacts, such as noise, dust, and disrupted access to property. The potential staging areas located on the piers are separated from other land uses by Alaskan Way or by water, and would be less likely to disrupt nearby land uses. However, for visitors to the waterfront, staging areas on the piers would be conspicuous and would result in construction-related nuisances such as noise, dust, and views of construction materials and equipment.

Parks and Recreational Facilities

Parks and recreational facilities that are near construction areas would be impacted by construction activities; such impacts could be noise, dust, access restrictions, and visual intrusions. Construction impacts may result in decreased enjoyment or convenience for those visiting a park or recreational

facility when construction is underway, but these impacts would be temporary. AWPOW would not close any parks or recreational facilities for the entire construction period, but it is possible that access could be limited for short durations. In particular, the path on the east side of Alaskan Way would likely be rerouted away from the active construction area.

Economic Activity

AWPOW construction could have a beneficial impact on the local economy if local contractors are awarded construction contracts or if the project contractors purchase local goods and services for construction. Also, the wages paid to workers in construction trades and supporting industries could be spent on other goods and services in the Seattle area during the construction period, thereby positively contributing to the local economy.

Construction activity also could result in negative impacts on businesses adjacent to the immediate construction area. Constructing AWPOW would alter access to some businesses, remove on-street parking and loading zones, cause traffic delays, and reroute traffic, which could increase travel times and make access to some locations difficult (see Chapter 3). When roadway construction is occurring adjacent to businesses, their access may be temporarily altered and parking and loading zones may be removed during that time to accommodate construction activities. Construction also would require detours to remove traffic from the sections of road being built. Detours could create inconvenient routes to businesses, which would make a visit for patrons less appealing or eliminate the opportunity for drive-by customers during the duration of the detour. In addition, patrons of the local businesses may choose to avoid the study area altogether due to the perceived or real inconvenience caused by project construction. While some businesses would suffer little or no adverse effect, others might experience a decline in sales or a decrease in efficiency.

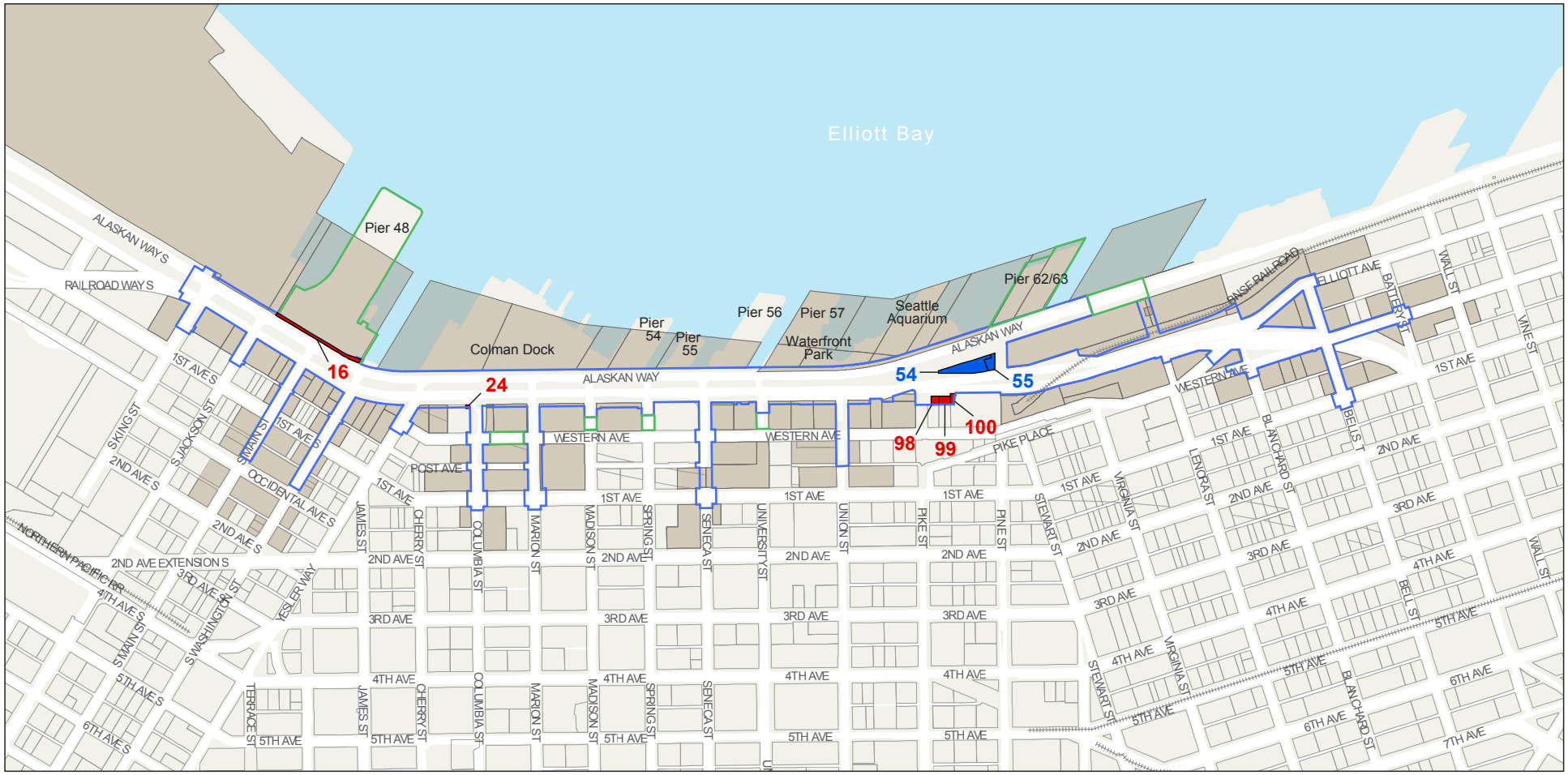
For purposes of this analysis, Alaskan Way is assumed to be closed at Pine Street for approximately 4 months to construct the Pine Street extension. During this time, access to the portion of Alaskan Way north of the closure would be provided via Elliott Way and the east-west streets from Wall Street north. The detour would make access to businesses on this part of Alaskan Way more circuitous and potentially more congested; this may result in some level of economic impact. Some businesses may suffer little or no adverse effect, while others might experience a decline in sales or a decrease in efficiency during this 4-month period.

This project would result in two full property acquisitions. These properties contain businesses that currently pay taxes to the City. The project would eliminate the tax revenue from these two parcels, which was about $34,600 in 2014. This would be annual tax revenue lost (which would increase in value with every year) due to the acquisition of these properties. However, given the size of the City of Seattle's property tax base, the loss of these two small enterprises would not adversely affect the City's revenue stream.

4.2.3 Construction Avoidance, Minimization, and Mitigation Measures

The City would compensate the owners of properties acquired for right of way in accordance with Washington's relocation and property acquisition law and regulations (RCW 8.26) and the City's relocation assistance policy (SMC 20.84). The intent of these policies is to minimize the hardships of displacement on households and businesses that result from City projects and programs. The City would provide relocation assistance to displaced businesses in accordance with these laws.

In accordance with SMC 20.84 and RCW 8.26, the City would provide just compensation, as determined by a qualified appraiser, to the owners of properties for which the City acquires TCEs. The City would generally restore TCE areas to their pre-construction condition as a requirement for acquiring the TCEs.



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Source: King County, City of Seattle

Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Full Parcel Acquisition
- Partial Parcel Acquisition
- Parcels with Temporary Construction Easements
- Parcel Boundary

Figure 4-5
Acquisitions and Temporary Construction Easements

Alaskan Way, Promenade, and Overlook Walk

The City would regularly communicate with residents, businesses, and other stakeholders to minimize the level of construction impacts, particularly those concerning utility disruptions, roadway detours, and changes to property and pedestrian access and parking availability. The City would maintain access to private property to the maximum extent feasible, and would notify property owners in advance of activities that might temporarily limit access. In addition, the City would coordinate with businesses affected by construction to provide wayfinding information for customers and support other outreach activities to minimize the potential adverse impacts of construction.

Mitigation measures for additional potential construction impacts on nearby land uses are presented in Chapters 3 (Transportation and Parking), 5 (Aesthetics), 6 (Noise), and 8 (Public Services and Utilities).

4.3 Operational Impacts and Mitigation

This section discusses the potential operational impacts on land use under the No Action and Action alternatives.

4.3.1 Operational Impacts of the No Action Alternative

AWPOW would not be built under the No Action Alternative. There would be no property acquisitions, displacements, or relocations associated with this alternative. Parks and recreational facilities would remain as they are. Land use and zoning designations would reflect the conditions that would be in place after completion of AWVRP and EBSP. Replacement of the seawall by EBSP and removal of the viaduct by AWVRP will improve public safety, enhance aquatic and riparian conditions at the shoreline, and visually and structurally "open up" Seattle's waterfront. These public investments will likely lead to some redevelopment along the corridor; however, compared to the Action Alternative, the investment and the corresponding level of improvement and redevelopment is expected to be smaller.

Under the No Action Alternative, Alaskan Way would not have sufficient capacity to accommodate travel demand, which is expected to be higher in the design year of 2030 than under 2017 existing conditions; see Chapter 3, Transportation and Parking, for more details. The resulting traffic congestion would affect mobility and could thereby affect business patronage. The No Action Alternative would maintain the existing poor pedestrian connections between the Pike Place Market and the waterfront.

Consistency with Adopted Land Use Plans

The No Action Alternative would be generally consistent with state and regional land use plans, but local land use plans envision a downtown waterfront that is different from existing conditions. As a result, some plans describe specific recommendations that the No Action Alternative would not realize. For instance, plans with goals about improving mobility, creating better connections between neighborhoods, and providing more pedestrian, bicycle, and transit facilities would not be supported by the No Action Alternative. This alternative would not be consistent with those plans in which the goals include a transportation system that supports local and regional economic growth, because the restored Alaskan Way would not be an improvement over existing conditions. The No Action Alternative would be inconsistent with elements of the following adopted land use plans:

- Transportation 2040
- Seattle Comprehensive Plan
- Transportation Strategic Plan
- Neighborhood plans for Greater Duwamish Manufacturing and Industrial Center, Pioneer Square, Commercial Core, and Belltown
- Seattle Pedestrian Master Plan
- Seattle Bicycle Master Plan
- Waterfront Seattle Guiding Principles

Appendix C contains specific information about how the No Action Alternative would be inconsistent with these adopted land use plans. Table 4-3 summarizes the No Action Alternative's consistency with the overarching goals promoted by the land use laws and plans that apply to the study area, and compares these findings with the Action Alternative.

4.3.2 Operational Impacts of the Action Alternative

The City's investment in AWPOW is designed to encourage more use of the waterfront, and to improve connections between the waterfront and downtown Seattle. Pedestrian, bicycle, and vehicle traffic in the study area would all increase as a result of the project. AWPOW would have a beneficial impact on the Greater Duwamish industrial area because it would improve the freight connection between that area and northwest Seattle, where the Ballard Interbay Northend Manufacturing and Industrial Center is located. A busier waterfront could increase traffic along Alaskan Way and on the surrounding streets, but the Action Alternative is designed to accommodate additional traffic and would have better traffic operations than the No Action Alternative.

The Promenade would create a wide, continuous pathway between Pioneer Square and the Seattle Aquarium, allowing more people to access and enjoy the waterfront than the narrow sidewalk that would continue to exist under the No Action Alternative. Kiosks located along the Promenade would be used to provide a variety of amenities for the traveling public, which could include the sale of food, flowers, and newspapers, and for bicycle rentals, among other things. This could allow new business types within the study area and small or start-up businesses entry into the market that would not otherwise be available with the existing brick-and-mortar sites. These structures would be subject to the height restrictions for the Downtown Harborfront 1 zoning, which is 45 feet. Current conceptual plans for the kiosks show heights of 46 to 48 feet, slightly above the current height restrictions for the Downtown Harborfront 1; however, the City's SMP update is expected to increase the allowed height to 50 feet (City of Seattle 2013). The Promenade may attract new businesses and patrons to the waterfront, but it would not result in new land uses in the area.

The Overlook Walk would be composed of two buildings and a sloping lid that would extend westward from the Pike Place Market, across the new Elliott Way, and down more than 100 vertical feet to the waterfront, near the Seattle Aquarium. It would transform a steep, underutilized existing public right of way into an active pedestrian facility and public open space connecting the Pike Place Market with the waterfront. By providing a grade-separated crossing over the BNSF tracks and Elliott Way, along with ramps and elevators, it would make the waterfront much more accessible from the Market and Belltown than under the No Action Alternative. The Overlook Walk would also provide new view opportunities up and down the waterfront and out across Elliott Bay. The two new buildings would be used for public purposes and transportation functions, including incidental private uses. One use currently being considered for Building C is an expansion of the Seattle Aquarium.

The East-West Connections would improve pedestrian access between the waterfront and downtown Seattle. Sidewalk improvements on S. Main and S. Washington Streets would address ADA deficiencies and enhance the connection between the waterfront and Pioneer Square. Constructing new pedestrian walkways, stairs, and elevators on Union Street between Alaskan Way and Post Alley would provide an ADA-accessible route and a viewpoint to the waterfront across this steep slope. In the north end of the study area, Bell Street Park would be extended to create a wider public space between Elliott and First Avenues. Improving the accessibility and connection to the waterfront could increase pedestrian traffic adjacent to businesses on S. Main, S. Washington, Union, and Bell Streets, supporting the land uses in this area.

As discussed in Section 3.7.2, the Action Alternative would remove parking spaces primarily along Alaskan Way and in the current Alaskan Way Viaduct right of way. A few spaces would also be removed on east-west streets. Parking patterns may shift, as motorists accustomed to parking on the street in a particular location may have to travel several blocks farther to find available parking. Sufficient off-street parking would be available in all zones to absorb this demand under the Action Alternative. As a result, the loss of parking is not anticipated to affect land uses in the study area.

Table 4-3. Summary of Project Consistency with Adopted Land Use Plan Primary Goals

	Primary Goals of Land Use Plans						
	Increased Multimodal Connectivity and Mobility	**Economic Development**	**Urban Growth**	**Environmental Protection**	**Public Access to the Shoreline**	**Open Space and Recreation**	**Adequate Public Facilities and Services**
No Action Alternative	Decrease in connectivity for northwest Seattle without viaduct.	No adverse impact on existing businesses, and no support for future economic development.	Provides adequate public services for the current population in the downtown and waterfront areas.	No changes related to environmental protection or enhancement.	No change in shoreline access.	No change in open space and recreation opportunities.	No change in public facilities and services.
Action Alternative	Greatly improves bicycle and pedestrian connections through the waterfront. Design accommodates the potential for a future waterfront bus transit service[1]. Improve vehicle connection between SODO and Belltown.	Displaces one business and a parking lot, creates construction jobs, and provides substantial investment in infrastructure that support tourist destinations and small businesses in the area.	Encourages and supports planned growth in the downtown and waterfront areas.	Promotes nonmotorized transportation through construction of the Promenade and bicycle facility. Incorporates planted and landscaped areas.	Provides public spaces near or with enhanced views of the waterfront.	Creates public open space and recreation opportunities along the Promenade and Overlook Walk.	Establishes a multimodal transportation facility able to accommodate future growth. Features include new Alaskan Way, Elliott Way, promenade, bicycle facility, and east-west connections.

[1] This transit service has not been proposed as part of AWPOW. Accommodations for this transit service that would be constructed as part of AWPOW include curb extensions at bus stops and transit shelter elements such as foundations and electrical conduits.

Property Acquisitions, Displacements, and Relocations

The two parcels that would be fully acquired (as discussed above in Section 4.2.2) would be permanently changed from parking and office space to transportation and incidental private uses. In addition, the five partial parcel acquisitions would permanently convert about 0.4 acre to new City right of way. This conversion of land use, at such a small scale in relation to the study area as a whole, is not expected to have permanent impacts on land use trends or development activity in the study area.

Parks and Recreational Facilities

AWPOW would improve the bicycle and pedestrian environment along Alaskan Way, enhancing access to the recreational facilities within the study area. The new protected bicycle facility and the greater pedestrian capacity along the Promenade would make the entrances of Waterfront Park and Pier 62/63 more inviting, and would integrate with the proposed improvements to both of these facilities, if they are built. The bicycle facility and Promenade would also enhance connections between parks and recreational facilities in the study area and facilitate access to others nearby, such as Myrtle Edwards Park and the Olympic Sculpture Park.

Economic Activity

Operation of AWPOW is expected to attract more visitors to the study area. A busier waterfront would result in busier nearby attractions, especially those that would be better connected to the waterfront, such as businesses in Pioneer Square, the western portion of the commercial core, and the Pike Place Market. Businesses in these areas may experience increased patronage as more people visit the waterfront area and make use of improved east-west connections. Similarly, the resulting pedestrian- and business-friendly active waterfront could encourage commercial and residential development on the east side of Alaskan Way in underutilized areas. Increased use and visibility of the area are expected to increase its desirability for businesses, especially those that rely on walk-by and drive-by traffic. However, this benefit would not materially change the land use in the area because all new development and redevelopment would be required to comply with the applicable standards for zoning designations. Although the potential economic impact of these changes cannot be quantified, it is expected to be positive.

Consistency with Adopted Land Use Plans

AWPOW would be consistent with the adopted land use plans listed above with which the No Action Alternative would be inconsistent; see Table 4-3. The Action Alternative is expected to be consistent with the City's Land Use Code and SMP; however, final confirmation of the project's consistency with applicable shoreline use and development standards would occur during the permit review process. AWPOW's consistency with specific adopted land use plans is discussed in detail in Appendix C.

The Action Alternative would implement a substantial portion of Waterfront Seattle's vision for revitalizing the waterfront. It also would support the broader goals of state, regional, and local plans and policies by:

- Increasing multimodal connectivity and mobility
- Supporting economic development and urban growth
- Supporting environmental protection measures
- Providing opportunities for public access to the shoreline, open space, and recreation
- Providing adequate public facilities and services

4.3.3 Operational Avoidance, Minimization, and Mitigation Measures

The City expects this project to be consistent with the adopted land use plans. No adverse operational impacts are expected. Accordingly, no operational mitigation measures are necessary.

5 Aesthetics

Seattle's downtown waterfront is one of the city's most visited tourist and recreation areas because of the scenic views, historic buildings and districts, and access to water-oriented transportation. The aesthetics analysis presented in this chapter identifies existing conditions and discusses AWPOW's potential impacts during construction and operation. The term "aesthetics" refers to the visual character of a place and its degree of visual quality, which is the value people attach to that character. The aesthetics assessment is based on a combination of factors and data that affect pedestrian or motorist experience, including the presence of panoramic or scenic views and the visual character and quality of the area. The analysis includes an evaluation of light and glare impacts. This chapter also describes possible measures to avoid, minimize, or mitigate any potential impacts. More details are provided in Appendix D, Aesthetics Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS.

5.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017 before AWPOW construction begins. These conditions, referred to as the 2017 existing conditions, are expected to be the same as they are today except that AWVRP, EBSP, and PPMWE construction will be complete.

The study area for the aesthetics analysis is the project viewshed and landscape units. The project viewshed is defined as all the views both toward the project and from the project, while the landscape units are smaller subareas within the viewshed. Figure 5-1 shows the project's viewsheds and viewpoint locations, which are discussed in Section 5.3 below, and Table 5-1 describes the direction and view at the viewpoint locations. Figure 5-2 identifies the five landscape unit boundaries defined for AWPOW: Pioneer Square, Waterfront, Downtown, Pike Place–Belltown, and Elliott Bay.

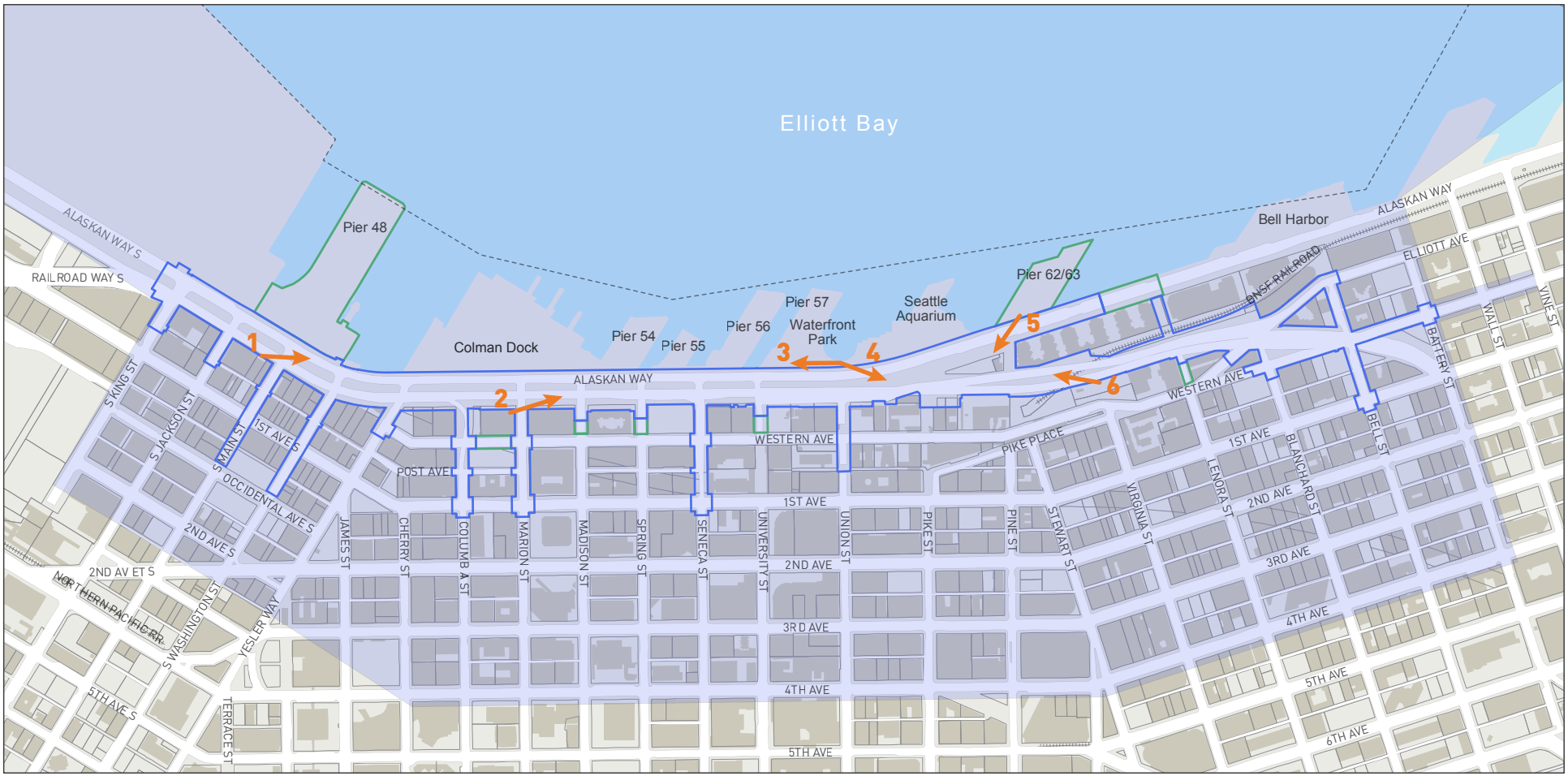
The FHWA's visual quality assessment methodology, a tested standard that is widely applied to major projects, was used to evaluate AWPOW's impacts. In this methodology, "visual quality" is the overall aesthetic value of a view or aggregate views based on an assessment of vividness, unity, and intactness. These terms are defined as follows:

- Vividness is the level of the memorability or distinctiveness of the landscape.
- Unity is the level to which the landscape is in harmony with or sensitive to the existing setting.
- Intactness is the level to which the landscape is free of eyesores or elements that are not compatible with the overall setting.

Table 5-2 shows the range of potential visual quality levels for each of these three qualities, which are rated on a scale from low to high. Table 5-3 shows the ratings for each visual quality component for each landscape unit.

5.1.1 Pioneer Square Landscape Unit

The Pioneer Square landscape unit includes portions of the Pioneer Square Preservation District—a Seattle landmark and historic district with distinctive buildings and urban design character that is listed on the National Register of Historic Places. The landscape unit also contains Pier 48 and part of the Port of Seattle's Terminal 46. The project footprint extends into the landscape unit along east-west streets perpendicular to Alaskan Way. The landscape unit is bordered by S. King Street on the south and by Cherry Street on the north, where the transition from historic mid-rise to modern high-rise buildings begins. To the east, the landscape unit is bounded by First Avenue S. or Second Avenue S., where the project footprint on Alaskan Way becomes less visible, and on the west by pedestrian and parking zones in front of the Pioneer Square buildings that front Alaskan Way. Views of the project footprint are primarily from sidewalks and west-facing windows along Alaskan Way and east-west streets that end at Alaskan Way.



0 400 800

Feet

Source: SDOT

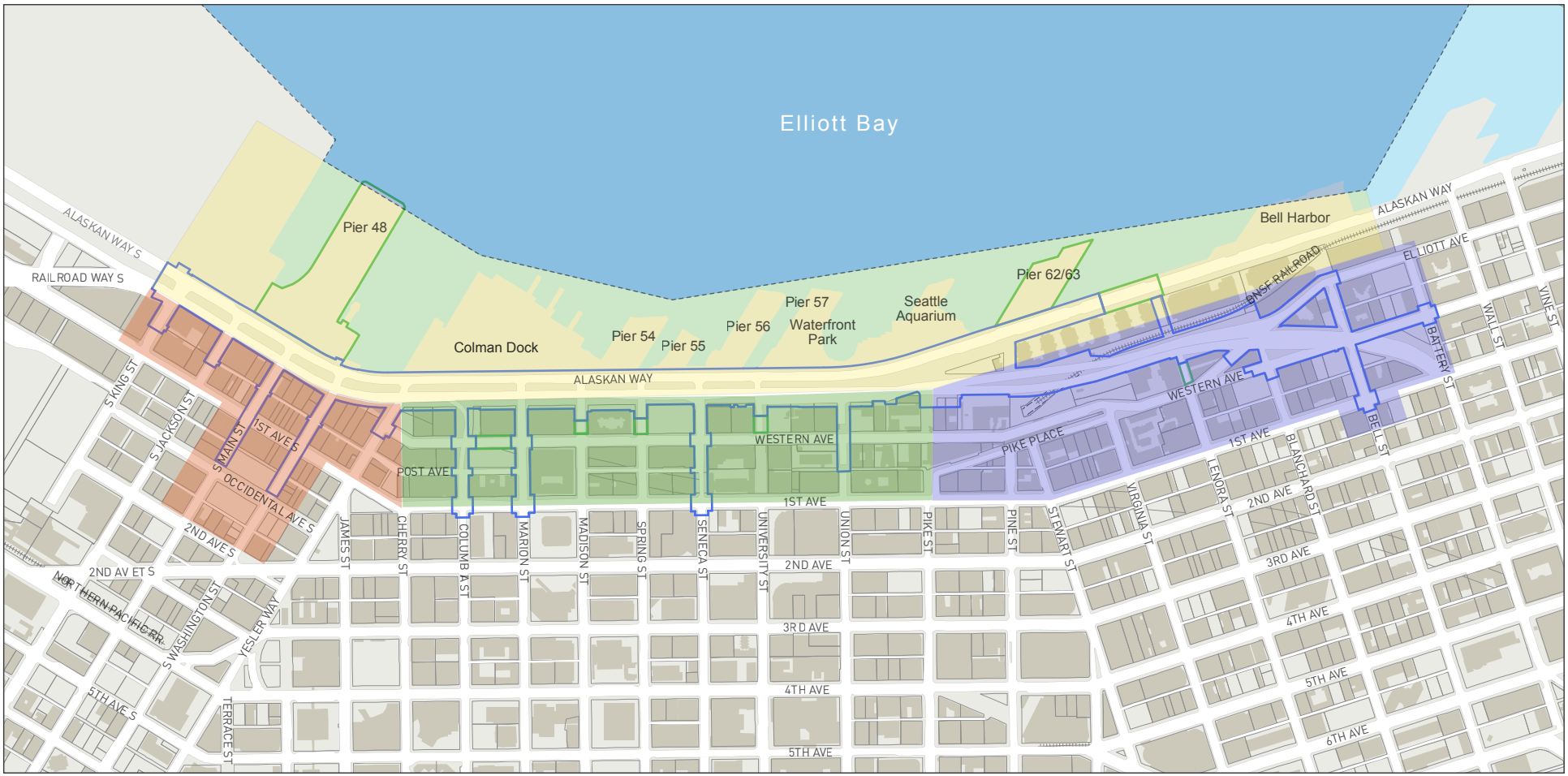
Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Project Viewshed
- Viewpoint
- Outer Harbor Line
- Parcel Boundary
- Building Footprint

Note:
Viewshed extends westward to the horizon.

Figure 5-1
Project Viewshed and Viewpoints

Alaskan Way, Promenade, and Overlook Walk



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Feet

Source: SDOT

Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Pioneer Square Landscape Unit
- Waterfront Landscape Unit
- Downtown Landscape Unit
- Pike Place / Belltown Landscape Unit
- Elliott Bay Landscape Unit

- Parcel Boundary
- Building Footprint
- Outer Harbor Line

Note:
Elliott Bay landscape unit extends 0.5 mile west of the shoreline.

Figure 5-2
Project Landscape Units

Alaskan Way, Promenade, and Overlook Walk

Table 5-1. Key Viewpoints

Viewpoint	Viewpoint Location	Direction	View
1	S. Main Street	Northwest toward Colman Dock	Seattle downtown skyline
2	Marion Street pedestrian bridge	Northwest toward historic piers	Piers 54 and 55
3	Union Street Pier at end of Union Street	Southeast toward historic piers and Pioneer Square	Pier 57, sports stadium arches
4	Waterfront Park	North toward Pike Place Market and Belltown	Seattle skyline
5	Pier 62/63	East toward downtown Seattle	Seattle skyline and buildings fronting east side of Alaskan Way
6	Victor Steinbrueck Park	South along the waterfront	Elliott Bay, Puget Sound, Olympic Mountains, historic buildings and piers, and Port of Seattle gantries

Table 5-2. Definitions of Visual Quality Levels

Rank	Vividness	Intactness	Unity
Low	Low vividness indicates a landscape that is mundane or nondescript.	Low intactness indicates the loss of large portions of a landscape from the view or the prevalence of elements having incompatible scales, colors, or massing.	Low unity indicates that the built features of a landscape were placed and built without sensitivity to the natural or existing setting.
Medium	Medium vividness indicates the presence of some features that have striking and attractive textures, colors, shapes, or sizes.	Medium intactness indicates the presence of some features that are not compatible with the existing landscape or a loss of part of the landscape.	Medium unity indicates that built features are somewhat responsive to the natural or existing setting.
High	High vividness indicates the presence of a dominant feature or a collection of features that is distinctive and memorable.	High intactness indicates that the landscape is not broken up by features that are out of place.	High unity indicates that the natural and built components of a landscape are in balance and harmony with each other.

Source: Adapted from FHWA 1988

Table 5-3. Summary of Visual Quality of the 2017 Existing Condition

Landscape Unit	Vividness	Intactness	Unity	Overall Visual Quality Level
Pioneer Square Southern end of project footprint	Medium–High Historic buildings and street trees are striking and attractive.	Medium West edge parking and loading areas are out of place with the whole.	Medium–High Structures are of similar scale and design, but parking areas are not harmonious with the whole.	Medium–High
Waterfront All of the Alaskan Way corridor along the water's edge	Medium–High Memorable and distinctive elements, scenic setting.	Medium Alaskan Way corridor is out of place with the recreational and historic character.	Medium Alaskan Way is very different in scale and design from the waterfront.	Medium

Table 5-3. Summary of Visual Quality of the 2017 Existing Condition

Landscape Unit	Vividness	Intactness	Unity	Overall Visual Quality Level
Downtown Eastern border of the project footprint	Medium–High Architectural styles are memorable.	Medium West edge parking and loading areas are out of place with the whole.	Medium Architectural styles and forms are an eclectic mix, but the character of the western edge is not harmonious with the whole.	Medium
Pike Place–Belltown Northern end of the project footprint	High Memorable and distinctive elements, scenic setting.	Medium Viaduct gap and railroad divide the landscape unit in two.	Medium Viaduct gap and uses are not harmonious with the character of the landscape unit.	Medium
Elliott Bay Open water to the west of the harbor piers	High Memorable elements, scenic setting.	High No intrusive or out-of-place features, or loss of the waterscape.	High No built elements.	High

Note: Landscape units are shown in Figure 5-2.

The visual character of this landscape unit is defined by its regular and continuous urban development, which is composed of late 19th century mid-rise buildings (typically 5 to 10 stories) of red brick or stone. Each building has its own unique architectural detailing, which creates an interesting and appealing street character. The uniformity of building scale and materials creates a high level of continuity, while the architectural details of each building contribute to an interesting and pleasing diversity. While there is no one dominant feature, the overall character is distinctly harmonious and memorable. Although they are not part of the Pioneer Square landscape unit, the presence of the parking and loading areas on the Alaskan Way corridor detract from the character of Pioneer Square.

Many of the views within the Pioneer Square landscape unit, such as those on S. Main and S. Washington Streets, are interior, focused on the historic buildings, trees, and public spaces. In the western portion of the landscape unit, some views include Elliott Bay, West Seattle, and the Olympic Mountains, but others are blocked by structures on Piers 46 and 48 and the Seattle Multimodal Terminal at Colman Dock. The viewer population includes shoppers, club and restaurant patrons, sightseers, commuters, and workers in and residents of Pioneer Square.

The overall visual quality level of the Pioneer Square landscape unit under 2017 existing conditions is medium–high. The high level of visual quality in the interior of the landscape unit is diminished by the undistinguished swath of pavement and parking places along the historic buildings fronting the east side of Alaskan Way. Vividness is medium–high because the historic buildings and street trees are attractive and memorable. Intactness is medium because the parking and loading areas are at odds with the character of the historic buildings and streetscapes of Pioneer Square. Unity is medium–high because the parking and loading areas associated with the buildings on the east side of Alaskan Way are not harmonious with the overall character of the landscape unit.

5.1.2 Waterfront Landscape Unit

The Waterfront landscape unit is the largest and most complex of all units within the viewshed. It is a regional destination for recreation and tourism, various modes of land- and water-borne transportation, and commerce. This landscape unit contains most of the project footprint along the Alaskan Way corridor; permanent structures along the piers, including the Seattle Multimodal Terminal at Colman Dock, historic Piers 54 to 59, Waterfront Park, Pier 62/63, and the Bell Harbor complex; and the

Waterfront Landings Condominiums across from Bell Harbor. The landscape unit is bordered by S. King Street on the south; by Battery Street on the north, the point at which the project footprint is no longer visible; by the outer harbor line on the west, which encompasses the harbor structures; and by the east edge of the Alaskan Way Viaduct footprint, where there is a transition to different development, pedestrian, and traffic patterns. Views of the project footprint are available from everywhere within this landscape unit.

The visual character of this landscape unit is defined by the harbor, which includes the seawall and adjacent sidewalk, and the Alaskan Way corridor, which includes the restored roadway and the area vacated by the viaduct. Marine and land-based traffic is a defining feature of the Waterfront landscape unit. Development in the area consists of large piers, historic warehouses, ferry terminal facilities for vehicles and pedestrians, two city parks, a fire station, and small pavilions and plazas. The scale and footprint of the buildings are generally similar, resulting in a high degree of coherence and continuity among the different eras and uses. The historic piers are visually attractive as individual buildings, but their more important contribution to the visual character of the waterfront is as an assemblage. The Waterfront Landings Condominiums on the east side of Alaskan Way have modulated façades and setbacks that echo the ins-and-outs of the harbor buildings.

The angle of the pier buildings relative to Alaskan Way and the flat topography of this landscape unit result in public views that are, for the most part, framed or channeled. Panoramic views are available from Pier 57, Waterfront Park (Pier 58), and Pier 62/63, where pedestrians can walk to the ends of the piers for views that extend the full length of the waterfront. Views that include the monumental structures of the Seattle Great Wheel, the Port's gantry cranes, and the arches of the sports stadiums are spectacular and highly memorable. The movement of ships, ferries, and sailboats and the movement, colors, and textures of water and clouds are an important and interesting component of these vistas. Views to the east and south include the tiers of high-rise buildings in downtown Seattle, a portion of the Pioneer Square skyline, and the arches of CenturyLink Field. Viewer groups comprise local and visiting diners, shoppers, walkers, joggers, tourists, commuters, and workers.

The overall visual quality of the Waterfront landscape unit under 2017 existing conditions is medium. Overall vividness is medium–high because of the scenic setting and the many memorable and distinctive elements in the landscape unit. However, the Alaskan Way corridor is large and prominent, and detracts from the visual quality of the waterfront as a whole. Intactness and unity are medium because the wide expanse of Alaskan Way is generally out of scale and character with the recreational and historic waterfront components; the roadway causes a loss of landscape for pedestrian and recreational purposes; and the alignment of this transportation facility reduces the overall integrity of the landscape unit.

5.1.3 Downtown Landscape Unit

The Downtown landscape unit is a dense urban landscape with a wide range of commercial, residential, recreation, and entertainment uses. The project footprint extends into this landscape unit short distances up the streets perpendicular to Alaskan Way. The landscape unit is bordered on the south by Cherry Street, where modern high-rise development ends; on the east by First Avenue, where the project footprint becomes less noticeable; on the north by Pike Street, where modern high-rise development becomes less dense; and on the west by the pedestrian and parking zones in front of the downtown buildings that abut the east edge of Alaskan Way. Views of the project footprint are available from pedestrian overlooks and stairs, upper-level windows, and many east-west view corridors.

The visual character of the Downtown landscape unit is defined by its sloping topography and its terraced, continuous development on a street grid. The topography rises from near sea level at Cherry Street to roughly 100 feet above sea level around Pike Street. Development is terraced along this slope and consists of modern high-rise buildings, primarily on the upper elevations, and historic mid-rise buildings, primarily on the lower elevations. Pedestrian connections between different elevations are made by stairs and small landscaped terraces that also act as informal public viewpoints. Development

comprises a mixture of architectural styles and ages interspersed with parking lots and structures. Parking and loading areas in front of the buildings along Alaskan Way and the Alaskan Way corridor itself, while not a part of this landscape unit, detract from the urban character of this landscape unit.

The combination of terraced development, the increase in building height from west to east, the street grid, and the sharp change in topography produces a wide range of view locations and view quality. Public views to the west from the upper levels of the Pike Street Hillclimb and from Union Street east of Western Avenue are panoramic and include the waterfront in the near ground, open water and Bainbridge Island in the middle distance, and the Kitsap Peninsula and the Olympic Mountains in the far distance. The project footprint is visible in these views; however, the Union Street Pedestrian Connection and Alaskan Way itself are typically a minor element of the view because it is framed and below viewers' eye levels. From the east side of Alaskan Way, the roadway and the pier buildings are dominant near-ground features, with views of Elliott Bay beyond. The viewer population includes workers, commuters, tourists and locals seeking recreation, and residents.

The overall visual quality of the Downtown landscape unit under 2017 existing conditions is medium. Overall vividness is medium–high because the collective styles and forms of the historic and modern architecture result in a visually rich and distinctive urban character and skyline that are memorable. The Seattle skyline is identified in the Seattle code as a valued visual resource. Intactness and unity are medium because the amount of pavement, staircases, blank walls, and parking places among the buildings fronting the east side of Alaskan Way diminishes this important transitional area.

5.1.4 Pike Place–Belltown Landscape Unit

The Pike Place–Belltown landscape unit includes the Pike Place Market Historical District, which is listed on the National Register of Historic Places. The District encompasses the Pike Place Market, Victor Steinbrueck Park, and the Pike Place Hillclimb. The landscape unit also includes part of the Belltown neighborhood and the steep slope between Alaskan Way and Western Avenue, known as the Belltown bluff. The landscape unit is bordered on the south by Pike Street, which is the beginning of the Pike Place Market area; on the east by First Avenue (except at Bell Street where it is a half block farther east); on the north by Battery Street; and on the west by the BNSF rail line that divides Alaskan Way and the waterfront from Belltown. At Pike Street, the AWPOW footprint is below the level of Pike Place Market and Victor Steinbrueck Park; farther north, the footprint rises to meet the existing terrain at Bell and Battery Streets. Because of the rising terrain and existing buildings, Bell Street Park is only visible from the project footprint near the First Avenue and Bell Street intersection.

The visual character of this landscape unit is defined by its mixed use, low and mid-rise urban development, and the steep topography on which this development is situated. Architectural styles, forms, and materials are very diverse, resulting in a high level of visual complexity and interest. Many lots and buildings are wedge-shaped because of the irregular angles between streets at Pike Place Market and along the former route of the viaduct. This angularity and the high diversity of architectural forms and styles create an unexpected and interesting street experience. Pedestrian and vehicle traffic, especially near Pike Place Market, add to the generally festive atmosphere. Pedestrian connections between the upper and lower elevations are made by stairs and elevators that also act as public viewpoints; these include the Pike Street Hillclimb, the pedestrian bridge and overlook at the west end of Lenora Street, and the Bell Street pedestrian bridge. The gap created by removal of the viaduct is a physical and visual barrier between the upper and lower parts of the landscape unit.

Large changes in topography, coupled with irregular sightlines along angled streets, result in public views that are narrowly framed by structures or are only available from elevated viewpoints, such as the west edge of Victor Steinbrueck Park, or the views that are anticipated to be available from the public spaces associated with the PPMWE. Views from Lenora, Blanchard, Bell, and Battery Streets are framed by buildings and include the project footprint in lower parts of the views and scenic resources in the distance. Views from Victor Steinbrueck Park include the full extent of the waterfront and harbor, as

well as the Seattle skyline. The façade of the Public Market Parking Garage and the wall of the Waterfront Landings Condominiums will be exposed after the viaduct is removed, and will dominate the near-ground view. The viewer population is similar to that of the Downtown landscape unit and includes workers, tourists and locals seeking entertainment, as well as commuters and residents.

The overall visual quality of the Pike Place–Belltown landscape unit under 2017 existing conditions is medium. Overall vividness is high because of the historic signs and buildings of Pike Place Market, the memorable views from Victor Steinbrueck Park, and the unusual street pattern. The mix of historic and modern architectural styles in and near Pike Place Market adds richness and distinctiveness that is memorable and stimulating. Unity is medium because the dominant components of the landscape (Pike Place Market, Belltown buildings, railroad tracks, and tall walls of the viaduct canyon) are not in balance or harmony with each other. Intactness is medium because the gap left by removal of the viaduct is a loss of a large portion of the landscape, which has an impact on views.

5.1.5 Elliott Bay Landscape Unit

The Elliott Bay landscape unit is the open water of eastern Elliott Bay that lies within ½ mile of Seattle's outer harbor line. Inside the ½-mile limit, in clear weather, trees and objects in the project footprint are identifiable from certain angles, especially south of Colman Dock. Farther than the ½-mile limit, objects within the project footprint are not distinguishable behind and amid other waterfront elements.

The visual character of this landscape unit is defined by the open water of Elliott Bay and the high volumes of marine traffic. This traffic includes international and national cargo ships heading to the Port of Seattle, cruise ships docking at Bell Harbor, Washington State ferries bringing commuters and tourists across Puget Sound, and regional tour boats making day trips. The bay is also a destination for recreational boating. The variety of ships and boats, their movements, and the varying weather, water textures, and colors create dramatic and interesting visual character.

All viewpoints within this unit contain unobstructed, 360-degree views of major regional visual resources: the Seattle waterfront and skyline, West Seattle, Bainbridge Island, Puget Sound, the hills of Kitsap County, and the Olympic Mountains. Water-borne vessels of all shapes and sizes are temporary elements in views that add interest, movement, and scale. Views are highly changeable due to the dynamics of Seattle weather, but this adds variety and different types of vividness. The Seattle skyline dominates views to the east because the rise in elevation creates a natural amphitheater that allows the buildings farther east behind the waterfront to show and makes the skyline appear taller and more varied. Architectural styles, forms, colors, materials, and details are highly diverse, which make the skyline very attractive and memorable. Views of the city lights at night are highly memorable, including the Seattle Great Wheel at the northern end and the arches of the stadiums at the southern end. The viewer population in this landscape unit includes workers on cargo ships, ferries, and tour boats; tourists and commuters riding the ferries and tour boats; and recreational boaters.

The overall visual quality of the Elliott Bay landscape unit under 2017 existing conditions is high. Vividness is high because the expanse of water is dominant and highly memorable, and because the setting has great natural beauty and grandeur. The colors and textures of the water vary with weather conditions; as a result, the open water is always interesting to look at and observe due to its variations. Unity is high because the landscape unit is an integral part of the regional Puget Sound system and is harmonious and continuous with its surroundings. Intactness is high because there are no permanent large and noticeable objects in the landscape unit. Cargo ships, cruise ships, and other vessels moor in the bay for varied lengths of time, but not permanently, and they are interesting elements to watch that add scale and variety to views.

5.1.6 Viewpoints, View Corridors, and Scenic View Routes

City of Seattle regulations (SMC 23.49.024 and SMC 25.05.675.P) establish the City's policy for protecting public views of valued natural and man-made features from specified viewpoints, parks, view corridors, and scenic view routes. The scenic views, routes, parks with protected views, and view corridors are shown on Figure 5-3. View corridors, as described in SMC 23.49.024, are designated streets (generally oriented east-west) where adjacent land use is regulated to maintain open views. The City's environmental policies described in SMC 25.05.675.P protect views of distinctive features, including Mount Rainier, the Olympic Mountains, the downtown skyline, and Puget Sound, from public viewing locations such as designated parks, viewpoints, and scenic routes. Designated viewing locations within the study area include:

- Waterfront Park
- Victor Steinbrueck Park
- Alaskan Way
- Elliott Avenue
- Yesler Way
- S. Jackson Street
- Fifth Avenue
- I-5
- Denny Way
- A portion of Broad Street

5.2 Construction Impacts and Mitigation Measures

The construction impacts for the Action and No Action alternatives were determined by assessing the difference between the visual quality rating of the affected environment (2017 existing conditions) and the visual quality rating during the construction phase for both alternatives. Impacts were rated as minor, moderate, or substantial in accordance with the criteria in Table 5-4.

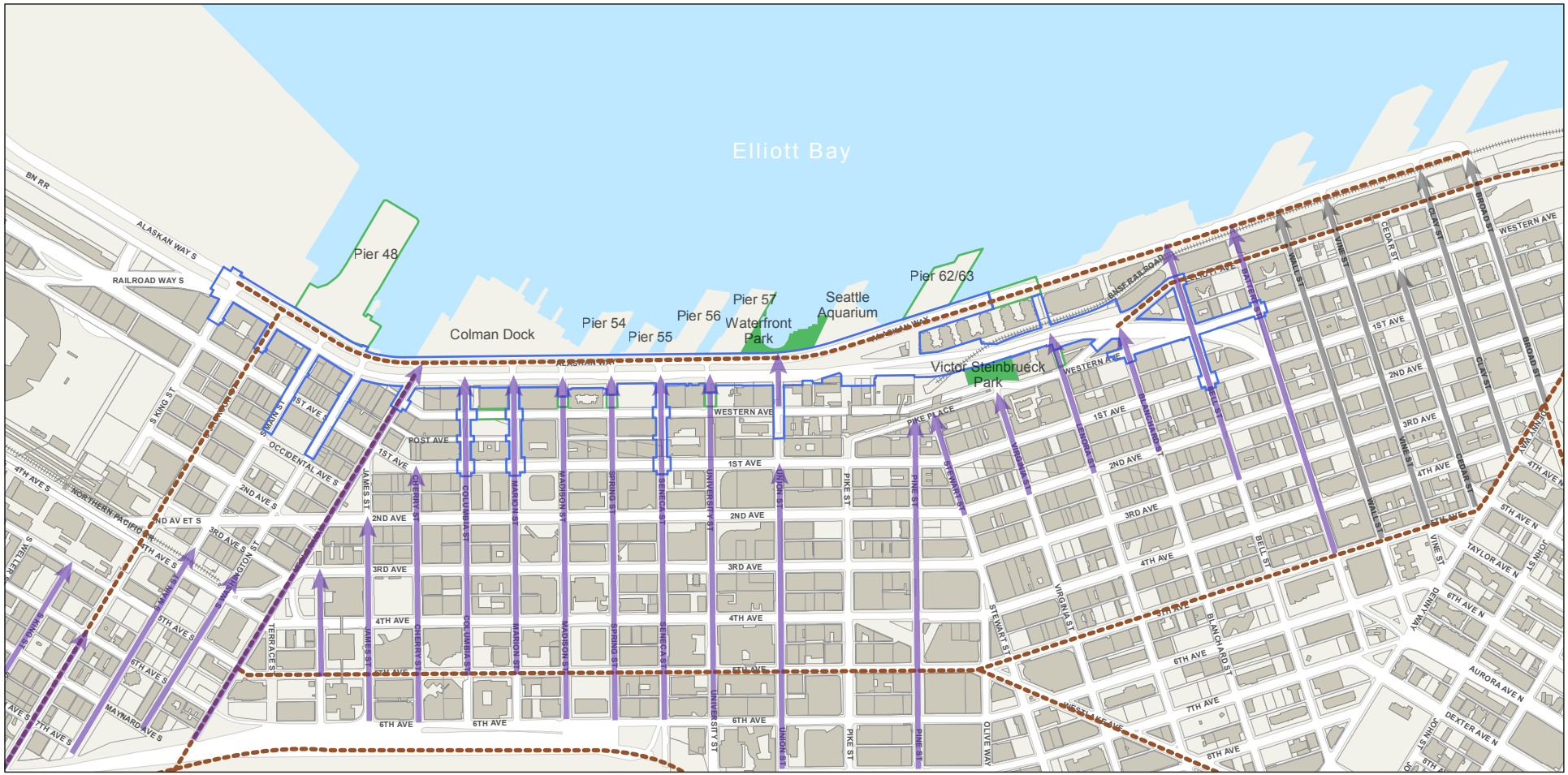
Table 5-4. Explanation of Impact Ratings

Minor	Moderate	Substantial
No or few physical changes result from the project.	Changes in qualities of vividness, intactness, or unity are noticeable.	Changes in qualities of vividness, intactness, or unity are obvious.
Important views are not affected.	Important views may be affected but are still available.	Important views are disrupted or blocked.
Viewers are not likely to notice visual changes.	Viewers are aware of visual changes.	Viewers see and are sensitive to visual change.
Changes in shadow or light levels and glare may occur, but are not noticeable.	Changes in shadow levels or light and glare are noticeable, but not conspicuous.	Changes in shadow levels or light and glare are pronounced.

Source: Adapted from FHWA 1988

5.2.1 Construction Impacts of the No Action Alternative

Under the No Action Alternative, there would be no construction activity and therefore no construction impacts on aesthetics.



0 500 1,000
Feet

GIS Source: King County, City of Seattle

Action Alternative
- Project Footprint
- Potential Construction Staging Area
- Scenic View Routes
- Extent of View Corridor / Direction of View
- View Corridor / Direction of View Outside the Project Area
- Parks with Protected Views

- Parcel Boundary
- Building Footprint

Figure 5-3
City of Seattle Scenic View Routes, Parks with Projected Views, and View Corridors

Alaskan Way, Promenade, and Overlook Walk

5.2.2 Construction Impacts of the Action Alternative

Construction activities for the Action Alternative would result in temporary impacts on aesthetics within the project viewshed. The construction of the new Alaskan Way-Elliott Way corridor would occur in sections ranging from one block to several blocks in length. Because the work would be done in segments, most views would be affected for only a portion of the overall construction period, and long-distance views of visual resources to the west from higher vantage points would generally not be affected. Construction of the East-West Connections on S. Main, S. Washington, Union, and Bell Streets would occur in one-block to two-block segments for approximately 1 year during the overall construction period. Construction activities would primarily be visible only to viewers in the immediate vicinity. However, construction of the new elevator shafts at Union Street could potentially affect long-distance views for a short period from locations on Union Street east of Post Alley. Visual quality would be degraded for all of the land-based landscape units during construction as a result of:

- Presence and movement of construction vehicles and equipment
- Staging areas and stored construction materials
- Temporary work structures for construction of the Elliott Way bridge over the railroad tracks and for construction of the Union Street Pedestrian Connection
- Safety and erosion control devices such as high visibility or screening fences
- Exposed soils, dust, exhaust, and airborne debris in areas of active construction
- Temporary lighting for night construction (if needed)
- Disruption to traffic, which would change the normal habits of pedestrians, bicyclists, and motorists and require detour signage

Construction impacts on each landscape unit, and the resulting visual quality levels, are discussed in the following sections. Table 5-5 provides a summary of the visual quality levels for each landscape unit during construction. Taken as a whole, adverse construction impacts for the project viewshed would be moderate because construction activities are not expected to be present throughout the entire project footprint at any point in time; rather, they will be temporary and transitory in nature.

Table 5-5. Summary of Construction Visual Quality Levels and Impacts for the Action Alternative

Landscape Unit	Vividness	Intactness	Unity	Overall Visual Quality Level	Construction Period Impact Rating
Pioneer Square Southern end of project footprint	Medium Disrupted and cluttered views at western edge.	Medium Temporary loss of the western edge of the landscape.	Medium Equipment and activities are out of scale and character at western edge and on S. Main and S. Washington Streets.	Medium	Moderate
Waterfront All of the Alaskan Way corridor along the water's edge	Low Construction would not directly impact features that primarily contribute to visual quality, but will detract from the setting and affect	Low Temporary impacts to large parts of the landscape.	Low Equipment and materials are out of scale and character with context.	Low	Substantial

Table 5-5. Summary of Construction Visual Quality Levels and Impacts for the Action Alternative

Landscape Unit	Vividness	Intactness	Unity	Overall Visual Quality Level	Construction Period Impact Rating
	views from scenic view routes.				
Downtown Eastern border of the project footprint	Medium Disrupted and degraded views of scenic resources from the western edge and on Union Street east of Post Alley.	Low Temporary impacts to large parts of the landscape.	Low Equipment and material are out of scale and character with context.	Low	Substantial
Pike Place–Belltown Northern end of the project footprint	High Construction would not directly impact features that primarily contribute to visual quality.	Medium-Low Temporary loss of small part of landscape.	Medium-Low Equipment and material are out of scale and character with context.	Medium	Moderate
Elliott Bay Open water to the west of the harbor piers	High Construction partially visible but would not directly impact features that primarily contribute to visual quality.	High No loss of any part of landscape.	High Construction partially visible; equipment and material are out of scale and character with context.	High	Minor

Note: Landscape units are shown in Figure 5-2.

Pioneer Square Landscape Unit

In this landscape unit, construction equipment and activities would be present in restricted locations along the front of buildings that define the west edge of the landscape unit and on some of the east-west streets, particularly S. Main and S. Washington Streets. Along the west edge of this landscape unit, the existing road and sidewalks would be excavated and rebuilt, utilities re-installed, and new landscaping installed. The staging area on Pier 48, if used, would be visible; however, the pier is being used for staging during construction of the SR 99 tunnel and therefore it would not be a noticeable change in use or character.

Impacts on views from the Seattle view corridors would be moderate because these views are narrowly framed by buildings and screened by tree canopies. Impacts on views from the west edge of Pioneer Square would be substantial because construction materials would be present in all views. All viewer groups would be sensitive to these impacts, in particular residents, commuters, and workers who would have regular or continuous exposure to the construction. Tourists and locals seeking entertainment may be less affected because they can choose to avoid the construction areas.

Overall, the visual quality of the Pioneer Square landscape unit would be medium during construction. Most of the construction activity would be at the perimeter of the landscape unit and on S. Main and S. Washington Streets. Vividness would be medium because construction activities would disrupt and clutter views. Unity and intactness would be medium because the integrity of the landscape would be disturbed by the prevalence of equipment and activities, as well as by the temporary loss of access to a portion of the landscape unit.

Waterfront Landscape Unit

Construction equipment and activities would be present and visible throughout the landscape unit as the existing roads and sidewalks are excavated, utilities and new landscaping installed, and the new roadway, pedestrian, and bicycle facilities built. Impacts in this landscape unit would be greater than in the other landscape units due to extensive reconstruction of the roadway and pedestrian facilities, and construction of the Overlook Walk lid, terraces and stairs, Buildings B and C, and the Marion Street pedestrian bridge. The staging area on Pier 62/63, if used, would be prominent and would look very different from the existing open deck.

Impacts on views along Alaskan Way, a scenic view route, and inland from Waterfront Park, a scenic viewpoint, would be substantial, especially during construction of the Overlook Walk, which would be visible as far south as the southern end of the project footprint at Pioneer Square. Westward views across Alaskan Way toward regional scenic vistas would be affected to the degree that the foreground would include construction materials, which would clutter and disrupt the view. In the event that safety fencing is used, views from street level may be blocked. However, views westward from Waterfront Park and along the seawall would not be impacted because construction elements would be behind the viewer and viewpoint.

All viewer groups would be sensitive to these impacts, especially residents, commuters, and workers in the area who would have regular or continuous exposure to views of construction. Residents of the Waterfront Landings Condominiums would have construction of Alaskan Way in the foreground of their west-facing views. This impact would be greatest for street-level views. South-facing units in the southernmost building would experience the highest impacts during construction of the Overlook Walk, which would dominate the foreground of those views.

Adverse construction impacts on the visual quality of the Waterfront landscape unit would be temporary, but substantial. The visual quality rating for this landscape unit would be low during construction. Vividness would be low because all viewpoints in the Waterfront landscape unit would at one time or another include construction activities as dominant and distracting elements. Unity and intactness would be low because construction equipment and activities would result in the temporary loss of large portions of the landscape, would disrupt its integrity, and would not be compatible with the setting.

Downtown Landscape Unit

Construction equipment and activities would be present along the front of buildings that define the west edge of the Downtown landscape unit and in restricted locations on some of the Seattle east-west view corridors and north-south avenues. Along the west edge, the existing road and sidewalks would be excavated and rebuilt, utilities re-installed, and new landscaping installed. Construction would include the renovation of the Marion Street pedestrian bridge.

Impacts on views from the Seattle view corridors (Columbia, Marion, Madison, Spring, Seneca, University, and Union Streets) would be noticeable but not prominent because these views are narrowly framed by buildings and screened by tree canopies. Construction impacts on the Union Street view corridor looking westward would be more substantial than those in the other view corridors due to the construction of the new pedestrian connection. Impacts on views from the west edge of downtown would be substantial because of the proximity and scale of construction activities and the high quantity of viewers. All viewer groups would be sensitive to these impacts, but especially residents, commuters, and workers who would have regular or continuous exposure to the construction. Tourists and locals seeking entertainment could be less affected because they can choose to avoid the construction areas.

Adverse construction impacts on the visual quality of the Downtown landscape unit would be temporary, but substantial. The overall visual quality rating would be low during construction. Vividness would be reduced to medium because construction activities would disrupt and clutter views from the

west edge of the landscape unit and near the staging areas. Intactness and unity would be reduced to low because the integrity of the landscape would be disturbed by the prevalence of equipment and activities, as well as by the loss of the western portion of the landscape unit.

Pike Place–Belltown Landscape Unit

Construction equipment and activities would be present in restricted locations in the Pike Place–Belltown landscape unit, but not visible from most places because of the hilly terrain. Construction activities would involve building the structures along Elliott Way, including the intersection with Pine Street; building new local street connections; installing new landscaping; and extending Bell Street Park.

Impacts on views from the Seattle view corridors (Lenora, Blanchard, Bell, and Battery Streets) would be noticeable but not prominent, because these views are limited by buildings and tree canopies. Construction impacts on the view from the edge of Victor Steinbrueck Park would disrupt the foreground view and detract from the quality of middle or distant views. Because of the topography and surrounding urban development, views from Bell Street Park towards the west are not likely to be impacted by construction on Bell Street between First and Elliott Avenues. Accordingly, most views in this landscape unit, including the Seattle view corridors, would not be appreciably affected because construction would, for the most part, be screened by buildings or be below grade and therefore not generally visible. All viewer groups are expected to be somewhat sensitive to these impacts, but because the views are not widely available, most viewers would not be affected.

Adverse construction impacts on the visual quality of the Pike Place–Belltown landscape unit would be moderate. Overall existing visual quality for the landscape unit is medium. As described above, construction activities would be extensive within the landscape unit, but would be partially screened by topography and existing structures from the majority of viewers. The most important character-defining elements of the landscape unit, including views of Puget Sound, Mount Rainier, and historic buildings, would generally not be affected by construction. These elements are important contributors to the vividness of the landscape unit; therefore, the rating for vividness would remain high. Construction equipment and activities would temporarily impact the intactness and unity of the landscape unit, although the construction period impacts would be moderate. The ratings for intactness and unity of visual quality would likely be reduced from medium to medium-low.

Elliott Bay Landscape Unit

The visual quality of Elliott Bay would not be impacted by construction because most views of project work would be blocked by existing mid-rise buildings along the harbor. Construction would be most visible from boats and ships docking at Colman Dock or the Bell Harbor Marina. The occasional, temporary presence of barges would have little impact on views. As a result, there would be no changes in vividness, intactness, or unity, which would remain high, and the overall visual quality also would remain high.

Viewpoints, View Corridors, and Scenic View Routes

Waterfront Park, Alaskan Way at Union Street

Construction impacts on the overall visual quality of westward views of the harbor and Puget Sound from Waterfront Park would be minor, provided the views did not include construction equipment or activity. Although occasional barges used for construction support are unlikely to have a substantial impact on the overall visual quality of the waterfront area or Elliott Bay, their presence could have substantial short-term impacts on specific views from Waterfront Park if they are located directly adjacent to the park.

Construction impacts on the visual quality of views to the east of Waterfront Park would be moderate. The presence of equipment and activity on Union Street during the construction of the new pedestrian connection would last for approximately 12 months. Construction impacts on vividness, intactness, and unity of views toward the downtown skyline and Alaskan Way would be temporary, but substantial,

because the proximity of construction activity and equipment would disrupt the landscape and would not be compatible with the surrounding development.

Victor Steinbrueck Park, Virginia Street at Western Avenue

Construction impacts on the setting of Victor Steinbrueck Park and its views to the west and south would be moderate. Vividness would be medium–high because construction would not affect views of scenic resources. Intactness and unity would be reduced to low because the proximity of construction activity and equipment would disrupt near- and middle-ground landscapes, and would not be compatible with the surrounding development.

View Corridors

Construction impacts on the view corridors would be moderate to substantial, depending on how far the construction work extends up the view corridor and whether there is a construction staging area nearby. Impacts would be moderate for construction work that takes place in the Alaskan Way corridor because it would be less visible from the view corridors, where tree canopies would screen some of the activities.

Scenic View Routes

Long-distance views of scenic resources from scenic view routes would be affected by objects in the near-ground field of view. Alaskan Way, S. Jackson Street, and Yesler Way are identified as Seattle scenic view routes that have views of Puget Sound, the Kitsap Peninsula, and the Olympic Mountains. Views westward along S. Jackson Street and Yesler Way are screened by street trees and partially blocked by structures on Colman Dock, but could include some construction activity where the street intersects with Alaskan Way when activities are occurring in that location.

5.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Mitigation measures addressing construction-related disruption of the visual environment are typically limited in their effectiveness. Measures to mitigate such construction impacts could include:

- Minimizing the amount of construction-related light and glare, particularly during work near residences, through such means as directional lighting or light barriers
- Adding attractive design elements to the public side of construction screening, including graphics and explanatory signs
- Providing windows or other viewpoints into the active construction area, where feasible, because many people find construction interesting and want to follow a project's progress

5.3 Operational Impacts and Mitigation Measures

This section discusses visual impacts of the Action Alternative compared to the No Action Alternative. Figures 5-4 through 5-9 show visualizations of the No Action and Action alternatives along with photographs showing the same views as they are today. These visualizations are from the six key viewpoints listed in Table 5-1 and shown on Figure 5-1. Impacts were determined by assessing the difference between the visual quality level for the 2017 existing conditions, summarized in Table 5-3, and the visual quality level following completion of construction for the Action Alternative, summarized in Table 5-6. The differences between the 2017 existing conditions (the No Action Alternative) and the Action Alternative were rated. Impacts were rated as minor, moderate, or substantial in accordance with the criteria in Table 5-4, and are summarized in Table 5-7.

5.3.1 Operational Impacts of the No Action Alternative

There would be no visual impacts or benefits under the No Action Alternative because it would be identical to the 2017 existing conditions.

Figure 5-4
Visualization at Viewpoint 1:
South Main Street, looking northwest

Figure 5-5
Visualization at Viewpoint 2:
Marion Street Pedestrian Bridge, looking northwest

Figure 5-6
Visualization at Viewpoint 3: Union Street Pier (Waterfront Park), looking southeast

Figure 5-7
Visualization at Viewpoint 4: Union Street Pier (Waterfront Park), looking north

Figure 5-8
Visualization at Viewpoint 5: Pier 62/63, looking east toward downtown

Figure 5-9
Visualization at Viewpoint 6:
Victor Steinbrueck Park, looking south

5.3.2 Operational Impacts of the Action Alternative

Operational impacts of the Action Alternative would generally be positive because the streetscape and pedestrian spaces would be considered an aesthetic enhancement compared to the No Action Alternative. These impacts are described below by landscape unit. Elements of the Action Alternative that are expected to enhance visual quality include trees and shrubs in planters; gathering areas with seating; and custom paving patterns and lighting. They also include several large landscaped open spaces: the area adjacent to Colman Dock, the Aquarium Plaza, and the Overlook Walk lid. These additions would improve the overall setting of the scenic viewpoints and view corridors. The Action Alternative streetscape and pedestrian spaces would generally be considered an aesthetic enhancement compared to the No Action Alternative. However, negative impacts from the Action Alternative could arise if tree canopies and kiosk towers were to block or interfere with scenic views along the waterfront or toward Puget Sound and the Olympic Mountains. Table 5-6 summarizes the visual quality levels for each landscape unit.

Table 5-6. Summary of Operational Visual Quality Levels for the Action Alternative

Landscape Unit[1]	Vividness	Intactness	Unity	Overall Visual Quality Level
Pioneer Square Southern end of project footprint	High Improved setting for memorable historic buildings on west edge.	High Urban design features would make visual character of west edge more in keeping with the urban character.	Medium–High Sidewalk and street improvements would be more harmonious with the historic character of Pioneer Square.	High
Waterfront All of the Alaskan Way corridor along the water's edge	High Improved views and setting of historic buildings and memorable elements. Some project elements could block or intrude on valued views.	Medium–High Landscaping and urban design features would unify the traffic corridor with the waterfront. Major project elements would interrupt the linear footprint of the landscape unit and scenic view route.	Medium–High Landscaping and urban design features would be harmonious with the existing setting; scale and contemporary character of some new structures would contrast with the existing historic setting.	Medium–High
Downtown Eastern border of the project footprint	High Improved setting for downtown architecture and views.	High Urban design features would make the visual character of the west edge integral with downtown's urban character.	High Scale and contemporary character of new elements would be harmonious with the whole landscape unit.	High
Pike Place–Belltown Northern end of the project footprint	High Improved views and setting for historic buildings and memorable elements.	Medium–High Project features would make part of the landscape more consistent, but not yet integrated with the setting.	Medium–High Development would be responsive to the topography and setting. Sidewalk and street improvements would be more harmonious with the landscape unit.	Medium-High
Elliott Bay Open water to the west of the harbor piers	High No impacts from Action Alternative.	High No impacts from Action Alternative.	High No impacts from Action Alternative.	High

[1] Landscape units are shown on Figure 5-2.

The Action Alternative, compared to the No Action Alternative, would produce highly noticeable and generally positive changes in the visual character of the project footprint (see Table 5-7). Adverse impacts are generally expected to be minor. The largest changes in visual character and quality would result from:

- A new system of pedestrian and bicycle facilities that would improve the visual consistency of the Waterfront landscape unit.
- The Overlook Walk and Buildings B and C, which would be new dominant structures in views from the Waterfront and Pike Place–Belltown landscape units.
- Trees, shrubs, and groundcovers in medians and planters that would contribute color, texture, and rhythm to the landscape and would also reduce the apparent scale of the corridor by defining the narrower travel ways within it. In some locations, these elements could block or impede desirable views.
- New kiosk structures that would be prominent in the historic pier section of the waterfront (Piers 54 to 59). The kiosks could impact views along designated view corridors at Seneca, Spring, Union, and University Streets.

Table 5-7. Comparison of Overall Operational Visual Quality Levels and Impact Ratings for the No Action and Action Alternatives

Landscape Unit[1]	Overall Visual Quality Level		Impacts Compared to No Action Alternative[1]
	No Action Alternative	Action Alternative	
Pioneer Square Southern end of project footprint	Medium–High	High	Moderate to substantial benefits; minor adverse impact (view blockage by trees)
Waterfront All of the Alaskan Way corridor along the water's edge	Medium	Medium–High	Substantial benefits; moderate adverse impact (view blockage and changes in form, texture, and materials)
Downtown Eastern border of the project footprint	Medium	High	Moderate benefits; minor adverse impacts (shadow and shade)
Pike Place–Belltown Northern end of the project footprint	Medium	Medium–High	Moderate benefits; no adverse impacts
Elliott Bay Open water to the west of the harbor piers	High	High	Minor or no benefits or adverse impacts

[1] Impacts were rated as minor, moderate, or substantial in accordance with the criteria in Table 5-4.

Pioneer Square Landscape Unit

The Action Alternative would improve visual quality in the Pioneer Square landscape unit by adding a new 20- to 30-foot-wide sidewalk, pavement, and curbs to delineate parking and pedestrian zones, parking space striping, and landscaping on Alaskan Way (see Viewpoint 1, shown on Figures 5-1 and 5-4). The new configuration and landscaping would buffer the buildings and sidewalk from traffic on Alaskan Way. Deciduous street trees added by the project would make this area more in keeping with the overall character of Pioneer Square and tie the edge of the project footprint more distinctly to this landscape unit. Street trees in medians and planters on Alaskan Way would continue the landscaping westward, making the entire area feel like a unified landscape. In addition, the sidewalk widening and addition of street trees along S. Main and S. Washington Streets would continue the unified landscape into Pioneer Square. In total, viewers are likely to respond positively to these changes.

Adverse operational impacts are expected to be minor, resulting from blocked or obscured scenic views due to the dense tree canopies along view corridors and Alaskan Way. The tree canopies could obscure views of distant scenic resources from Seattle view corridors (Yesler Way), view routes (S. Jackson Street and Yesler Way), and east-west streets (S. King, S. Main, and S. Washington Streets), but these views are already affected by existing tree canopies.

Compared to the No Action Alternative, the Action Alternative would have moderate to substantial benefits that would raise the visual quality level of the Pioneer Square area. AWPOW would replace the undistinguished swath of pavement and parking places of the No Action Alternative with attractive urban design features. While the contemporary character of the proposed improvements would contrast with the more historically focused detailing in the Pioneer Square landscape unit in general, they would be aesthetically positive contributions that would connect this edge of the Pioneer Square unit to the unified waterfront landscape. Vividness for the Action Alternative would be high because the improvements would enhance the setting of these distinctive architectural styles and views. Intactness would be high because the new landscaped sidewalk would bring the former parking areas into alignment with the character of Pioneer Square. Unity would be medium–high because the new landscaped sidewalk would be consistent and in balance with the scale and character of the setting. The overall visual quality level of this landscape unit under the Action Alternative would be high, compared to the No Action Alternative's rating of medium–high.

Waterfront Landscape Unit

This landscape unit would undergo the most pronounced changes in visual character and quality of all the landscape units. Compared to the No Action Alternative, the Action Alternative would have substantial benefits that would improve visual quality in a number of ways. Planted medians, buffers, and wider sidewalks on both sides of Alaskan Way would screen bicyclists and pedestrians from traffic and reduce the apparent scale of the roadway. New gathering areas with landscaping and seating would act as focal points within the larger landscape context. The Overlook Walk would provide new access to highly valued views of the waterfront and its scenic setting and would create a large, landscaped public open space. Specific impacts of features within this landscape unit are summarized below.

- The landscaping, consistent materials, and design approach along the Promenade and the new, wider sidewalks on the east side of Alaskan Way would create aesthetic continuity along the waterfront, which would improve intactness and unity for the landscape unit as a whole. Linear bands of trees and shrubs would provide visual demarcation to differentiate Alaskan Way, the bicycle and pedestrian facilities, and the Promenade; buffer these paths and lanes from each other; and reduce the perceived width of Alaskan Way. The continuity and linearity of the landscaping would unify the corridor and give it a parkway character. The overall effect would enhance the experience of traveling through the waterfront and create an inviting public open space for walking, sitting, cycling, and viewing. However, the dense plantings may block some desirable views in this landscape unit, increase shadow and shade, and diminish the expansiveness of sky and water views that are key components of visual quality along the waterfront.
- The new gathering areas near Colman Dock, in front of the historic piers, and at the Aquarium Plaza would include shelters, seating, bicycle parking, and formal and informal clusters of trees in terraces or at-grade planters (see Viewpoint 4, shown on Figures 5-1 and 5-7). These gathering spaces would help create a welcoming and attractive public space by enhancing cohesiveness throughout the Promenade. The improved cohesiveness and pleasing visual character would improve unity and intactness, thereby improving overall visual quality.
- Kiosks would be located on the Promenade in front of the historic pier buildings, at the intersections of Alaskan Way with Spring, Seneca, University, and Union Streets (see Viewpoints 3 and 4, shown on Figures 5-1, 5-6, and 5-7), all of which are view corridors. A typical kiosk footprint would be 16 feet by 16 feet, and the structure would be approximately 46 to 48 feet high. In the

current preliminary design, the upper part of a typical kiosk would be of reflective materials arrayed in flat planes at different angles, like a faceted tower. The height of the kiosks would make them almost as tall as the historic pier sheds. The reflective materials of the upper structure would contrast with the materials and colors of the historic buildings and, depending on final design, may be perceived by some viewers as reducing the unity and intactness of the landscape. The reflective surfaces could be new sources of glare.

- The Overlook Walk would create a set of new structures in the landscape that would offer scenic views of the new Alaskan Way landscape, the waterfront, Elliott Bay, Puget Sound, and the Olympic Mountains. Because it is located just north of where Alaskan Way bends westward to follow the shoreline, the Overlook Walk would divide the Alaskan Way corridor visually and physically into separate north and south segments (see Viewpoint 6, shown on Figures 5-1 and 5-9), and would serve as the new visual terminus for views from Alaskan Way (see Viewpoints 4 and 5, shown on Figures 5-1, 5-7, and 5-8). This would result in a substantial impact on the character and aesthetics of the northern half of the Waterfront landscape unit and a moderate impact on views from other landscape units. Many viewers are likely to find the structure attractive in itself as an aesthetic enhancement to the waterfront, and the new view opportunities from elevated portions of the structure would contribute to the overall enjoyment of the scenic setting. The complexity and contemporary architectural character of the Overlook Walk and Buildings B and C would be very different from the predominantly older and simpler structures that contribute to the visual character of the area near the historic piers in the No Action Alternative.

Adverse operational impacts from the Action Alternative on the Waterfront landscape unit are expected to be moderate. Adverse impacts could result from blocked or obscured long-distance views to Puget Sound, the Olympic Mountains, and the Seattle skyline. Scenic view routes and view corridors also could be obscured or disrupted for the medium-distance viewer. The primary contributors to such impacts would be new street trees, the kiosks, and the Overlook Walk with Buildings B and C that would span Alaskan Way. Depending on their final design, the scale and proximity of the proposed kiosks to the historic pier sheds also could be perceived by some viewers as reducing the quality of the views to this assemblage of valued buildings, with potential impacts on the unity of the visual environment in this section of the landscape unit.

Overall, the Action Alternative would improve the visual quality level of the Waterfront landscape unit compared to the No Action Alternative. New elements added by AWPOW would, for the most part, enhance and unify the visual character of the landscape. Vividness would remain high because the new urban design and landscape elements would maintain or enhance the overall setting and foreground of valued views. Intactness would be medium–high because new paths, landscaping, and amenities would tie the landscape together to read and function as a whole, but the Overlook Walk and kiosks would introduce contrasting architectural elements that could be perceived by some viewers as detracting from the existing setting. Unity would be medium–high because the new landscaping and built components would be internally consistent throughout the landscape unit, but their contemporary character would contrast with many of the older existing elements that define the setting. Based on the above assessment, the overall visual quality level of the Action Alternative would be medium–high, compared to the No Action Alternative's medium rating.

Downtown Landscape Unit

In this landscape unit, AWPOW would provide sidewalk improvements, landscaping, pavement, and curbs that would more clearly delineate vehicle and pedestrian zones along the east side of Alaskan Way (see Viewpoint 2, shown on Figures 5-1 and 5-5). New street trees would buffer and refine the pedestrian area and improve the overall street character, although they could obscure views northward and westward from adjacent buildings. Street trees in medians and planters on Alaskan Way would help reduce the perceived width of the corridor by breaking the expanse of pavement into narrower bands. The improvements would maintain views of scenic vistas from the view corridors at Columbia, Marion,

Madison, Spring, and Seneca Streets, and would be an attractive foreground element in views from overlooks such as the Harbor Steps, which are located on University Street between Western and First Avenues. The Union Street Pedestrian Connection would include walkways with new public viewpoints that would provide high-quality views of the waterfront and Elliott Bay. The new pedestrian connection would also include elevator towers that would be compatible with existing nearby development, although the towers would partially alter the views of Elliott Bay currently provided at Union Street just east of Post Alley.

Viewers are likely to have positive responses to the changes, residents and workers on upper levels would continue to have expansive views of open water and sky, and the corridor would look like a green parkway. Adverse operational impacts would only include blockage of views by the elevator tower on the southeast corner of Union Street and Western Avenue, and shadows in some areas from the new street trees.

Compared to the No Action Alternative, the Action Alternative would moderately improve the visual quality of the Downtown landscape unit. Project improvements would replace the undistinguished swath of pavement and parking places under the No Action Alternative with urban design features and allow pedestrians to appreciate the architectural character of the buildings on the west edge of the downtown area. Vividness under the Action Alternative would be high because AWPOW would enhance the distinctiveness of the architecture styles and views. Intactness would be high because the new design would contribute to a greater visual coherence and would not add elements that are out of place. Unity would also be high because the new landscaping and built components would improve upon and be in balance with the scale and character of the setting. As a result, overall visual quality for the Action Alternative in this landscape unit would be high compared to the No Action Alternative's medium rating.

Pike Place–Belltown Landscape Unit

AWPOW would raise the visual quality in this landscape unit by improving the character of the area between Pike Place Market and lower Belltown, which under the 2017 existing conditions will be occupied by the Alaskan Way right of way where the viaduct formerly stood. Most of the Action Alternative's improvements would not be visible from the Pike Place Market because the existing market buildings and the new PPMWE structure would block those views. Elliott Way and the Overlook Walk would be prominent in views from the west edge of Victor Steinbrueck Park and the upper-floor windows of nearby buildings (see Viewpoint 6, shown on Figures 5-1 and 5-9), but would not affect long-distance views from these locations. The new intersection at Blanchard Street, where Elliott Way ties into Elliott and Western Avenues, would be a substantial change from the vacant right of way that would be present under the No Action Alternative; however, landscaping, pedestrian crossings and sidewalks, and bicycle paths would make the scale and appearance of the intersection consistent with the visual character of the Belltown business and residential area. Extending Bell Street Park between Elliott and First Avenues would also change the aesthetics of this section of Bell Street, making its scale and appearance consistent with the visual character east of First Avenue. Viewers are likely to have positive responses to the changes. No adverse operational impacts are anticipated as a result of the Action Alternative in this landscape unit.

Compared to the No Action Alternative, the Action Alternative would moderately improve the visual quality of a limited area of the Pike Place–Belltown landscape unit that is not generally visible to viewers. Visual quality of views from the west edge of Victor Steinbrueck Park would be dominated by new Buildings B and C and the Overlook Walk. However, overall vividness would be high because long-distance views of scenic resources would not be affected. Intactness and unity would be medium–high because the new facilities would be consistent with the urban character of Belltown, but out of scale relative to the surrounding network of streets. The overall visual quality level of the Action Alternative would be medium–high compared to the No Action Alternative's medium visual quality level.

Elliott Bay Landscape Unit

The Action Alternative would not change the overall visual quality of the Elliott Bay landscape unit, and views from the unit would not be adversely affected. The addition of landscaping along the waterfront would only be noticeable from certain view angles because of the existing buildings along the harbor. From viewpoints near the outer harbor line, such as from ferries, the Overlook Walk could be a noticeable addition to the backdrop of buildings at the foot of downtown development, but it probably would appear somewhat consistent and in harmony with the existing buildings. Although Buildings B and C could be new sources of glare, they would not be noticeably different from existing sources of glare along the shoreline. Similarly, new and additional lighting along the main corridor and Promenade is not expected to make the waterfront substantially more visible in nighttime views of the city from Elliott Bay. Most viewers in the Elliott Bay landscape unit are not likely to notice the changes.

Compared to the No Action Alternative, the Action Alternative could have a minor adverse impact due to the Overlook Walk. However, vividness, intactness, and unity would not be affected by the Action Alternative and would remain unchanged from their original high levels. Overall visual quality of the Action Alternative and the No Action Alternative would be high.

Viewpoints, View Corridors, and Scenic View Routes

Waterfront Park, Alaskan Way at Union Street

Adverse impacts on views from Waterfront Park would be moderate overall. Looking northward from Waterfront Park, the Overlook Walk would be prominent in most views. However, westward views of the harbor and Puget Sound would not be affected. Southeast-facing views toward the downtown skyline and Alaskan Way could be screened by street trees or blocked by the kiosks (see Viewpoints 3 and 4, shown on Figures 5-1, 5-6, and 5-7). However, vividness, intactness, and unity would be high overall.

Victor Steinbrueck Park, Virginia Street at Western Avenue

AWPOW's view impacts on Victor Steinbrueck Park would be minor. Elliott Way and the Overlook Walk would be prominent in south-eastward views from the west edge of the park (see Figure 5-9), but they would be consistent with the urban character of the Pike Place–Belltown landscape unit. Westward views of the waterfront, harbor, and Puget Sound would not be affected.

View Corridors

AWPOW would have minor adverse operational impacts on views along some Seattle view corridors, but would not affect others. Near the Pioneer Square landscape unit, views along S. King, S. Main, S. Jackson, and S. Washington Streets, including Yesler Way, are, for the most part, currently blocked by structures on Piers 46 and 48 and Colman Dock. These views are also seasonally screened by existing tree canopies that disrupt views of distant scenic resources. AWPOW could result in additional screening because of the density of the Alaskan Way street trees.

In the Waterfront landscape unit, the proposed kiosks would be similar to the height of the existing historic pier sheds. Depending on the final design, the kiosks could potentially block views of the piers from the view corridors on Spring, Seneca, University, and Union Streets. At their current proposed height, the kiosks are not expected to interfere with views of Puget Sound or the Olympic Mountains.

Near the Downtown landscape unit, views along Columbia, Marion, Madison, Spring, and Seneca Streets are for the most part currently blocked by harbor buildings and therefore would not be affected by AWPOW. Views of distant visual resources are available at overlooks at University and Union Streets along First Avenue. These westward views would not be affected by the Alaskan Way landscaping because the tree canopies would be below the line of sight from these overlooks. The Alaskan Way landscape would be an attractive foreground element in views from overlooks such as the Harbor Steps.

Near the Pike Place–Belltown landscape unit, views along Lenora, Blanchard, and Battery Streets would not be affected by AWPOW because these views are currently limited by buildings and tree canopies; moreover, most of the project elements are below the level of these streets.

Scenic View Routes

Views along Alaskan Way would be substantially affected due to the loss of the portion of Alaskan Way where the Overlook Walk is constructed, and could be further affected by the density of street trees in the corridor. Views of distant scenic resources from the Seattle scenic view routes at Yesler Way and S. Jackson Street could be obscured by the new Alaskan Way street trees when the canopies become dense and continuous; however, these views are already affected by existing tree canopies.

5.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

The Action Alternative design has been developed with early input from waterfront stakeholders and the public at large. The intent of the design is to develop operational improvements of high aesthetic quality, appropriate to their setting. Design standards have been developed that address a number of visual, design, architectural, signage, and lighting parameters for the project. Adherence to these design standards would provide a consistent visual palette for the project and help ensure that the visual composition of corridor improvements would be internally consistent and still respect the character of the existing built elements and the surrounding streetscape.

Because the design of the Action Alternative has been developed to enhance the aesthetic experience of traveling through Seattle along the waterfront, measures to avoid and minimize the potential adverse impacts of project-related changes were incorporated into the design as it evolved.

The final design might include additional measures to minimize impacts if it is determined that public views and sightlines would be affected by the presence, size, or location of AWPOW structures. Mitigation measures could include changing the location, height, profile, or bulk of the more prominent structures. The final design might also include additional measures to minimize any light and glare impacts by limiting the amount and reflective qualities of glare-producing materials and by reducing the intensity, location, or angle of illumination.

6 Noise

This chapter provides a summary of the existing noise levels in the study area and evaluates how AWPOW-related noise will affect local residences, businesses, and visitors in the corridor. The analysis summarizes the results of noise monitoring and modeling that were performed to identify potential impacts and identifies measures to avoid, minimize, or mitigate those impacts. Additional details about acoustics and noise modeling are provided in Appendix E, Noise Discipline Report, to this Draft EIS.

6.1 Affected Environment

6.1.1 Measurement and Perception of Sound

Sound is measured in terms of both loudness and frequency. The unit used to measure loudness is called a decibel (dB). A range from 0 to 120 dB is the typical range of human hearing. To account for the human ear's sensitivity to frequencies, an adjustment is made to the dB measurement scale. The adjusted scale, referred to as the A-weighted decibel scale, provides a more accurate measure of what the human ear can actually hear. When the A-weighted scale is used, the decibel levels are designated as dBA.

Normal human conversation ranges between 44 and 65 dBA when people are about 3 to 6 feet apart. Very slight changes in noise levels, up or down, are generally not detectable by the human ear. The smallest change in noise level that a human ear can readily perceive is about 3 dBA, while increases of 5 dBA or more are clearly noticeable. For most people, a 10-dBA increase in noise levels is judged as a doubling of sound level, while a 10-dBA decrease in noise levels is perceived to be half as loud. Noise levels during the day in a noisy urban area are frequently as high as 70 to 80 dBA. Table 6-1 shows sound levels from some common noise sources.

Table 6-1. Sound Levels of Typical Noise Sources

Noise Source or Activity	Sound Level (dBA)	Subjective Impression
Jet aircraft takeoff from carrier (50 feet)	140	Threshold of pain
50-horse-power siren (100 feet)	130	
Loud rock concert near stage; jet takeoff (200 feet)	120	Uncomfortably loud
Float plane takeoff (100 feet)	110	
Jet takeoff (2,000 feet)	100	Very loud
Heavy truck or motorcycle (25 feet)	90	
Garbage disposal; food blender (2 feet); pneumatic drill (50 feet)	80	Moderately loud
Vacuum cleaner (10 feet); passenger car at 65 mph (25 feet)	70	
Large store air-conditioning unit (20 feet)	60	
Light automobile traffic (100 feet)	50	Quiet
Bedroom or quiet living room; bird calls	40	
Quiet library; soft whisper (15 feet)	30	Very quiet
High-quality recording studio	20	
Acoustic test chamber	10	Just audible
	0	Threshold of hearing

Sources: Beranek 1988; EPA 1971

Noise levels from most sources tend to vary with time. For example, noise levels increase when a car approaches, reach a peak as it passes, and decrease as the car moves farther away. To account for the variance in loudness over time, a common noise measurement is the equivalent sound pressure level (Leq). Leq is defined as the average noise energy level, in dBA, for a specific time period (for example, 1 minute). Leq is the designated noise metric for many local and federal agencies, including FHWA and the City of Seattle. Noise measurements taken using the Leq are denoted dBA Leq.

6.1.2 Study Area

In general, the noise study area extends approximately one full block beyond the project footprint. Beyond one block, existing structures block the sound transmission and noise levels become dominated by traffic noise on that block. The noise environment in the study area was separated into three sections:

1. Southern Section: extends from S. King Street to Cherry Street
2. Central Section: extends from Cherry Street to Pine Street
3. Northern Section: extends from Pine Street to the vicinity of Wall Street

These three sections and the study area for noise are shown in Figure 6-1.

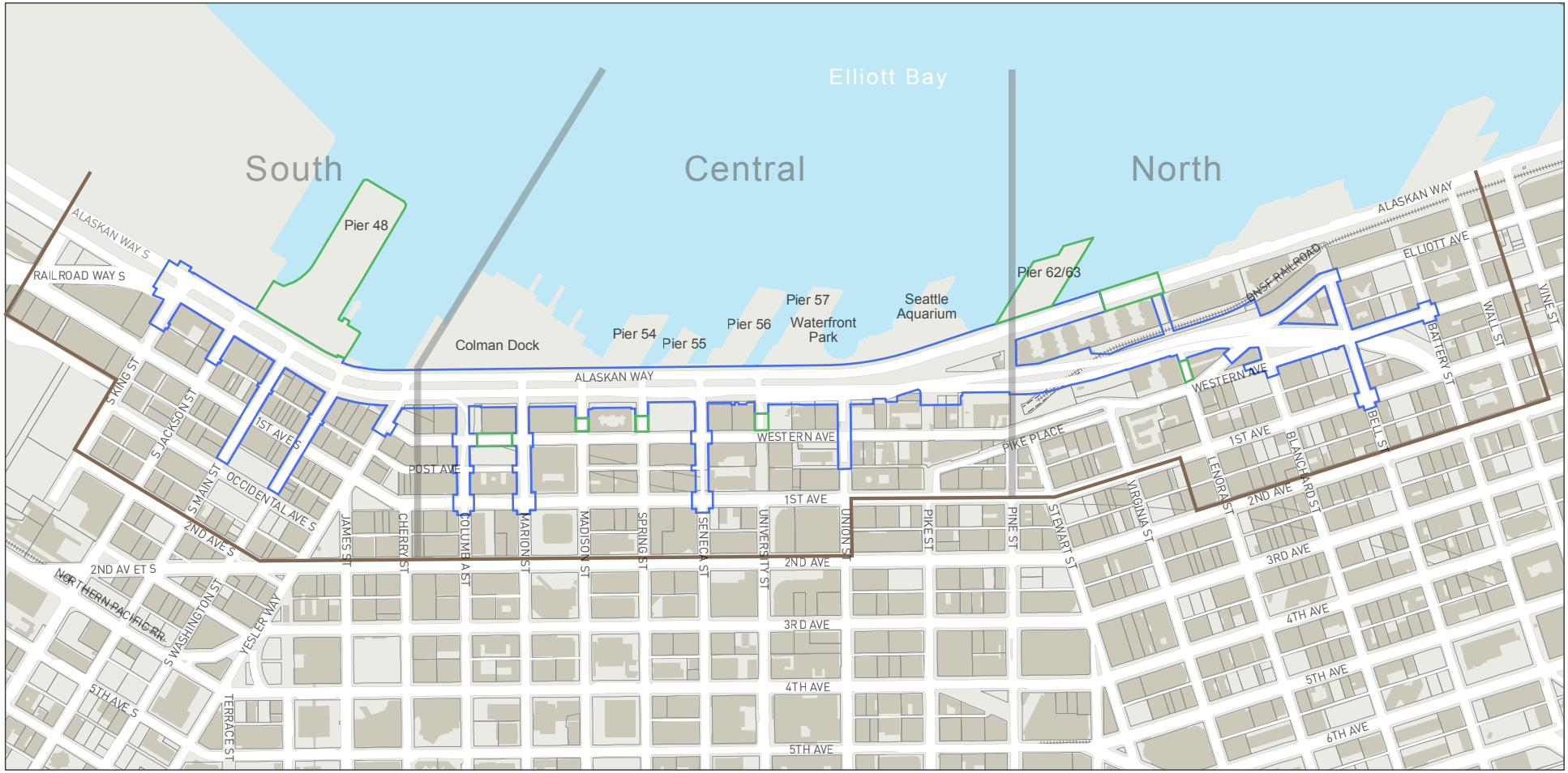
6.1.3 2017 Existing Conditions

The affected environment for this analysis is defined as the conditions that will exist within the study area in 2017 when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. Because traffic noise dominates the study area and because the Alaskan Way Viaduct is still in place as of the writing of this Draft EIS, peak-hour traffic noise levels for the 2017 existing conditions were calculated using the FHWA's Traffic Noise Model, version 2.5 (TNM). Input to the model included peak-hour traffic volumes for passenger vehicles, delivery trucks, and heavy trucks, along with posted speed limits and area topographical conditions. Noise measurements taken at 41 sites during analyses completed for the AWVRP and EBSP were used to verify the traffic noise modeling results. Existing (year 2017) modeled traffic noise levels for these 41 modeling sites are shown on Figure 6-2.

The range of modeled existing conditions (2017) for peak-hour traffic noise levels in each study area section are:

- Southern section—61 dBA to 73 dBA Leq
- Central section—62 to 72 dBA Leq
- Northern section—62 to 68 dBA Leq

The 2017 model results were then compared to FHWA's noise abatement criteria (NAC), which establish noise threshold levels for different land uses. The criteria are defined in terms of exterior Leq measured at the property line. Land uses in 2017 are expected to be the same as the land uses that currently exist in the study area, which are primarily commercial and residential, including apartments, condominiums, hotels, and motels. Many visitors, residents, and commuters also walk and cycle to destinations on the waterfront, along Alaskan Way, or west of Alaskan Way. Existing land uses are described below by study area section. No highly sensitive uses such as recording studios, broadcast studios, or medical facilities were identified in the study area.



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Source: SDOT
Google Earth Pro, Licensed to
Michael Minor & Associates

Action Alternative
- Project Footprint
- Potential Construction Staging Area
- Noise Study Area
- Section Boundries

- Parcel Boundary
- Building Footprint

Figure 6-1
Noise Analysis Study Area

Alaskan Way, Promenade, and Overlook Walk

Southern Section

Land use in the southern section is primarily commercial. However, a large condominium complex is located just south of S. King Street on First Avenue S., and several other residential uses were identified in buildings between S. Jackson Street and Yesler Way, including the Best Western Plus Pioneer Square Hotel. All of the residential uses identified are located on the upper floors of multi-floor buildings. Two city parks are within this section of the study area: Occidental Park, between S. Washington Street and S. Main Street, and Pioneer Square Park, north of Yesler Way on First Avenue.

Central Section

The central section of the study area also includes commercial and residential land uses, with the latter including apartments, condominiums, hotels, and motels. Fire Station 5, located on the west side of Alaskan Way at Madison Street, is also considered a residential use because it houses firefighters. The central section also includes Colman Dock, Waterfront Park, the Seattle Aquarium, several large parking lots, and numerous visitor attractions on Piers 54 through 57. Three schools were identified within the central section: Kid's Center Preschool on Spring Street between Western Avenue and First Avenue; a daycare at the intersection of First Avenue and Seneca Street; and the Pike Place Market Child Care and Preschool just south of Pine Street. The only other noise-sensitive use within the central section is the Seattle Art Museum at 1300 First Avenue.

Northern Section

Beginning at Pine Street and continuing to the north, land uses include several condominiums and apartments and the Pike Place Market. A large condominium complex (Waterfront Landings) and the Seattle Marriott Waterfront Hotel are located on Alaskan Way between Pine Street and Blanchard Street. East of SR 99, Victor Steinbrueck Park is located near Virginia Street. Several apartments and condominiums are located within the northern section, along Elliott, Western, First, and Second Avenues from Stewart Street to Wall Street. A laboratory facility that is part of the University of Washington School of Medicine is located between the BNSF rail line and Elliott Avenue, south of Bell Street.

Modeling of 2017 Existing Conditions

The peak-hour traffic noise levels that were predicted for the 41 exterior noise modeled locations are shown on Figure 6-2. Many of the 41 sites are near or above the NAC for residential uses. Residences with noise levels at or above the NAC are not uncommon for dense urban residential areas in a metropolitan area with a major freeway nearby. In addition to the 41 exterior sites, one interior site was used to predict the noise level inside a typical unit at the Waterfront Landings Condominiums. Based on measured exterior-to-interior noise reduction, the peak-hour traffic noise levels inside a unit at this complex for 2017 existing conditions were predicted to be 37 dBA Leq.

Based on the modeled 2017 existing conditions, exterior noise levels at 1,136 residential units (including hotel rooms) are predicted to meet or exceed the NAC. In the southern section of the study area, noise levels are predicted to meet or exceed the NAC at 360 residential units and in Pioneer Square Park. In the central section, 446 residential units and Waterfront Park would exceed the NAC levels. In the northern section, 327 residential units and Pier 62/63 would be at or above the NAC.

6.2 Construction Impacts and Mitigation Measures

Construction noise would result from the operation of heavy equipment needed to construct various project features and structures. The FHWA Roadway Construction Noise Model (FHWA 2006) was used to provide an estimate of noise levels from typical construction activities. The results of this analysis are summarized below. As with all construction projects, the contractor would be required to comply with the requirements of the City of Seattle Noise Control Ordinance; construction activities outside normal weekday daytime hours, or that exceed the ordinance, would require a noise variance from the City.

6.2.1 Construction Impacts of the No Action Alternative

Under the No Action Alternative, there would be no construction activity and therefore no construction-related noise impacts.

6.2.2 Construction Impacts of the Action Alternative

The construction noise analysis considered the temporary noise impacts that construction would cause in the study area. These impacts would be localized in areas of active construction and would end when project construction is completed. Noise related to construction would result from the operation of heavy equipment needed to construct project features and structures, such as bridges, retaining walls, roads, and pedestrian and bicycle facilities.

Construction Equipment Noise Levels

Equipment required to complete the project would include construction equipment typically used for transportation projects. Table 6-2 lists the typical construction equipment used for this type of project, the activities the equipment would be used for, and the corresponding maximum noise levels that would be produced when measured at 50 feet from the noise source under normal conditions.

Table 6-2. Typical Noise Levels from Construction Equipment

Equipment	Expected Project Use	Lmax[1, 2] (dBA)
Air compressors	Pneumatic tools and general maintenance (all phases)	70 to 76
Backhoe	General construction and yard work	78 to 82
Concrete pump	Pumping concrete	78 to 82
Concrete saws	Concrete removal and utilities access	75 to 80
Crane	Materials handling: removal and replacement	78 to 84
Drill rigs	Support piles	82 to 88
Excavator	General construction and materials handling	82 to 88
Forklifts	Staging area work and hauling materials	72
Haul trucks	Materials handling: general hauling	86
Jackhammers	Pavement removal	74 to 82
Loader	General construction and materials handling	86
Pavers	Roadway paving	88
Power plants	General construction use: nighttime work	72
Pumps	General construction use: water removal	62
Pneumatic tools	Miscellaneous construction work	78 to 86
Tractor trailers	Material removal and delivery	86
Utility trucks	General project work	72
Vibratory equipment	Shoring up hillside to prevent slides and soil compacting	82 to 88
Welders	General project work	76

[1] Typical maximum noise level under normal operation as measured at 50 feet from the noise source.

[2] Noise levels presented are based on measured data from several construction projects and other measured data, as well as U.S. Department of Transportation construction noise documentation and other construction noise sources.

Estimated Construction Noise Levels by Activity

The FHWA Roadway Construction Noise Model (FHWA 2006) also was used to predict the maximum noise levels for different types of construction activities. The noise analysis assumes the worst-case average and maximum noise levels when making projections. The analysis also assumes that construction would begin simultaneously in two areas: at Columbia Street, and on the portion of

Elliott Way that crosses the BNSF rail line. In general, construction activities would be completed in increments of one to several blocks.

Table 6-3 summarizes the worst-case average (Leq) and maximum (Lmax) noise levels by activity, based on the equipment typically used during each activity. The actual noise levels experienced during construction would generally be lower than those described in Table 6-3 because these maximum noise levels would occur only for a limited period. Typical average noise levels from most construction activities would frequently be 10 to 15 dB lower.

Table 6-3. Noise Levels for Typical Construction Activities

Scenario[1,2]	Equipment[3]	Lmax[4]	Leq[5]
Demolition, site preparation, and utilities relocation	Air compressors, backhoes, concrete pumps, cranes, excavators, forklifts, haul trucks, loaders, pumps, power plants, service trucks, tractor trailers, utility trucks, and vibratory equipment	88	87
Structure construction and paving activities	Air compressors, backhoes, cement mixers, concrete pumps, cranes, forklifts, haul trucks, loaders, pavers, pumps, power plants, service trucks, tractor trailers, utility trucks, vibratory equipment, and welders	88	88
Miscellaneous activities	Air compressors, backhoes, cranes, forklifts, haul trucks, loaders, pumps, service trucks, tractor trailers, utility trucks, and welders	86	83

[1] Combined worst-case noise levels for all equipment at a distance of 50 feet from work site

[2] Operational conditions under which the noise levels are projected

[3] Normal equipment in operation under the given scenario

[4] Lmax (dBA) is the highest maximum noise level for the construction equipment listed under the given scenario.

[5] Leq (dBA) is a 1-hour energy average noise emission for construction equipment operating under the given scenario.

Some construction activities might be required during nighttime hours to avoid daytime traffic impacts or impacts on adjacent land uses. If nighttime construction is deemed necessary, a temporary noise variance or a construction noise variance for large public projects would be required from the City's Department of Planning and Development. The variance process would include placing limits on noise levels during nighttime hours and also specifying construction noise mitigation measures to help reduce the impacts of nighttime construction.

Potential for Vibration during Construction Activities

Vibration impacts during construction are expected to be minimal. Drilling and vibratory pile driving for deep shafts to support the Overlook Walk and Elliott Way bridge structures could result in minor temporary vibration impacts; however, this vibration is not expected to reach levels that would cause damage to any buildings or utilities. Impact pile driving is not currently anticipated for AWPOW.

6.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

The City would minimize construction noise at nearby noise receptors by complying with the Seattle Noise Ordinance and any variances to the ordinance that are obtained for the project. Mitigation measures that could be recommended or required include the following:

- Using the least intrusive broadband type of backup warning devices or back observers as permitted by law
- Minimizing the use of generators or use generators with extreme silencers (quiet mufflers) to power equipment
- Installing high-grade engine exhaust silencers and engine-casing sound insulation

- Using low-noise emission equipment, when available
- Monitoring and maintaining equipment to meet noise limits
- Using lined or covered storage bins, conveyors, and chutes with sound-deadening material
- Implementing noise-deadening measures for truck loading and operations, such as lining the truck beds with acoustical material and using proper loading techniques for concrete blocks
- Limiting or avoiding high noise activities, such as loading concrete blocks and conducting demolition, saw cutting, and soil compacting, during nighttime hours
- Monitoring vibration levels could occur at structures susceptible to vibration damage that are in proximity to construction activities that may produce vibration levels close to the maximum level established by the U.S. Department of Transportation

6.3 Operational Impacts and Mitigation Measures

6.3.1 Operational Impacts of the No Action Alternative

Under the No Action Alternative, traffic would continue to be the predominant noise source in the study area. Traffic volumes in 2030 are expected to be about 5 to 10 percent higher in the study area than in 2017 because of regional population and employment growth. Because the SR 99 tunnel would provide less access into downtown Seattle from the south than the Alaskan Way Viaduct did, traffic bypassing downtown would use the tunnel, while vehicles needing access to the downtown area would use Alaskan Way. Overall, 2030 traffic noise levels in the study area are predicted to range from 62 to 74 dBA Leq, compared with 61 to 73 dBA Leq under 2017 existing conditions. This represents an overall increase of 0 to 1 dBA at the modeling locations used in this analysis, with most sites having the same noise levels as presented for the 2017 existing conditions in Section 6.1.3.

In the southern section of the study area, noise levels with the No Action Alternative are predicted to range from 62 to 74 dBA Leq, with an average level of 68 dBA. Noise levels in the central section are predicted to range from 62 to 72 dBA Leq, with an average level of 67 dBA Leq, while the noise levels in the northern section are predicted to range from 62 to 68 dBA Leq with an average Leq of 65 dBA.

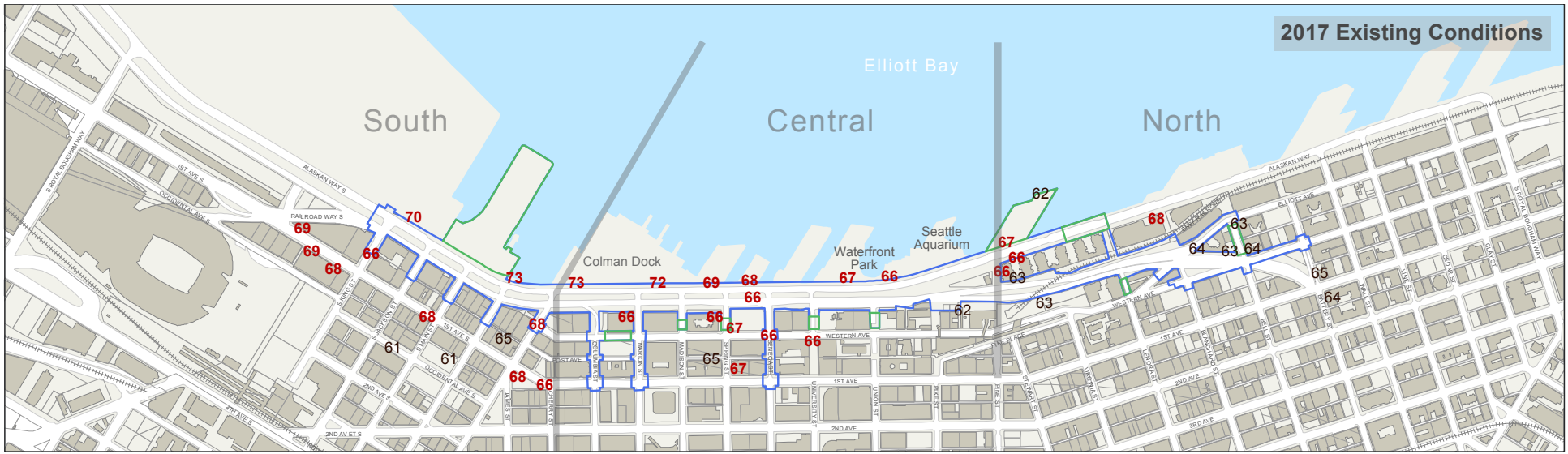
In 2030 without the project, 1,136 units would meet or exceed the NAC, which is the same as under the 2017 existing conditions. Of the 1,136 units, 1,133 are residences, one is a daycare, and two are parks. No hotel rooms are predicted to meet or exceed the NAC. Figure 6-2 shows the peak hour modeled traffic noise levels for the No Action Alternative in 2030.

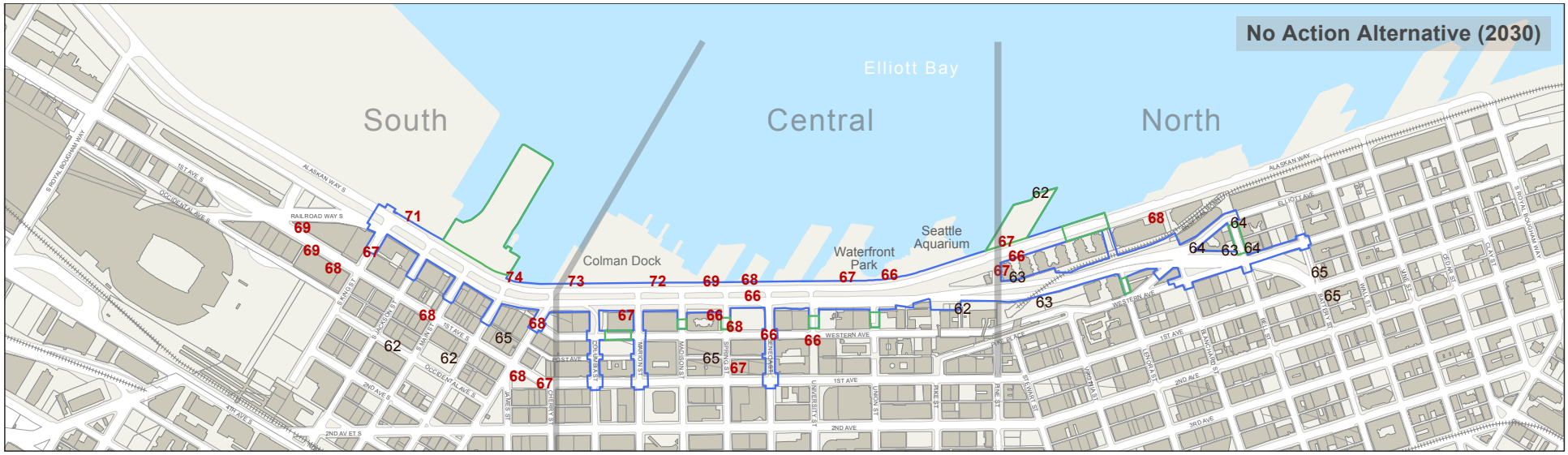
6.3.2 Operational Impacts of the Action Alternative

Traffic noise would continue to be the predominant noise source under the Action Alternative because of the increased traffic volumes on Alaskan Way following the closure of the viaduct. Noise levels across the study area would range from 58 to 72 dBA Leq during peak hours in 2030 for the Action Alternative. The average overall noise level for all receivers modeled under each condition are:

- 2017 existing conditions—66 dBA Leq
- No Action Alternative—67 dBA Leq
- Action Alternative—66 dBA Leq

Compared to the No Action Alternative, traffic noise levels with the Action Alternative would increase in some areas by up to 5 dBA, while other areas would decrease by up to 6 dBA. Overall, noise levels are predicted to be at or above the NAC at 1,211 units under the Action Alternative, compared to 1,136 under the No Action Alternative. Figure 6-2 shows the peak-hour modeled traffic noise levels for the Action Alternative in 2030 and the difference in noise levels between the Action and No Action alternatives in 2030.





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GIS Source: King County, City of Seattle
Data Source: Elliott Bay Seawall Project

Action Alternative
- Project Footprint
- Potential Construction Staging Area

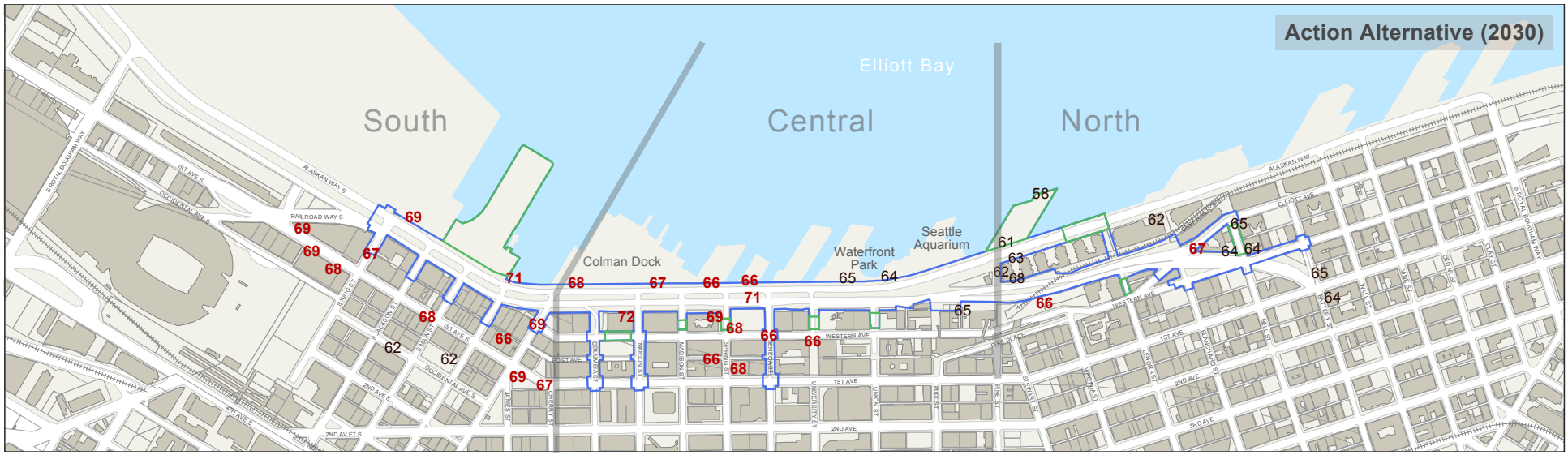
- Parcel Boundary
- Building Footprint

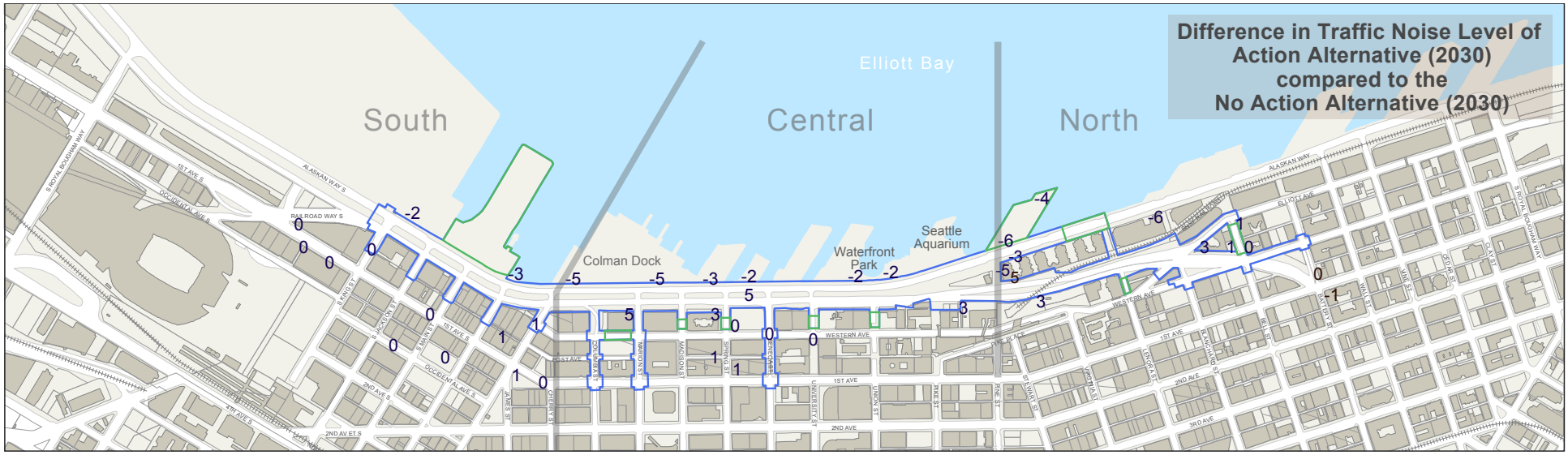
Note:
The modeled noise levels represent the peak hour traffic noise level (dBA Leq) from the FHWA Traffic Noise Model under given conditions.

Noise levels in **red** meet or exceed the NAC for residential use.

Figure 6-2
Comparison of Modeled Noise Levels
(Sheet 1 of 2)

Alaskan Way, Promenade, and Overlook Walk





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Feet

GIS Source: King County, City of Seattle
Data Source: Elliott Bay Seawall Project

Action Alternative
- Project Footprint
- Potential Construction Staging Area

Parcel Boundary
Building Footprint

Note:
The modeled noise levels represent the peak hour traffic noise level (dBA Leq) from the FHWA Traffic Noise Model under given conditions.

Noise levels in **red** meet or exceed the NAC for residential use.

Figure 6-2
Comparison of Modeled Noise Levels
(Sheet 2 of 2)

Alaskan Way, Promenade, and Overlook Walk

In the southern section of the study area, peak-hour traffic noise levels under the Action Alternative in 2030 are predicted to range from 62 to 71 dBA Leq. Under the Action Alternative, all but two of the modeled sites would have noise levels that are within 2 dB of the No Action noise levels. Those two sites would have noise reductions of -3 and -5 dB, respectively. Overall noise impacts in the southern section would be slightly higher than under the No Action Alternative, with 18 new residential impacts at receivers between S. Washington Street and Yesler Way because of the reduced distance between Alaskan Way and these receivers. This would bring the total number of potential noise impacts in the southern section to 378 residences and one park.

In the central section of the study area, peak-hour traffic noise levels under the Action Alternative in 2030 would range from 64 to 72 dBA Leq. Two of the modeled sites would have noise levels 3 to 5 dB lower than under the No Action Alternative due to the northbound lanes of Alaskan Way being farther away from these sites. In contrast, four of the modeled sites would have noise increases of 3 to 5 dB, due to roadway widening or the new intersection at Alaskan Way and Pine Street. Modeled sites in the central section that would be at or above the NAC under the Action Alternative include 611 residential units and a daycare. This is an increase in the number of units over the NAC under the No Action Alternative, which consist of 446 residential units and Waterfront Park. The 165 new residential noise impacts are located along Post Avenue between Spring and Seneca Streets.

In the northern section of the study area, peak-hour traffic noise levels under the Action Alternative in 2030 would range from 58 to 68 dBA Leq. Traffic noise levels in 2030 would be lower at half of the modeling sites in the northern section, with reductions as high as 6 dB when compared to the No Action Alternative. Conversely, some of the modeled sites would have slight increases in traffic noise levels of 3 to 5 dBA due to the alignment of Elliott Way north of Pine Street. The largest noise reduction would be at the modeled sites along Alaskan Way, north of the new intersection at Pine Street, due to lower traffic volumes predicted with the Action Alternative.

Under the Action Alternative in 2030, an estimated 219 residential units in the northern section are predicted to have noise levels at or above the NAC. This is a reduction of 108 units compared to the No Action Alternative. Some of the reduction in impacts would occur at the Seattle Marriott Hotel as a result of the reduced traffic on Alaskan Way north of Pine Street. At the Waterfront Landings Condominiums, noise levels would be lower in units facing the water. Units at this complex with eastern noise exposure are expected to see an increase in impacts due to the new connection to Elliott Avenue. Although none of the units in this complex face directly east, there are units on the north and south ends of the complex and some upper floor units that have exposure to traffic noise from the east. For this analysis, it was assumed that up to 77 units could have exposure to traffic noise from roads to the east of the complex. An additional 64 new impacts are predicted at the Elliott Point Apartments, due in part to the new connection of Elliott Way to Elliott Avenue and Western Avenue. Under the Action Alternative in 2030, noise levels at Victor Steinbrueck Park are also predicted to be at or above the NAC, but would be just below the criteria with the No Action Alternative.

6.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Because AWPOW would result in increased noise impacts at some locations compared to the No Action Alternative, the City evaluated three general forms of noise abatement: mitigation at the source, mitigation in the path of the noise between source and receiver, and mitigation at the receiver. The evaluation was done in accordance with applicable guidance for highway noise impact mitigation as well as other potentially applicable standards. The following measures were evaluated:

- Mitigation at the source—Measures evaluated include traffic management, such as modifying speed limits and restricting truck traffic, and roadway design measures, which have been incorporated into the project design as applicable. The use of special noise-reducing pavement was

considered, but was not included in the project design because of the limited life span and low cost-effectiveness of this method when used in Western Washington.

- Mitigation in the path of the noise between source and receiver—Noise barriers, such as noise walls and berms, were evaluated, but were determined to be infeasible in the study area because of the limited right of way, dense urban development, and the need for property access at frequent intervals. All of these constraints would make noise walls either impossible to build without additional property acquisition or ineffective in noise reduction.
- Mitigation at the receiver—The City could consider requiring sound-reducing elements for all new residential construction, and sound insulation upgrades for existing buildings. However, imposing such requirements on existing development, especially in areas where noise levels have historically been high, would be inconsistent with federal, state, and local noise regulations and policies. This type of mitigation for private properties is typically the responsibility of the homeowners.

For the Action Alternative, traffic noise levels could increase by up to 5 dBA in some locations, and conversely, could decrease by 5 to 6 dBA in other locations compared to the No Action Alternative. Noise source control measures, including traffic management, speed, and roadway design, have been incorporated into the design as applicable. Applying any additional minimization or mitigation measures would be difficult or infeasible due to the existing constraints in this corridor.

In a broader perspective, it is important to note that the overall noise levels under the Action Alternative would be up to 12 dBA lower than the current noise levels with the viaduct in operation. The noise level reductions resulting from removal of the Alaskan Way Viaduct are not attributable to AWPOW, but would form an important part of the future noise environment within which AWPOW would operate. The cumulative noise impacts for AWPOW and other projects in the noise study area are described in Section 15.7 of this Draft EIS.

7 Hazardous Materials

The hazardous materials analysis presented in this chapter identifies known hazardous materials-related conditions in the study area and discusses the potential for impacts if hazardous materials are encountered or released during construction. It also discusses the potential for impacts if hazardous materials are released during project operation. For purposes of this analysis, "hazardous materials" includes hazardous substances, hazardous wastes, and contaminated soil and groundwater. This chapter also describes possible measures to avoid, minimize, or mitigate any potential impacts. More details are provided in Appendix F, Hazardous Materials Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS.

7.1 Affected Environment

7.1.1 Hazardous Materials Risk and Control

Hazardous materials can affect human health and the environment during construction and operation of facilities, especially facilities that are located in areas with a long industrial history. The area in which AWPOW would be built has such a history, with industrial use dating back over a century. Encountering unexpected hazardous materials-related conditions can lead to the release of hazardous materials that can affect worker health and safety, as well as pose an environmental hazard. Identifying the location and type of potential hazardous materials-related conditions can mitigate the risks of release and provide the basis for ensuring the proper management, handling, and disposal of hazardous materials.

In the state of Washington, the Model Toxics Control Act (MTCA) is the primary law requiring and governing cleanup of sites contaminated by hazardous materials. MTCA provides standards to determine whether a contaminated site may pose a risk to human health and the environment and drives the determination of how contaminated media, such as soil and groundwater, will be managed and disposed of if encountered during construction.

7.1.2 Study Area

A ¼-mile distance around the project footprint was selected as the study area for this hazardous materials analysis. This distance, shown in Figure 7-1, was selected based on two general factors. The first factor, which is discussed below, is the potential for hazardous materials released to the environment to migrate to the project footprint. This potential is assessed based on the topographic, geologic, and hydrologic conditions in the vicinity of the project footprint. The second factor is information regarding historical land uses and hazardous materials-related conditions known to exist in the vicinity of the project footprint, which are discussed in Section 7.1.3, 2017 Existing Conditions.

The project footprint is located in a generally flat area between Elliott Bay to the west and ridges to the north and east. Topography generally slopes from northeast to southwest, toward Elliott Bay. The southern portion of the project footprint is relatively flat and approximately 20 feet in elevation; near Spring Street, the land east of Alaskan Way begins to slope upward, toward the northeast. At University Street, the topography becomes steeper, rising in elevation toward Western Avenue, and continues to slope upward to an elevation of approximately 120 feet near the Pike Place Market (USGS 2005).

Geologic conditions in the area have been influenced by repeated glaciations. These glaciations have left successive layers of sediments that vary in thickness and permeability, creating complex subsurface conditions. In the project vicinity, approximately 1,500 feet of glacial and non-glacial sediments overlie bedrock (Troost et al. 2005). Adding to the complexity of shallow geologic conditions, the project vicinity has undergone extensive modification over the last 150 years. Historic photographs indicate that the shoreline was originally located near the current-day First Avenue, which is approximately one city block

0 400 800

Feet

Source: King County, City of Seattle

Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Study Area

Figure 7-1
Hazardous Materials Study Area

Alaskan Way, Promenade, and Overlook Walk

east of the project footprint. Alaskan Way is located almost entirely on fill material that was placed east of the Elliott Bay Seawall. Prior to construction of the seawall, there were timber trestle-supported railroads, roadways, and wharfs in this area. In addition to earthen fill, which is generally believed to be sourced from the regrading of Seattle's hills, the material landward of the seawall contains various types of debris from early settlement of the area, including garbage and construction debris. Information obtained from borings conducted along the seawall indicates that soils within and near the southern portion of the project footprint consist of fill material to depths between 10 and 50 feet bgs, underlain by native silts, sands, and cobbles (FHWA et al. 2011).

In the northern portion of the project footprint as it moves upslope, shallow soils are expected to consist predominantly of native soils with some surface grading. These shallow soils are soft and susceptible to landslides. Deeper native soils in this area are expected to be composed of till and fine-grained deposits, both of which have low permeability. The soil structure tends to be complex due to the repeated glaciation in the region.

Groundwater flow in the project vicinity is primarily from the east-northeast to west-southwest towards Elliott Bay. Near the seawall, the groundwater gradient within the project footprint can be highly variable due to tidal influences; these influences greatly decrease as the project footprint moves uphill and east. In general, the shallow groundwater gradient is relatively high to the east of the project footprint, and flattens significantly near the seawall. Based on groundwater sampling conducted for the EBSP, groundwater is very shallow within and near the project footprint, lying at approximately 6 to 12 feet bgs (SDOT 2014). Groundwater depth increases to the east and is expected to be approximately 70 to 80 feet bgs at the northern end of the project footprint.

Soil properties and the presence of groundwater influence the mobility and migration of contaminants. While contaminants migrate in soil and groundwater in different ways, in general, there is more movement when groundwater is present and when soils are more porous, such as gravels and sands. Because the fill material behind the seawall is relatively unconsolidated, contaminants in shallow groundwater may migrate through it more freely than through denser native soil, especially because of the tidally influenced groundwater flows. However, the area within which this more active contaminant could migrate is relatively narrow, confined by the native soils of the bluff that rises east of Western Avenue. Within this narrow band of land (which may range from approximately 200 to more than 400 feet wide in the waterfront area), contaminants are likely to move from east to west with the flow of groundwater.

7.1.3 2017 Existing Conditions

The existing conditions for this analysis are defined as the conditions that will exist within the study area in 2017, when the AWVRP, EBSP, and PPMWE are complete and before AWPOW construction begins. The 2017 existing conditions relevant to this portion of the analysis are the historical land uses and hazardous materials-related conditions known to exist in the study area.

Historical Land Uses

The study area has been occupied by many industrial and commercial land uses since development began in the mid-19th century. Such historical land uses have often been associated with the release of hazardous materials into the environment. Accordingly, project analysts consulted historical land use information sources, including Sanborn maps and city directories, to identify previous land uses in the vicinity of the project footprint and subsequently develop a list of contaminants typically associated with those uses. The types of land uses identified in the vicinity and the potential contaminants associated with those uses are shown in Table 7-1.

Table 7-1. Historical Land Uses Identified in the Vicinity of the Project Footprint and Potential Contaminant Types

Historical Land Uses	Potential Contaminant Types
Automotive repair, wrecking	Petroleum hydrocarbons, including fuels and oils Solvents, including volatile organic compounds (VOCs) Polycyclic aromatic hydrocarbons (PAHs)
Service stations	Petroleum hydrocarbons, including fuels and oils Solvents, including VOCs PAHs Metals (specifically lead)
Dry cleaners and laundry	Perchloroethylene (PCE) Trichloroethylene
Machine shop	Petroleum hydrocarbons, including fuels and oils Metals Solvents, including VOCs
Foundry	Petroleum hydrocarbons, including fuels and oils Metals Solvents, including VOCs
Plating facilities	Metals Solvents, including VOCs Polychlorinated biphenyls (PCBs)
Printers and painters	Solvents, including VOCs Metals
Steam plant	Petroleum hydrocarbons, including fuels and oils Solvents, including VOCs PAHs
Historic buildings (general)	Petroleum hydrocarbons (heating oil) Asbestos PCBs Mercury

All of the contaminants shown in Table 7-1 will travel with groundwater flow, although metals, PAHs, and PCBs have a greater capacity to bond to soil, which can slow the migration process. Some solvents (PCE and trichloroethylene) have a higher capacity for migration, particularly vertical migration within groundwater zones because those solvents are heavier than water and tend to sink away from their source. Therefore, any of these contaminants that may have been released as a result of past land uses are likely to have migrated at least some distance from the site where they were originally used.

The project analysts further reviewed the historical land uses to identify specific businesses or properties that have the potential to have released contaminants. The businesses and properties were then qualitatively ranked as high, medium, or low based on their potential to have an impact on the project footprint. Analysts assigned a ranking of "high" to 24 sites. Each of these sites was given a unique identification (A through X) and is summarized in Table 7-2 and shown on Figure 7-2.

Table 7-2. Historical Land Use Sites with High Potential Impact Ranking

Site ID	Name	Address	Source	Site Use	Potential Contaminants
A	Haines Oyster Co.	221 Alaskan Way, Pier 47	Sanborn 1969	Carpenter shop, refrigerator repair	Metals, petroleum including fuels and oils
B	Unknown	2300 Block Western Avenue	Sanborn 1969, CD 1981	Electrical transformer yard	PCBs
C	Unknown	2200 Block Western Avenue	Sanborn 1969	Automotive sales and service, body shop	Petroleum including fuels and oils, VOCs
D	Unknown	221 Alaskan Way S.	Sanborn 1950	Service station	Petroleum including fuels and oils, PAHs, VOCs, and metals
E	Unknown	1420 Alaskan Way	Sanborn 1950	Service station	Petroleum including fuels and oils, VOCs
F	Unknown	1500-1502 Alaskan Way	Sanborn 1950	Automotive repair	Petroleum including fuels and oils, VOCs
G	Hal Thompson's Prkg. & Auto Repair	1524 Alaskan Way	Sanborn 1950	Automotive repair	Petroleum including fuels and oils, VOCs
H	Unknown	88 Jackson Street	Sanborn 1916	Machine shop, painting	Metals, solvents including VOCs, oils
I	Pioneer Graphics; Silver Image Gallery	92 S. Washington Street	CD 1996, 1981	Printing	Solvents including VOCs, metals
J	Perfection Machinery Co.	2218 Western Avenue	CD 1981, 1976	Machine shop	Metals, solvents including VOCs, oils
K	Impressions Printing	628 Alaskan Way	CD 1966, 1961	Printing	Solvents including VOCs, metals
L	Smith-Silliston Machine Shop	1528 Alaskan Way	CD 1966	Machine shop	Metals, oils, solvents including VOCs
M	Unknown	Pier 62	CD 1966	Transport, wood storage	Methane (from wood chips)
N	Kelly Printing	90 S. Washington Street	CD 1966, 1961	Printing	Solvents including VOCs, metals
O	Unknown	Railroad Avenue and Virginia Street	Sanborn 1905	Coal bin	Oils, coal
P	Unknown	Elliott Avenue and Virginia Street	Sanborn 1905	Concrete mixing plant	Fuel, oil
Q	Paint warehouse	Railroad Avenue south of Pike Street	Sanborn 1905	Warehouse	Solvents including VOCs, metals
R	Unknown	Railroad Way and Pike Street	Sanborn 1905	Boiler, forge	Oil, metals, petroleum including fuels and oils
S	Unknown	C Railroad Avenue	Sanborn 1905	Tin shop	Metals, oils
T	Unknown	M Railroad Avenue	Sanborn 1905	Machine shop	Metals, oils
U	Moran Brothers Foundry	Unknown	Sanborn 1888	Foundry	Petroleum including fuels and oils, metals
V	Mechanics Mill	Unknown	Sanborn 1888	Machine shop	Metals, oils
W	Enwave Seattle (formerly Seattle Steam Company)	1311-1321 Western Avenue	Sanborn 1969, CD 1976–1996	Steam plant	Grease, oil, coal, asbestos
X	Pacific Marine Supply Co.	1213-1223 Western Avenue	Sanborn 1969, CD 1976	Machine shop	Metals, oils, solvents including VOCs

Sanborn = Sanborn Maps; CD = city directory

Known Hazardous Materials-Related Conditions

In addition to assessing the types of potential contamination that may have resulted from past land uses, analysts identified known hazardous materials sites by researching regulatory databases and reports. The databases, maintained by the Washington State Department of Ecology (Ecology) and the U.S. Environmental Protection Agency (EPA), identify the location, contaminant types, and cleanup status for a wide variety of hazardous materials sites, including underground storage tank (UST) sites, spill areas, and facilities with a documented history of contamination. The data were augmented with updated information from the City regarding known or suspected USTs, contamination data obtained from EBSP, and information obtained from a reconnaissance of the project area.

A search of Ecology and EPA databases identified over 400 unique hazardous materials sites within the study area. Table 7-3 lists the number of various types of sites that were identified in the most relevant databases, both within the project footprint and within the study area. Some of the sites are listed on multiple databases; therefore, the total number of sites shown in Table 7-3 is greater than the total number of unique sites within the study area.

Table 7-3. Number of Hazardous Materials Sites Identified on Regulatory Databases

Database	Within Project Footprint	Within Study Area[1]
Washington State Department of Ecology Databases		
LUST	3	70
UST	8	141
CSCSL	8	124
CSCSL-NFA	1	53
Spills	6	38
VCP	2	49
Brownfields	0	3
ICR	6	93
U.S. Environmental Protection Agency Databases		
NPL	0	0
Delisted NPL	0	0
CERCLIS	0	0
CERCLIS-NFRAP	1	5
CORRACTS	0	1
RAATS	0	1
RCRA (LQG, SQG, CESQG)	2	16
ERNS	0	0

[1] The number shown for study area includes sites within the project footprint.

Following the database search and review of other reports, analysts conducted other evaluations to identify the hazardous materials sites that are of the highest potential concern, by ranking the sites from 1 to 5, with 1 reflecting a low likelihood of adversely affecting the project and 5 reflecting a high likelihood of adversely affecting the project. Table 7-4 lists the nine sites that received a ranking of 4 or 5, which are the hazardous materials sites with the highest potential to impact the project. Table 7-4 also lists the types of contaminants associated with those sites. These sites are shown on Figure 7-2.

Table 7-4. Hazardous Materials Sites with the Highest Potential to Impact the Project

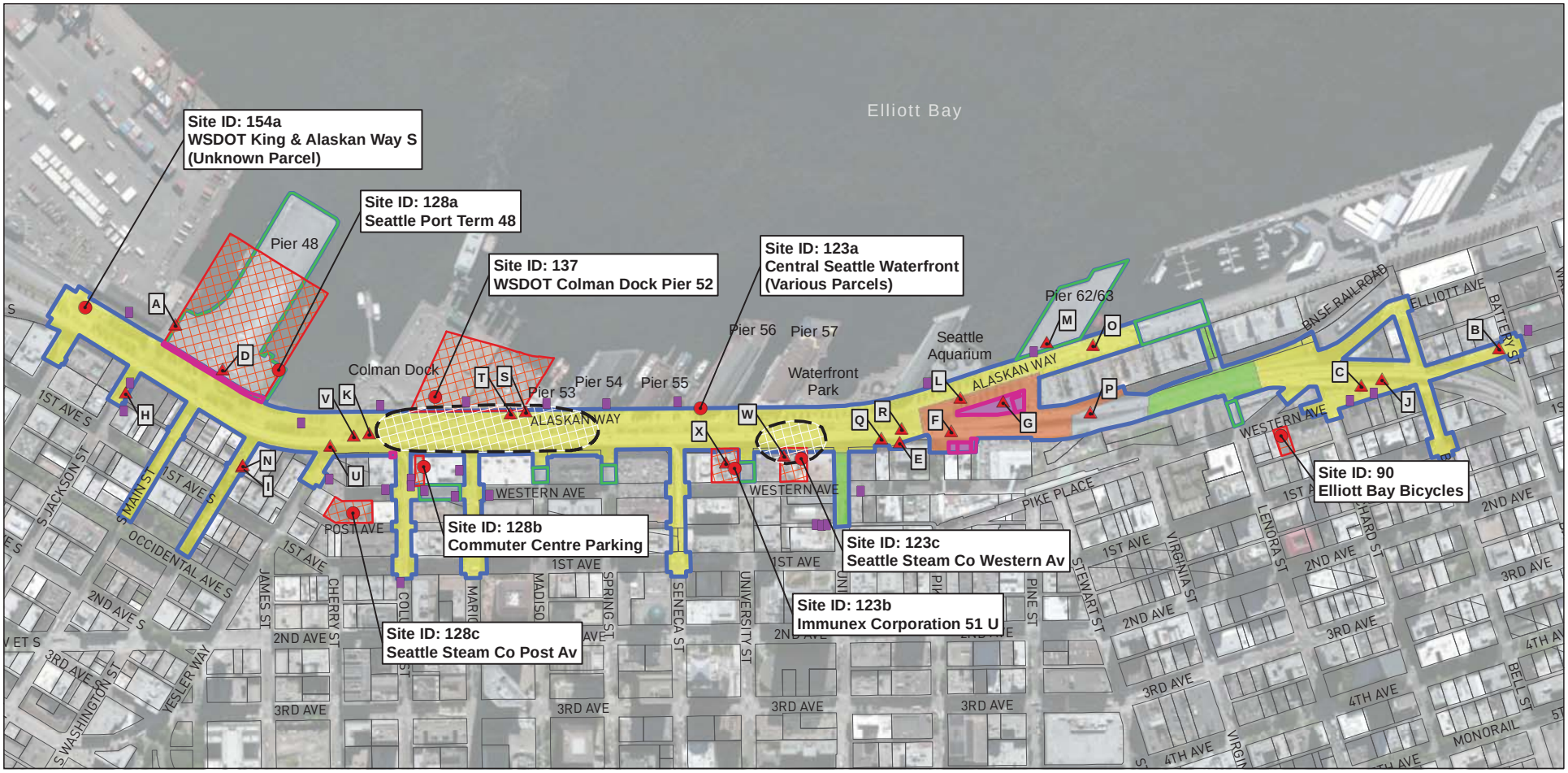
Map ID	Site Name (Historical Name)	Address	Parcel Number	Ecology Cleanup Site ID#	Potential Contaminant
90	Elliott Bay Bicycles (Armory Garage)	2114 Western Avenue	197720540	3458	Petroleum hydrocarbons
123a	Central Seattle Waterfront	Piers 53-58, Alaskan Way	Various parcels	2545	Metals, petroleum, PCBs, PAHs, phenols
123b	Immunex Corporation	51 University Street	766620-2477	11818	Petroleum hydrocarbons, PAHs
123c	Seattle Steam[1] Western Avenue	1319 Western Avenue	197620-0070 and 766620-2445	5075	Petroleum hydrocarbons, PAHs, asbestos-wrapped piping
128a	Port of Seattle Terminal 48	101 Alaskan Way W., Terminal 48	766620-2632	1076	Metals
128b	Commuter Centre Parking	801, 807, 809 Western Avenue	766620-2560	11129	Petroleum hydrocarbons
128c	Seattle Steam[1] Post Avenue	619 Post Avenue	859140-0100	1330	Petroleum hydrocarbons, metals, PCBs, PAHs
137	Colman Dock Pier 52	801 Alaskan Way	766620-2612 and 766620-2620	2448	Metals, petroleum, PCBs, PAHs
154a	WSDOT S. King Street & Alaskan Way	S. King Street and Alaskan Way S.	Unknown	264	Petroleum hydrocarbons, PAHs

[1] Seattle Steam Company was acquired by Enwave Seattle in 2014.

In addition to the UST site information obtained from Ecology and EPA and summarized in Table 7-3, analysts evaluated UST information from the City of Seattle's geographic information system (GIS) data layer as well as from SDOT. It is not known with certainty if the USTs shown in the GIS data layer and identified in information from SDOT were removed or are still active. Sixteen of the USTs shown in the GIS layer, associated with the following eight locations, appear to be in or near the project footprint.

- One UST along S. Jackson Street, between Alaskan Way and First Avenue
- One UST on Alaskan Way, between Yesler Way and S. Washington Street
- Up to six USTs along Western Avenue, between Marion and Columbia Streets
- Two USTs along Western Avenue, between Bell and Blanchard Streets
- One UST near the intersection of First Avenue and Columbia Street
- One UST near the intersection of Western Avenue and Yesler Way
- One UST near the intersection of Western Avenue and Union Street
- Up to three USTs to the south of Union Street between Western Avenue and First Avenue

Information from the SDOT UST data revealed the location of 11 additional USTs that might be in or near the project footprint. The 27 USTs and UST locations (16 USTs identified through the City's GIS data layer and 11 locations revealed by SDOT UST information) in or near the project footprint are shown in Figure 7-2. These USTs and UST locations revealed a potential hazardous materials-related condition that is considered in the construction analysis in Section 7.2.



0 400 800
Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, swisstopo, and the GIS User Community

Action Alternative
- Project Footprint
- Potential Construction Staging Area
- Parcel Boundary

Depth of Construction
- 0-20 Ft
- 40-60 Ft
- 60-80 Ft

- Hazardous Materials Sites with Highest Potential to Impact the Project Footprint (See Table 7-4)
- Historical Land Use Sites with High Potential Impact Ranking (See Table 7-2)
- UST Locations, Based on City Data
- Contaminated Areas Exceeding MTCA Cleanup Levels*
- Partial or Full Acquisition Area

*Other locations along the Waterfront and Alaskan Way have also had contaminant concentrations exceeding MTCA cleanup levels, but these areas were limited.

Figure 7-2
Affected Environmental Conditions in the Study Area

Alaskan Way, Promenade, and Overlook Walk

Based on the historical uses, known sites, and other available data for the study area, including data obtained as part of EBSP, shallow soil and groundwater contamination is expected to be widespread throughout the project footprint, but appears to be at levels less than the MTCA cleanup levels in all but a few locations (SDOT 2012). The main contaminant types are petroleum hydrocarbons, PAHs, and metals. Three areas of more defined or concentrated (significant) groundwater and soil contamination are known to exist in the project footprint. A plume of groundwater contaminated with diesel is centered on Alaskan Way near Madison Street and extends from Columbia Street almost to Spring Street. A plume of groundwater contaminated with Bunker C, a petroleum hydrocarbon, extends into Alaskan Way from the Seattle Steam Company site (Map ID 123c, now known as Enwave Seattle). Finally, an area of soil significantly contaminated with diesel exists within the groundwater plume centered on Alaskan Way near Madison Street. The locations of the groundwater plumes are shown on Figure 7-2.

A reconnaissance of the area within and in the vicinity of the project footprint revealed the presence of a number of monitoring wells. These wells may have been installed to monitor groundwater levels for EBSP and AWVRP, to monitor groundwater contaminants associated with the Seattle Steam site (Map ID 123c), and to monitor groundwater contamination associated with other sites.

7.2 Construction Impacts and Mitigation Measures

7.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative would not involve any property acquisition, structure demolition, or soil or groundwater disturbance and therefore would have no impact on hazardous materials-related conditions. Any existing hazardous materials-related conditions would remain unless addressed by actions unrelated to AWPOW.

7.2.2 Construction Impacts of the Action Alternative

The release of hazardous materials or encountering existing contamination during construction can result in risk to human health or the environment, create potential liability, increase project costs, and cause schedule delays. The types of potential impacts that could occur as a result of AWPOW construction are discussed below.

Impacts Related to Property Acquisition and Building Demolition

The City anticipates acquiring all or part of seven properties as part of AWPOW. These properties are listed in Table 7-5, and their locations are shown on Figure 7-2. Acquisition of property can expose the party acquiring the property to liability for hazardous materials-related conditions associated with the property and an obligation to take action with respect to those conditions. None of the properties planned for acquisition are listed hazardous materials sites; however, contamination could still be present, given the study area's history of industrial use.

Table 7-5. AWPOW Right of Way Acquisition

King County Parcel Number	Owner	Full/Partial Acquisition	Percentage of Parcel Acquired
766620-2630	WSDOT	Partial	2
766620-2565	Mayers	Partial	0.3
766620-2380	1524 Alaskan Way Assoc.	Full	100
766620-2381	Pumpkin & Big Man, LLC	Full	100
197620-0300	Inter Co-op USA No. 7, LP	Partial	20
257028-0000	Fix Building Condominium	Partial	27
659835-0000	PC-1 South Condominium	Partial	2

The current project design requires the City of Seattle to acquire Parcel 766620-2381, listed in Table 7-5. This property includes a building that would be removed to allow for project construction. The building was constructed in the 1940s and may have lead-based paint or asbestos-containing materials, which might need to be abated before building demolition.

Impacts from Contaminated Soil, Contaminated Groundwater, and Subsurface Features

The sites and areas within the study area that have the greatest potential to affect construction are shown in Figure 7-2. Contaminants known or suspected to exist on these sites and areas could be found in soil and groundwater and include petroleum hydrocarbons, PAHs, and metals.

Contaminated soils would likely be encountered during the excavation and subsurface drilling anticipated during AWPOW construction. Potential impacts from encountering contaminated soil generally consist of exposure to and spreading of the contamination. In general, site construction workers are most likely to be exposed to contaminants, but under certain unmitigated circumstances people passing through the area, neighborhood residents, and employees of nearby businesses could also be exposed. Potential exposure routes include skin contact, accidental ingestion of contaminated soil and water, and inhalation of contaminated vapors or particulates. Health effects are dependent on the type of contaminants present, the exposure route and duration of exposure, the dosage, and the individual's age. Spread of contamination can occur if the contaminated soil is placed or allowed to fall or blow onto clean soil or into surface water or groundwater, whether on or off the construction site. Contaminated groundwater would also likely be encountered during AWPOW-related excavation and subsurface drilling. Encountering contaminated groundwater could create potential exposure and contaminant migration similar to those described for encountering contaminated soil.

Groundwater exists at shallow depths in the AWPOW footprint and generally migrates from east to west. Construction in areas of existing contamination extending to or below the water table could cause contaminants to migrate through groundwater along drilling or excavation pathways, including utility corridors or conduits. Contaminants could also enter groundwater from contact with exposed soils or contaminated stormwater.

The potential impacts described above could vary depending on the depth of construction activities. As shown on Figure 7-2, project construction depths are expected to range from about 20 to 80 feet bgs. Fill materials exist to varying depths in the project footprint. Because fill is expected to be more porous than native soil and because some of the fill could have been contaminated before it was placed, the potential to encounter contaminated soil and groundwater is expected to be higher in the fill than in native soil. In general, this means that construction activities occurring deeper beneath the ground surface, closer to and below the fill-native soil interface, could have a lower likelihood of encountering contaminated soil or groundwater.

Although most of the USTs identified in the project footprint appear to have been removed, the potential exists that some remain in place and that additional undocumented USTs may be encountered during construction. Damage to a UST whose contents have not been completely removed could result in a release of hazardous materials.

Steam pipes associated with the Enwave Seattle facility may include pipes that are wrapped in asbestos. In addition, abandoned pipelines may be present within the project footprint. There is potential that these subsurface features may be encountered during construction, which could result in exposure or release of hazardous materials.

Based on the number of monitoring wells located within and near the project footprint, there is a high potential for encountering monitoring wells during construction. Monitoring wells, particularly those associated with hazardous materials sites, may need to be decommissioned or replaced. This process may require coordination with the site owner or Ecology.

Impacts from Dewatering

Groundwater levels near the shoreline of Elliott Bay are very close to the ground surface and are influenced by tidal action. Within the project footprint, groundwater is expected to be approximately 6 to 12 feet bgs. As a result, excavations in this area are likely to require dewatering (removal of excess water from excavated areas). The specific locations of dewatering activities and the volumes of water likely to be removed are not known at this time; however, the potential exists for dewatering to be required in most areas of excavation, and significant volumes of water could be generated in areas of deep excavation, such as the foundation of Building C. Figure 7-2 shows the approximate depths of potential construction activities.

Water generated by the dewatering process needs to be handled, stored, and disposed of in a manner consistent with applicable regulations. Because of the potentially widespread groundwater contamination in the study area, particularly the significant diesel concentrations observed near the intersection of Alaskan Way and Madison Street, dewatering activities would likely need to include treatment options. This assumption is corroborated by the fact that groundwater contamination has been identified during dewatering activities conducted as part of the EBSP, with the extracted water requiring treatment or off-site disposal.

In areas where substantial dewatering takes place, pumping of water from the construction excavation may change the direction of local groundwater flows, which could result in "pulling" a contaminant plume into a formerly uncontaminated (or less contaminated) area. This could occur if extensive dewatering were required in areas close to, but not currently within, the diesel plume identified near the intersection of Alaskan Way and Madison Street. It is difficult to determine the likelihood of this impact because neither the exact location of the plume nor the locations of dewatering activities are known.

Impacts from Spills or Other Releases due to Construction

The potential exists for hazardous materials to be released into the environment by construction equipment and materials. This generally occurs from the improper transfer of fuel or from spills. Pollutants, such as paints, acids for cleaning masonry, solvents, raw concrete, and concrete-curing compounds, are present at construction sites and may enter the environment if not managed correctly. Construction equipment could potentially track and spread contaminated soils off-site, unless properly managed. Spreading of contaminants can also occur in the event of damaged water or sewer lines during construction in contaminated areas. In addition to affecting public health, spills could enter the ecologically sensitive waters of Elliott Bay.

Impacts from Construction Staging

Construction staging areas are not expected to be excavated; as a result, subsurface contamination in those areas would not be disturbed. However, these areas could be used for the storage and handling of fuels, oils, and other construction-related products, and for operation and storage of heavy equipment. This usage creates the potential for releases through spills, as discussed in the previous section. The potential construction staging areas located on Pier 48 and Pier 62/63 present a greater potential for impacts to surface water in the event of a spill because the piers are directly over Elliott Bay.

7.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Hazardous materials-related conditions exist throughout the project footprint. AWPOW construction activities are likely to encounter at least some of those conditions. Hazardous materials-related conditions that are encountered could be mitigated by implementing the measures recommended in Table 7-6.

Table 7-6. Hazardous Materials Construction Impacts and Mitigation Measures

Impact or Issue	Location	Identified Construction Impacts	Recommended Mitigation Measures
Property acquisition	Specific locations (see Figure 7-2)	Acquisition liability in the event of acquiring a hazardous materials site or property impacted by a hazardous material site.	• Conduct appropriate due diligence investigations before acquiring potentially contaminated property.
Building or structure demolition	One identified location (Parcel 766620-2381)	Buildings can include hazardous materials such as asbestos-containing materials, lead-based paint, PCBs, or mercury.	• Conduct a hazardous building materials survey before demolition. • Implement a hazardous building materials abatement program, as necessary, prior to demolition.
Disruption of existing monitoring wells	Project-wide	Monitoring wells may have to be maintained. In the event of decommissioning, coordination with agency or well owner is required.	• Develop a plan or approach for decommissioning and protecting monitoring wells.
Potential for encountering USTs	Project-wide	This can include previously abandoned or decommissioned USTs within the project footprint.	• Before construction begins, decommission, remove, or develop plans for protecting USTs known to exist within the project footprint. • Develop a protocol in the event unknown USTs are encountered during project construction, including protocols for communications with the regulatory agency and others; protocols should be developed for decommissioning responsibilities and for sampling, storage, and disposal of contaminated soil and groundwater encountered during UST decommissioning or removal.
Encountering contaminated soil or groundwater during construction	Project-wide; highest in areas shown in Figure 7-2	Spreading or improperly handling soil or groundwater contaminated with known or suspected petroleum products, metals, PCBs, and PAHs.	• Develop and implement a site-specific contaminated media management plan for identifying, testing, storing, handling, and disposing of soil and groundwater known or suspected of being contaminated.
Spills of hazardous materials during construction or staging activities	Project-wide	Potential for accidental spill of hazardous materials during construction activities.	• Develop and implement a site-specific Spill Plan to address the use, storage, and disposal, as well as the prevention and response to potential releases, of hazardous materials used or encountered during project staging and construction. • Develop and implement a site-specific Construction Stormwater and Erosion Control Plan to prevent or minimize the potential for stormwater to carry contaminated soil and sediment into surface water.

7.3 Operational Impacts and Mitigation Measures

7.3.1 Operational Impacts of the No Action Alternative

Hazardous materials contamination in the soil and groundwater throughout the study area would not be disturbed under the No Action Alternative; therefore, it would not be different from 2017 existing conditions. The existing contamination would remain in place except where active cleanup operations are underway. Future maintenance in the project footprint, especially of underground utilities, could be negatively affected by the presence of contamination.

7.3.2 Operational Impacts of the Action Alternative

Potential operational impacts of AWPOW include spills or releases from vehicles traveling on the completed Alaskan Way-Elliott Way corridor, the potential for underground utilities to create contaminant migration corridors, and exposure of workers to contamination during maintenance activities.

Operational Impacts from Hazardous Materials

Operation of AWPOW's aboveground and roadway elements is not expected to affect existing hazardous materials in the soil and groundwater. However, the operation of new facilities installed underground, such as utilities, could have impacts on future cleanup efforts. New pipelines, duct banks, or conduits could physically impede future cleanup of soil or groundwater, requiring either that the contamination be left in place or that the cleanup operation take extra measures to protect and support the utilities. Linear underground utilities can also act as conduits for the movement of soil or groundwater contamination due to the typical use of porous fill materials as backfill for utility trenches. This practice could lead to the transport of existing contamination to less contaminated areas, with the result that future projects or cleanup efforts could encounter contaminants in unexpected places or at higher than expected levels.

Contaminated soils and groundwater could also affect maintenance activities for the completed project. Where maintenance activities require excavation, existing soil or groundwater contamination can continue to create hazardous conditions for workers. Additionally, the buildup of dangerous gases, such as benzene or methane, in confined spaces can be dangerous for workers maintaining utility vaults and stormwater systems. This is primarily of concern along Alaskan Way, where methane buildups have occurred in the past in areas where wood waste material was historically used as fill. However, there have been issues with methane gas and other dangerous gas buildups throughout the Seattle downtown area. Additionally, benzene may be of concern in areas where petroleum releases have occurred. Benzene is a volatile component of petroleum hydrocarbons, particularly in light-end fuels such as gasoline.

Impacts from Operation and Maintenance

Operation of transportation corridors may result in the release of hazardous materials into the environment from accidental spills. Such releases would primarily be related to vehicular accidents, as well as spills during maintenance work involving hazardous materials. Fuel or hazardous materials, if accidentally released, could migrate to surface water or groundwater and affect properties outside of the right of way. Impacts could include road closures and delays, cleanup costs, and regulatory fines. Stormwater can carry these materials from the highway to surface water or to the water table, where they can persist and accumulate for long periods and cause harm to species and their habitats. However, because the Action Alternative would improve traffic operations and reduce congestion compared to the No Action Alternative, fewer accidents are expected and therefore less risk of spills. The potential for spills can be further reduced through the development of emergency response plans and BMPs, which would be incorporated as part of the project. No long-term effects are anticipated.

7.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Operation of the Action Alternative could lead to encountering hazardous materials during maintenance as well as spills of hazardous materials. These events could be mitigated by implementing the measures recommended in Table 7-1.

Table 7-7. Operational Impacts and Mitigation Measures

Impact	Location	Identified Operational Impacts	Recommended Mitigation Measures
Maintenance of roadways and stormwater and utility systems	Throughout project footprint	Contaminants could be encountered during maintenance of roadways and stormwater and utility systems.	• Inform maintenance personnel of known hazardous materials-related conditions they might encounter. • Train personnel in appropriate protection measures for hazardous materials-related conditions. • For work in areas known to be contaminated, use personnel who have received the appropriate level of hazardous waste operations training. • Develop protocols for appropriate coordination with and reporting to oversight agencies regarding encountered hazardous materials.
Spills of hazardous materials	Throughout project footprint	Vehicular accidents could result in spills on or near the roadway. Spills could occur as a result of maintenance work utilizing hazardous materials.	• For worker safety, train maintenance personnel that might use hazardous materials in the hazardous communication and globally harmonization system. • Implement BMPs to prevent or minimize the effects of spills. • Train maintenance personnel in the use of spill kits for responding to spills of hazardous materials used for maintenance work. • Develop protocols for responding to hazardous materials spills too large to be managed by spill kits. • Develop protocols for appropriate coordination with and reporting to oversight agencies regarding spilled hazardous materials.

8 Public Services and Utilities

This chapter describes the existing conditions for public services and utilities and discusses the project's potential impacts during construction and operation. Public services discussed are law enforcement, fire suppression, emergency response services and hospitals, emergency management, solid waste collection and recycling, public schools and school bus service, and mail delivery and post offices. Utilities discussed are water, stormwater collection, sewer (wastewater), electricity, natural gas, steam, and telecommunications services. The analysis also identifies possible measures to avoid, minimize, or mitigate any potential impacts. More details are provided in Appendix G, Public Services and Utilities Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS. Public transportation services are addressed in Chapter 3 of this Draft EIS and Appendix A, Transportation Discipline Report.

8.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017, when the AWVRP, EBSP, and PPMWE are complete and before AWPOW construction begins. This is referred to as the 2017 existing conditions. The study area for public services and utilities is bounded by S. King Street to the south, Elliott Bay to the west, Occidental Avenue S. and First Avenue to the east, and Battery Street to the north. The public services and utilities study area extends from the easternmost edge of the project footprint to Elliott Bay, as shown in Figure 8-1.

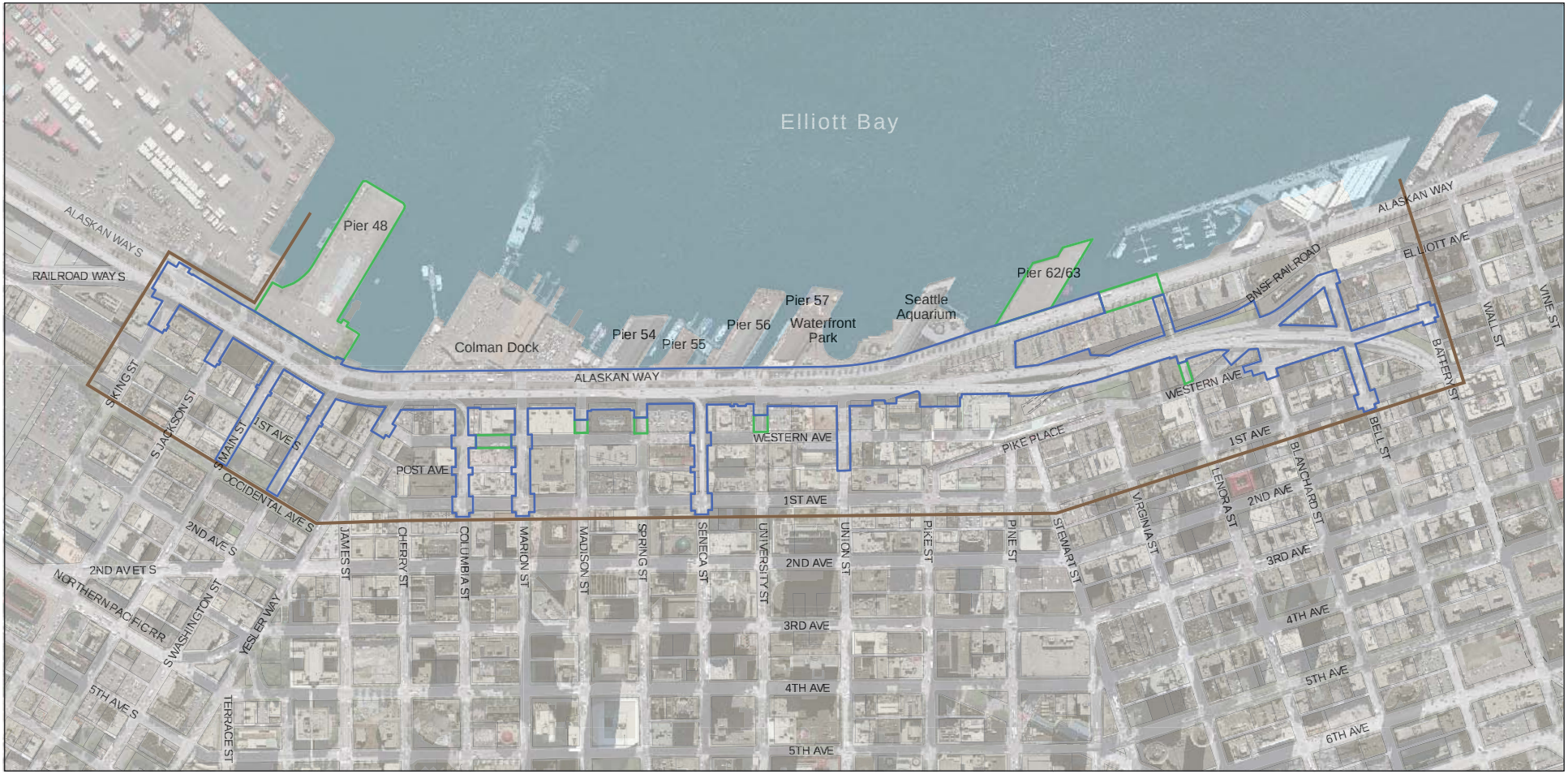
8.1.1 Public Services

The public services in the study area are law enforcement, fire suppression, emergency response services and hospitals, emergency management (including disaster preparedness), solid waste collection and recycling services, public schools and school bus service, and mail delivery and post offices. The primary providers of these public services are:

- Seattle Police Department (SPD)
- Seattle Fire Department (SFD)
- Seattle Office of Emergency Management
- Seattle Public Utilities (SPU) Solid Waste Division
- Waste Management and CleanScapes
- Seattle School District
- United States Postal Service
- King County
- Washington State Ferries (WSF)
- Port of Seattle

Law Enforcement

SPD provides law enforcement and responds to 911 emergency calls throughout Seattle. The study area lies within SPD's West Precinct, which includes Belltown, the central business district, the Chinatown-International District, and Pioneer Square. The Port of Seattle has its own police department that patrols the waterfront and responds to incidents within the Port's jurisdiction.



0 400 800

Feet

Source: SDOT

Action Alternative

- Project Footprint
- Potential Construction Staging Area
- Study Area

Figure 8-1
Public Services and Utilities Study Area

Alaskan Way, Promenade, and Overlook Walk

Fire Suppression and Emergency Medical Services

The SFD provides fire suppression and emergency medical services to Seattle residents. Fire Station 5, the only fire station within the study area, is located north of the Seattle Multimodal Terminal at Colman Dock at 925 Alaskan Way. This station houses an engine company, a medical unit, and two fireboats. Its service area extends roughly from Broad Street to Spokane Street, including the Port of Seattle properties immediately south of the study area. Fire Station 5 is the primary station for first response to fire and medical emergencies within the study area.

There are no hospitals or clinics within the study area. However, several hospitals provide emergency care for people transported from locations within the study area, either by SFD Medic One units or by a private ambulance service.

Emergency Management

Disaster planning efforts for the City of Seattle are regional, involving various partners that include multiple City departments, King County, and state and federal agencies. The City of Seattle Office of Emergency Management is an emergency-preparedness bureau of SPD that is devoted to citywide disaster preparedness, recovery, response, and mitigation. The Port of Seattle, WSF, and King County also collaborate on disaster preparedness in the study area and provide services in the event of an emergency situation or disaster, such as a bomb threat or earthquake.

WSF has an emergency operations center located at Colman Dock that responds to safety, emergency, or security incidents. The center operates 24 hours per day, 365 days per year. Its primary role is to respond in times of crisis, such as severe regional weather, emergency-vehicle transport coordination, and accidents involving vessels or terminal facilities. The Washington State Patrol Homeland Security Division provides vessel and terminal security for the entire WSF fleet (Washington State Patrol 2014).

Solid Waste Collection and Recycling Services

The City of Seattle currently contracts with CleanScapes, Inc. and Waste Management of Washington, Inc. (Waste Management) for garbage, recycling, and food and yard waste collection services. Waste Management covers northwest and south Seattle, and CleanScapes covers northeast and central Seattle, including the study area. Commercial garbage generated in the city, as well as construction, demolition, and land-clearing waste, is generally delivered to two private transfer stations: Waste Management's Eastmont Station (located in the South Park area near the City's South Recycling and Disposal station) and a Rabanco-owned station at Third Avenue S. and S. Lander Street. Waste Management also handles contaminated soils.

Public Schools

There are no public schools in the study area. Public facilities in the study area, such as Colman Dock and the Seattle Aquarium, are often destination points for students from the region on education field trips. Approximately three to five school buses per day use Alaskan Way to access these facilities when school is in session.

Postal Service

There are two United States post offices in the study area. They are located at 91 S. Jackson Street, near Pioneer Square, and at 909 First Avenue in the Federal Building. The facility located at 91 S. Jackson Street is scheduled to be relocated in 2015. Numerous other businesses throughout the city, including bank branches and retail stores, are designated Approved Postal Providers, meaning that they provide some postal services. The United States Postal Service makes regular mail deliveries throughout the study area.

8.1.2 Utilities

The conditions described below for utilities are expected to exist when AWPOW construction begins in 2017, and reflect utility work that will have been completed by that time as part of the EBSP and AWVRP. Municipal agencies and private companies provide a number of utilities within the study area, particularly water, stormwater collection, and sewer (wastewater), as well as electricity, natural gas, steam, and telecommunications services. The primary public utility providers in the study area are:

- SPU for water, wastewater, and stormwater systems
- King County for wastewater and combined sewer overflow (CSO) facilities
- SCL for electrical power
- PSE for natural gas
- Enwave Seattle for steam used to heat downtown buildings
- CenturyLink (formerly Qwest) for telecommunications
- Comcast for cable television
- Other private communications companies

Water

SPU supplies water to 1.4 million people and businesses in the Seattle area from two watersheds: the Cedar River Watershed and the South Fork Tolt River Watershed, both located in eastern King County (SPU 2014). The study area is supplied with fresh water from both of these watersheds.

Water mains within the study area provide service to commercial and residential property on both sides of Alaskan Way, as well as supplying water for fire response. Mains run along the west side of Alaskan Way between S. Washington Street and Columbia Street, and on the east side of Alaskan Way between Columbia Street and Battery Street. As part of the EBSP, a new water main will be constructed in the restored Alaskan Way roadway from Yesler Way to Virginia Street, and a new main will be installed from S. King Street to Yesler Way as part of the AWVRP. The water mains connect to downtown Seattle's water supply system at Broad Street, Madison Street, Yesler Way, and S. Washington Street.

The water distribution mains within the study area were built at different times over the last 100 years. Consequently, various construction techniques, materials, and standards were used. Water mains constructed prior to the mid-1950s were typically installed using cast iron or steel pipe with lead joints (FHWA et al. 2006). Newer water mains are ductile iron pipe.

Stormwater

The existing stormwater drainage system is discussed in Chapter 11, Water Quality, of this Draft EIS. In the study area, the system collects stormwater and discharges it either to the combined sewer system (where sanitary sewage and stormwater are commingled) or to separate storm drainage facilities that discharge to Elliott Bay.

Sewer

In the study area, sanitary sewage is collected by a network of conveyance pipes owned and operated by SPU and the King County Department of Natural Resources Wastewater Treatment Division. This network consists of the separate sanitary sewer system and the combined sewer system. Both systems flow to the West Point Treatment Plant, with the combined sewer system conveying sanitary sewage as well as stormwater to the treatment plant. Flows to the treatment plant are treated and discharged into Puget Sound. During heavy rainfall, stormwater runoff draining to the combined sewer sometimes overwhelms pipe capacities and, along with other factors, can result in overflows of the combined sewer into Elliott Bay. These combined sewer overflows or CSOs and the combined sewer system are discussed in Chapter 11, Water Quality, of this Draft EIS.

Electrical Power

SCL supplies electrical power to customers in Seattle, including those in the study area. The system that SCL owns and operates includes both 115-kV transmission lines and 13.8-kV distribution lines. Overhead and underground distribution lines are located along many streets in the study area. A number of the existing distribution lines along Alaskan Way will be removed or replaced by the EBSP.

SCL's transmission system includes several high-voltage transmission lines in the study area. These transmission lines run between electrical substations, which lower the voltage of the electricity before transferring it to the distribution lines. The Union Street Substation, located on Union Street between Western Avenue and Post Alley, is the only electrical substation within the study area. Substations outside of the study area that serve transmission lines within the study area include the Massachusetts Substation at Colorado Avenue and Massachusetts Street, and the Broad Substation at Sixth Avenue and Broad Street.

Four transmission lines emanate from the Massachusetts Substation, running north through the study area. Three of these lines (Transmission Lines 1, 2, and 3) terminate at the Union Substation. The fourth line, Transmission Line 4, acts as a regional line between the Massachusetts Substation and the Broad Substation, serving both SCL customers and the regional Bonneville Power Administration (BPA) grid.

Natural Gas

PSE provides natural gas service in the study area, with a service network consisting of transmission lines (high-pressure gas main lines), distribution lines (including intermediate pressure [IP] distribution lines), pressure controls, meters, and service lines. Within the study area, a PSE high-pressure gas main line is located between Madison Street and Blanchard Street within the Alaskan Way right of way. This line provides natural gas to the Enwave Seattle plant on Union Street and other businesses along Alaskan Way as well as all of western King County. IP lines distribute natural gas to customers throughout the study area.

As part of the EBSP, PSE will remove portions of the existing IP distribution lines serving the businesses along Alaskan Way and construct a new IP distribution line from Blanchard Street to Pike Street. EBSP will also construct a new IP distribution line from University Street to Madison Street to serve Piers 54 through 57. The EBSP work will leave two gaps in the new IP system: one from Pike Street to University Street, and one from Madison Street to Columbia Street. These gap portions are planned to be completed as part of AWPOW.

Steam

The privately held Enwave Seattle provides steam service in the study area under a franchise agreement with the City. The main plant, located on Western Avenue between University and Union Streets, pumps steam from four main boilers through a system of underground pipes. Enwave Seattle has historically provided steam service to many buildings in the study area through underground steam mains in Western Avenue near the steam plant and on other streets in the study area. However, the company recently decided to abandon all service to the piers, with the exception of Colman Dock. Service to Colman Dock will be provided from Western Avenue via a steam line that crosses Alaskan Way at Columbia Street. All other piers formerly served by Enwave Seattle have recently been converted to natural gas service provided by PSE. Enwave Seattle maintains a gravity drain from the plant, across Alaskan Way, and through the seawall. This outfall is covered by the National Pollutant Discharge Elimination System (NPDES) permit originally obtained by the Seattle Steam Company.

Telecommunications

The communications infrastructure in the study area is located both aerially and underground. These systems use fiber optic, coaxial, and copper-cable materials, and have associated conduits, risers, vaults, manholes, and other appurtenances. Underground lines have been direct-buried, installed in open-cut trenches, or directionally drilled; others have been pulled through pipelines formerly used for other

utility purposes, such as gas and water (FHWA et al. 2004). Telecommunications providers in the study area include:

- CenturyLink
- Comcast
- Wave Broadband
- Seattle Department of Information Technology (DoIT)
- Sprint
- ELI-Integra
- Verizon

8.2 Construction Impacts and Mitigation Measures

8.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative would not involve construction and therefore would not have construction impacts on public services and utilities. However, other planned utility improvements in the study area would still take place.

8.2.2 Construction Impacts of the Action Alternative

Public Services

Construction impacts on public services are primarily related to the potential for traffic congestion or access disruption. Two lanes in the main corridor (one in each direction) are anticipated to be open during the majority of construction, but periodic closures and restrictions on east-west streets and construction of the Pine Street extension could impact circulation at times. In addition, construction directly in front of buildings, parking lots, and other land uses could affect service to those properties. Such construction-related impacts on transportation and parking are described in greater detail in Chapter 3 (Transportation and Parking) of this Draft EIS.

Emergency Services (Fire, Police, and Disaster Preparedness)

Traffic congestion during construction, as well as construction-related detours, could have an impact on fire, police, and disaster response services. During peak hours when congestion is greater, travel times for emergency calls could increase in areas near construction. The potential for delays would be higher during the closure of Alaskan Way for approximately 4 months to construct the Pine Street extension. Depending on the location of the roadway construction, response times from Fire Station 5 could increase.

Access would be maintained to properties and structures along Alaskan Way and adjacent to construction areas as required for emergency responders. Work occurring in the immediate area of the properties from which temporary construction easements would be obtained could restrict or change how vehicle or pedestrian traffic accesses those properties. These changes may result in increased emergency service response times to those properties and could complicate access, especially for large fire department vehicles such as ladder trucks. Access from and to Fire Station 5 could be affected by project construction when roadway or Promenade work is occurring directly in front of the station. Station access must be provided at all times because the station provides support for its engine company as well as the fireboats.

There could be an increase in the demand for emergency response due to spills of hazardous substances, such as fuel and other flammable liquids, during construction. However, the likelihood of such events occurring is expected to be minimal.

Solid Waste

Solid waste haulers could experience temporary delays or disruptions in collection routes during construction activities, especially along route sections that include curbs, driveways, or other collection points that could be closed or difficult to access. Access to the waterfront piers, in particular, could be more difficult when construction is occurring, which could result in more time-consuming collections. Temporary waste collection locations may need to be established to provide necessary services to businesses.

In addition, waste and debris generated during construction would need to be collected for disposal. Materials removed from the construction zone are anticipated to be hauled away in trucks to a predetermined disposal site.

Public Schools

School buses that use Alaskan Way for field trips could experience some traffic delays during construction. Loading, unloading, and parking could be more difficult and farther away from desired destinations, especially when construction work is occurring near the Seattle Aquarium or the historic piers.

Postal Service

Project construction would have impacts on the United States Post Office on S. Jackson Street, particularly because vehicular exit from the post office is onto Alaskan Way. Access would remain available at all times during the facility's hours of operation. Postal deliveries could be subject to some delays during construction, particularly those along Alaskan Way.

Utilities

Construction impacts on utilities are primarily related to the depths of the utilities below grade, material composition, construction excavation limits, and the location of the corridor alignment and associated foundations relative to the location of utilities. The exact locations and depths of critical utilities would be determined and verified with utility providers during the final design process. Utility work related to AWPOW may be performed by various City departments, other agencies, or private utilities. Construction is planned to begin with utility work, but the sequence of construction has not yet been finalized due to the dynamic nature of other projects in the area.

Water

Properties and businesses in and near the project footprint may experience impacts to their water distribution as a result of planned outages when switchovers occur. These outages would affect both potable water supply and water for fire suppression. Maintaining fire flows and water supply pressure is essential to protect life and property during construction; service lines and laterals may have to be relocated to maintain continuous service and fire protection. In addition to the impacts of construction on existing service, a new water line may be installed in Elliott Way from Pike Street to Lenora Street to serve Buildings B and C.

Stormwater

Construction activities for AWPOW would include storm drain utility work, including relocating a 30-inch storm drain near Alaskan Way and Union Street to make room for support shafts associated with the Union Street Pedestrian Connection. Project impacts on stormwater are discussed in Chapter 11, Water Quality, of this Draft EIS.

Sewer

During AWPOW construction, SPU plans to install a new sanitary sewer line with control structures along the new Alaskan Way from S. King Street to University Street. These planned sewer infrastructure improvements will undergo a separate environmental review. Temporary facilities would be provided to maintain service to adjacent properties during construction. New side sewers constructed during the EBSP would be connected to the new sewer.

Electrical Power

Uninterrupted operation of the network transmission and distribution system is critical to maintaining electrical service to downtown Seattle, including electrical power essential to fire and life safety systems. All network electrical relocation work would require construction sequencing to maintain electrical service reliability.

As part of AWPOW construction, new duct banks and vaults would be built on the east side or center of the Alaskan Way right of way from Yesler Way to Pine Street. From Pine Street, the new duct bank would extend west to connect to an existing distribution system in the Alaskan Way right of way near the seawall. Once the new ducts and vaults are energized, SCL would de-energize and abandon in place the duct bank that is currently located in the area where the Promenade would be built. SCL would replace the electrical system without service disruptions, but individual service connections from the network would require scheduled service interruptions.

On the south side of Union Street, between Western Avenue and Post Alley, there is an SCL substation. The foundations for the columns needed to support the elevated walkway for the new pedestrian connection between Post Alley and Western Avenue may encroach on SCL utility tunnels that are in the Union Street right of way. The exact locations and depths of the utility tunnels would be determined and verified with SCL during the final walkway design process. The foundations for the columns at Union Street would be designed to avoid the SCL utility tunnels and prevent service disruptions.

Portions of Transmission Line 4 would be relocated due to horizontal and vertical conflicts with Elliott Way and Building B. This line is a high-pressure fluid-filled cable and must be replaced in full runs from vault to vault rather than by cutting and splicing. Consequently, several thousand feet of the line must be relocated. Because this line is a regional power transmission line serving both SCL customers and the regional BPA grid, its relocation would require a scheduled shutdown, necessitating advance notice and coordination with BPA.

Service lines, vaults, and meters would be moved or constructed as a result of the new Alaskan Way roadway alignment, requiring customer notification of scheduled service interruptions. It is anticipated that new connections would be provided and that the existing and new connections would be sequenced and protected during construction to provide service with as few outages as possible. Facilities must be accessible for SCL trucks and equipment at all times for maintenance during and after construction.

Natural Gas

Construction of gas transmission and distribution lines in and across Alaskan Way could affect pedestrian and vehicle access, depending on how the crossing of the roadways is constructed. Some service connections could be disrupted during construction. New connections would be provided where necessary; the existing and new connections would be sequenced and protected during construction to provide service with as few interruptions as possible. Facilities must be accessible for trucks and equipment to allow maintenance during and after construction. As part of AWPOW, PSE plans to build a new district regulator pressure-reducing facility on Elliott Way near either Blanchard Street or Lenora Street; construction of this facility could require detours for pedestrians and vehicular traffic.

Steam

No steam facilities would be affected by the project because Enwave Seattle would have completed all changes to steam service, including installation of the new steam line serving Colman Dock and the abandonment of service to other customers, prior to AWPOW construction.

Telecommunications

As part of AWPOW, a shared telecommunications duct bank would be built along the new Alaskan Way from S. Washington Street to Pine Street, along the Pine Street extension, and along Elliott Way. The installation of this facility along the west side of the main corridor could temporarily affect pedestrian

access. Short detours may be put in place to safely route pedestrians around the section being constructed.

Some of the telecommunications systems in the study area provide regional services, while others provide local distribution and include lateral and service lines to customers. In general, all of the active systems are essential. Except during planned cutovers required to switch service to the relocated lines, the project would not take telecommunication lines out of service during construction. Each communications provider would need to consider operational impacts on their systems during the design phase.

8.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Public Services

The City would coordinate with public service providers as construction plans are developed. The City would work closely with emergency service providers, such as SPD and SFD, to put in place appropriate measures for emergency access to and travel through construction areas to minimize impacts on response times. As construction activities proceed, the City would provide timely communications to all service providers with details about detours, utility disruptions, and other critical activities. The City would also:

- Coordinate with solid waste service providers to minimize impacts on solid waste collection and recycling activities
- Notify the Seattle School District of construction detours that may affect school bus routings to and through the study area
- Notify the United States Postal Service of construction detours and access changes that may affect postal deliveries; access would be maintained to all buildings along the construction route for postal deliveries

Utilities

The City would work closely with utility providers to ensure appropriate space planning and construction sequencing to minimize overall risks, costs, and impacts. The City would also:

- Work with utility providers to provide maintenance and emergency access to all utilities throughout construction
- Ensure that outages are minimized and that critical utilities, such as power, water, and telecommunications for emergency response and public safety, are maintained
- Contact the utility provider immediately if any inadvertent damage to the utility occurs

8.3 Operational Impacts and Mitigation Measures

8.3.1 Operational Impacts of the No Action Alternative

Under the No Action Alternative, the new seawall would be in place, the viaduct would be removed, and the Alaskan Way surface street would be restored to its configuration before the start of AWVRP construction. Most public services would operate in a manner similar to what exists today. In addition to the utility upgrades included as part of AWVRP and EBSP, other upgrades may take place to meet future development demands or comply with future regulations.

Routine maintenance activities would continue and could result in periodic sidewalk or lane closures. These short-duration lane closures may have some impact on emergency response times; however, emergency providers would be informed in advance of such closures. Demand for emergency services is

expected to remain relatively constant. Overall, impacts on the provision of public services and utilities from the No Action Alternative are expected to be minimal.

8.3.2 Operational Impacts of the Action Alternative

Public Services

The project's long-term impacts on public services would be mostly positive. The new Alaskan Way and Elliott Way improvements are expected to benefit all service providers and expedite emergency response compared to the No Action Alternative.

Fire, Police, and Emergency Services

The new Alaskan Way and Elliott Way would have more traffic capacity than under the No Action Alternative, and would also provide a more direct connection to Belltown via Western and Elliott Avenues. The Action Alternative would remove the southbound bottleneck at Alaskan Way and Spring Street, improving southbound emergency response times along the corridor by nearly 4 minutes compared to the No Action Alternative. Northbound travel times along Alaskan Way would be similar between the Action and No Action alternatives.

Because AWPOW would provide new public amenities, the project is expected to attract more visitors to the study area compared to the No Action Alternative. This increased use could also increase the demand for emergency services in the area. However, it is not expected that the project would result in a substantial increase in emergency calls, and such calls are likely to be sporadic events that would not require increases in staffing for emergency service providers. Emergency response vehicles would be required to make U-turns along the corridor to reach destinations on the opposite side of the street. U-turns would be possible at all intersections. Because roadway operations on Alaskan Way would generally improve under the Action Alternative, emergency vehicles would likely experience shorter response times as a result of the project.

South of Pine Street, the relocation of Alaskan Way to the east would increase the distance that emergency service providers would need to cover to reach a fire on one of the piers or an incident along the Promenade. The increased distance would be greatest in the vicinity of the Seattle Aquarium, where there would be up to 75 additional feet between the roadway and the Aquarium. Intervening features such as plantings, bicycle and pedestrian facilities, and kiosks could also complicate access. However, these types of features are typical of urban areas and are not expected to result in substantial delays for service providers compared to the No Action Alternative. The installation of new water connections to adjacent buildings would improve the reliability of water flow for fire response.

Solid Waste

Impacts on solid waste and recycling activities under the Action Alternative are expected to be minor. Collection service and frequency would not change. However, access to buildings along Alaskan Way would be affected. Some buildings on the east side of the street would need to relocate dumpsters or use trash cans or other receptacles instead. The Action Alternative would maintain the existing access locations for service functions to the piers on the west side of Alaskan Way, although the distances from the curb to the building face would be greater. This could require garbage and recycling trucks to cross the Promenade for collection. Litter and refuse receptacles would be installed at the kiosks and at Buildings B and C.

Public Schools

There are no anticipated operational impacts on public schools or school bus routes as a result of the project.

Postal Service

There are no anticipated operational impacts on postal service branches or on postal deliveries as a result of the project.

Utilities

The project's impacts on utility operation and maintenance are expected to be minimal. New facilities would provide a benefit; however, access to utilities may be more restricted in some cases.

Water

The operation of AWPOW is not expected to impact overall water supply or demand in the study area. Operation of the water system, including fire flows, would not be adversely affected and may be enhanced in some areas by new facilities installed as part of the project. Access to valves, fire hydrants, and other appurtenances for operation of the system would be maintained. The irrigation system for landscape elements in the medians would be separated from the main pipelines with backflow protection devices.

Stormwater

Project impacts on stormwater are discussed in the Water Quality Discipline Report (Appendix J) to this Draft EIS.

Sewer

New sanitary sewer lines would be connected to Buildings B and C and possibly to the kiosks. During operation of the Action Alternative, maintenance of these sewer lines would occur as needed, but would not be expected to have any noticeable changes or impacts. Access to maintenance holes would be maintained.

Electrical Power

Operation of the electrical system in the study area would remain the same after project completion. New distribution facilities would improve the network's capacity and reliability. Relocation of Transmission Line 4 would also result in increased system reliability both locally and regionally.

Natural Gas and Steam

Operation of the natural gas and steam systems is not anticipated to change substantially as a consequence of the project. Once construction is complete, the function of the systems would not be affected. New natural gas facilities would provide improved reliability, and the new steam service to Colman Dock would improve service reliability at that location.

8.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

No adverse operational impacts on public services or utilities have been identified. The Action Alternative will be designed to provide maintenance access to underground utilities that meets the standard access criteria and associated vehicle loading. Therefore, no additional avoidance, minimization, or mitigation measures are necessary.

9 Historic Resources

This chapter identifies the existing historic resources in the study area and discusses AWPOW's potential impacts on these resources during construction and operation. Each historic resource within the study area was evaluated to determine whether the project would alter its historic character or use. This chapter also identifies measures to avoid, minimize, or mitigate potential impacts during construction and operation of the project. Additional details about the analysis are provided in Appendix H, Historic Resources Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS.

A historic resource is defined for this analysis as any building or structure that is a designated City of Seattle landmark, a contributing or non-contributing property in a City of Seattle-designated historic district, or listed in the National Register of Historic Places (NRHP).

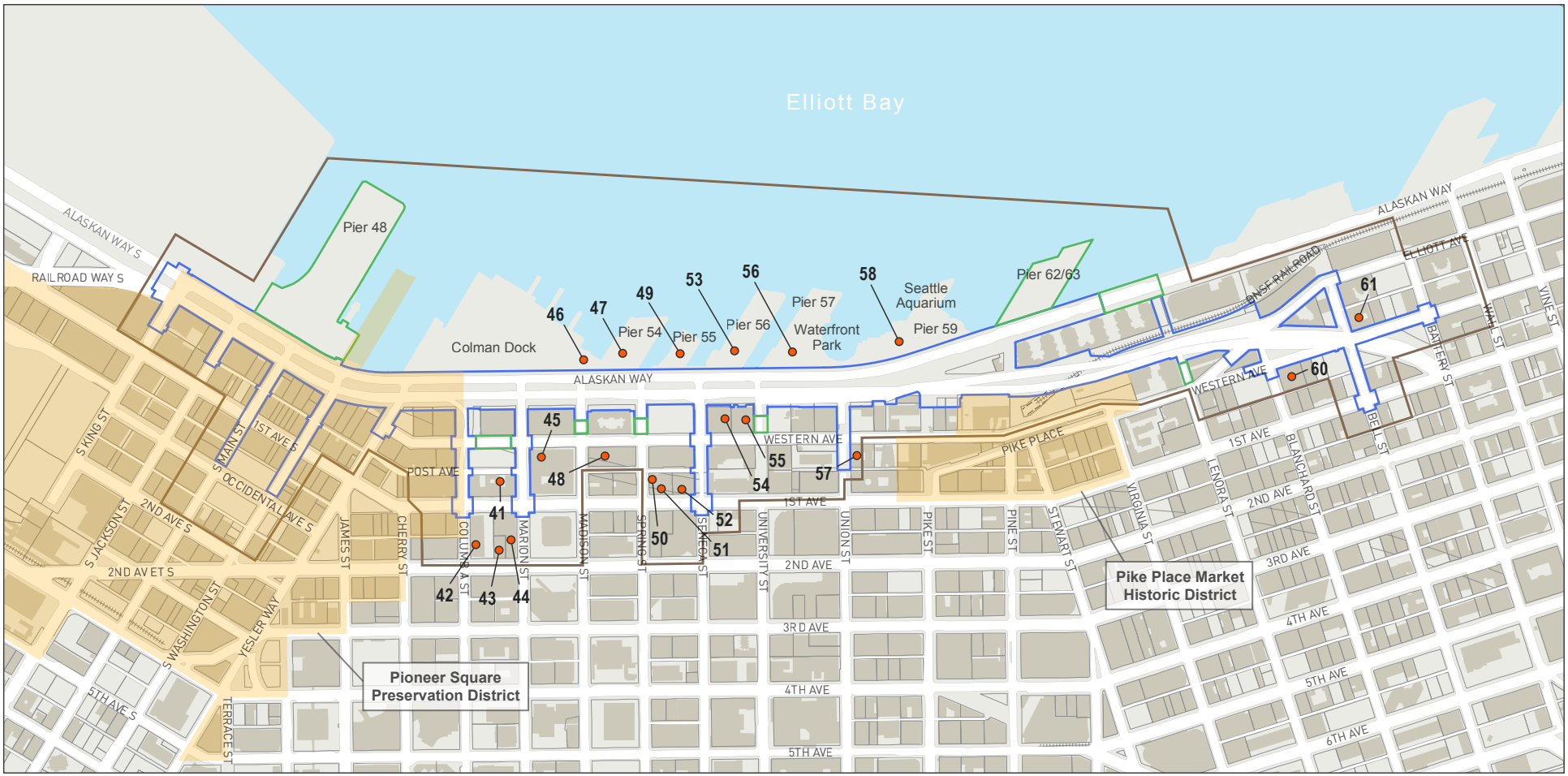
9.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017 when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. The historic resources study area extends about one-half to one block beyond the project footprint, based on the type, extent, and intensity of project activities, and to accommodate the City Historic Preservation Officer's adjacency review of potential impacts on City landmarks. The study area, shown in Figure 9-1, is generally bounded by Railroad Way S. to the south; First, Second, and Western Avenues to the east; Wall Street to the north; and Alaskan Way and Elliott Bay to the west.

Seattle's downtown waterfront is the birthplace of the city, the place where settlers arrived, and where a regional and, later, a worldwide commercial center developed. The study area contains portions of two City of Seattle-designated historic districts: the Pioneer Square Preservation District and the Pike Place Market Historical District. In addition to the landmarks in the historic districts, there are 19 designated Seattle landmarks in the study area. Eight of these city landmarks are also listed in the NRHP. One additional property listed on the NRHP is not a City of Seattle landmark. These landmarks date predominantly from the late 19th and early 20th centuries and reflect the area's history as a working waterfront, as well as the commercial and transportation activities characteristic of the early days of the city. Table 9-1 lists all the historic resources in the study area, indicating the historic status of each one. Figure 9-1 shows the locations of the individual landmarks and the boundaries of the local historic districts. Almost all the buildings within the districts are historic (contributing resources to the district); for greater clarity, only the district boundaries are shown.

In the Pioneer Square Preservation District, buildings on S. Main and S. Washington Streets are among the city's oldest, and many have adjoining areaways. An areaway is a space directly below the sidewalk, between the building wall and the street wall. In some older Pioneer Square buildings, the areaways were created when the City raised the level of the streets during rebuilding after the Great Fire of 1889. Most areaways provide an important structural function by supporting the sidewalk and street wall. Many of them are also historically significant and are contributing features to the Pioneer Square Preservation District, specifically protected by the district rules. Appendix L contains additional information on areaways, and Table 9-2 lists the areaways that are along S. Main and S. Washington Streets within the project footprint.

Seattle's original business district (the area now known as Pioneer Square) sat on a narrow spit of land surrounded by tidelands. Filling these tidelands was the best way to accommodate new rail yards and industrial uses. The growth of trade and shipping included development of the piers and wharfs along the downtown Seattle waterfront. Railroad Avenue (where Alaskan Way is today) originally consisted primarily of railroad trestles and planked roadways set on pilings with open water in between.



0 400 800
Feet

Source: SDOT

Action Alternative

- Historic Resources Study Area
- Project Footprint
- Potential Construction Staging Area
- Historic District
- Historic Properties
- Parcel Boundary
- Building Footprint

Figure 9-1
Historic Resources within the Study Area

Alaskan Way, Promenade, and Overlook Walk

Table 9-1. Historic Districts and Landmarks in the Study Area

ID Number	Location	Popular Name (Historic Name)	Designation
	Alaskan Way to Fourth Avenue, between Royal Brougham Way S. and Columbia and Cherry Streets (roughly)	Pioneer Square Preservation District[1]	Local district, NRHP district
	SR 99 to First Avenue between Pike and Virginia Streets (roughly)	Pike Place Market Historical District[2]	Local district, NRHP district
01	Foot of S. Washington Street	Washington Street Boat Landing	PSPD, NRHP
02	83 S. King Street	83 King Street & garage (Seattle Hardware Co.)	PSPD
03	410 Alaskan Way S.	Merrill Place Garage	PSPD
04	419 First Avenue S.	Merrill Place (Hambach Building)	PSPD
05	411 First Avenue S.	Merrill Place (Seller Building)	PSPD
06	401 First Avenue S.	Merrill Place (Schwabacher Hardware Co.)	PSPD
07	79 S. Jackson Street	Merrill Place	PSPD
08	80 S. Jackson Street	80 S. Jackson Condo (Steinberg Building)	PSPD
09	316 Alaskan Way S.	Old Seattle Parking Garage	PSPD
10	304 Alaskan Way S.	C&H Company (Otto Sturham & Sons)	PSPD
11	313 First Avenue S.	Crown Hotel	PSPD
12	309 First Avenue S.	Maud Building	PSPD
13	301 First Avenue S.	Bread of Life Mission (Matilda Winehill Block)	PSPD
14	75 S. Main Street	Our Home Hotel	PSPD
15	76 S. Main Street	Boston Hotel	PSPD
16	80 S. Main Street	New construction (formerly Argens Safe & Lock Co.)	PSPD
17	212 Alaskan Way S.	OK Hotel	PSPD
18	210 Alaskan Way S.	Compass Center Addition	PSPD
19	77 S. Washington Street	Lutheran Compass Center (Pacific Coast Company)	PSPD
20	81 S. Washington Street	St. Charles Hotel	PSPD
21	68 S. Washington Street	Washington Park Building (Lowman & Hanford)	PSPD
22	217-19 First Avenue S.	New England Hotel	PSPD
23	213 First Avenue S.	Branagan-Smith Building	PSPD
24	211 First Avenue S.	Lucky Hotel	PSPD
25	209 First Avenue S.	Marathon Building	PSPD
26	207 First Avenue S.	Skagit Hotel	PSPD
27	201-205 First Avenue S.	J&M Hotel & Café	PSPD
28	114 Alaskan Way S.	Prudential Building	PSPD
29	117 First Avenue S.	Maynard Building	PSPD
30	109-115 First Avenue S.	Terry-Denny Lofts (Northern Hotel)	PSPD

Table 9-1. Historic Districts and Landmarks in the Study Area

ID Number	Location	Popular Name (Historic Name)	Designation
31	1 Yesler Way	1 Yesler Building (Bedford Hotel)	PSPD
32	77 Yesler Way	Pioneer Square Hotel (Yesler Hotel)	PSPD
33	90 Yesler Way	(Post Hotel)	PSPD
34	95 Yesler Way	Yesler Building (Bank of Commerce)	PSPD
35	93 Yesler Way/103-107 First Avenue S.	Schwabacher Building	PSPD
36	619 Post Alley	Enwave Seattle (Seattle Steam)	PSPD
37	619 Western Avenue	Western Building	PSPD
38	61 Columbia Street	Polson Building	PSPD
39	83 Columbia Street	Journal Building	PSPD
40	701-23 First Avenue	All-Rite Parking Garage/US Bank	PSPD
41	801-821 First Avenue	Colman Building	SL, NRHP
42	801 Second Avenue	Norton Building	SL
43	815 Second Avenue	Key Bank (Bank of California)	SL
44	821 Second Avenue	Exchange Building	SL
45	909 First Avenue	Federal Office Building	NRHP
46	925 Alaskan Way	Fire Station 5	SL
47	1001 Alaskan Way	Pier 54	SL
48	1000-1024 Western Avenue	National Building	SL, NRHP
49	1101 Alaskan Way	Pier 55	SL
50	1107 First Avenue (94-96 Spring Street)	Watermark Tower (Colman Building)	SL
51	1115-1117 First Avenue	Grand Pacific Hotel	SL, NRHP
52	1123 First Avenue	Colonial Hotel	SL, NRHP
53	1201 Alaskan Way	Pier 56	SL
54	1203-1207 Western Avenue	(Olympic Warehouse)	SL, NRHP
55	51 University Street	Pacific Net & Twine Building	SL
56	1301 Alaskan Way	Pier 57	SL
57	84 Union Street (1400 Western)	Marketside Flats (U.S. Immigration Building)	SL, NRHP
58	1483 Alaskan Way	Pier 59	SL
59	1531 Western Avenue	PC-1 South Condominium/ Heritage House/garage	PPMHD
60	2200 Western Avenue	Union Livery Stable	SL, NRHP
61	66 Bell Street/2307 Western Avenue	Belltown Lofts (Seattle Empire Laundry)	SL
62	314 First Avenue S.	Nord Building	PSPD
63	310 First Avenue S.	Globe Building	PSPD
64	210 First Avenue S.	Grand Central Building	PSPD
65	206 First Avenue S.	City Loan Building	PSPD
66	200 First Avenue S.	Buttnick Building	PSPD
67	108 S. Washington Street	Delmar Building (Terry and Kittinger Building)	PSPD

Table 9-1. Historic Districts and Landmarks in the Study Area

ID Number	Location	Popular Name (Historic Name)	Designation
68	114 First Avenue S.	State Hotel	PSPD
69	117 S. Main Street	Union Trust Annex	PSPD
70	119 S. Main Street	Union Trust Building	PSPD
71	116 S. Washington Street	Laguna Pottery (Scandinavian Hotel and Clancy Building)	PSPD
72	118 S. Washington Street	The Source (Scandinavian Hotel and Clancy Building)	PSPD
73	124 S. Washington Street	Hotel Interurban	PSPD
74	115 Occidental Avenue S.	Casco Antiguo	PSPD
75	300 Occidental Avenue S.	State Building	PSPD
76	305 Second Avenue S.	Fire Station #2	PSPD
77	200 Occidental Avenue S.	Weyerhaeuser Building	PSPD
78	219 Second Avenue S.	Casey Waterfall Park	PSPD
79	215 Second Avenue S.	Lucknow Building	PSPD
80	207 Second Avenue S.	Leroy Hotel	PSPD
81	173 S. Washington Street	McCoy's Tavern	PSPD
82	164 S. Washington Street	Barney's Loans (Nugent Block and Considine Block)	PSPD

[1] The NRHP district has a slightly different name, the Pioneer Square-Skid Road Historic District, and different boundaries.

[2] The NRHP district has a slightly different name, the Pike Place Public Market Historical District, and different boundaries.

NRHP = National Register of Historic Places

PPMHD = Pike Place Market Historic District

PSPD = Pioneer Square Preservation District

SL = Seattle Landmark

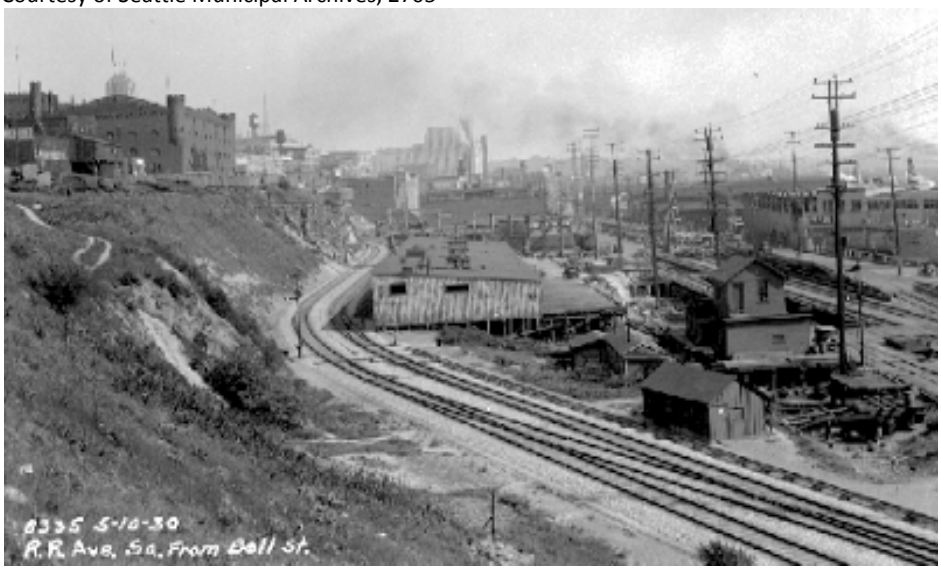
Table 9-2. Areaways in the Project Footprint

ID Number	Popular Name	Status of Areaways
S. Main Street		
13	Bread of Life Mission	Substantially intact
22	New England Hotel	Substantially intact
63	Globe Building	Substantially intact
64	Grand Central Building	Substantially altered
69	Union Trust Annex	Slightly altered
70	Union Trust Building	Slightly altered
S. Washington Street		
21	Lowman & Hanford	Substantially altered
27	J & M Hotel & Cafe	Substantially intact
29	Maynard Building	Substantially intact
66	Buttnick Building	Slightly altered
67	Delmar Building	Significantly altered (Filled)
71	Laguna Pottery	Slightly altered (Filled with remaining features)
72	The Source	Slightly altered (Filled with remaining features)
73	Interurban Hotel	Substantially altered

Source: SDOT 2003; City of Seattle 2008

Washington Street Boat Landing, 1921
Courtesy of Seattle Municipal Archives, 2705

Railroad Avenue looking north from University Street, 1935
Courtesy of Seattle Municipal Archives, 9532



Railroad Avenue looking south from Bell Street, 1930
Courtesy of Seattle Municipal Archives, 4100

The trestles and planked roadways were not only inefficient and unsafe, but the pilings were being attacked by woodboring worms known as teredos. To provide some level of protection from Elliott Bay, between 1911 and 1917, the City built a concrete seawall along the west side of Railroad Avenue from S. Washington Street to Madison Street. The area to the east of this first section of seawall was then gradually backfilled. This seawall and subsequent seawall construction from 1934 to 1936 established the present shoreline. Appendix H contains additional information about the history of early settlement and growth along the Seattle waterfront.

World War II brought significant changes to the waterfront, with increasing activity due to population growth, the booming factories and shipyards nearby, and the U.S. Navy facilities in Bremerton. Pier 36 became a major Port of Embarkation for the U.S. Army and is now the district headquarters for the U.S. Coast Guard.

By the late 1950s, shippers began consolidating cargo in larger shipping containers, revolutionizing the work and the design of the piers. Fewer workers were needed; large cranes were used to move freight directly onto rail cars or trucks. Freight sheds and warehouses on the piers were no longer needed because cargo, secure in containers, could be moved more quickly by truck or rail. To the south of Pier 48, the Terminal 37/46 complex was created by filling and joining several piers (Hershman et al. 1981).

The other transformative change after World War II was the dominance of the automobile. Air travel replaced the coastal and ocean-going steamers. The opening of the Alaskan Way Viaduct on April 4, 1953 symbolized the final transition of the post-war world from water and rail transportation to automobiles and trucks. The Battery Street Tunnel was completed in June 1954, connecting the new viaduct to Aurora Avenue. The viaduct dramatically altered the character of the waterfront and its buildings, turning the city's back on what had once been its gateway.

By the early 1960s, the changes in shipping and transportation reduced traditional uses on the waterfront, and recreation and tourism became more significant factors. In the 1970s, a new round of regional civic improvements recognized the change along the waterfront by replacing Pier 58 with Waterfront Park and building an aquarium at Pier 59. Just north of the aquarium, the pier sheds on Pier 62/63 were demolished because of their dilapidated condition in the 1980s.

In the early 1990s, Pier 69, which had been used as a warehouse for the nearby American Can Company factory, was completely remodeled into the Port's headquarters building. The large factory building on the east side of Alaskan Way had been closed in the 1970s and was remodeled into a trade center in the 1980s and, later, into offices. In the mid-1990s, more dramatic changes occurred with the Port of Seattle's Central Waterfront Project. Piers 64, 65, and 66 were replaced by a small boat marina, a cruise ship terminal, and the Bell Harbor conference center and restaurant complex. Pedestrian bridges at Bell and Lenora Streets connected Belltown to the waterfront. The upland area directly across Alaskan Way from Pier 66, also owned by the Port of Seattle, was privately developed as condominiums, office buildings, and a large hotel.

Today, work is underway to replace the Alaskan Way Viaduct with a tunnel. Demolishing the viaduct will reverse some of the changes that have occurred since the 1950s and remove a large visual and physical barrier between the waterfront and areas farther east. The removal of the viaduct will reduce noise and pollution, leading to a more pleasant atmosphere for waterfront visitors. Pioneer Square and the Pike Place Market will have the same level of access to the waterfront as they do today, and will also benefit from the removal of the viaduct and its negative impacts. The EBSP is replacing the original seawall, which will help to protect the historic structures along and near the waterfront. By 2017, when AWPOW construction is planned to start, the new seawall will be completed, the Alaskan Way Viaduct will be gone, the SR 99 tunnel will be in operation, and Alaskan Way would be restored to its original condition. The restored Alaskan Way would have the same width as in 2010, and would continue to provide access to the businesses in the historic piers; generally, the same amount of parking would be available.

9.2 Construction Impacts and Mitigation

9.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative does not involve any construction activities and therefore would not have any construction impacts on historic resources.

9.2.2 Construction Impacts of the Action Alternative

The most important factors in determining potential construction impacts of the Action Alternative are its construction methods (the type and intensity of activities), the location of the construction work, and the duration of the activities. As currently planned, AWPOW's construction activities are expected to have only minor impacts on historic resources in the study area. These impacts would be typical of roadway projects, such as noise, vibration, dust, and tracking of dirt and mud. There would also be short-term access limitations, traffic congestion, and reduced parking in the study area. Because work would be done in segments (each one block to several blocks long), each historic property would be affected for a relatively short period. Construction of the Overlook Walk and Elliott Way would take longer, but the work duration would still be relatively short term. Structural foundations such as pier shafts are expected to be drilled or vibrated into place. Impact pile driving, which can cause higher vibration levels, is not anticipated. As a result, construction-related vibration is expected to be of

insufficient magnitude to adversely affect historic resources. While these short-term impacts may inconvenience residents, customers, and employees who use the historic properties, the ability of owners to maintain the historic integrity of their properties is not anticipated to be affected.

Temporary construction easements would be sought from many historic buildings, primarily to temporarily modify access and to change how some loading docks are used. The City does not anticipate any removal of loading docks or other physical impacts or alterations to these buildings.

Main Corridor and East-West Connections

The following historic resources would experience the types of impacts described above as a result of the construction of street improvements, pedestrian and bicycle facilities, or transit facilities along the Alaskan Way-Elliott Way corridor and adjacent east-west streets:

- Construction of the new Alaskan Way from S. King Street to Pine Street would cause short-term construction impacts to the historic piers (Piers 54 to 59, ID Numbers 47, 49, 53, 56, and 58); to Fire Station 5 (ID Number 46); to buildings on the east side of Alaskan Way on the western edge of the Pioneer Square Preservation District; and to other buildings on the east side of Alaskan Way (ID Numbers 54, 55, 57, and 59). The short-term access limitations, traffic congestion, and reduced parking could affect all of the historic resources (such as ID Numbers 42, 43, 44, 45, 48, 50, and 51).
- Construction of wider sidewalks and repaving of the roadway along S. Main and S. Washington Streets would cause short-term impacts for the numerous adjoining buildings in the Pioneer Square Preservation District.
- Construction of urban design and landscape improvements on Columbia and Seneca Streets would cause short-term impacts for the adjoining historic buildings: the Polson (ID Number 38), Journal (ID Number 39), and Colman (ID Number 41) buildings on Columbia Street; and the Colonial (ID Number 52) and 1201 Western (ID Number 54) buildings on Seneca Street.
- Construction of the pedestrian bridge at Marion Street could cause short-term impacts for the adjoining historic Colman Building (ID Number 41).
- Construction of wider sidewalks on the east side of Alaskan Way would have short-term construction impacts on the adjacent buildings, including temporary alteration of pedestrian routes and vehicle access.
- Construction of bicycle and transit facilities along the new Alaskan Way would have minimal impacts because these facilities would be located some distance from historic buildings.
- Construction of walkways, elevators, and urban design improvements on Union Street would cause short-term impacts for the adjoining U.S. Immigration Building (Marketside Flats, ID Number 57).
- Construction of the Pine Street extension would have little or no impact on historic resources because there are no such resources in the vicinity.
- Construction of Elliott Way between Lenora and Bell Streets could have short-term impacts on two historic buildings that are in the general vicinity: the Union Livery Stable at Blanchard Street (ID Number 60) and the Empire Laundry (Belltown Lofts, ID Number 61) at Bell Street.
- Construction of urban design and landscape improvements to extend Bell Street Park would cause short-term impacts for the adjoining Empire Laundry (Belltown Lofts building, ID Number 61).

None of the potential construction impacts on historic resources are considered significant because none would alter the character or use of historic resources.

Promenade

Construction of the Promenade on the west side of Alaskan Way would cause short-term impacts for Fire Station 5 (ID Number 46) and the historic piers (Piers 54 to 59; ID Numbers 47, 49, 53, 56, and 58),

including temporary limitations on pedestrian and vehicle access. However, these potential impacts on historic resources are not considered significant because they would not alter the character or use of the resources.

Overlook Walk

The Overlook Walk would involve the construction of two buildings west of and below the Pike Place Market and a sloping lid descending to the waterfront. This large-scale construction would lead to short-term impacts for Pier 59 (ID Number 58) at the Seattle Aquarium, including temporary limitations on pedestrian and vehicle access. The Pike Place Market would also be affected by changes to access from the waterfront during construction of the Overlook Walk. However, these potential impacts on historic resources are not considered significant because they would not alter the character or use of historic resources.

9.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Before constructing the Action Alternative, the City would obtain the required Certificates of Approval for work within historic districts and any alterations, even temporary ones, to landmarked buildings. Such Certificates of Approval would be needed from the Pioneer Square Preservation Board, the Pike Place Market Historical Commission, and the Seattle Landmark Preservation Board.

During construction, the City would protect the historic and physical integrity and the economic viability of historic structures, properties, and districts through the avoidance, minimization, and mitigation measures proposed for other elements of the environment, particularly noise, water quality, transportation, parking, public services, and land use. Such potential mitigation measures could include:

- Using BMPs to control noise, vibration, dust, and mud
- Maintaining access to businesses and residences to the maximum extent feasible, and notifying property owners in advance of activities that might temporarily limit access
- Using measures identified in the Traffic Control Plan to minimize congestion in and around construction zones, and developing practices to manage parking during construction
- Communicating information about construction to residents, businesses, and the public regularly
- Coordinating with affected businesses to provide wayfinding information for customers and support other outreach activities to minimize the potential adverse impacts of construction

The City would repair any damage that occurs to historic buildings as a result of AWPOW construction in accordance with the U.S. Secretary of the Interior's Standards for Rehabilitation (36 Code of Federal Regulations [CFR] 67).

9.3 Operational Impacts and Mitigation

Operational impacts occur once a project is completed and functioning. Important factors to consider in determining these impacts on historic resources are whether or not there would be a permanent change to a historic property (such as demolition or physical alteration), whether the property's historic context and setting would change, and what effect the project would have on the use and viability of the property.

9.3.1 Operational Impacts of the No Action Alternative

This alternative would have minimal or no impact on historic resources; conditions would be similar to those in 2017 after completion of the AWVRP and EBSP.

9.3.2 Operational Impacts of the Action Alternative

Main Corridor and East-West Connections

The operation of street improvements along the main corridor and east-west connections would have minimal impacts on and could have slight benefits to historic resources, with the possible exception of the improvements on S. Main and S. Washington Streets, as described below.

- The new Alaskan Way and Elliott Way would improve access between historic resources along the waterfront and the Pioneer Square and Pike Place Market historic districts compared to the No Action Alternative.
- The width of the new Alaskan Way would be the same as that of the paved area that existed before AWPOW construction, because it would be entirely within the combined footprint of the existing Alaskan Way and the parking area beneath the viaduct.
- The removal of parking that would occur under AWPOW, in conjunction with enhanced nonmotorized and transit facilities that are included in the project, is consistent with City policy direction and supports overall City planning goals for reducing dependency on single-occupant vehicles in the downtown area.
- Wider sidewalks on the east side of Alaskan Way would enhance the pedestrian environment and would support the viability of the businesses in the historic buildings. Between S. King Street and Yesler Way (in the Pioneer Square Preservation District), east side sidewalks would be about 20 to 30 feet wide. North of Yesler Way (partially in the historic district and adjacent to other landmarked buildings), the sidewalks would be about 14 to 20 feet wide. These improvements would encourage appropriate new uses and more pedestrian-oriented activities. Any alterations would have to be approved by the appropriate historic review board.
- All intersections on Alaskan Way would be signalized; this would control traffic speeds and reduce the sense of a barrier between the historic districts and the waterfront. The signalized intersections would enable pedestrians to cross easily from Pioneer Square to the waterfront, maintaining the historical connections between these areas.
- Provisions for regional transit and local waterfront bus transit would have a minimal impact on historic resources because bus stops would not abut historic buildings in the Pioneer Square Preservation District or Pike Place Market Historic District and would be separated from the historic piers by the Promenade. The improved access and connections would benefit businesses and residents in Pioneer Square and along the waterfront.
- Bicycle facilities are also unlikely to impact historic resources because they would generally be located west of Alaskan Way, not close to historic buildings.
- The Elliott Way connection would have little or no impact on historic resources. The two historic buildings in the general vicinity (Union Livery Stable, ID Number 60, and the Empire Laundry [Belltown Lofts], ID Number 61) would not be impacted.
- The Pine Street extension would have little or no impact on historic resources because there are no such resources in the vicinity.
- Urban design and landscape improvements to Seneca and Columbia Streets would have minimal impacts on historic resources. A very small amount of right of way (54 square feet) would be acquired from the Polson Building parcel (ID Number 38). The south side of Columbia Street is within the Pioneer Square Preservation District, and several other historic buildings (the Colman [ID Number 41], Colonial [ID Number 52], and 1203 Western [ID Number 54] buildings) are located on these two streets. The specific changes would be determined during final design and the Certificate of Approval process.

- The proposed improvements on S. Main and S. Washington Streets could potentially have permanent impacts on some areaways. Constructing sidewalk improvements often requires that nearby areaways be modified. This may significantly alter character-defining features of some of these historic spaces. The type and extent of alterations would depend on the specific characteristics of each areaway and would be determined during final design and the Certificate of Approval process.
- The Union Street Pedestrian Connection would have minimal operational impacts on the U.S. Immigration Building (Marketside Flats, ID Number 57). Although the pedestrian walkways and elevators would change the area around the building, and may affect views of the building from some vantage points, the impact would not be significant and would not affect the building's historical, physical, or economic integrity. The enhanced access from First Avenue and the Pike Place Market could improve the economic viability of the building and its businesses.
- The Bell Street Park Extension would have little or no operational impact on the Empire Laundry (Belltown Lofts, ID Number 61). Although the urban design improvements would alter the building's setting, the impact would not be significant and would not affect the building's historical, physical, or economic integrity. The improvements, however, could potentially improve the economic viability of the building.

With the possible exception of the improvements on S. Main and S. Washington Streets, none of these potential impacts are considered significant because they would not alter the character or use of historic resources.

Promenade

The Promenade would be located on the west side of Alaskan Way, adjacent to the historic piers and the Washington Street Boat Landing. It would include kiosks, a new railing, planted terraces, and numerous trees. In their current preliminary design, the proposed kiosks are about the same height as the pier sheds and modernist in character, massing, and materials, which would make the structures incompatible with the adjoining historic buildings. The Promenade, particularly the kiosks, would alter the setting of the historic piers and the boat landing. Depending on the final design, these additions could be perceived to reduce the sense of connection relating to the waterfront structures, roadway, and the buildings on the east side of Alaskan Way, to which they were historically connected through use and association. These impacts could be minimized by using the types of measures identified in Section 9.3.3.

Overlook Walk

The new Overlook Walk could potentially alter the setting, character, and usage of parts of the Pike Place Market. The sloping lid of the Overlook Walk would provide grade-separated pedestrian access between the Pike Place Market and the waterfront, connecting to the Promenade near the Seattle Aquarium. It would improve the connections between two historic areas—the Pike Place Market and the historic piers. These improvements would potentially benefit both areas by making it easier for visitors to access and visit them. The open space on the lid, and potential activities associated with Buildings B and C, could encourage more visitors and longer visits. These visitors may also patronize the businesses in the historic buildings, enhancing the commercial viability of the historic areas and the ability of the owners to maintain the historic features of their properties.

A small amount of right of way (940 square feet) would be acquired from one property in the Pike Place Market Historic District, the PC-1 South Condominium parcel, to construct the Overlook Walk. This acquisition would not affect the building on this parcel.

9.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

The City would obtain Certificates of Approval and undergo Landmarks Adjacency Reviews, as appropriate, for all permanent impacts the Action Alternative would have on historic resources. Certificates of Approval would be needed from the Pioneer Square Preservation Board, the Pike Place Market Historical Commission, and the Seattle Landmarks Board. The Seattle Department of Neighborhoods would conduct Landmarks Adjacency Reviews for project elements located next to or across the street from designated City landmarks. These approvals and reviews would consider the compatibility of project elements, materials, and designs with the area's historic character. The City would also use urban design and place-making approaches such as landscaping, interpretation, and reuse of historical elements (seawall railing, ship's wheel ornamentation, etc.) to enhance the sense of historical connection among the waterfront structures, the roadway, and buildings on the east side of Alaskan Way.

10 Archaeological Resources

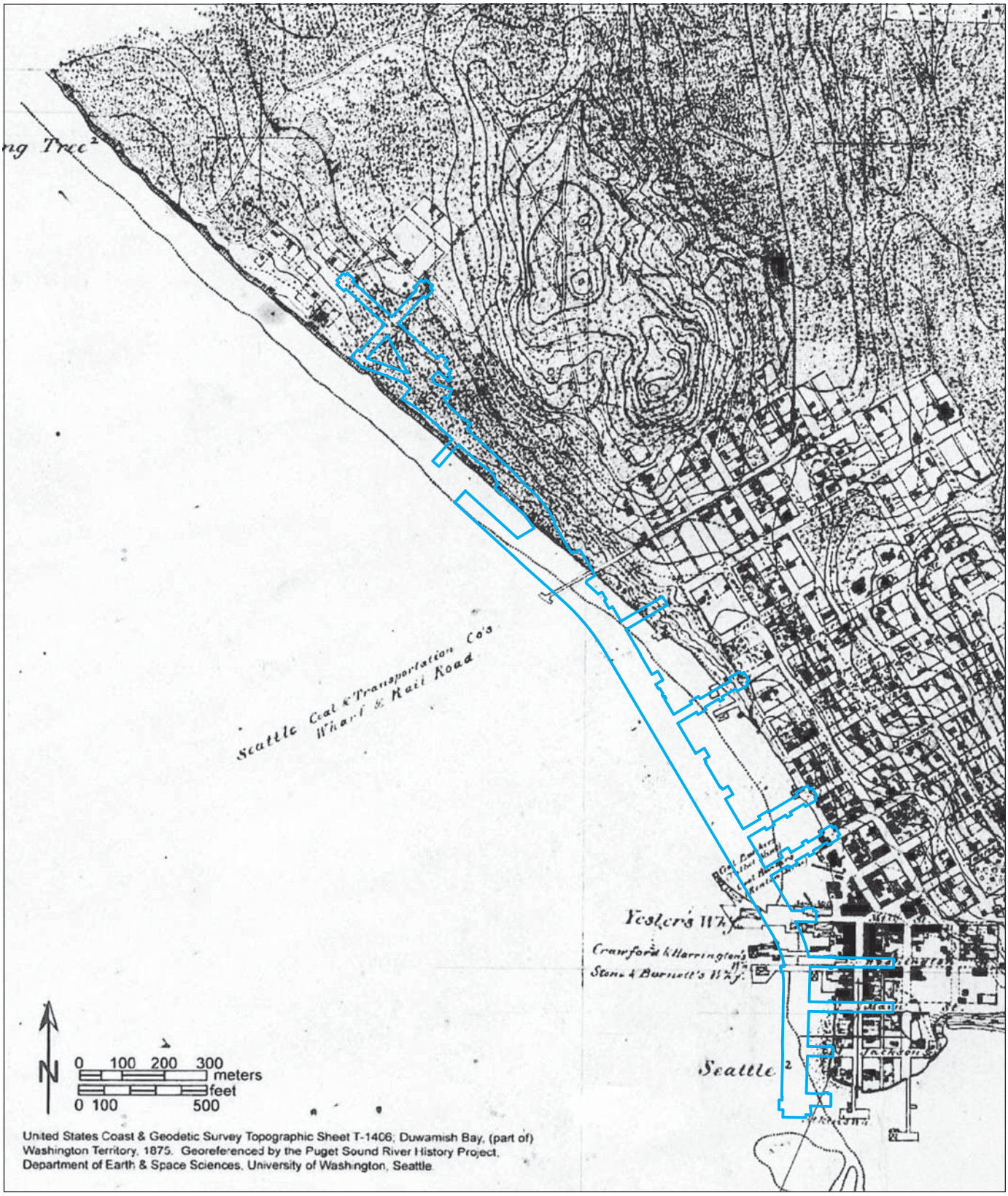
This chapter discusses the potential for encountering archaeological resources during construction of AWPOW and the impacts that could result if such resources were encountered. It also describes how any required avoidance, minimization, and mitigation measures would be developed in consultation with the Department of Archaeology and Historic Preservation (DAHP) and concerned tribes. Additional details about the analysis are provided in Appendix I, Archaeological Resources Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS.

10.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017 when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. Figure 10-1 shows the horizontal boundary of the study area against the original 19th century shoreline of Elliott Bay before this filling occurred. The horizontal boundary for the study area is the same as the project footprint. The vertical boundary of the archaeological resources study area is the depth of construction, as shown in Figure 10-2.

The study area is within the traditional territory of the Duwamish, a people in the Lushootseed language group who inhabited winter villages and temporary camps along the shorelines of Elliott Bay, Lake Washington, Lake Union, and the Duwamish, Black, and Cedar Rivers (Petite 1954; United States Court of Claims 1927; Waterman 1922). Today, many Duwamish descendants have chosen to become members of federally recognized tribes, including the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Suquamish Tribe, and the Tulalip Tribes, while others continue to seek independent Duwamish tribal status. The Duwamish, Muckleshoot, and Suquamish peoples likely shared the shoreline of Elliott Bay and the Duwamish River (Lane 1987). As was the case with many Puget Sound peoples, salmon was a staple food in a diet based on a larger seasonal round that exploited a wide range of resources as they became available. The tidal flats and the adjacent shorelines provided habitat for multiple varieties of invertebrates, mollusks, and crustaceans as well as waterfowl. The bay's open water supported many of the same fish and sea mammals found there today, including varieties of salmon, steelhead trout, cod, flounder, and other rockfish (Suttles and Lane 1990).

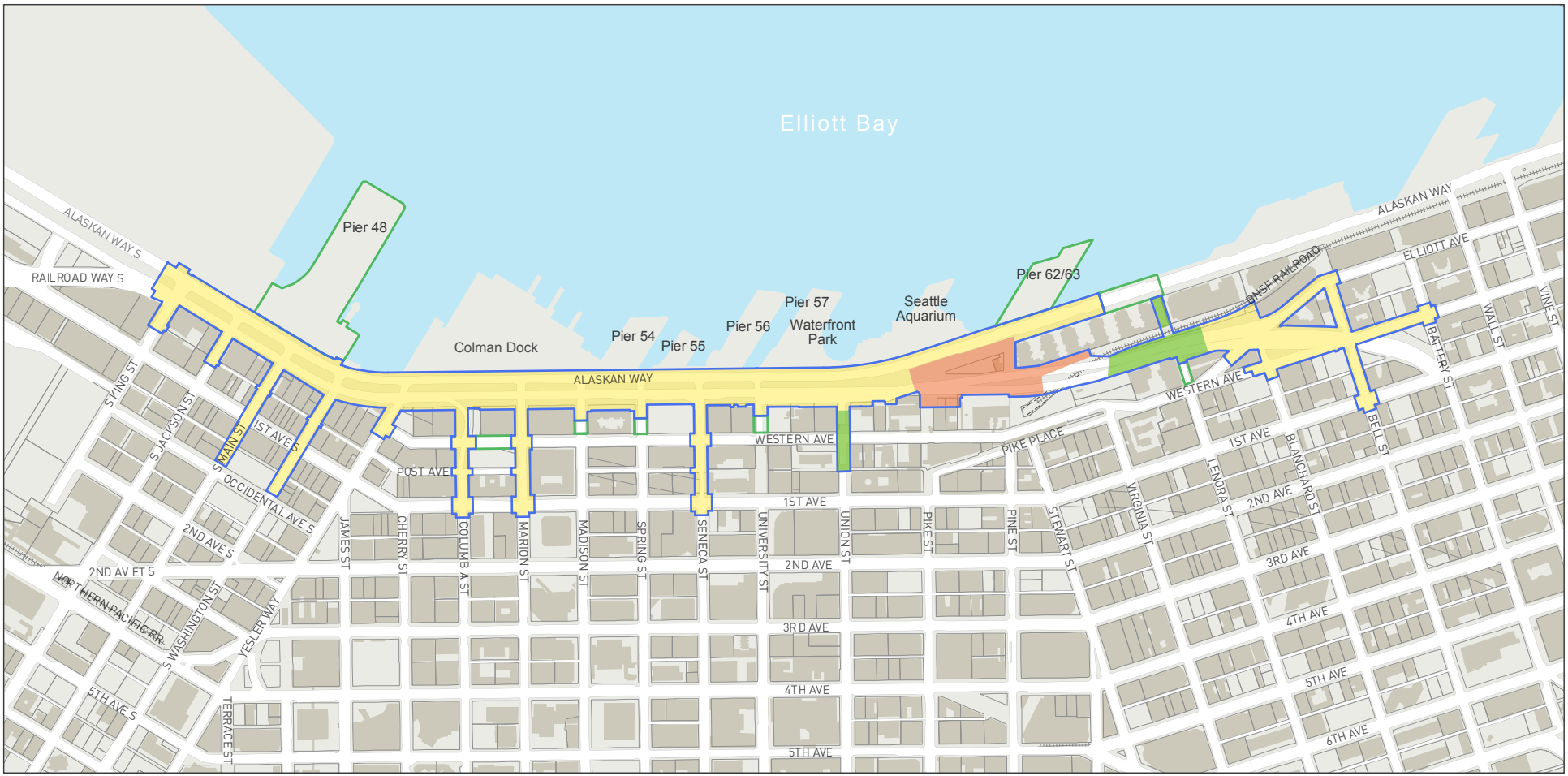
Various geological events, including glaciation and seismic activity, have changed the location of the shoreline over time and created complex subsurface layers that have varying potential to contain archaeological deposits. In the late 19th century, the shoreline was subject to extensive grading and filling in efforts to improve waterfront access, hold back the tidal Elliott Bay, and raise the level of the city streets above high tide. As can be seen in Figure 10-1, most of the study area was under water prior to the filling; however, it intersects several features of the historic shoreline. Between S. King Street and Yesler Way, the study area extends over a former tidal marsh and lagoon; north of Yesler Way, it is entirely west of the historic shoreline until approximately Pike Street. North of Pine Street, the study area is mostly landward of the historic shoreline, running along former beach areas and up the steep bluff to the east (FHWA et al. 2004). In general, areas located on native soils have the potential to contain pre-contact (prior to 1850) cultural resources, while those located in fill areas have the potential to contain historic-era (post-1950) resources. However, in the westernmost 20 to 40 feet of the AWPOW footprint south of Pine Street, construction of the EBSP will remove and replace soils landward of the existing seawall to a depth of about 15 feet before the start of AWPOW construction. Soils below this level will be stabilized with jet grout, a cement-based mixture that solidifies underground to provide structural support. As a result, this area will contain little or no original subsurface material and therefore will have very low potential for cultural resource deposits.



AWPOW Study Area

Figure 10-1
1875 Historic Shoreline
Near the Archaeological Resources Study Area

Alaskan Way, Promenade, and
Overlook Walk



0 400 800
Feet

Source: SDOT

Action Alternative

- Project Footprint
- Potential Construction Staging Area

Depth of Construction

- 0-20 ft
- 40-60 ft
- 60-80 ft

- Parcel Boundary
- Building Footprint

Note:
The horizontal boundary of the study area for construction and operational impacts is the same as the project footprint. The vertical study area boundary is the depth of construction within the project footprint.

Figure 10-2
Action Alternative
Depth of Construction

Alaskan Way, Promenade, and Overlook Walk

Numerous cultural resource studies and investigations have been conducted for other projects in the vicinity of the study area and are noted in Appendix I and Appendix L to this Draft EIS. Fifteen archaeological sites have been previously recorded in or adjacent to the study area. Of these 15 sites, five are within the AWPOW footprint. Three of these sites have been mitigated through recordation and excavation and at least partially removed. The other two sites are Ballast Island and a historic buried concrete wall. The Ballast Island site remains in place near Pier 48 and was originally used for ship ballast disposal. It later became an encampment and gathering area for Native Americans in the mid to late 1800s. Sometime between 1900 and 1904, development of the waterfront covered Ballast Island. The site was recently identified and recorded through investigations conducted for the AWVRP; ballast deposits are present at depths between 2.5 and 12 feet bgs (Elder 2014). The historic buried concrete wall site, adjacent to the Union Street Pedestrian Connection, may extend north across Union Street. It was recorded in 2012 when discovered during construction activities. The wall has been impacted by previous construction episodes, including the 2012 construction activities.

10.2 Construction Impacts and Mitigation

10.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative would not involve any construction or other ground-disturbing activities and therefore would not impact archaeological resources.

10.2.2 Construction Impacts of the Action Alternative

Impacts to Known Archaeological Sites

Construction of AWPOW would intersect with the boundaries of Ballast Island that were determined as part of the AWVRP cultural resource investigations (Elder 2014). As indicated above, the Ballast Island site, located near Pier 48, was identified as having deposits between 2.5 and 12 feet bgs. AWPOW construction occurring at greater depths could encounter and impact these deposits. Based on current design plans for this location, project elements with the potential to exceed 2.5 feet in depth near Pier 48 are a light pole, telecommunications lines under the bicycle facility, and root zones for trees. If construction exceeds this depth, impacts on the deposits would be likely. Construction may also intersect with a historic buried concrete wall near Union Street and Western Avenue that is a recorded archaeological site.

The other three known archaeological sites within the study area have been recorded and at least partially removed. These sites would not be impacted during AWPOW construction; however, the areas around the sites remain high-probability areas for encountering additional cultural resources.

Potential for Impacts to Undiscovered Archaeological Sites

Because of the past uses of the area, construction of AWPOW has the potential to encounter previously undiscovered cultural resources. This potential varies by the type of soils in which construction takes place (native or fill) and by the depth of construction. In general, native soils have greater potential to contain pre-contact archaeological resources, while fill soils are most likely to contain historic-era resources. Because of historic alteration in the study area, deeper excavations are more likely to intersect with native soils than shallower excavations. Figure 10-2 above shows the expected depths of excavation for AWPOW construction.

As shown in Figure 10-2, construction of the main corridor and Promenade would generally be at relatively shallow depths (20 feet or less) below the current ground surface, within areas that were filled during the historic regrading of downtown Seattle. Construction in this area would therefore be most likely to encounter historic-era archaeological sites. Artifacts from this era could include lumber, sawdust, bottles, wire, brick, cans, foundations, walls, industrial equipment, and wood, iron, and steel associated with railroads. If any of these materials are discovered in association with intact identifiable and datable artifacts or features, or with stratified deposits, they could provide information about the

chronology of the developing shoreline. However, given the history of filling in this area, it is more likely that these materials would be discovered in mixed fill, with no intact context, and would therefore not be considered significant resources. Construction of the EBSP would likely remove any sites or artifacts in the westernmost 20 to 40 feet of the AWPOW footprint along Alaskan Way south of Pine Street; therefore, the potential for impacts in this area is minimal.

The potential for discovering pre-contact archaeological deposits in the study area is generally low because of the geologic events that have changed the location of the Elliott Bay shoreline over time. Most of the intertidal zones and beaches that might have been used by Native Americans in pre-contact times are now inundated by Elliott Bay. In addition, beach backshore areas that underlie much of the study area were subject to erosion during high-water periods and as a result are considered unlikely locations for significant pre-contact archaeological materials (SDOT 2013). The greatest likelihood of encountering such materials is in the area between Pike Street and Blanchard Street, where construction depths could reach 80 feet bgs. Although regrading in this area has removed some of the native soils, the historic fill is thinner than it is along the shoreline, and deeper areas of excavation could intersect older deposits that have the potential to contain pre-contact materials. Construction activities on Union Street would be 40 to 60 feet deep due to the drilled shafts required for the pedestrian walkway connections, and therefore could also encounter older archaeological deposits. In addition, there is an area of shallow historic fill near S. Washington Street where beach deposits could be present at depths as shallow as 23.5 feet bgs. Construction in this area would be near the boundary where pre-contact archaeological deposits could be present (SDOT 2013).

10.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

There are two known archaeological sites in the study area: Ballast Island and a historic buried concrete wall near the corner of Union Street and Western Avenue. The Action Alternative would be designed to avoid both of these sites. If impacts on the sites cannot be avoided, the City would work with the DAHP and interested Native American tribes to identify appropriate mitigation. To address the potential for project construction to impact currently undetected archaeological sites, the City would prepare an Inadvertent Discovery Plan before project construction begins. The plan would identify actions to be taken if archaeological resources are discovered during construction.

The City might also develop a plan in consultation with the DAHP and interested Native American tribes to conduct archaeological monitoring during some construction activities in areas having a high potential for encountering undetected archaeological resources. Such monitoring would be conducted under the direct supervision of an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for Archaeology.

10.3 Operational Impacts and Mitigation

10.3.1 Operational Impacts of the No Action Alternative

No impacts are anticipated from operation of the No Action Alternative because no ground-disturbing activities would take place in the study area.

10.3.2 Operational Impacts of the Action Alternative

The operation of AWPOW would not involve any ground-disturbing activities that could affect archaeological resources; as a result, no impacts are anticipated.

10.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Because AWPOW operation would not adversely affect archaeological resources, no mitigation measures are necessary.

11 Water Quality

This chapter describes the water quality analysis conducted for AWPOW. Analysts first identified the drainage system and natural water body conditions that are expected to exist in 2017 after the completion of AWVRP, EBSP, and PPMWE. These 2017 existing conditions are known as the affected environment. Analysts then evaluated the changes that the proposed Action Alternative would have relative to the No Action Alternative on the stormwater drainage system and natural water body conditions. Changes arising from operation of the Action Alternative were generally identified through a quantitative evaluation of pollution-generating impervious surfaces and the pollutants these surfaces are expected to discharge to Elliott Bay. Potential construction-related impacts were qualitatively assessed. Measures to avoid, minimize, or mitigate any potential impacts are identified. Additional details about the analysis are provided in Appendix J, Water Quality Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS. Wastewater collection and treatment are discussed in Chapter 8, Public Services and Utilities, of this Draft EIS.

11.1 Affected Environment

11.1.1 Existing Drainage System

The project footprint is located at the downstream end of a large area that drains stormwater runoff to a complicated system of pipes, pumps, and diversion structures. This drainage system has been modified over time since it was originally built and includes areas that drain to separated storm, combined sewer, and low-flow diversion facilities (which typically drain to the combined sewer). All three types of facilities are present within the project footprint (WSDOT 2007). The study area for the water quality analysis comprises the full extent of the sub-basins (small drainage areas that all discharge to the same water body) in which the project footprint is located, the outfalls of those sub-basins, and Elliott Bay. Figure 11-1 shows the water quality analysis study area and the sub-basins in the study area. Figure 11-2 shows the stormwater sub-basin type for each portion of the project footprint. Both figures show outfalls within and in the vicinity of the project footprint.

Most of the stormwater runoff from the project footprint discharges through separated storm drain sub-basins directly to Elliott Bay (Figure 11-2). The combined sewer sub-basins within the project footprint, which include components that were constructed as early as 1934, convey flows to the King County West Point Treatment Plant (located northwest of downtown Seattle in Discovery Park) prior to discharging into Puget Sound. In the study area, the separated storm drain system discharges stormwater runoff to Elliott Bay through six major separated storm drain outfalls and a number of minor (individual) separated storm drain outfalls, which are shown in Figure 11-2. Some of the separated storm drain sub-basins share their outfall structures with combined sewer overflow structures, but are independent of the combined sewer system.

11.1.2 Water Quality Conditions

The project footprint lies within one of the oldest and most urbanized parts of Seattle, where land cover is predominantly pollution-generating impervious surfaces (PGIS) consisting of roadways and parking areas. The small amounts of non-pollution-generating impervious surfaces (NPGIS) present within the project footprint include sidewalks, bicycle lanes, and pervious landscaped areas. No streams, wetlands, or surface waters other than Elliott Bay are present in the area. The bay is part of Puget Sound—the second largest estuary in the United States and home to hundreds of different species of fish, birds, and marine mammals.

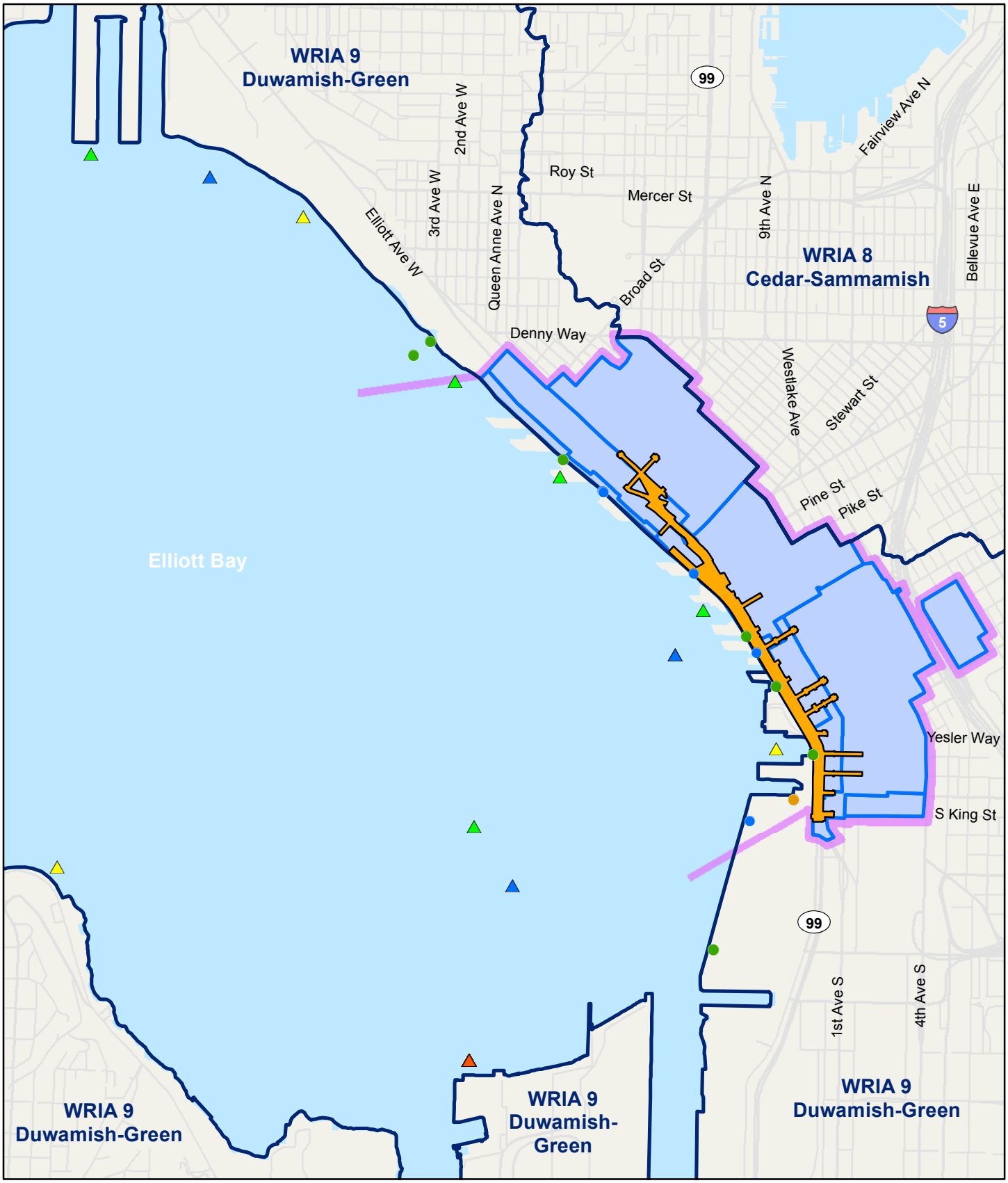
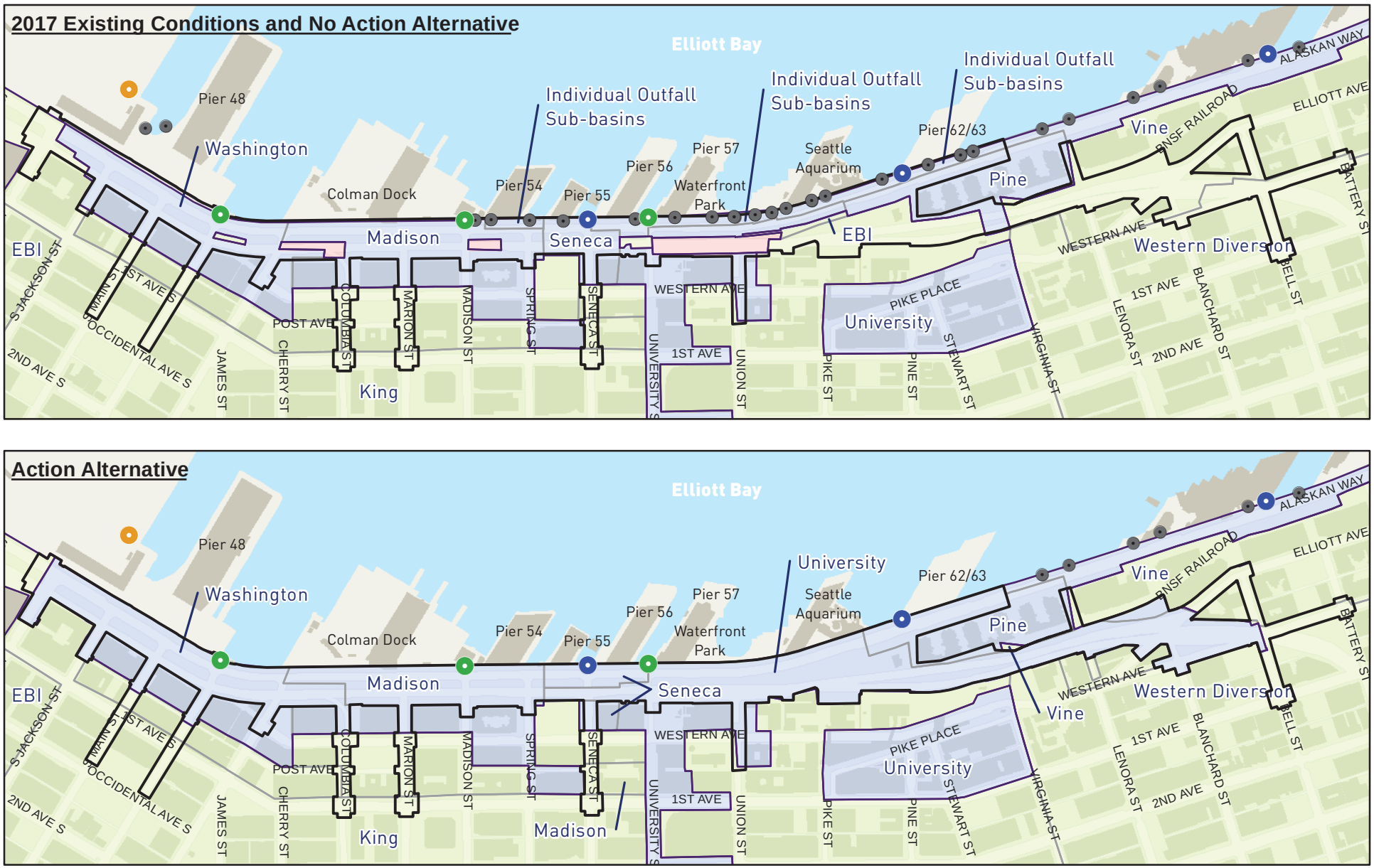


Figure 11-1
Water Quality Study Area and Analysis Elements

Alaskan Way, Promenade, and Overlook Walk



Source: King County, City of Seattle

Figure 11-2
Drainage Area Modifications

Alaskan Way, Promenade, and Overlook Walk

Ecology is the agency with primary responsibility for regulating water quality in Washington. Ecology oversees water quality within large-scale watersheds known as Water Resource Inventory Areas (WRIAs); the Elliott Bay tributary area is located within WRIA 9. The agency has established standards for water quality in fresh and marine waters, and maintains a list of water bodies that do not meet these standards. Ecology has assigned stringent water quality standards to Elliott Bay (WAC 173-201A-612), and the bay has been identified as exceeding water quality criteria for fecal coliform bacteria and several types of toxins (Ecology 2012). The WRIA 9 boundary and water quality exceedance listings in the study area are shown on Figure 11-1.

Most of the stormwater that flows into Elliott Bay from the project footprint is currently untreated. In portions of the project footprint (primarily along Alaskan Way), stormwater that will drain to the separated storm drain system after completion of the EBSP will receive treatment through media filters installed by EBSP. The remaining stormwater runoff that drains from the project footprint to the separated storm drain system will continue to discharge to Elliott Bay without treatment.

Stormwater runoff from the project footprint that does not drain to the separated storm drain system drains to the combined sewer system, which is a large network of sewage pipelines, pump stations, control facilities, and outfalls (SPU 2014), some parts of which were installed over a century ago. Under normal circumstances, the combined sewer system conveys flows to King County's West Point Treatment Plant for treatment. During periods of heavy rainfall, however, stormwater runoff draining to the combined sewer sometimes overwhelms pipe capacities (WSDOT 2007). The interaction of the high stormwater volumes with many other components of the combined sewer system can exacerbate the possibility of the discharge of an untreated stormwater-sewage mix, known as a combined sewer overflow or CSO, into Elliott Bay. The City of Seattle has entered into a Consent Decree with EPA and Ecology regarding the discharge of CSOs into Elliott Bay (EPA 2013). Under the terms of the Consent Decree, SPU plans to install a new sanitary sewer line along Alaskan Way that would provide storage to help address CSOs into Elliott Bay.

11.2 Construction Impacts and Mitigation Measures

11.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative would not involve any construction or alteration of land cover or drainage basin boundaries from the 2017 existing conditions. Therefore, no construction impacts on water quality would result from the No Action Alternative.

11.2.2 Construction Impacts of the Action Alternative

Construction activities under the Action Alternative have the potential to affect water quality in Elliott Bay. Earthwork, trench work, stockpiling, and material transport can expose soils or stockpile material, which can be carried by water or wind into adjacent stormwater drains and natural receiving waters and increase turbidity. If stormwater runoff comes into contact with process water or slurry from curing concrete, the pH in nearby surface water can increase to levels harmful to fish and wildlife. Construction adjacent to Elliott Bay can pose a direct impact on water quality through pollutant spills, sediment transport, or wind deposition of stockpiled materials. Uncontained leaks or spills from construction equipment could result in pollutant discharges to Elliott Bay. Contaminated groundwater (discussed in the Hazardous Materials Discipline Report, Appendix F to this Draft EIS), which could be encountered during construction dewatering, could mix with stormwater runoff and be conveyed into Elliott Bay if not contained and disposed of properly. The potential water quality impacts that could result from the Action Alternative would be similar across the entire construction area because construction equipment and techniques would be similar. Construction impacts would be temporary and would vary in intensity and duration depending on the type of construction occurring.

11.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

The City would prepare and implement plans pursuant to the City of Seattle Stormwater Code, Stormwater Manual, and the NPDES Construction Stormwater General Permit that describe BMPs to prevent pollution, control stormwater flows, and protect Elliott Bay during construction. BMPs could include the following:

- Minimizing the amount of cleared and cut pavement areas at any one time to the extent feasible
- Stabilizing construction entrances and internal haul roads using quarry spalls
- Washing truck tires at construction site exits, as necessary
- Cleaning construction site track-out from public roads, as necessary
- Constructing silt fences downslope from exposed soil
- Protecting catch basins from sediment
- Installing temporary ditches or asphalt berms to route runoff around or through construction sites, with periodic check dams to slow and settle runoff, as necessary
- Placing temporary plastic or mulch to cover soil stockpiles and exposed soil
- Using temporary erosion control blankets or mulch on exposed steep slopes to minimize erosion before vegetation or other permanent cover is established
- Constructing temporary sedimentation ponds or cells to remove solids from concentrated runoff and dewatering the ponds or cells before the runoff is discharged
- Providing secondary containment for all potential sources of leaks and spills
- Conducting vehicle fueling and maintenance activities no closer than 100 feet from a water body
- Washing concrete work equipment in designated contained areas

A Certified Erosion and Sediment Control Lead (CESCL) would be assigned to conduct compliance inspections. If discharge of treated construction or process water to a sanitary sewer is proposed, approval would be obtained from both the King County Industrial Waste Division and the City of Seattle, and applicable water quality requirements would be met.

11.3 Operational Impacts and Mitigation Measures

AWPOW would result in changes in land cover and impervious surface area within the project footprint. The project would also change the boundaries of some sub-basins within the study area. These changes would affect the potential quantities of pollutants (pollutant loads) carried in stormwater runoff. Pollutants that are typically found in urban stormwater include suspended solids and various metals, such as copper and zinc.

To determine whether AWPOW would result in water quality impacts, analysts compared the land cover changes and the resulting pollutant load changes between the No Action Alternative and the Action Alternative. The analysts quantitatively evaluated the land cover and sub-basin boundaries for the 2017 existing conditions, No Action Alternative, and Action Alternative for all of the project footprint except the East-West Connections. Changes in land cover were qualitatively evaluated for the East-West Connections because no changes to sub-basin boundaries were identified and no changes to water quality treatment discharges are expected. The results of the analyses are presented below.

11.3.1 Operational Impacts of the No Action Alternative

Land cover, drainage areas, and associated pollutant loads under the No Action Alternative are considered to be identical to those under the 2017 existing conditions. Therefore, the No Action Alternative would not result in impacts to water quality.

11.3.2 Operational Impacts of the Action Alternative

The Action Alternative would have less total PGIS than the No Action Alternative, as summarized in Table 11-1. In addition, the Action Alternative would result in a lower volume of stormwater runoff draining to the combined sewer by diverting approximately 12 acres of stormwater runoff area to the separated storm drain system, which drains to Elliott Bay (Figure 11-2 and Table 11-1).

Table 11-1. Changes in Land Cover within the Project Footprint

Drainage Area	2017 Existing Conditions and No Action Alternative (acres)				Action Alternative (acres)			
	Pervious	NPGIS	PGIS	Total	Pervious	NPGIS	PGIS	Total
Combined Sewer	0.63	0.64	15.12	16.39	0.05	0.34	4.01	4.40
Elliott Bay	1.39	3.18	14.91	19.48	4.56	10.40	16.52	31.47
Total Project Footprint	2.02	3.82	30.03	35.87	4.60	10.73	20.54	35.87

The Action Alternative would also provide water quality treatment to all PGIS within the project footprint, including areas not treated under the No Action Alternative. Stormwater runoff from PGIS that would not be diverted away from the combined sewer would continue to receive off-site water quality treatment at King County's West Point Treatment Plant; therefore, the overall pollutant load from these areas is expected to be the same as the 2017 existing conditions and No Action Alternative. Diverted stormwater runoff from PGIS that previously drained to the combined sewer system would continue to receive treatment via the on-site stormwater facilities provided within the separated storm drain system. In addition, the Action Alternative would improve the quality of discharges to Elliott Bay by treating runoff from PGIS that was previously untreated. Table 11-2 summarizes changes to Elliott Bay pollutant loads, which include PGIS diverted from the combined sewer system.

Table 11-2. Changes to Elliott Bay Pollutant Loads in Project Stormwater Runoff[1]

Area and Pollutant	2017 Existing Conditions and No Action Alternative		Action Alternative		Difference	
	(influent)	(effluent)	(influent)	(effluent)	(influent)	(effluent)
PGIS (acres)	14.91	14.91	16.52	16.52	1.61	1.61
Total Suspended Solids (lbs/yr)	996	677	1,104	218	108	-460
Total Copper (lbs/yr)	0.35	0.26	0.39	0.12	0.04	-0.14
Dissolved Copper (lbs/yr)	0.11	0.10	0.12	0.10	0.01	0.00
Total Zinc (lbs/yr)	2.01	1.39	2.23	0.44	0.22	-0.95
Dissolved Zinc (lbs/yr)	1.03	1.03	0.71	0.60	-0.33	-0.43

[1] Columns labeled "influent" show pollutant loads in water entering the stormwater collection system; those labeled "effluent" show the corresponding pollutant loads following treatment.

Main Corridor

The main corridor of the Action Alternative would include pervious vegetated landscaping along the roadway in many locations throughout the project footprint. Although the total area of landscaping is relatively small in the context of the overall footprint, introducing vegetation and decreasing the amount of impervious surface within the study area would help to increase rainfall interception and

could slightly reduce the volume of surface runoff discharged to the combined sewer. The roadway components of the Action Alternative would also divert a large amount of tributary area from the combined sewer system to the separated storm drain system (see Figure 11-2). Drainage from the roadway would constitute the major source of pollutant loads from the Action Alternative to Elliott Bay (see Table 11-2).

The pedestrian and bicycle facilities included in the Action Alternative are considered NPGIS, and would contribute to an overall reduction of approximately 9.49 acres of PGIS under the Action Alternative, as shown in Table 11-1. This reduction in PGIS would reduce the overall pollutant load discharging to Elliott Bay from the project footprint compared to the 2017 existing conditions and No Action Alternative (see Table 11-2).

Transit service facilities, such as curb extensions and transit shelter foundations, would not include additional PGIS and therefore would not affect water quality.

Promenade

Stormwater runoff from the Promenade would discharge to Elliott Bay under the Action Alternative, just as the area would under the No Action Alternative. Therefore, this runoff would not change the volume of flows in the combined sewer system. However, the Promenade would contribute to the overall reduction of 9.49 acres of PGIS because it would replace existing PGIS with NPGIS sidewalk and pervious landscaping. This would reduce the pollutant load discharging to Elliott Bay compared to the 2017 existing conditions and No Action Alternative (see Table 11-2).

Overlook Walk

The Overlook Walk would divert stormwater runoff from the combined sewer system to the separated storm drain system. The sloping lid of the Overlook Walk would cover an area of pollution-generating roadway along the new Alaskan Way. However, due to the potential for wind-blown rain under the lid, as well as vehicles tracking in stormwater, the coverage of Alaskan Way provided by the Overlook Walk was not considered in the land cover and pollutant load analyses in order to conservatively estimate the PGIS changes.

East-West Connections

The East-West Connections are expected to improve water quality compared to the 2017 existing conditions and the No Action Alternative, mainly due to the conversion of PGIS to NPGIS. The East-West Connections would replace PGIS with widened sidewalks, public space, tree planters, and other landscaping. Sidewalks and landscaping are not considered to be a significant source of pollutants in stormwater runoff. Therefore, the reduction in PGIS would reduce the overall pollutant load discharging from the project footprint compared to the 2017 existing conditions and the No Action Alternative. Also, although the area would be relatively small in the context of the overall footprint, the addition of vegetation could slightly reduce the volume of stormwater runoff draining to the combined sewer system.

11.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

The design of the Action Alternative incorporates BMPs that are considered to be avoidance and minimization measures. These BMPs prevent operational impacts on water quality and include treating stormwater runoff from most of the PGIS in the Action Alternative. Treatment would be provided via on-site facilities meeting basic treatment requirements of the City's Stormwater Code and through discharging this treated water to the separated storm drain system.

The remaining stormwater runoff from the Action Alternative's PGIS would drain to the combined sewer system and receive treatment at the King County West Point Treatment Plant. As a result of these design BMPs, no adverse operational impacts on water quality are expected from the Action Alternative; therefore, no additional mitigation measures are necessary.

12 Vegetation and Wildlife

This chapter describes the existing conditions of terrestrial vegetation and wildlife within and surrounding the AWPOW footprint, and analyzes the potential for construction and operation to impact these resources. Aquatic birds and mammals that may use surface waters adjacent to the project footprint are also included in the analysis. Potential measures are identified to avoid, minimize, or mitigate potential impacts. Additional details about the analysis are provided in Appendix K, Vegetation and Wildlife Discipline Report, and Appendix L, East-West Connections Environmental Review, to this Draft EIS.

12.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017 when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. This is referred to as the 2017 existing conditions. The study area for vegetation and wildlife extends 500 feet from the project footprint, including the waterward area over Elliott Bay because AWPOW construction and operational noise could disturb animals on the surface of the bay. Plants or animals present below the surface of Elliott Bay (e.g., seaweeds, fish, and marine mammals) are not addressed because the project would not involve in-water work, any over-water work would be incidental, and noise impacts from AWPOW construction and operation would not extend beneath the surface of Elliott Bay.

12.1.1 Vegetation

The heavily urbanized habitats in the study area include streets, parking lots, commercial and industrial properties, high-density residential buildings, and railroad rights of way. Over the last 150 years, urban development has eliminated nearly all of the native vegetation. Existing vegetation consists primarily of street trees and related streetscape vegetation in the right of way, which have been installed and are maintained by the City's Urban Forestry section or by private development projects under permit from SDOT. Volunteer invasive species are also present in unmaintained areas.

Non-native species planted for landscaping, such as maples and geraniums, are the dominant vegetation in much of the study area (SDOT 2012). Non-native invasive species, such as English ivy and Himalayan blackberry, are present in the study area. These invasive species are well adapted to urban environments and out-compete native plant species (SDOT 2012). However, native species, such as western brackenfern and swordfern, can grow opportunistically in the study area, although they are less commonly found where conditions favor invasive species (SDOT 2012). Non-vascular plants, such as mosses and lichens, grow on a variety of hard surfaces such as concrete, treated wood, and occasionally metal in the study area (SDOT 2012).

Vegetation on the Belltown bluff above the BNSF tracks behind the Waterfront Landings

As part of AWVRP and EBSP, a diverse mix of native and hybrid trees, shrubs, and groundcover will have been selected and planted along Alaskan Way before AWPOW construction begins. Trees planted could include red alder, Pacific madrone, and shore pine. The beach riparian area for the EBSP, located

between Pier 48 and Colman Dock, has a small overlap with AWPOW, and those plantings will also include primarily native species.

The largest contiguous area of vegetation in the AWPOW footprint is found on the Belltown bluff, which is the steep slope immediately east of the BNSF rail line between the Pine Street extension and Blanchard Street. Vegetation in this area is dominated by invasive non-native species, such as English ivy and Himalayan blackberry, with some native trees, such as red alder and western redcedar. The AWVRP would remove or disturb some of the vegetation in this area during the viaduct's demolition. Once demolition is complete, vegetation in the disturbed area would be restored. As a result, the conditions in 2017 in the AWPOW study area will likely consist of a mix of impervious surfaces, invasive species, and replanted native and non-native trees, shrubs, and groundcover.

No populations of threatened or endangered plants have been documented within 3 miles of the project footprint (WDFW 2014a).

12.1.2 Wildlife

Wildlife species in the study area are generally limited to those well adapted to living in a highly altered urban landscape. Examples include birds and mammals that tolerate or benefit from human disturbance, urban habitat features, and trash.

Birds

Some of the most common birds in the study area are non-native species such as the house sparrow, European starling, and rock pigeon (USACE 2008; Seattle Audubon Society 2013). Some native species are commonly found along the waterfront, including American crow, Northwestern crow, and Brewer's blackbird. Black-capped chickadees, another native species, commonly nest in landscape trees planted along Alaskan Way (FHWA et al. 2004; USACE 2008; Seattle Audubon Society 2013). Purple martin nest at the north and south ends of Elliott Bay, but their nesting areas are well outside the project footprint (WDFW 2014a).

Raptor species regularly seen in the study area include bald eagle, peregrine falcon, osprey, and red-tailed hawk (USACE 2008; Seattle Audubon Society 2013). Bald eagles are commonly seen along the waterfront at any time of year; nesting territories have been documented at two locations along Elliott Bay more than 1 mile from the project footprint. Peregrine falcons nest on tall buildings and other structures in downtown Seattle and along the waterfront, preying on birds in the study area (WDFW 2014a). No osprey or red-tailed hawk nests have been documented in or near the project footprint, but both species are likely to use the study area for hunting (FHWA et al. 2004; Buchanan 2006).

Many species of waterfowl and seabirds use habitats in and around Elliott Bay. Some of the most common species include herring gulls, California gulls, and ring-billed gulls (USACE 2008; Seattle Audubon Society 2013). These species are usually found perched on piers or floating on the water surface. Other common species that occasionally use habitats near the AWPOW footprint are described in the Vegetation and Wildlife Discipline Report, Appendix K to this Draft EIS.

Mammals

Very few species of mammals are present within the urbanized and disturbed habitat of the study area. Commonly present species include non-native species such as the black rat, Norway rat, house mouse, and eastern gray squirrel (SDOT 2012). Domesticated animals such as dogs and cats are also likely to be present as feral or human companion animals (SDOT 2012). Native species that may occasionally be present in the study area include opossum, raccoon, and coyote. These species most likely frequent nearby parks but may also venture into more urbanized areas to seek food or while traveling between patches of suitable habitat (SDOT 2012). Native bat species occasionally roost in buildings or other structures and forage in the study area. FHWA et al. (2004) identified several species of bats that may occur in the area; the most common are big brown bats and four species of the genus *Myotis*.

Various marine and aquatic mammals are known to use the waters of Elliott Bay adjacent to the study area and may be infrequent visitors in the study area; however, only the species that may use surface waters are described here. Harbor seals and California sea lions inhabit nearshore habitats in Puget Sound and are commonly seen near piers along the waterfront (Steiger and Calambokidis 1986; Osborne et al. 1988; USACE 2008; Anchor QEA 2011). WDFW has identified several locations in the southern portion of Elliott Bay as sites where sea lions haul out to bask and sleep (WDFW 2014a). Northern river otters are known to frequent nearshore areas in Elliott Bay (King County 1999). Steller sea lions, a species removed from the list of threatened species under the Endangered Species Act (ESA) in 2013, may also be an infrequent visitor to Elliott Bay.

Threatened, Endangered, and Sensitive Species

Based on their habitat requirements and known distribution, no ESA-listed species that may occur in King County are expected to be present in the study area, and the study area contains no designated critical habitat for any ESA-listed wildlife species (USFWS 2014). However, it is possible that marbled murrelets could forage in Elliott Bay because it is within their known range and they feed on small fish and invertebrates, which are common in marine waters such as bays or sounds (Carter 1984). However, their nearest nesting habitat is in the Cascade Mountains, approximately 30 miles from the study area (USFWS 2014). Aerial surveys by the Washington Department of Fish and Wildlife (WDFW), conducted in cooperation with the Puget Sound Ambient Monitoring Program, tracked sightings of marbled murrelets throughout Puget Sound from 1992 through 1999. No marbled murrelets were observed in Elliott Bay during these surveys (WDFW 2005); the potential for their occurrence in the study area is therefore low.

Bald eagle, peregrine falcon, and common loon are state-listed as sensitive species and may be present in or near the study area (WDFW 2014b). Although bald eagles are no longer listed under the ESA, they receive protection under the Bald and Golden Eagle Protection Act.

12.2 Construction Impacts and Mitigation

12.2.1 Construction Impacts of the No Action Alternative

Under the No Action Alternative, AWPOW would not be constructed and there would be no construction-related impacts on vegetation and wildlife.

12.2.2 Construction Impacts of the Action Alternative

Overall, impacts on vegetation and wildlife from construction of the Action Alternative are not likely to be substantial because the study area is urban and already degraded. Impacts specific to vegetation and wildlife are described below.

Vegetation

Construction activities would remove existing planters, landscaping, and street trees along the majority of the Alaskan Way corridor. Most of vegetation impacted by the Action Alternative would be for the construction of Elliott Way. Approximately 1.5 acres of vegetation on the bluff would be removed, which is anticipated to include invasive species, replanted native and non-native trees, shrubs, and groundcover between the BNSF tunnel entrance and Blanchard Street.

Following completion of the AWVRP and the EBSP, it is likely that much of the vegetation in the study area would consist of a mix of impervious surfaces and replanted native and non-native trees, shrubs, and groundcover. There would be planters and street trees along the median and east side of the restored Alaskan Way that would need to be removed or relocated during construction of the new Alaskan Way.

Wildlife

AWPOW construction activities would generate noise from heavy equipment, such as jackhammers, concrete saws, pavement breakers, hoe rams, auger drills, bulldozers, backhoe excavators, loaders, and

haul trucks. The potential for construction noise to impact wildlife is higher with the Action Alternative than the No Action Alternative, which would not have any construction-related impacts.

Construction-related noise, light, and the shifting location of construction activities through the study area could disrupt wildlife activities, such as feeding and breeding. The disruption could be sufficient to displace some animals, potentially leading to competition for resources, such as food and breeding sites, with individuals in other parts of the study area. General construction activities that are carried out in areas where current levels of human activity are comparatively low, such as the Belltown bluff, also could result in a level of disturbance sufficient to affect some species. As discussed above, the species affected would be mostly non-native species that are adapted to urban conditions, although some native species could also be affected.

Because wildlife species in the study area have already adapted to high levels of noise, temporary increases in noise from construction-related activities are not likely to cause animals to modify their behavior. However, especially loud equipment (e.g., jackhammers and concrete saws) could affect the behavior of some waterfowl and seabird species (including marbled murrelets, although their presence is unlikely).

AWPOW construction may require some nighttime work and associated lighting of the construction area. The urban setting of the study area includes extensive lighting; therefore, species sensitive to nighttime light probably already avoid the area. Additional lighting for construction is not expected to disturb wildlife or habitat use in the study area.

Other anticipated construction-related disturbance to wildlife includes vegetation clearing, the possible use of barges, and general construction activities. Vegetation clearing during the breeding season (spring and summer) may damage or destroy bird nests, possibly resulting in temporary, local reductions in the reproductive success of some species, including species protected under the Migratory Bird Treaty Act. Any such impacts would likely be limited to the breeding season during which the construction activities occur, and would not be expected to result in any long-term changes in species composition or population in the study area.

The contractor may use barges occasionally for delivery of construction materials to specific access points. Barges may temporarily disturb waterfowl, seabirds (including marbled murrelets, if present), and marine mammals on the water surface in Elliott Bay.

AWPOW construction work would occur year-round and would extend over several years. As a result, construction-related activities could affect species that breed in the study area as well as those (primarily birds) that are present only during winter or while migrating. Construction work would generally be short in duration in any one area along Alaskan Way, resulting in any impacts being generally localized and temporary (except for construction of Elliott Way and the Overlook Walk, which would be ongoing in the same general area during much of the construction period). Construction for each of the East-West Connections would take approximately 1 year and could occur at any time during the overall AWPOW construction time frame. These temporary disturbances in an environment that is already highly disturbed are unlikely to cause adverse impacts on wildlife populations in the study area.

12.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Vegetation

A Tree, Vegetation, and Soil Protection Plan would be developed to ensure the selection of appropriate protective measures during construction. These measures would identify protective measures for trees and other vegetation to be retained as well as for soil surfaces to guard against compaction and erosion. In accordance with federal, state, and local requirements and guidance, the City of Seattle would implement appropriate measures to minimize the risk of introduction and spread of noxious and

invasive species. The City would restore and landscape the project footprint as soon as practicable during construction.

Wildlife

Conservation measures and BMPs would be implemented before or during construction to minimize the potential impacts on wildlife. The contractor would be required to adhere to the requirements of the City of Seattle Noise Control Ordinance.

12.3 Operational Impacts and Mitigation

12.3.1 Operational Impacts of the No Action Alternative

Under the No Action Alternative, AWPOW would not be constructed. The only operational impacts associated with the No Action Alternative would be from maintenance and repairs of the restored Alaskan Way, path, and sidewalk. The condition of vegetation and wildlife in the study area would likely remain as described in Section 12.1.1. Land cover would continue to be dominated by streets, parking lots, industrial and commercial properties, high-density residential buildings, and railroad rights of way, including the paved area that would be left after removal of the Alaskan Way Viaduct. The most common plants in the study area would be non-native trees and shrubs, invasive species, and a mix of appropriate native and non-native trees and understory vegetation planted following completion of the AWVRP and EBSP.

Structures and vegetation in the study area would continue to provide habitat for wildlife, particularly species that tolerate or benefit from human disturbance, urban habitat features, and refuse. Newly planted vegetation from AWVRP and EBSP could provide additional urban habitat and potentially increase the number of animals in the study area. Increased wildlife populations in the study area could lead to a higher potential for contact between animals and humans. Such impacts would likely be limited to window and car strikes, depredation from domestic pets, attraction of wildlife to human-generated trash, and the feeding of wildlife by humans (SDOT 2012).

The use and maintenance of the restored Alaskan Way under the No Action Alternative are not expected to affect wildlife that inhabit Elliott Bay.

12.3.2 Operational Impacts of the Action Alternative

Vegetation

Following construction of the main corridor, Promenade, and Overlook Walk, most areas not covered by impervious surface would be planted with diverse species, resulting in more vegetated areas than under the No Action Alternative. Planting would comply with the City of Seattle's Urban Forest Stewardship Plan, which aims to restore the declining urban forest in Seattle and develop long-term management plans for Seattle's trees (City of Seattle 2007, 2013a). The majority of the vegetation would be planted along the Promenade; however, some sections on the east side of the main corridor as well as some medians within the corridor would also be planted. The species mix would be an enhanced native palette, combining native plants with non-native, non-invasive, and salt-tolerant species. Connectivity between planted areas would be promoted as much as possible, with the intention of creating a system of habitats along the waterfront that connects to the more natural settings along the Elliott Bay Trail north of the study area (City of Seattle 2013b).

Wildlife

AWPOW's primary operational impact on wildlife would be an increase in the availability of habitat for both native and non-native species. The greater variety of plant species and structures would be expected to increase the capacity of the area to support wildlife populations. For example, the increased availability of trees and shrubs could result in increased nesting opportunities for birds such as the American robin and American goldfinch. The Belltown bluff would be revegetated with a mix of trees,

shrubs, and ground cover, with a heavy emphasis on native species. This larger vegetated area, in particular, may attract more wildlife. Because of the highly urbanized condition of the study area and its location in the city core, land cover would continue to be dominated by streets, parking lots, and buildings. Increased numbers of animals in the study area could lead to a slightly higher potential for window and car strikes, depredation from domestic pets, attraction of wildlife to refuse, and the feeding of wildlife by humans (SDOT 2012). However, this is not expected to constitute a significant adverse impact on wildlife in the study area.

Use and maintenance of the main corridor, Promenade, and Overlook Walk would not be expected to affect wildlife that use Elliott Bay. The installation of interpretive signage and related components would provide environmental educational opportunities for users of the Promenade and Overlook Walk, with potential benefits to wildlife in Elliott Bay and throughout the study area.

12.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Landscaping and water treatment measures are incorporated in the design of the Action Alternative. These measures would be compatible with the City of Seattle Urban Forest Stewardship Plan and would expand the vegetated areas in the corridor. By restoring and planting native tree species and understory vegetation, these measures would increase wildlife habitat. Because these design measures would provide a positive impact on both vegetation and wildlife, no additional avoidance, minimization, or mitigation measures beyond those listed in Section 12.2.3 are necessary.

13 Energy Resources

This chapter discusses AWPOW's energy use and greenhouse gas (GHG) emissions during construction and operation. Energy use during construction is estimated quantitatively, using standard relationships between construction cost and energy consumption; energy use during project operation is discussed qualitatively. GHG emissions during construction are discussed as a function of estimated energy consumption. GHG emissions during project operation are discussed qualitatively as a comparison between the Action and No Action alternatives.

13.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017 when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. Because AWPOW's primary contributors to energy consumption and GHG emissions are related to transportation, the study area for energy and GHGs is the same as the study area for transportation, which is described in Chapter 3 of this Draft EIS.

13.1.1 Energy Use

A variety of energy types are used within the study area. The primary forms of energy used in the area are described below.

Energy generated from fossil fuel combustion is used to power most vehicles that use study area roadways. While Seattle is a national leader in electric and hybrid vehicle use, these vehicles represent only a small percentage of all vehicles using the roads. In the Seattle metropolitan area, which ranked third in the United States in electric car use in 2013, less than 2 percent of all vehicles purchased during that time period were electric (Wall Street Journal 2014). The vast majority of vehicles burn gasoline or diesel fuel in internal-combustion engines, with fuel efficiency for light vehicles averaging 24.1 miles per gallon as of 2013 (USDOT 2014). Fossil fuels are also used to power some industrial facilities such as the Enwave Seattle generating facility, discussed below.

Electrical energy is consumed by residential and commercial customers of SCL, the electrical service provider for the study area. In 2012, SCL provided 9,466,642 megawatt-hours of power to 403,000 retail customers (SCL 2013). SCL's hydroelectric projects on the Skagit and Pend Oreille Rivers provide about half of the power customers need. The remainder comes from a mix of power sources, including long-term contracts with BPA and others. In 2005, SCL became the first electric utility in the country to achieve zero net greenhouse gas emissions, and has since maintained that carbon-neutral status (http://www.seattle.gov/light/greenest/cleanhydro.htm).

Steam energy is both generated and used in the study area. Enwave Seattle produces steam through the combustion of natural gas, diesel oil, and recycled wood. This steam is used to heat buildings in the central business district, including a number of buildings in the study area, and on First Hill.

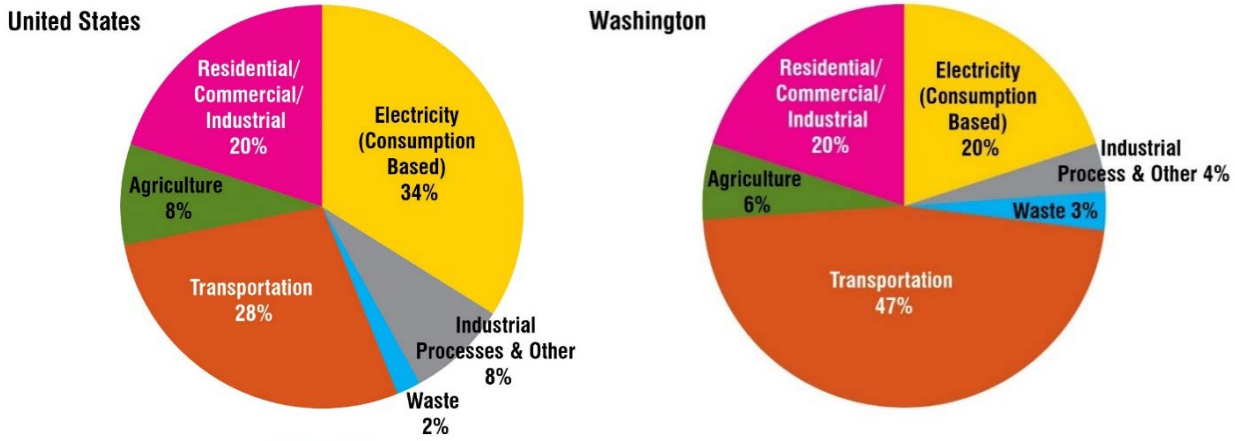
13.1.2 Greenhouse Gas Emissions

Naturally occurring and human-made gases that trap heat in the earth's atmosphere are commonly referred to as greenhouse gases or GHGs. Some GHGs, such as carbon dioxide, occur naturally and are emitted through both natural processes and human activities. Other GHGs are created and emitted solely through human activities, such as the burning of fossil fuels. Many GHGs remain in the atmosphere for a long time ranging from decades to centuries. The principal GHGs that enter the atmosphere because of human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride).

As shown in Figure 13-1, transportation, consumption-based electricity use, and residential, commercial, and industrial fossil fuel combustion are Washington's principal sources of GHG emissions, while

agriculture, waste, and industrial process emissions contribute marginal amounts. Because Washington uses hydropower for much of its electricity (nearly three-fourths of the state's electricity generation), the electricity sector is less significant compared to the national average. The transportation sector is Washington's most significant contributor of GHGs as opposed to electricity consumption at the national level (Center for Climate Strategies 2007). Seattle's GHG emissions are produced from three main sources: transportation, buildings, and industry. At 62 percent, the transportation sector is the largest source of emissions, and fully two-thirds of transportation emissions are from cars and trucks on Seattle streets.

Although the state of Washington has developed reduction targets for emissions resulting from state agency activities and requires the evaluation of GHG emissions under SEPA, there are currently no national or local standards regulating emissions of GHGs. In contrast to broad-scale actions, such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emission impacts for a particular transportation project. Furthermore, there is currently no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions. Therefore, impacts from GHGs at the project level are generally assessed in a qualitative manner.



Sources: Center for Climate Strategies 2007; SDOT 2012

Figure 13-1
Gross Greenhouse Gas Emissions by Sector in Washington and the United States in 2005

13.2 Construction Impacts and Mitigation

13.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative would not involve any construction activities. Therefore, it would not consume energy during construction and would not result in construction-related GHG emissions.

13.2.2 Construction Impacts of the No Action Alternative

Energy Consumption

Construction energy would constitute most of the overall project-related energy use. Energy would be consumed during construction to manufacture materials, transport materials, and operate construction equipment. Most of the energy consumed during construction would be produced by fossil fuel consumption from construction vehicles and equipment powered by gas or diesel engines. There would

also be some incidental use of electrical energy from construction lighting and electric-powered equipment. No steam energy would be used as a result of project construction.

On-site energy and fuel consumption depends on many factors, such as the type of construction activity, net working days, the acreage subject to disturbance, the type and amount of equipment, the hours of equipment use, and the number of construction truck and worker trips to and from the work site. To allow for a simplified estimate of energy use for complex projects, analysts typically calculate energy consumption during construction by applying a construction energy consumption factor to the estimated total project cost.

The California Department of Transportation derived energy consumption factors for different roadway facilities in the 1983 report Energy and Transportation Systems; these factors are still widely used today. For this analysis, the energy consumption factors for urban roadways and bridges were used to estimate the energy consumed during the project. The consumption factors are expressed as thousands of British thermal units (MBtu) per thousand dollars of construction spending. Based on these factors, the energy expected to be consumed during the construction of AWPOW is approximately 5 million MBtu. For comparison, this is less than one-fiftieth of 1 percent of the total energy output of SCL in 2012.

Greenhouse Gas Emissions

Project construction would contribute to GHG emissions through the burning of fossil fuels to operate construction machinery and transport workers. In addition to the construction activities, GHG emissions would originate from producing concrete and steel for the project. GHG emissions would also result from the use of electrical energy during construction because some of SCL's purchased power comes from fossil fuels. However, SCL offsets all of its GHG emissions by mitigation programs to achieve equivalent emission reductions.

Because the primary source of energy during construction would be the combustion of fossil fuels, GHG emissions for AWPOW are expected to be proportional to overall energy use. The amount of energy used for AWPOW, and hence the total GHG emissions, would be a small fraction of overall energy consumption in Seattle. This usage is not expected to contribute significantly to overall GHG emissions or to hinder compliance with GHG reduction targets in Seattle or the state.

13.2.3 Construction Avoidance, Minimization, and Mitigation Measures

Based on the magnitude of the estimated construction energy consumption, and on GHG emissions compared to applicable GHG emission targets, the Action Alternative would not have a significant effect on energy resources and would not require mitigation. However, the following measures, if implemented by the City, would contribute to improved energy efficiency during construction:

- Limiting idling of equipment
- Encouraging carpooling of construction workers
- Locating staging areas near work sites

13.3 Operational Impacts and Mitigation

Energy consumption during project operation would vary primarily with the degree of traffic congestion in the study area. Traffic congestion reduces fuel efficiency; excessive idling and stop-and-go traffic conditions substantially reduce fuel economy compared to free-flow conditions. Emissions of carbon dioxide are also dependent on congestion and can be reduced by alleviating stop-and-go traffic conditions and allowing traffic to flow at better speeds (Barth and Boriboonsomsin 2009). Hence, improvements in traffic operations reduce both energy consumption and GHG emissions.

13.3.1 Operational Impacts of the No Action Alternative

Energy

Under 2030 No Action conditions in the Alaskan Way corridor, the increased traffic volumes resulting from vehicles that would otherwise have used the Alaskan Way Viaduct would cause substantial congestion and queuing in the corridor. Chapter 3 of this EIS describes these congested conditions, which would result in long delays during which traffic would idle at traffic signals with failing levels of service. Up to 30 percent of vehicles would be diverted from the Alaskan Way corridor, resulting in more circuitous routes to reach their destinations with a corresponding increase in energy consumption. Overall, these conditions would result in higher consumption of energy than under 2017 existing conditions. Consumption of electrical energy and steam energy would not change under the No Action Alternative.

Greenhouse Gas Emissions

Because GHG emissions are proportional to overall energy use by vehicles, these emissions are also expected to increase between the 2017 existing conditions and 2030 No Action Alternative. Stop-and-go traffic and an increase in the number of vehicle miles traveled as a result of diversion would contribute to GHG emissions in the study area.

13.3.2 Operational Impacts of the Action Alternative

Energy

As described in Chapter 3 of this EIS, although the Action Alternative would have similar traffic volumes to the No Action Alternative, it would reduce congestion and result in more efficient operation of the study area transportation system. The number of intersections on Alaskan Way operating at LOS F would decrease from three to two. As a result, vehicles are expected to operate more efficiently, and overall consumption of energy from fossil fuel combustion is expected to decline slightly compared to the No Action Alternative. In addition, AWPOW improvements to pedestrian, bicycle, and transit facilities could encourage alternative forms of transportation to single-occupant vehicles, thus reducing consumption of fossil fuels.

Street lighting and pedestrian signal systems would consume energy in the form of electricity in amounts approximately the same as consumed today. While the main corridor and Promenade would have more lighting than under the No Action Alternative, the new lighting would be energy efficient. The existing electricity grid is expected to have sufficient capacity for the operational electricity demand. Therefore, no adverse impacts on energy demand are anticipated during operation. Steam energy consumption would not change as a result of the Action Alternative.

The public amenities associated with AWPOW could prompt an increase in both tourism and local visitation to the waterfront, thereby resulting in minor increases in traffic and associated GHG emissions. However, the effects of potential increased visitation on energy resources are expected to be minor.

Greenhouse Gas Emissions

Because AWPOW would improve traffic operations and travel times and reduce the number of vehicle miles traveled in the study area, the Action Alternative is expected to slightly reduce GHG emissions compared to the No Action Alternative.

13.3.3 Operational Avoidance, Minimization, and Mitigation Measures

No adverse effects on energy resources and GHG emissions within the study area are expected from the operation of AWPOW; therefore, no mitigation would be necessary.

14 Air Quality

This chapter discusses existing air quality conditions in the study area and describes the potential for project-related impacts during construction and operation. It also describes possible measures to avoid, minimize, or mitigate potential impacts.

14.1 Affected Environment

The affected environment is defined as the conditions that will exist within the study area in 2017 when the AWVRP, EBSP, and PPMWE have been completed and before AWPOW construction begins. The study area for air quality is between S. King Street and Battery Street from the waterfront to I-5.

14.1.1 Air Pollutants and Air Quality Standards

The state of Washington is subject to air quality regulations issued by EPA, Ecology, and the Puget Sound Clean Air Agency (PSCAA). EPA's National Ambient Air Quality Standards (NAAQS) set limits on concentration levels of "criteria pollutants," which are defined as carbon monoxide (CO), particulate matter (PM), ozone, volatile organic compounds (VOCs), and nitrogen oxides (NO_x). Lead and sulfur dioxide (SO_2) are also criteria pollutants, but since the introduction of unleaded fuel and ultra-low sulfur fuel, lead and SO_2 are no longer pollutants of concern for transportation projects. Concentration levels of the criteria pollutants must not exceed the NAAQS over specified time periods. Ecology and PSCAA monitor air quality in the Puget Sound region by measuring the levels of criteria pollutants found in the atmosphere and comparing them with the NAAQS. Areas that meet the limits set by the NAAQS are referred to as "attainment areas," and areas that exceed the limits for one or more pollutants are referred to as "non-attainment areas." When an area is designated as non-attainment, measures must be taken to bring the area into compliance; after a non-attainment area achieves compliance, it becomes a "maintenance" area.

The NAAQS consist of two sets of standards: primary standards that are intended to protect public health and secondary standards that are intended to protect the natural environment. In addition to these standards, Ecology and PSCAA have adopted state and local ambient air quality standards. Table 14-1 lists the national, state, and local air quality standards in effect for criteria pollutants (except for VOCs) in the state of Washington.

Table 14-1. National, State, and Local Ambient Air Quality Standards

Pollutant	National (NAAQS)		Washington State	Puget Sound Region
	Primary	Secondary		
Nitrogen Dioxide				
Annual Average (ppm)	0.053	0.053	0.05	0.05
1-Hour Average (ppm)	0.100	0.100	NS	NS
Carbon Monoxide				
8-Hour Average (ppm)	9	NS	9	9
1-Hour Average (ppm)	35	NS	35	35
Ozone				
8-Hour Average (ppm)	0.075	0.075	NS	NS
Lead				
Maximum Arithmetic Mean ($\mu g/m^3$) (averaged over rolling 3 months)	0.15	0.15	NS	1.5

Table 14-1. National, State, and Local Ambient Air Quality Standards

Pollutant	National (NAAQS)		Washington State	Puget Sound Region
	Primary	Secondary		
Sulfur Dioxide				
Annual Arithmetic Average (ppm)	NS	NS	0.02	0.02
24-Hour Average (ppm)	NS	NS	0.10	0.10
3-Hour Average (ppm)	NS	0.5	NS	NS
1-Hour Average (ppm)	0.075	NS	0.40	0.40
Particulate Matter (PM_{10})				
24-Hour Average ($\mu g/m^3$)	150	150	150	150
Particulate Matter ($PM_{2.5}$)				
Annual Arithmetic Average ($\mu g/m^3$)	12	15	NS	NS
24-Hour Average ($\mu g/m^3$)	35	35	NS	NS

Source: Air and Radiation: National Ambient Air Quality Standards (NAAQS). Accessed at: http://www.epa.gov/air/criteria.html (EPA 2013)

$\mu g/m^3$ = micrograms per cubic meter

NAAQS = National Ambient Air Quality Standards

NS = no standard established

$PM_{2.5}$ = particulate matter smaller than 2.5 microns in diameter

PM_{10} = particulate matter smaller than 10 microns in diameter

ppm = parts per million

Transportation is a significant source of many criteria pollutants, including CO, PM, VOCs, and NO_x. Emissions of these pollutants are greatest under congested conditions, when vehicles are idling during long periods of delay at traffic signals. In addition to criteria pollutants, vehicles also emit mobile source air toxics (MSATs); these are compounds that can negatively affect human health. MSATs are released primarily by diesel-powered vehicles, such as trucks and buses, as well as non-road diesel-powered equipment. Currently, there are no standards establishing allowable concentrations of MSAT emissions in the air.

14.1.2 Climate Conditions and Local Air Quality

The Puget Sound region has a relatively mild, marine climate with cool summers and mild, wet, and cloudy winters. Within the study area, weather conditions such as temperature, fog, rain, and snowfall can vary within short distances, influenced by such factors as the distance from Puget Sound, the rolling terrain, and air from the ocean moving inland.

Although the region contains some of the most densely populated and industrialized areas in Washington, there is sufficient wind most of the year to disperse air pollutants released into the atmosphere. Air pollution is usually most noticeable in the late fall and winter, under conditions of clear skies, light wind, and a sharp temperature inversion. Temperature inversions occur when cold air is trapped under warm air, preventing vertical mixing in the atmosphere. Inversions can last several days and can prevent pollutants from being dispersed by the wind. Inversions are most likely to occur during January, February, October, November, and December. If poor dispersion persists for more than 24 hours, PSCAA can declare an "air pollution episode" or local "impaired air quality."

The Puget Sound region is currently in attainment or unclassified for all criteria pollutants except for CO; EPA designated the region as being in maintenance status for CO in 1996. Ecology also designates Seattle and King County as being in maintenance status for ozone. The project footprint is just north of the Seattle Duwamish maintenance area for PM_{10}. Within the study area, transportation is the primary source of CO and PM_{10}. Emission projections and ongoing monitoring throughout the Puget Sound

region over the past decade indicate that the ambient air pollution concentrations for CO have been decreasing. The decline of CO is due primarily to improvements made to emission controls on motor vehicles and the retirement of older, higher polluting vehicles. Attainment status is not expected to change by 2017, when construction is planned to begin on AWPOW.

14.2 Construction Impacts and Mitigation Measures

14.2.1 Construction Impacts of the No Action Alternative

The No Action Alternative would not involve any construction, and therefore would have no construction-related impacts on air quality.

14.2.2 Construction Impacts of the Action Alternative

During construction of AWPOW, soil-disturbing activities, operations of heavy-duty equipment, commuting workers, and the placement of concrete and asphalt may generate emissions that would temporarily affect air quality. The total emissions and the timing of the emissions from these sources would vary depending on the phasing of the project and options chosen for the project.

Typical sources of emissions when transportation projects are under construction include:

- Fugitive dust generated during excavation, grading, and loading and unloading activities
- Dust generated during demolition of structures and pavement
- Engine exhaust emissions from construction vehicles, worker vehicles, and construction equipment using diesel as fuel
- Increased motor vehicle emissions associated with increased traffic congestion during construction
- VOCs and odorous compounds emitted during asphalt paving

The regulated pollutants of concern for the first two source types (dust) are particulate matter smaller than 2.5 microns in diameter ($PM_{2.5}$) and PM_{10}. Engine and motor vehicle exhaust would result in emissions of VOCs, NO_x, $PM_{2.5}$, PM_{10}, air toxics, and GHGs.

14.2.3 Construction Avoidance, Minimization, and Mitigation Measures for the Action Alternative

For temporary impacts during construction, state law requires that construction site owners and operators take reasonable precautions to prevent fugitive dust from becoming airborne. Fugitive dust may become airborne during demolition, material transport, grading, vehicle and machinery operations on and off the work site, and wind events. Controlling fugitive dust emissions could involve some of the following actions:

- Spray exposed soil with water or other suppressant to reduce emissions and deposition of particulate matter
- Phase construction activities to keep disturbed areas to a minimum
- Use wind fencing to reduce disturbance to soils
- Minimize dust emissions during transport of fill material or soil by wetting down or by ensuring adequate freeboard (space from the top of the material to the top of the truck bed) on trucks
- Promptly clean up spills of transported material on public roads
- Schedule work tasks to minimize disruption of the existing vehicle traffic on streets
- Restrict traffic on site to reduce soil upheaval and the transport of material to roadways

- Locate construction equipment and truck staging areas away from sensitive receptors, to the extent practicable, and in consideration of potential impacts on other resources
- Provide wheel washers to remove particulate matter that would otherwise be carried off site by vehicles to decrease deposition of particulate matter on area roadways
- Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris
- Minimize odors on site by covering loads of hot asphalt
- Require contractors to keep machinery in good mechanical condition, reduce idling time, and use equipment with emission controls, where feasible, to minimize exhaust emissions

14.3 Operational Impacts and Mitigation Measures

14.3.1 Operational Impacts of the No Action Alternative

As described in Chapter 3 of this Draft EIS, traffic volumes under the No Action Alternative are generally expected to increase by approximately 5 to 10 percent between 2017 and 2030 due to regional population and employment growth. This growth would result in higher levels of traffic congestion, which contributes to higher pollutant emissions. Three intersections (Alaskan Way at Columbia, Spring, and Pine Streets) are expected to operate at LOS F in 2030 under the No Action Alternative. These intersections would experience considerable delay, which would result in increased emissions of CO and PM compared to 2017 levels.

14.3.2 Operational Impacts of the Action Alternative

Traffic volumes in 2030 under the Action Alternative would be essentially the same as those for the No Action Alternative. However, congestion would be reduced by AWPOW's improvements. As described in Chapter 3, LOS is expected to improve in the study area under the Action Alternative, with only two intersections on Alaskan Way operating at LOS F. Because air emissions are directly correlated to traffic volumes and congestion, the Action Alternative is expected to result in a slight reduction in emissions of CO and PM within the study area. The Action Alternative's reduced congestion would also contribute to decreased emissions of MSATs by reducing vehicle-miles traveled.

14.3.3 Operational Avoidance, Minimization, and Mitigation Measures for the Action Alternative

Because no impacts are expected to result from operation of the Action Alternative, no mitigation is required.

15 Cumulative Impacts and Mitigation Measures

This chapter describes how the environmental impacts of AWPOW may contribute to the impacts of other past, present, and reasonably foreseeable actions to affect resources in the study area. AWPOW's improvements would be built in the midst of a dynamic, working waterfront that has a rich history, several projects are currently under construction, and more projects are planned in the future. The cumulative impacts analysis evaluates the impacts that could result from the combination of these multiple activities over time. Its purpose is to identify the potential for incremental changes to a given resource which could, if left unmitigated, reach significant proportions. The analysis is also helpful for decision makers in evaluating how sustainable a proposed project is likely to be in the future and how it might interact with other projects that are foreseeable, but have not yet been built.

SEPA requires that cumulative impacts be considered in an EIS (WAC 197-11-792). Although SEPA does not specifically define "cumulative impacts," the term is defined under the National Environmental Policy Act (NEPA) as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time." (40 CFR 1508.7).

15.1 How Cumulative Impacts Were Evaluated for AWPOW

The cumulative impacts and mitigation measures analysis for AWPOW was performed in accordance with the eight-step guidance developed jointly by WSDOT, FHWA, and EPA, Region X (WSDOT 2008).

The City completed Step 1 of the guidance by determining that all of the resources evaluated in discipline reports for this EIS would be analyzed for cumulative impacts. Project analysts identified appropriate study areas and time frames in which to evaluate cumulative impacts for their resources (Step 2), evaluated the current status and historical context for each resource (Step 3), and characterized the construction and operational impacts of AWPOW that might contribute to cumulative impacts (Step 4). The City completed Step 5 by compiling a list of reasonably foreseeable actions within the combined study areas of all the disciplines. Based on this list, analysts determined whether the combination of AWPOW's impacts and those of other projects would result in cumulative impacts (Step 6) and assessed the need for mitigation measures (Step 8). This chapter, and the cumulative impacts chapters in each discipline report, constitute Step 7, documentation of the results.

The cumulative impacts analysis assumes that the AWVRP, EBSP, and PPMWE have been completed before AWPOW construction begins and are part of the 2017 existing conditions.

The eight steps outlined in the joint guidance on preparing cumulative impact analysis are:

Step 1: Identify the resources to consider in the analysis

Step 2: Define the study area for each resource

Step 3: Describe the current status/viability and historical context for each resource

Step 4: Identify direct and indirect impacts of the project that might contribute to a cumulative impact

Step 5: Identify other current and reasonably foreseeable actions

Step 6: Identify and assess cumulative impacts

Step 7: Document the results

Step 8: Assess the need for mitigation

15.2 Reasonably Foreseeable Actions

To identify reasonably foreseeable actions that could, in combination with AWPOW, contribute to cumulative impacts, the City reviewed comprehensive land use planning documents, long-range transportation plans, and agency websites in order to obtain publicly available information. The City also contacted staff from other City departments to obtain information on upcoming planned and permitted development within the cumulative impact study area.

Table 15-1 and Figure 15-1 show the reasonably foreseeable actions identified through this process. Future actions that are not numbered are plans that cover a larger area and projects located more than ¼ mile from the project footprint. Most of the actions shown are individual projects that the City believes have a reasonable expectation of being implemented before the AWPOW design year of 2030. Also shown are several plans that include multiple actions, such as the Bicycle Master Plan. In these cases, the City determined that the implementation of actions in the plan, in combination with AWPOW, could contribute to cumulative impacts on some resources. The potential cumulative impacts for the actions checked in Table 15-1 are discussed by resource in Sections 15.3 through 15.14.

In a number of cases, construction of the reasonably foreseeable actions could overlap in space and time with the construction of AWPOW. This chapter discusses the potential cumulative impacts of such concurrent construction along with those of project operation. Projects whose current schedules overlap with the planned construction time frame for AWPOW (currently estimated from mid-2017 through 2020) are:

- Union Street Pier Replacement—anticipated 2019
- Seattle Multimodal Terminal at Colman Dock Project—anticipated 2017 to 2022
- Seattle Aquarium Expansion—anticipated 2020 or later
- Pier 62/63 Replacement—anticipated 2019
- Two-Way Columbia Street Pathway Project—anticipated 2019
- Center City Connector Streetcar Project—anticipated 2020
- Madison Corridor Bus Rapid Transit Project—anticipated 2018 to 2020
- Private development projects in downtown Seattle and Belltown—anticipated 2016

15.3 Transportation and Parking

15.3.1 Study Area and Time Frame

The study area for cumulative impacts on transportation and parking is based on consideration of potential impacts on these resources. Accordingly, the study area for cumulative impacts is defined generally as the downtown Seattle area, bordered by the West Seattle Bridge to the south, I-5 to the east (including I-5 through downtown Seattle), Elliott Bay to the west, and South Lake Union to the north. The time frame for the cumulative impacts assessment is the period from approximately 1953 (when the Alaskan Way Viaduct was completed) until 2030, the design year for the project.

15.3.2 Current Health and Historical Context

Growth and development in Seattle and the Puget Sound region have resulted in increased traffic volumes and congestion for many decades. The Alaskan Way Viaduct was constructed and completed in 1953 to relieve congestion in downtown Seattle and to provide a north-south regional connection through the Seattle area. The Alaskan Way Viaduct carried approximately 19,000 vehicles per day, and now carries approximately 110,000 vehicles per day (Ott 2011; FHWA et al. 2009). The viaduct provides an important north-south connection, but creates a barrier between the waterfront and downtown Seattle and became structurally unstable after the 2001 Nisqually Earthquake. Plans to replace the

Table 15-1. Reasonably Foreseeable Actions Considered in the Cumulative Impacts Analysis

		Estimated Construction Time Frame	Description	Potential Cumulative Impacts										
				Transportation	Parking	Land Use	Aesthetics	Noise	Hazardous Materials	Public Services and Utilities	Historic Resources	Archaeological Resources	Water Quality	Vegetation and Wildlife
Actions in the Project Vicinity														
1	Terminal 46 Dock Rehabilitation, Crane Rail Extension, and Paving	2015–2020	Repair deteriorated container berth pile caps and deck panels; repair terminal apron and container yard to address safety concerns; and extend dock crane rail to allow an additional 100-foot gauge crane.				✓	✓		✓		✓	✓	✓
2	Central Waterfront Combined Sewer Overflow Project	2016–2018	Provide increased storage capacity within the combined sewer system. The study area currently includes five CSO outfalls, located at King, Washington, University, Pine, and Vine Streets.					✓	✓	✓		✓	✓	✓
3	Seattle Multimodal Terminal at Colman Dock Project	2017–2022	Replace aging and seismically vulnerable components of Colman Dock, including the timber portion of the dock, vehicle and overhead loading structures on slip 3, and the main terminal building. The project will add about 5,200 square feet of new overwater coverage.	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
4	Union Street Pier Replacement	2019	Replace the current Waterfront Park with a new park on a rebuilt Union Street Pier.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5	Seattle Aquarium Expansion	2020	Expand the aquarium to accommodate new exhibits and programs.	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
6	Pier 62/63 Replacement	2019	Replace the existing Pier 62/63 with a reconfigured pier to be used for recreation, including temporary boat moorage.	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
7	Pier 66 Cruise Terminal Shore Power Upgrade	2020	Upgrade the pier's electrical system to allow cruise ships to plug into shore power during calls, reducing diesel emissions.					✓				✓	✓	✓
8	Elliott Bay Seawall Project, Phase 2 (North Seawall)	2018 or later	Rebuild the seawall from Virginia Street to Broad Street to resist storm and seismic events.				✓	✓	✓	✓	✓	✓	✓	✓
9	Battery Street Portal Park	2018–2020	Develop the open space created by closure of the north portal of the Battery Street Tunnel.			✓	✓	✓	✓	✓	✓	✓	✓	✓
10	Alaskan Way Promenade, Phase 2	2018 or later	Extend the Promenade north from the Overlook Walk to Broad Street following the North Seawall replacement.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

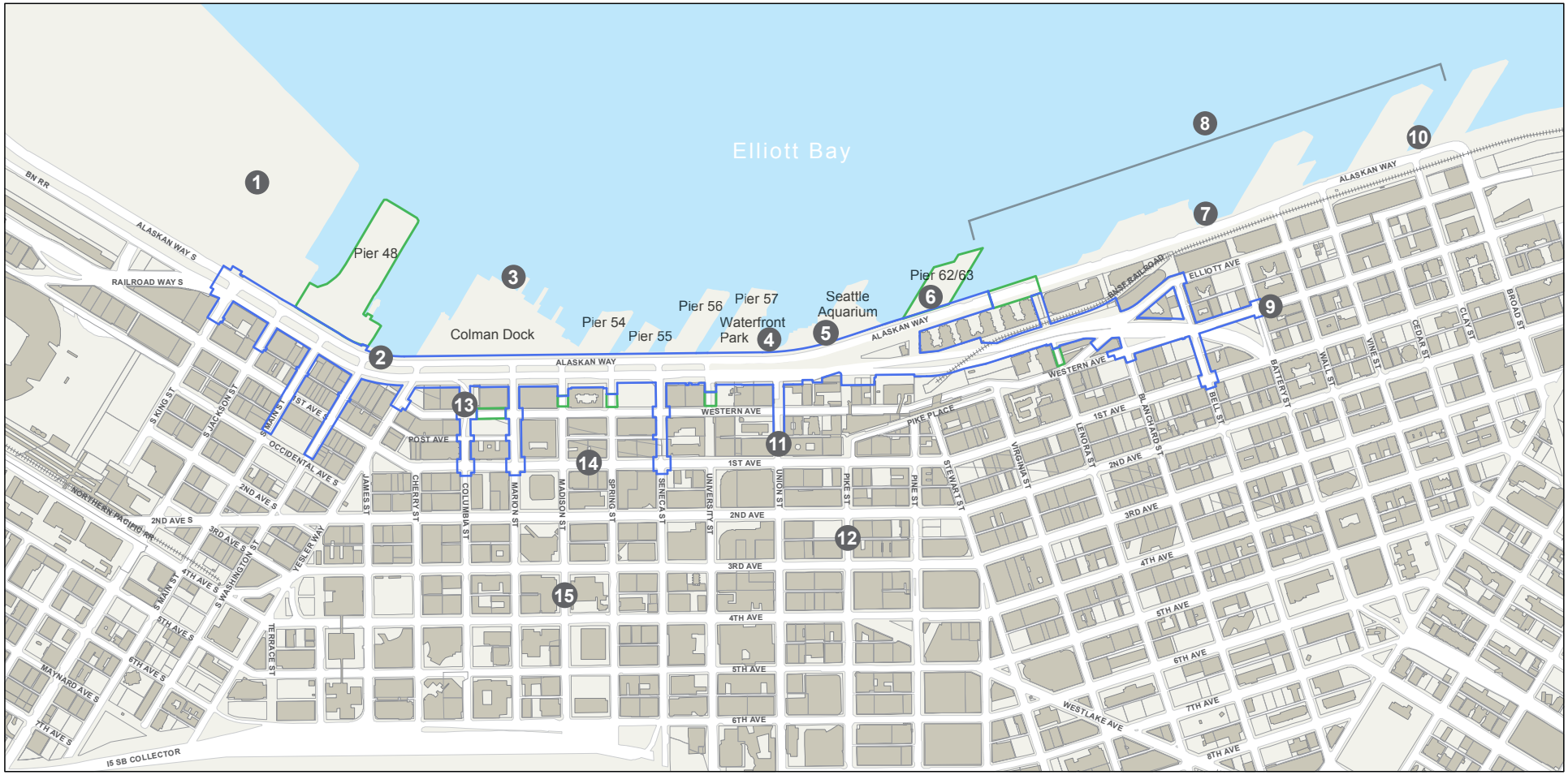
Table 15-1. Reasonably Foreseeable Actions Considered in the Cumulative Impacts Analysis

		Estimated Construction Time Frame	Description	Potential Cumulative Impacts										
				Transportation	Parking	Land Use	Aesthetics	Noise	Hazardous Materials	Public Services and Utilities	Historic Resources	Archaeological Resources	Water Quality	Vegetation and Wildlife
Development in Downtown Seattle														
11	Union Street Gondola	Unknown	Construct a gondola linking the Washington State Convention & Trade Center with the Seattle waterfront via Union Street.	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
12	Pike-Pine Renaissance	Unknown	Improve the Pike-Pine corridors in downtown Seattle from First Avenue to I-5 by providing higher-quality, more consistent pedestrian space by upgrading the standards for sidewalks and intersections.	✓		✓								
	South Downtown Rezone (Livable South Downtown)	2011–ongoing	Provide for increased densities in areas south of downtown Seattle, including Pioneer Square and the stadium area.	✓	✓	✓	✓							✓
	SODO Arena	Unknown	Construct a new stadium in the South Downtown (SODO) area for professional basketball and hockey.	✓	✓	✓		✓			✓			✓
	Private development projects in downtown Seattle (including Pike Place Market) and Belltown	2016–ongoing	Develop new residential and commercial space in downtown Seattle comprising an estimated development of 4,500 residential units; 2,500 hotel rooms; 2 million square feet of office space; and 65,000 square feet of ground-floor retail.	✓	✓	✓	✓	✓	✓	✓		✓	✓	
Local and Regional Transportation Improvements (Bus, Streetcar, Light Rail)														
13	Two-Way Columbia Street Pathway Project	2019	Reroute bus routes from Southwest Seattle onto Alaskan Way and Columbia Street up to Third Avenue after AWPOW is complete.	✓	✓	✓	✓	✓				✓		✓
14	Center City Connector Streetcar Project	2020	Develop a new streetcar route generally along First Avenue and Stewart Street that will link the South Lake Union and First Hill Streetcars.	✓	✓	✓		✓		✓	✓	✓		✓
15	Madison Corridor Bus Rapid Transit Project	2018–2020	Implement bus rapid transit service on Madison Street between Colman Dock and 23rd Avenue East in Madison Park.	✓	✓	✓	✓	✓						✓
	Roosevelt to Downtown Project	2020	Provide a new high-capacity transit route for improved service between the University District and downtown Seattle via Eastlake Avenue East.	✓										✓
	University Link Extension	In construction through 2016	Build a 3.15-mile light rail extension that will run in twin bored tunnels from downtown Seattle north to the University of Washington, with stations in Capitol Hill and on the University of Washington campus near Husky Stadium.	✓										
	Northgate Link Extension	In construction through 2020	Build a 4.3-mile light rail extension from the University of Washington Station to Northgate Station with two stations in between (Brooklyn and Roosevelt).											
	Lynnwood Link Extension	2018–2023	Build an 8.5-mile light rail extension from Northgate to Lynnwood with 4 to 6 new stations.											

Table 15-1. Reasonably Foreseeable Actions Considered in the Cumulative Impacts Analysis

		Estimated Construction Time Frame	Description	Potential Cumulative Impacts										
				Transportation	Parking	Land Use	Aesthetics	Noise	Hazardous Materials	Public Services and Utilities	Historic Resources	Archaeological Resources	Water Quality	Vegetation and Wildlife
	East Link Extension	2015–2022	Provide light rail service linking Redmond and Bellevue with downtown Seattle across Lake Washington.											
	Pedestrian Master Plan Implementation	2009–ongoing	Improve pedestrian facilities in downtown Seattle, including connections to other parts of the city; AWPOW pedestrian facilities are included in the plan.	✓	✓	✓							✓	
	Bicycle Master Plan Implementation	2014–ongoing	Improve the bicycle network in downtown Seattle, including connections to other parts of the city; AWPOW bicycle facility is included in the plan.	✓	✓	✓							✓	
	SR 520, I-5 to Medina Bridge Replacement and HOV Project	Ongoing–completion by 2020	Replace the existing SR 520 corridor from I-5 to Medina, including the Evergreen Point floating bridge, with two general-purpose lanes and one HOV lane in each direction.	✓										
	I-90 Tolling Project	Unknown	Conduct tolling on I-90 to manage congestion and fund completion of the SR 520, I-5 to Medina Bridge Replacement and HOV Project.	✓										

Note: The locations of the numbered projects (1 to 15) are shown on Figure 15-1. Future actions that are not numbered are plans that cover a larger area and projects located more than ¼ mile from the project footprint that could impact the downtown transportation system



0 500 1,000
Feet

Source: King County, City of Seattle

Action Alternative
- Project Footprint
- Potential Construction Staging Area
- Parcel Boundary
- Building Footprint

Note:
Table 15-1 lists the future actions considered in the cumulative impacts analysis. Future actions that are not numbered on this figure are plans that cover a larger area and projects located more than 0.25 mile from the project footprint that could impact the downtown transportation system.

Figure 15-1
Reasonably Foreseeable Actions in the Project Vicinity

Alaskan Way, Promenade, and Overlook Walk

viaduct began shortly after the Nisqually Earthquake, and a bored tunnel alternative was selected as the preferred alternative. Increased use of pedestrian, bicycle, and transit facilities and services over the past several decades has also created the need and opportunity for improved facilities to support changing transportation trends in the Seattle area.

In 2017, the restored Alaskan Way roadway will provide transit, freight, and general-purpose travel lanes; emergency vehicle access; and pedestrian and bicycle facilities. Other transportation resources in the study area include public transportation services operated by King County Metro; water transportation services operated by WSF, King County Water Taxi, and cruise ship service; and freight and passenger rail service, which operates in a tunnel for the majority of the study area. The existing resources are adequate to serve demand in 2017, with the exception of some intersections that are expected to operate at unacceptable levels in the PM peak hour. However, the transportation system would not improve the connection between the waterfront and downtown Seattle or add new facilities and amenities for transit, bicycle, and pedestrian traffic.

From the 1930s to the late 20th century, Seattle and the Puget Sound region—including the study area—were developed in a manner that assumed and supported the use of personal automobiles. As a result, large supplies of parking were developed, such as those that existed in the study area before the beginning of AWVRP construction. Much of the area's parking has been in place since the 1970s, when the waterfront began to transition from industrial and commercial use to recreational and tourist use.

Since the early 2000s, Seattle's population has reversed the historical trend, shifting from automobile dependency toward higher levels of transit, bicycle, and pedestrian travel. During this time, the number of parking spaces along the waterfront began to level off in accordance with demand. The current parking resources in the study area include a number of off-street parking lots as well as on-street public parking along Alaskan Way and side streets. The parking resources that will exist in 2017, prior to the start of AWPOW construction, are adequate to serve the existing demand.

15.3.3 Project-Related Construction and Operational Impacts

The analysis in Chapter 3 shows that AWPOW would have the following impacts on transportation resources:

- The primary construction impact would occur during the road closure at Pike Street on Alaskan Way, which would require vehicles to use the new Elliott Way to detour around the road closure to access the northern portion of Alaskan Way. This could increase travel times and congestion at Wall, Vine, Clay, and Broad Streets. Other construction impacts would be short term and could be avoided or minimized by BMPs, public communication, and coordination with transportation service providers.
- Operational impacts on business access could occur due to the new location of Alaskan Way, which would alter existing access to businesses. Impacts would be minimized by providing sufficient on-street loading and parking zones near affected businesses and coordinating with businesses to develop alternative access routes for freight.

AWPOW would have the following impacts on parking:

- Construction activities for AWPOW would impact parking throughout the study area by temporarily or permanently eliminating on-street parking spaces in the active construction area. To construct the Action Alternative, SDOT would acquire a surface parking lot with approximately 60 off-street spaces and convert it to right of way.
- Operational impacts on parking would consist of the removal of 88 on-street parking spaces along Alaskan Way, 377 parking spaces that existed under the Alaskan Way Viaduct, 15 on-street spaces on Bell Street, 3 spaces on Union Street, and 1 space on S. Main Street. The removal of this parking supply would adversely impact some users. The overall loss of on-street

parking supply represents approximately 26 percent of on-street parking and approximately 6 percent of all parking in the study area.

15.3.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects with check marks in the Transportation and Parking column of Table 15-1 are those that may result in construction or operational impacts on transportation in the study area. Chapter 8 of Appendix A, Transportation Discipline Report, and Appendix B, Parking Discipline Report, provide detailed information on the impacts of each checked project.

Projects that may be under construction simultaneously with AWPOW are identified in Section 15.2. All of these projects are likely to result in varying degrees of traffic congestion and diversion during construction because of detours, lane closures, and additional truck traffic. Most would also result in some disruption to on-street parking and loading spaces, although there is generally sufficient off-street parking to accommodate these temporary reductions. Transit and freight vehicles, as well as general-purpose traffic, would experience these impacts. Construction of the Seattle Multimodal Terminal at Colman Dock would temporarily reduce vehicle storage capacity in the ferry holding lanes, which would further contribute to congestion. Pedestrian and bicycle traffic would also experience some delays resulting from the need to detour around the active construction area.

The operation of the transportation improvements checked in Table 15-1 would benefit all modes of transportation in the study area, reducing congestion and supporting a wider variety of travel choices. Implementation of the Pedestrian Master Plan and the Bicycle Master Plan would establish new facilities and connections between existing facilities so that nonmotorized travelers could safely reach a wider variety of destinations. Planned streetcar and bus rapid transit projects, along with Sound Transit light rail extensions, would substantially enhance transit service in the study area. Although the creation of new bicycle and transit lanes may affect a small amount of parking, enhancing facilities for nonmotorized transportation would provide travel options that could reduce the overall parking demand. Regional improvements such as the SR 520 bridge replacement would improve overall traffic flow throughout the study area. Although proposed development projects along the waterfront and nearby (such as the SODO arena) would generate additional vehicle, bicycle, and pedestrian traffic in the study area, the reasonably foreseeable transportation improvements would provide the multimodal capacity needed to accommodate the increased demand while also reducing the need for parking.

15.3.5 Potential Cumulative Impacts to Transportation and Parking

Cumulative impacts could result if the construction of AWPOW occurs simultaneously with that of any of the projects checked in Table 15-1. Impacts from simultaneous construction with other reasonably foreseeable projects could include additional traffic diversion to other streets, temporary closures of transportation facilities such as sidewalks or bicycle facilities, and increased travel time and delay for all modes of transportation. Simultaneous construction could also result in a temporary reduction of available on-street parking spaces in the study area. However, many off-street parking spaces and garages are available in the area. Because the combined impacts of AWPOW construction and any reasonably foreseeable projects would occur in isolated locations and for limited durations of time, they are not expected to significantly impact the status or condition of transportation resources or parking.

Operational impacts of AWPOW and the other reasonably foreseeable projects could increase the volumes of motor vehicles, pedestrians, and bicyclists in the study area. An increase in nonmotorized traffic in the study area would not have a significant adverse impact because several of these projects, including AWPOW, would provide new nonmotorized facilities that would have enough capacity to accommodate additional users. The new nonmotorized facilities would be designed to current standards to maintain user safety and comfort even with more users. As a result, cumulative impacts on nonmotorized transportation are expected to be beneficial.

Operation of AWPOW would remove approximately 6 percent of all parking in the study area. The projects checked in Table 15-1 could affect a small number of parking spaces, primarily due to additional transit vehicles or bicycle lanes. Some of the projects would also generate additional parking demand. However, many of these projects, like AWPOW, would also enhance facilities for nonmotorized transportation and transit, thereby providing travel options to and from the waterfront and collectively reducing the overall demand for parking in a manner consistent with City policies.

AWPOW and the reasonably foreseeable projects would improve roadway facilities and expand the transit system. Along with the improvements included in AWPOW, improvements to key roadway facilities (such as the SR 520, I-5 to Medina Bridge Replacement and HOV Project, and the AWVRP when it is complete) will enhance the overall capacity and operation of the regional transportation system. Even more substantial improvements are proposed to the transit system in the study area, such as proposed new light rail and streetcar service and the shift of King County Metro bus service to the permanent pathway on Columbia Street. These transit enhancements, in combination with AWPOW's proposed improvements to nonmotorized modes and transit facilities, are likely to result in some degree of mode shift from single-occupant vehicles to transit over time. Overall, the combined operational impacts of AWPOW and reasonably foreseeable future projects are not expected to adversely impact the status or condition of transportation resources or parking, and could provide a modest degree of benefit to regional transportation.

15.3.6 Mitigation Measures for Cumulative Impacts

During construction of AWPOW and the reasonably foreseeable actions that may affect transportation, the City and other proponents should coordinate closely to minimize closures, detours, and delays for all travel modes. Coordination between the City and WSF will be particularly important if AWPOW and the Seattle Multimodal Terminal at Colman Dock Project are constructed at the same time. Coordination with other projects proposed in or adjacent to the AWPOW footprint, such as the Seattle Aquarium expansion, the Union Street Pier Replacement, the Union Street Gondola, and the Two-Way Columbia Street Pathway Project would all require coordination with their respective proponents if they were constructed concurrently with AWPOW.

Simultaneous construction of AWPOW and reasonably foreseeable actions are anticipated to result in losses of on-street parking spaces. The City and other project proponents could implement measures similar to those presented in Section 3.6.3 to minimize the effect of construction-related cumulative impacts on parking. In addition, the City would continue enforcement of short-term parking limits and the use of e-Park, which provides real-time off-street parking availability, to make the most efficient use possible of the supply of short-term parking within the project footprint.

Because AWPOW operation would not adversely affect travel modes, no mitigation measures for cumulative operational impacts for transportation are suggested. However, to mitigate for operational cumulative impacts on parking, the City and other project proponents could implement measures similar to those presented in Section 3.7.3. Such measures could create additional off-street parking, modify and enforce on-street parking policies and practices, provide real-time information on parking availability, provide wayfinding to existing off-street parking, and work to increase awareness and use of alternative modes of transportation.

15.4 Land Use

15.4.1 Study Area and Time Frame

The study area for the analysis of cumulative land use impacts is the same as for the construction and operational impacts analysis described in Chapter 4—the area inside a two-block radius from the edge of the project footprint. The past temporal boundary for the analysis is approximately 1850, when Euro-American settlers came to the Seattle area (City of Seattle 2014). Prior to the arrival of Euro-American settlers, there likely were Native American settlements above the original Elliott Bay waterfront, but

Native American uses, although significant, did not result in the type of urban development that Euro-American settlers brought. The future temporal boundary is the project design year of 2030.

15.4.2 Current Health and Historical Context

The land in the study area is highly developed, and has been occupied by urban land uses for about 150 years. Although Euro-American settlers came to Seattle around 1850, population growth was modest, with an estimated 2,000 residents living in the city when it incorporated in 1869. It was not until the 1880s when Seattle saw significant population growth after connecting with the Northern Pacific railroad line, and with the growth of the lumber and coal industries, fishing, wholesale trade, and ship building. Estimates for the growth in population in 1889 had 1,000 new residents entering Seattle per month. The fire of 1889, which destroyed buildings on 116 acres in the business district, provided the city leaders an opportunity for municipal improvements, such as wider and regraded streets, reconstructed wharfs, and municipal water works. The 1897 discovery of gold along the Klondike River made Seattle a boom town. By 1909, the population was approaching 240,000, and the once small logging town became a small city with a developed waterfront and downtown (City of Seattle 2014).

The gold rush led to an influx of immigrants to Seattle, and the downtown area developed to accommodate this growth. During this time, many of Seattle's neighborhoods got their start, with streetcars providing transportation to the new neighborhoods outside of the downtown area. The first decade or so of the 1900s also saw the city undertake a major effort to level the steep hills to the north and south of the downtown area. The spoils from the Denny Regrade and regrading of S. Jackson Street were used to fill areas along the waterfront. The fill and construction of the seawall established much of the present-day waterfront land in the study area. The regrading also encouraged development around the downtown core. World War I brought success to Seattle's shipbuilding industry, but that success ended with the war and ushered in the Great Depression. During and after World War II, the success of Boeing led an economic growth period that lasted until 1970. During this period, the interstate highways (I-5 and I-90) were built, along with the Alaskan Way Viaduct. In 1979, Microsoft was established, beginning a trend of technology-related businesses influencing growth in Seattle. During the 1970s, the city's waterfront also began to transition from commercial and industrial use to uses related to recreation and tourism.

In recent decades, the City has focused on increasing residential and commercial density in the downtown commercial core with new mixed-use buildings and condominiums. Adjacent neighborhoods also have seen an increase in development to address the growing population. Given the presence of several Fortune 500 companies (e.g., Boeing, Amazon, Microsoft, Google) and smaller successful technology firms (gaming, software) in the area, Seattle is poised for continued growth.

15.4.3 Project-Related Construction and Operational Impacts

Construction of the Action Alternative would result in noise, dust, glare, traffic, access disruption, detours, and other impacts associated with construction work on adjacent land uses. These impacts would be temporary and would vary in intensity and duration, depending on the type of construction occurring.

Operational impacts of the Action Alternative would be positive because the project would support land use plans that call for planned density, increased transportation capacity and mobility for all modes, and increased economic vitality in downtown Seattle. These plans are in place to guide development within Seattle so that it produces desired results, such as urban density, walkable neighborhoods, adequate public facilities, and economic vitality. The study area is already a dense, urban area; therefore, this project would not cause growth, but rather support the present and future community. AWPOW may increase the desirability of the waterfront area for businesses or residences, resulting in new development that may occur in underutilized areas, but this would not change the land use in the study area.

AWPOW would rebuild Alaskan Way to accommodate general-purpose, regional transit, and freight traffic. It would also accommodate pedestrians and bicyclists and provide improved east-west connections from downtown Seattle to the waterfront. These connectivity and mobility improvements address goals in Transportation 2040 (congestion and mobility), Seattle Comprehensive Plan (urban village, land use, and transportation elements), and the various transportation-related plans (e.g., Transportation Strategic Plan, City of Seattle Center City Circulation Report, Pedestrian Master Plan, and Bicycle Master Plan). The Promenade and Overlook Walk would also provide new open space and opportunities for businesses, both of which support goals found in the City's land use plans.

15.4.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Land Use column of Table 15-1 are those that may result in construction or operational impacts on land use in the study area. Chapter 8 of Appendix C, Land Use Discipline Report, provides more information on the impacts of each checked project.

The projects checked in Table 15-1 are governed by the adopted land use and transportation plans for the city and the region. In general, these projects support the City's land use goals for the waterfront and downtown areas and would have positive operational impacts on land use. During construction there could be temporary negative cumulative impacts on nearby land uses, such as increased noise, traffic congestion, and aesthetic impacts. However, the completion of these projects would contribute to positive cumulative impacts on land use in the form of enhanced bicycle, pedestrian, and transit facilities; growth in neighborhoods designated for higher-density development; and more access to better public services and facilities.

Actions in the project vicinity (Union Street Pier Replacement, Seattle Aquarium Expansion, Pier 62/63 Replacement, Battery Street Portal Park, and Phase 2 of the Alaskan Way Promenade) would result in long-term impacts during their operation, including an improved pedestrian environment, larger and more usable open spaces, and improved recreational opportunities in the study area. All of these long-term impacts would strongly support regional and local land use planning.

Development in downtown Seattle (Union Street Gondola, Pike-Pine Renaissance, South Downtown Rezone, SODO arena, and various private development projects) would result, over the long term, in greater density in Seattle's downtown core and enhancements to nonmotorized transit in key pedestrian corridors (specifically the gondola and the Pike-Pine Renaissance improvements). These changes would be consistent with regional and City goals for concentrating growth in urban centers and improving the quality of the pedestrian environment.

Local and regional transportation improvements (Two-Way Columbia Street Pathway Project, Center City Connector Streetcar Project, Madison Corridor Bus Rapid Transit Project, and implementation of the Bicycle and Pedestrian Master Plans) would result in long-term beneficial impacts during their operation. The three transit projects would create new and enhanced transit routes linking the study area to other parts of Seattle, supporting the Transit Master Plan and other plans that encourage multimodal transportation in the city. Implementation of the Bicycle Master Plan and the Pedestrian Master Plan would create improved pedestrian and bicycle connections that would promote alternative modes of transportation, increasing Seattle's vibrancy and sustainability and supporting the goals of many elements of the Comprehensive Plan.

15.4.5 Potential Cumulative Impacts for Land Use

During AWPOW's construction, there could be temporary adverse cumulative impacts on land use if other reasonably foreseeable projects are under construction concurrently near the project footprint. Projects whose construction schedules may overlap with AWPOW's are identified in Section 15.2. The cumulative impacts of concurrent construction schedules for AWPOW and the projects shown in Section 15.2 would result in more intense construction-related impacts, such as noise, dust, vibration,

visual intrusions, and traffic congestion, than would have been experienced if only one project was under construction in the area. For example, construction cumulative impacts on land use could be a detour that is in place longer than it would have been, thereby affecting the patronage of the businesses that it bypasses or makes it inconvenient to access; noise that is louder at adjacent land uses; or more dust and trucks on the roads to contribute to congestion, thereby potentially impacting the desirability of the waterfront during this time, as well as negatively impacting the land uses that are accessed by vehicles.

During project operation, AWPOW's improvements would integrate with the other improvements planned along the waterfront to support the City's land use planning goals for the study area. These projects, taken together, would create a better environment for all who use the waterfront: vehicles, pedestrians, bicyclists, local businesses, ferry patrons, residents, and visitors. Collectively, AWPOW and the projects checked in Table 15-1 would support planned density, increased transportation capacity and mobility for all modes, adequate public facilities, and increased economic vitality in downtown Seattle. Capacity and mobility improvements would address goals in Transportation 2040 and the Seattle Comprehensive Plan's Transportation Element to reduce congestion and increase mobility. New pedestrian and bicycle facilities created by AWPOW and other projects that implement the Bicycle Master Plan and the Pedestrian Master Plan will support Seattle's overarching land use goals of increased multimodal connections and recreational opportunities. Also, the projects with transportation, bicycle, pedestrian, and open space or recreational elements would all positively address the goal of adequate public facilities and services, resulting in benefits for those visiting, working, or living in the waterfront area.

Many of the new development projects in downtown Seattle, including AWPOW, would support the City's economic development goals. Kiosks included in the project could provide new business opportunities, such as bicycle rentals and the sale of food, flowers, and newspapers. The planned private developments in downtown Seattle would also bring economic opportunities to downtown. Projects that facilitate or concentrate urban growth in areas designated by the land use plans (such as the South Downtown Rezone, downtown private development projects, and the Pike-Pine Renaissance) would all result in beneficial cumulative impacts due to their consistency with land use goals.

15.4.6 Mitigation Measures for Cumulative Impacts

Mitigation measures for potential construction-related cumulative impacts on land use would be similar to those discussed in Section 4.2.3. Because AWPOW operation would not adversely affect land use, no mitigation measures for cumulative operational impacts are suggested.

15.5 Aesthetics

15.5.1 Study Area and Time Frame

The study area for the analysis of cumulative impacts on aesthetics is the AWPOW viewshed and its landscape units, as described in Chapter 5 of this Draft EIS. The evaluation time frame begins in 1953, the year the Alaskan Way Viaduct opened, because this event influenced the development and views along the waterfront over the past 60 years. The future temporal boundary is the project design year of 2030.

15.5.2 Current Health and Historical Context

As described in the Historic Resources Discipline Report in Appendix H, wharf building began soon after Seattle was first platted in 1853, with successive waves of construction in the shoreline area creating the urban landscape that exists today. Steady urban development has changed a harbor and waterfront that was largely devoted to shipping into one that is devoted to tourism and commuter-oriented travel. From the mid-20th century on, the aesthetics of the project viewshed have been strongly influenced by the presence of the Alaskan Way Viaduct, which became a dominant feature from many vantage points and affected the urban form of areas (such as portions of Belltown) that developed or redeveloped around it. The elimination of the viaduct, which will be completed before AWPOW construction begins, has the

potential to start a positive aesthetic trend by removing a structure generally considered an eyesore and allowing the area to regain its historic orientation toward the water. The aesthetic character and quality of the study area under the 2017 existing conditions is high due to the scenic natural setting, vivid urban skyline, historic buildings, monumental structures such as the gantry cranes along the waterfront, and panoramic views across Puget Sound to the Olympic Mountains on the horizon.

15.5.3 Project-Related Construction and Operational Impacts

AWPOW would have generally adverse aesthetic impacts during construction and generally beneficial impacts during operation. Construction impacts would consist primarily of visual clutter from equipment, fencing, temporary structures, and stockpiled materials. These impacts would be temporary and would vary in intensity and duration depending on the type of construction occurring and its location.

The operational impacts of AWPOW would be predominantly positive because the project would create a far more visually unified and pleasing environment than that which would exist under the No Action Alternative. New landscaping, bicycle, and pedestrian facilities would create a strong physical and visual connection between the waterfront and downtown Seattle. The Action Alternative would support urban design and neighborhood plans that call for high levels of design and aesthetics. The new features of the Action Alternative would increase the vividness, intactness, and unity of the waterfront area. However, the Overlook Walk, as the most unique and dominant structure in the project, could potentially be experienced as either a negative or positive impact, depending on the perspective of the observer.

15.5.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Aesthetics column of Table 15-1 are those that may result in construction or operational impacts on aesthetics in the study area. Chapter 8 of Appendix D, Aesthetics Discipline Report, provides more information on the impacts of each checked project.

All of the projects checked in Table 15-1 would cause some degree of aesthetic impact during construction. Such impacts would be similar to those described above for AWPOW, consisting primarily of visual clutter of various types. These impacts would be temporary and would end with restoration of the study area at the close of the construction period. During their operation, however, most of the checked projects would result in aesthetic benefits within the study area. In particular, the other improvements that are part of Waterfront Seattle—the Union Street Pier Replacement, the Pier 62/63 Replacement Project, the Battery Street Portal Park, and Phase 2 of the Promenade—would include urban design and landscaping elements that would be coordinated with one another and with AWPOW to form a visually cohesive whole.

The proposed Union Street Gondola would have a potentially adverse impact on views. The gondola would look different from any existing structure crossing Alaskan Way; the cables would be minor impacts, but stanchions that were not incorporated into an existing large building or structure would be highly noticeable. If built, such structures could detract from the aesthetics of the corridor and impede views from elsewhere in the study area.

15.5.5 Potential Cumulative Impacts for Aesthetics

Projects checked in Table 15-1 could have temporary, negative, construction-related cumulative impacts on aesthetics if the projects are near each other and built at the same time. AWPOW's expected construction duration is from 2017 through 2020; construction of several of the checked projects is expected to occur nearby during this time frame. Other checked projects could also be built concurrently with each other. This could result in the waterfront area of downtown Seattle having multiple projects under construction for as much as 10 years. The cumulative impacts of such concurrent construction would be more intense visual intrusions than would be experienced if only one project at a time were under construction.

The demolition of the Alaskan Way Viaduct, while not attributable to AWPOW, would remove a physical and visual barrier. Removal of the viaduct will expose the buildings along the east side of the structure, which would become dominant in the near-ground views from the waterfront towards downtown Seattle. Views from the Seattle view corridors will be unobstructed and will extend from the waterfront to the horizon. In addition, the operation of AWPOW and the projects checked in Table 15-1, except the Union Street Gondola, would contribute to beneficial cumulative impacts on aesthetics in the study area. These projects would support the City's aesthetics and urban design goals for the waterfront and downtown areas. Completion of these projects would contribute to positive cumulative impacts (benefits) in the forms of enhancement or protection of public views of scenic and historic resources; coherent landscaping that makes the waterfront area read as an understandable and unified locale; welcoming and safe gathering and walking areas near important recreation and tourist attractions; and stronger visual connections between the downtown, Pike Place–Belltown, and Pioneer Square neighborhoods and the waterfront. The future actions and their impacts are part of a steady trend in improving and increasing pedestrian and bicyclist connections, enhancing urban streetscapes, and upgrading, maintaining, or refurbishing old or historic structures.

15.5.6 Mitigation Measures for Cumulative Impacts

AWPOW and the reasonably foreseeable actions that could have construction-related impacts on the visual environment would implement project-appropriate mitigation measures, such as reducing the amount of construction-related light and glare, adding attractive design elements to the public side of construction screening, and providing windows or other viewpoints into the active construction area.

Most of the reasonably foreseeable actions analyzed should, like AWPOW, have positive operational impacts on aesthetics. Proponents of reasonably foreseeable actions that could cause adverse operational cumulative impacts on aesthetics would likely mitigate those impacts by designing features to respect the historical and scenic context of the area while supporting the development of a coherent urban aesthetic character.

15.6 Noise

15.6.1 Study Area and Time Frame

The study area for cumulative impacts on noise is the same as the study area described in Chapter 6. The past temporal boundary selected for the project was 1953, the year the Alaskan Way Viaduct opened. The future temporal boundary selected was the project design year of 2030.

15.6.2 Current Health and Historical Context

Although little information exists on historical noise levels in the study area, it is evident that noise levels have risen over time as a result of increasing traffic volumes and the growth of Seattle's downtown core. Currently, the study area is heavily urbanized, and traffic noise dominates the environment, with many areas near or above the NAC for residential uses. The land uses in the study area are primarily commercial and residential, including apartments, condominiums, hotels, and motels. Many visitors, residents, and commuters walk and cycle to destinations on the waterfront, along Alaskan Way, or west of Alaskan Way.

As described in Chapter 6, traffic noise will be substantially lower in some areas once the Alaskan Way Viaduct is removed as part of the AWVRP. The viaduct structure, which has influenced noise and development in the study area, is anticipated to be demolished in 2016 or 2017. However, traffic will continue to be the predominant noise source in the study area because of vehicles using the dense arterial street grid. Noise levels in the southern portion of the study area are not expected to change substantially after the viaduct is removed because of the high traffic volumes on surface streets in this area, which will increase after the viaduct closure.

15.6.3 Project-Related Construction and Operational Impacts

As described in Chapter 6, construction of the Action Alternative would result in noise impacts associated with construction work, with maximum noise levels of up to 88 dBA at the nearest residences during the most intense construction activities. These impacts would be temporary, and would vary in intensity and duration depending on the type of construction activity in progress.

During operation of the Action Alternative, traffic noise levels across the study area would range from 58 to 72 dBA Leq during peak hours. Compared to the No Action Alternative, noise levels would increase in some areas by up to 5 dBA, while other areas would decrease by up to 6 dBA. Overall, noise levels are predicted to be at or above the NAC at 1,211 units under the Action Alternative, compared to 1,136 under the No Action Alternative. Noise levels would remain similar in the southern and central sections of the main corridor, and would increase slightly near the connection of the new Elliott Way to Alaskan Way at Pine Street. The study area would continue to have noise levels consistent with those in a typical city environment.

15.6.4 Other Reasonably Foreseeable Actions That May Affect the Resource

The projects checked in the Noise column of Table 15-1 are those that may result in construction or operational impacts on noise in the study area. Construction of all the checked projects would result in temporary noise impacts in and near the construction area. In general, these impacts would be within the range of construction noise impacts discussed above for AWPOW, ranging up to 88 dBA at the nearest residences during periods of intense activity. However, a number of these projects may require the use of impact pile driving, which could result in noise levels in excess of 100 dBA at 50 feet. Without detailed information on design and geotechnical conditions, it is not possible to determine which projects may need to use impact pile driving as a construction technique. In addition, it is likely that some projects would need to conduct construction activities during nighttime hours.

Operation of the projects checked in Table 15-1 could result in noise impacts if those projects included noise-generating equipment, such as pumps and motors, or if they resulted in additional traffic. Streetcars, trains, and buses used for transit projects would generate engine or motor noise, but such noise would conform to applicable standards and is not expected to add substantially to ambient noise levels. Projects that would attract visitors to the study area, such as the Union Street Pier Replacement, the Seattle Aquarium expansion, and the Pier 62/63 replacement, have the potential to result in increased traffic. However, it is important to note that, in order for noise levels to increase by a perceptible amount (3 dBA or more), either traffic volumes would have to double or vehicle speeds increase by 10 mph. Based on these acoustical properties, it is unlikely that these reasonably foreseeable future projects would cause a noticeable change in the operational noise levels in the study area.

15.6.5 Potential Cumulative Impacts for Noise

As discussed in Section 15.2, several of the projects checked in Table 15-1 could be constructed concurrently with portions of AWPOW, and could therefore interact with AWPOW to result in cumulative construction noise impacts. The degree of potential cumulative noise impacts from concurrent construction is not possible to predict in the absence of detailed construction schedules for each project. However, overall construction noise levels can be expected to be slightly higher in areas where two or more projects are being constructed simultaneously within the same vicinity.

The overall noise levels in the study area would be up to 12 dB lower once the AWVRP and EBSP are completed. The noise level reductions resulting from removal of the Alaskan Way Viaduct are not attributable to AWPOW, but would form an important part of the future noise environment within which AWPOW would operate. The removal of the viaduct, restoration of the corridor, and reduced speeds would all combine to make the corridor more livable for residents.

Cumulative operational noise impacts could result from the operation of AWPOW and the projects checked in Table 15-1. Because ambient noise levels in the study area are dominated by traffic noise, only those projects that would change traffic volumes or speeds would have the potential to result in cumulative impacts. Traffic volumes would have to double or vehicle speeds would have to increase by 10 mph for noise levels to increase by a perceptible amount (3 dBA or more). None of the projects checked in Table 15-1 is expected to result in a doubling of traffic or an increase of 10 mph in vehicle speeds, and all of these projects were included in the traffic noise analysis for both the No Action Alternative and the Action Alternative. Accordingly, cumulative operational traffic noise levels are expected to range from 58 to 72 dBA Leq across the study area during peak hours. These levels are consistent with those typically found in densely developed metropolitan areas.

15.6.6 Mitigation Measures for Cumulative Impacts

AWPOW and a number of reasonably foreseeable actions could result in construction noise impacts. Construction activities would be required to comply with the Seattle Noise Ordinance. Any construction activities that cannot meet the Seattle Noise Ordinance, or that occur outside the allowable hours for construction, would be required to obtain and comply with any necessary noise variances.

Operational noise impacts resulting from AWPOW and other foreseeable projects would be required to mitigate noise impacts in accordance with the applicable noise regulations and ordinances for those projects.

15.7 Hazardous Materials

15.7.1 Study Area and Time Frame

The cumulative impacts study area for hazardous materials is the same as described in Chapter 7, which extends ¼ mile from the project footprint. The topographic, geologic, and groundwater characteristics that informed the study area boundaries, as well as the area's historical industrial and business practices, provide a coherent and consistent context for the consideration of cumulative impacts. Analysts also took the number of hazardous materials sites in the vicinity into consideration when determining the study area boundaries. The temporal boundary extends from approximately 1900 (the peak of intensive development of the waterfront area and industrial activities) to 2030 (the project design year).

15.7.2 Current Health and Historical Context

Industrial use of the AWPOW study area began over 100 years ago, and has resulted in widespread contamination of the area with a variety of hazardous materials. Contamination likely peaked in the mid-20th century. However, current regulations, passed primarily in the 1970s and 1980s, require that when contaminated soil and groundwater are encountered during construction, the area must be cleaned up or otherwise mitigated to meet minimum standards that are designed to protect human health and the environment. Specific sites with high levels of contamination have also undergone cleanup activities to comply with state and federal regulations. These efforts have resulted in a 'checkerboard' of less contaminated areas where cleanup activities have taken place, but overall have proved to be an incremental benefit to the environment.

15.7.3 Project-Related Construction and Operational Impacts

The primary potential for hazardous materials-related construction impacts from AWPOW would result from the following activities:

- Property acquisition liability
- Building demolition and abatement
- Disruption of monitoring wells

- Encountering USTs
- Construction-related spills and releases
- Disturbance, removal, or exacerbation of contaminated soil and groundwater during construction

The primary potential operational impacts due to hazardous materials include:

- Hindering future cleanup activities or creating conduits of contamination through the presence of new underground utilities
- Encountering contaminants during roadway or utility maintenance
- Managing spills of hazardous materials due to vehicular accidents or maintenance activities

15.7.4 Other Reasonably Foreseeable Actions That May Affect the Resource

The projects checked in the Hazardous Materials column of Table 15-1 are those that may result in hazardous materials-related impacts in the study area. Hazardous materials-related impacts from these reasonably foreseeable actions can be grouped into two main categories:

- Disturbance, removal, and potential exacerbation of existing contaminated soil and groundwater during construction and operation
- Potential for spills or releases during construction or operation

As shown in Table 15-1 and Figure 15-1, a number of reasonably foreseeable actions are located within or immediately adjacent to the AWPOW footprint and are likely to contain similar types of subsurface contamination. These projects are in various stages of planning and design. It is expected that some excavation could occur as part of construction during each of these projects.

15.7.5 Potential Cumulative Impacts for Hazardous Materials

A review of the available information suggests that two of the projects checked in Table 15-1 appear to have construction components that could be in proximity to the two groundwater plumes previously identified within the project footprint (the Alaskan Way/Madison Street area and near the Enwave Seattle Plant; see Figure 7-2). These projects are the Central Waterfront Combined Sewer Overflow project and the Union Street Pier Replacement. This would result in an increased cumulative potential for spills and releases of hazardous materials in the project footprint during construction. However, all of these projects would be required to comply with hazardous materials laws and regulations. This makes it unlikely that construction of the projects would have a cumulative adverse impact on hazardous materials conditions.

Operation of AWPOW and the projects checked in Table 15-1 would likely involve some use and handling of hazardous materials, and would be required to comply with hazardous materials laws and regulations. Therefore, these projects would likely implement programs to manage hazardous materials handling, use, and disposal, such as spill response plans to address accidental releases. Over the long term, AWPOW and the other projects are likely to improve conditions due to the removal and disposal of some contaminated soils and groundwater. As a result, no adverse cumulative impacts to hazardous materials are expected from the operation of AWPOW and the projects checked in Table 15-1.

15.7.6 Mitigation Measures for Cumulative Impacts

AWPOW and a number of reasonably foreseeable actions may have some adverse impacts on hazardous materials and be adversely affected by hazardous materials during construction and operation.

Project proponents should mitigate construction-related cumulative impacts from hazardous materials, for example, by implementing measures such as those presented in Section 7.2.3. Such measures could include conducting due diligence before potentially contaminated property is acquired; surveying for

and abating hazardous building materials before structures are demolished; appropriately addressing monitoring wells and USTs in the project footprint; and developing and implementing plans to protect worker health and safety, address contaminated materials discovered during construction, and prevent and control spills and stormwater contamination.

Project proponents should mitigate operational cumulative impacts from hazardous materials by implementing measures such as those presented in Section 7.3.3. Such measures could include training and informing maintenance personnel regarding hazardous materials and hazardous materials-related conditions that would exist or could be encountered during maintenance work. These measures could also include developing protocols for maintenance work regarding spill response and agency notification.

15.8 Public Services and Utilities

15.8.1 Study Area and Time Frame

The study area for cumulative impacts on public services and utilities is the same as the study area for the construction and operational impacts analysis described in Chapter 8. The past temporal boundary for the evaluation is 1936, the year the seawall was completed. The seawall allowed Alaskan Way to be constructed, increasing the need for public services in the area as the waterfront developed, and allowing utilities to be placed in the Alaskan Way right of way. The future temporal boundary is the project design year of 2030.

15.8.2 Current Health and Historical Context

Public Services

Because of AWPOW's proximity to Seattle's central business district, the Port of Seattle, waterfront businesses, and the sports stadiums, there is full coverage of public services and fast response from emergency services. Public service facilities and equipment are readily available and in good condition to serve the study area.

Utilities

Utility systems in the study area were originally installed after the seawall was completed in the 1930s, but have been maintained and replaced over the years and are therefore of varying ages. Construction of the Alaskan Way Viaduct, which opened in 1953, has influenced the location of the utilities and access routes for public services along the waterfront over the past 60 years. The condition of utilities within the area is generally good. Many utilities, including water, electrical power, natural gas, steam, and telecommunications, have been or will be relocated and upgraded in conjunction with construction of the AWVRP and EBSP, improving service and reliability.

15.8.3 Project-Related Construction and Operational Impacts

Public Services

Project construction is likely to increase response times for fire, police, and emergency response services, and could intermittently impede access for all service providers during this period. During project operation, service providers would have to travel slightly longer distances to provide service to businesses along the west side of Alaskan Way, although this is not expected to reduce the overall quality of service.

Utilities

A number of utilities would be replaced or relocated during construction, resulting in the potential for intermittent service outages. During project operation, utility service would be similar to or better than under the No Action Alternative, although relocated utilities may have different or more complex access requirements.

15.8.4 Other Reasonably Foreseeable Actions That May Affect the Resource

The projects checked in the Public Services and Utilities column of Table 15-1 are those that may result in construction or operational impacts on these resources in the study area. Chapter 8 of Appendix G, Public Services and Utilities Discipline Report, provides more information on the impacts of each checked project.

During their construction, all of the projects checked in Table 15-1 would result in the disturbance of utilities, added congestion, or both within the study area. These impacts would be localized in and near the active construction area. With the possible exception of Phase 2 of the EBSP, they are not expected to cause major disruptions in the provision of public services and utilities.

Operation of the projects checked in Table 15-1 would either not affect public services and utilities or provide some degree of long-term benefit. In particular, the Central Waterfront Combined Sewer Overflow Project would reduce the frequency of overflows into Elliott Bay, resulting in overall long-term improvement to water quality. The Seattle Multimodal Terminal at Colman Dock Project would have a beneficial impact on public services by improving pedestrian and vehicle passenger safety, connections to public transit, accessibility for the physically disabled, and environmental conditions in the shoreline area (WSDOT 2013). Projects such as the Seattle Aquarium expansion and private development projects in downtown Seattle and Belltown could increase the demand for public services and utilities by attracting more residents and visitors to the study area, but these demands are expected to be within the existing service capacity of the providers. All new development would comply with existing utility codes.

15.8.5 Potential Cumulative Impacts for Public Services and Utilities

Public Services

During construction, AWPOW would contribute slightly to cumulative increased demands on public service providers. Collectively, the number of major projects planned sequentially or simultaneously for construction in the study area could increase the demand for fire, police, and emergency services during construction of the projects. The potential exists for emergency response times to increase if additional staffing is not provided. Non-emergency service providers would likely find access further complicated by the presence of multiple construction sites within their service areas.

Operation of AWPOW and the other reasonably foreseeable actions would likely contribute to an overall increase in demand for public services as more people live in, work in, and visit the study area. However, these increases are expected to be within the capacity of the service providers to address, and response times would be facilitated by improvements to the transportation system. Therefore, no operational cumulative impacts on public services are anticipated.

Utilities

The construction of AWPOW, in combination with other major projects in the study area with potentially overlapping construction dates (as listed in Section 15.2), has the potential to result in cumulative impacts on utility service. Although the relocation and construction of utilities are being coordinated carefully among the respective utilities so as not to relocate any utility twice, disturbance by simultaneous or successive projects is likely to result in increased disruptions of service during the construction period.

During project operation, AWPOW is expected to contribute to a minor beneficial cumulative impact. Access to utilities for maintenance could be more restricted in some cases. However, many of the reasonably foreseeable actions evaluated would result in some degree of upgrade to the adjacent portions of the utility system. The installation of new pipes or lines would be an upgrade to the current infrastructure and would improve service reliability for utilities such as sewer system, electrical power, and natural gas. In addition, all new development would meet current codes, which are more stringent

than the older codes to which many study area utilities were constructed. These improvements would collectively enhance the reliability of utility service and (in the case of sewer system improvements) the water quality of Elliott Bay.

15.8.6 Mitigation Measures for Cumulative Impacts

During construction of AWPOW and the reasonably foreseeable actions that may affect public services or utilities, the City and other proponents should work closely with utility providers to coordinate project design and construction activities. Coordinating construction activities would help to minimize disruptions and the potential for lengthy or multiple impacts. The City and other proponents should also:

- Notify public service and utility providers of detours and other construction activities likely to affect service provision
- Address potentially heightened demand for public services and utilities as a result of concurrent construction of projects

Because AWPOW operation would not adversely affect public services or utilities, no mitigation measures for cumulative operational impacts are suggested.

15.9 Historic Resources

15.9.1 Study Area and Time Frame

The study area for cumulative impacts on historic resources is defined generally as the area west of Second Avenue from S. King Street north to Broad Street. The time frame for the cumulative impacts assessment is the period from approximately 1900 (when most of the existing central waterfront piers were built) until 2030, the project design year.

15.9.2 Current Health and Historical Context

Historic resources are generally properties that are more than 50 years old, which have retained their integrity and have historical significance. Over time, some of these resources have been lost through fire, earthquake, or other disaster; due to demolition for redevelopment; or because of neglect and lack of maintenance. A number of historically significant buildings in the study area were razed before preservation laws were put in place. The current condition is that legislation over the past 50 years has significantly decreased the loss of historic resources, particularly reducing losses due to redevelopment.

The National Historic Preservation Act of 1966 requires reviews of the historical significance of properties affected by federal projects. The Seattle Landmarks Preservation Ordinance of 1973 and subsequent national, state, and local laws and programs provide a variety of controls and incentives for preservation. In addition, Seattle's SEPA rules require that most buildings over 50 years old be reviewed for landmark eligibility before they can be razed or significantly altered.

Currently, as a result of these laws and regulations, most of the significant buildings within the cumulative impacts study area are now protected through the two historic districts or as individual designated landmarks. Each year, as more buildings meet the 50-year age threshold for historical significance, reviews will result in more buildings being designated as historic resources. Counteracting this preservation trend, however, is the increased pressure for redevelopment of older buildings within the cumulative impacts study area as property values increase.

15.9.3 Project-Related Construction and Operational Impacts

The analysis in Chapter 9 shows that AWPOW would have the following impacts on historic resources:

- Construction impacts would consist of short-term changes to the access or setting of historic properties and can be avoided or minimized by using BMPs and providing adequate access and parking so that businesses can operate successfully during construction.
- The most likely operational impact is alteration of the historic setting of Piers 54 through 59 due to construction of the Promenade. The Overlook Walk may, to a lesser extent, alter the historic character, setting, and usage of the Pike Place Market.

15.9.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Historic Resources column of Table 15-1 have the potential to impact historic resources. Chapter 8 of Appendix H, Historic Resources Discipline Report, provides information on the impacts of each project.

Construction of the checked projects is likely to have localized, temporary impacts on nearby historic properties. These impacts would be similar to those described above for AWPOW and would consist of short-term changes to access or historic setting.

Operation of several of the reasonably foreseeable actions would involve changes in the streetscape, primarily in Pioneer Square, or could lead to increased traffic in the vicinity of that area. It is unlikely that these actions would directly impact historic buildings. Compliance with federal and state regulations, local review, and approval processes would minimize operational impacts. The impacts of reasonably foreseeable future actions that require federal permits would be subject to review under Section 106 of the National Historic Preservation Act, which would minimize and mitigate impacts for those projects. Projects that are within the Pioneer Square Preservation District would have to be approved by the Pioneer Square Preservation Board. Projects with the potential to affect Seattle Landmarks would undergo City adjacency review and design review to ensure compatibility with the landmarked resources.

15.9.5 Potential Cumulative Impacts to Historic Resources

Projects that may be under construction concurrently with AWPOW are noted in Section 15.2. Of those, the projects that could affect historic resources are the Seattle Multimodal Terminal at Colman Dock Project, the Union Street Pier Replacement, Seattle Aquarium expansion, and the Center City Connector Streetcar Project. If these projects and AWPOW are under construction at the same time, they may result in temporary cumulative impacts on the access and setting of historic properties.

During operation, the impacts of AWPOW, in combination with the impacts of other concurrent and reasonably foreseeable actions or projects in the study area, are not expected to significantly affect the status or condition of historic resources. Some minor changes may take place, but they are not anticipated to significantly alter the character or use of historic resources. As noted in Section 15.9.4, existing regulations and processes require detailed review of potential project impacts on historic resources so that impacts can be avoided or minimized.

15.9.6 Mitigation Measures for Cumulative Impacts

To avoid and minimize cumulative impacts on historic resources, the City and other proponents of reasonably foreseeable actions would obtain Certificates of Approval, and undergo Landmarks Adjacency Reviews, as appropriate. In addition, projects may require DAHP review during project planning. The historic and physical integrity and the economic viability of historic structures, properties, and districts would be protected through temporary construction-related measures as well as permanent operations-related avoidance, minimization, and mitigation measures. Any damage that

occurs to historic buildings as a result of project construction would be repaired by that project in accordance with the U.S. Secretary of the Interior's Standards for Rehabilitation (36 CFR 67).

15.10 Archaeological Resources

15.10.1 Study Area and Time Frame

The cumulative impacts study area for archaeological resources is the portion of the waterfront bordered by S. King Street to the south, Second Avenue to the east, and Broad Street to the north. The time frame ranges from the mid-20th century (when archaeological sites in this area began to be recorded) to 2030, the AWPOW design year.

15.10.2 Current Health and Historical Context

Pre-contact era archaeological sites are finite in number and have become fewer over time. Prior to the passage of modern environmental regulations beginning in the 1960s and 70s, sites and artifacts encountered in excavations during development were not protected and were often discarded, destroyed, or stolen. Mitigating the impacts of modern-day development projects on those archaeological sites ameliorates their loss, but still results in a net reduction of that finite number of sites, if not the information they contain.

Most losses of pre-contact sites in the study area occurred long ago, during the period when Seattle's downtown was being developed. In recent decades, the unmitigated destruction of archaeological sites has been slowed by the implementation of local, state, and federal laws designed to protect these resources. These same laws aid in the detection of archaeological resources, allowing recovery to occur from pre-contact sites and contributing to the increase in archaeological knowledge. It is impossible to know if, or how many, archaeological sites might have been destroyed prior to the advent of professional archaeological site records. Seattle may well have contained and may yet contain many more archaeological sites, but cumulative effects can only be measured on the basis of known quantities. When detected by permitted projects, archaeological sites are mitigated or avoided, resulting in no net loss. It may be argued that the number of known resources actually increases with permitted projects because current law requires the recordation of previously unknown archaeological sites detected only through project studies.

15.10.3 Project-Related Construction and Operational Impacts

Two archaeological sites, Ballast Island and a buried concrete wall, are below the surface of the AWPOW footprint. AWPOW is expected to avoid impacts to these sites. No other known archaeological sites would be impacted by construction or operation of AWPOW. The potential remains for construction to encounter previously undetected historic-era or pre-contact sites.

15.10.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Archaeological Resources column of Table 15-1 have the potential to impact archaeological resources in the study area. Because downtown Seattle has a complex geological profile and an equally complex history of human occupation, subsurface archaeological resources could be present throughout the study area. In general, identified archaeological resources encountered during development are recorded and removed during construction. Therefore, impacts in the study area are most likely to occur at previously undiscovered sites. The projects checked in Table 15-1 are considered to have the potential to affect archaeological resources because they are likely to involve excavation or other ground-disturbing activity during construction, and could therefore encounter or harm archaeological resources. While the extent of any such impacts is not possible to estimate, regulations would require that all impacts of these projects be mitigated so as to result in no net loss of archaeological sites. Operation of these projects is not anticipated to result in cumulative impacts.

15.10.5 Potential Cumulative Impacts to Archaeological Resources

AWPOW is expected to avoid the two sites that intersect the project footprint, Ballast Island and the buried concrete wall; however, if avoidance is not possible, disturbance of a site would contribute to a cumulative impact.

Although the impacts of the other projects in the cumulative impacts study area are not yet known, the potential for the presence of archaeological resources in the study area makes it possible that one or more of these projects could encounter undiscovered archaeological resources during its construction. Any sites or artifacts that were encountered would be appropriately recorded before being either avoided or mitigated in accordance with applicable laws and regulations. However, recordation and removal of archaeological sites would result in a further reduction in the finite number of such sites within the study area.

15.10.6 Mitigation Measures for Cumulative Impacts

During construction of AWPOW and the reasonably foreseeable actions that may affect archaeological resources, the City and other proponents would comply with applicable local, state, and national archaeological regulations and policies. During operation, AWPOW would not adversely affect archaeological resources. Therefore, no mitigation measures for cumulative operational impacts are suggested.

15.11 Water Quality

15.11.1 Study Area and Time Frame

The cumulative impacts study area for water quality is the same as the studay area used to evaluate construction and operational impacts in Chapter 11. The time frame for the cumulative evaluation begins in the 1850s when Seattle was settled and urban development began. The evaluation time frame extends into the future to the project design year of 2030.

15.11.2 Current Health and Historical Context

Prior to the first settlement of Seattle, the landscape within the study area and rainfall runoff patterns were governed by the native forest cover. Stormwater pollution sources were minimal and Elliott Bay water quality was likely very high. During the early settlement of Seattle, logging, lumber milling, coal mining, fishing, shipbuilding, and other local industries are likely to have affected water quality in Elliott Bay. Ongoing logging, population growth, increased industrial activities, and other changes to the landscape have resulted in a complete loss of native land cover (vegetation) within the study area, increased stormwater runoff, and higher pollutant loads. Over time, discharges of municipal sewage, untreated stormwater runoff, industrial wastes, and pesticides and fertilizers used on landscaped areas have entered the bay's waters. Within the study area, Elliott Bay has been identified on Ecology's 303(d) water quality list for exceeding criteria for fecal coliform bacteria and several types of toxins (Ecology 2012).

15.11.3 Project-Related Construction and Operational Impacts

Project construction activities such as earthwork, trench work, stockpiling, material transport, concrete work and paving, storm drain utility work, use of construction machinery, and dewatering have the potential to impact water quality in Elliott Bay. Entrained pollutants can increase turbidity, change pH, and reduce available oxygen in the water. These impacts would be temporary and would vary in intensity and duration depending on the type of construction occurring.

Operational impacts are expected to be beneficial because the project would divert stormwater runoff from the combined sewer system to the separated storm drain system. In addition, the project would reduce the overall amount of pollutants in stormwater runoff by converting much of the existing PGIS to NPGIS in the footprint.

15.11.4 Other Reasonably Foreseeable Actions That May Affect the Resource

The projects checked in the Water Quality column of Table 15-1 are those that could contribute to the cumulative impacts on water quality in the study area. The following discussion summarizes the potential impacts of these projects. Chapter 8 of Appendix J, Water Quality Discipline Report, provides more information on the impacts of each checked project.

Construction of the reasonably foreseeable projects would have the potential to increase pollutant loadings into Elliott Bay. These potential cumulative impacts would be similar across all projects. Pollutants could be contained in stormwater runoff, in process water generated during concrete placement, or in groundwater removed during construction dewatering. All projects would be required to follow state and City requirements for water quality protection, including (as applicable) preparation of a construction stormwater and erosion control plan and a construction stormwater pollution prevention plan. Complying with these requirements would minimize the potential for pollutants to enter Elliott Bay; however, collectively the projects may result in a small increase in pollutant discharge.

The operation of all the checked projects in Table 15-1 would include stormwater management and treatment facilities that would comply with applicable state and City requirements. As a result, they are expected to collectively improve water quality in Elliott Bay. A subset of the projects checked in Table 15-1 also have the potential to affect stormwater runoff draining to the combined sewer system, or to change the area of PGIS contributing runoff to the separated storm drain system. Projects that may include changes to PGIS are:

- Terminal 46 Dock Rehabilitation, Crane Rail Extension, and Paving
- Seattle Multimodal Terminal at Colman Dock Project
- Battery Street Portal Park
- Alaskan Way Promenade, Phase 2

Projects that may include changes to the runoff volumes draining to the combined sewer system are:

- Alaskan Way Promenade, Phase 2
- Central Waterfront Combined Sewer Overflow Project

15.11.5 Potential Cumulative Impacts to Water Quality

AWPOW would be constructed from approximately 2017 through 2020, which would coincide with several other major construction projects in the study area. These projects are noted in Section 15.2. Construction of some or all of these projects at the same time could increase the overall potential for pollutants from construction areas to be carried into Elliott Bay. However, these impacts would be temporary, and would be minimized by the implementation of construction BMPs in compliance with state and City regulations.

The operation of AWPOW and all the projects checked in Table 15-1 would comply with state and City stormwater management and treatment requirements. Although the design for most of the projects in Table 15-1 has not yet been established, complying with the regulations would result in the addition of stormwater treatment facilities to currently untreated areas and, in some cases, reductions in PGIS or in stormwater discharges to the combined sewer system. All of these changes are expected to result in incremental reductions over time to pollutant loads in Elliott Bay.

15.11.6 Mitigation Measures for Cumulative Impacts

During construction of AWPOW and the reasonably foreseeable actions that may affect water quality, the City and other proponents would be required to prepare and implement plans pursuant to the Seattle Stormwater Code, Stormwater Manual, and the NPDES Construction Stormwater General Permit. The plans would describe BMPs to prevent pollution, control stormwater flows, and protect

Elliott Bay during construction. Because AWPOW operation would not adversely affect water quality, no mitigation measures for cumulative operational impacts are suggested.

15.12 Vegetation and Wildlife

15.12.1 Study Area and Time Frame

The study area for cumulative impacts on vegetation and wildlife is the same as the study area described in Chapter 12, which extends 500 feet beyond the project footprint. The time frame for the evaluation is approximately 1850, when Euro-American settlement began in the Seattle area, until 2030, the project design year.

15.12.2 Current Health and Historical Context

There have been dramatic changes in vegetation and wildlife in the study area since the 1850s, with an almost complete loss of native habitat and wildlife species due to the development of Seattle. The current waterfront is located on what was once tidelands, dominated by marine and intertidal vegetation (e.g., eelgrass) and wildlife (e.g., salmon, clams, and waterfowl). Farther inland, the area was dominated by upland vegetation, likely forested, with associated wildlife. This area was developed, leveled, and filled over many years, with the seawall being completed in 1936 (SDOT 2012). Euro-American settlement also brought vegetation and wildlife that would become invasive. By the early to mid-1900s, the study area had been completely transformed and most native vegetation and wildlife extirpated. Although development has continued since then, the majority of impacts had already occurred by this time.

The study area has heavily urbanized habitats such as streets, parking lots, commercial and industrial properties, high-density residential buildings, and railroad rights of way. Existing vegetation in 2017 will include street trees and other native and non-native vegetation installed in the right of way as part of the AWVRP and EBSP, as well as invasive species in some areas. Wildlife consists of species well adapted to or benefiting from the urban environment.

15.12.3 Project-Related Construction and Operational Impacts

Construction of AWPOW may result in temporary impacts on vegetation and wildlife. Vegetation would be removed to accommodate construction activities, and wildlife may be displaced due to loss of habitat or noise. However, given the urban nature of the study area, construction impacts on vegetation and wildlife would be minimal.

The primary operational impacts of the project on vegetation and wildlife would be an increase in the availability of habitat for both native and non-native species. The greater variety of plant species and structures is expected to increase the capacity of the area to support wildlife populations. Overall, this change is expected to be positive. Although increased wildlife populations in the study area could lead to a higher potential for contact between animals and humans, this is not expected to result in significant adverse impacts on wildlife in the study area.

15.12.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Vegetation and Wildlife column of Table 15-1 are those that may result in construction or operational impacts on vegetation and wildlife in the study area. Because all of these projects are located in a dense urban environment, their impacts are expected to be similar. During construction, the projects would result in noise that could disturb wildlife in the construction area, potentially causing them to relocate to other areas during construction. Construction activities could also remove a limited amount of vegetation, primarily street trees and planted or potted shrubs. In addition to these impacts on land-based species, projects that involved in-water work could create noise

and stir up sediment, affecting aquatic habitat. Following construction, plantings and habitat are likely to be restored or enhanced; therefore, operational impacts are expected to be generally beneficial.

15.12.5 Potential Cumulative Impacts to Vegetation and Wildlife

Construction of AWPOW and the reasonably foreseeable future projects would result in temporary impacts on vegetation and wildlife. Vegetation would be removed to accommodate construction activities, and wildlife may be displaced due to loss of habitat or noise. However, these impacts would be temporary and, given the urban nature of the study area, minimal. Most of the impacts of these projects would be limited to the construction period, and areas where vegetation is removed would be revegetated with appropriate species.

Operation of AWPOW and the reasonably foreseeable future projects could contribute to a minor beneficial cumulative impact on vegetation and wildlife in the study area. These reasonably foreseeable projects, although still in development, are assumed to include planting plans that would increase vegetation types suitable for use as habitat. Combined with the vegetation added by AWPOW, this would increase the amount of habitat in the study area that is suitable for native wildlife. However, these positive impacts would be small, because the study area would remain urbanized and dominated by paved surfaces. Increased wildlife populations may lead to a slight increase in contact between animals and humans, but this increase is expected to be minor. Where these projects have operational impacts, such as increased overwater coverage, resource agencies would require compensatory mitigation. As a result, the implementation of these other projects is not expected to result in changes to the long-term trends affecting the existing urbanized environment of the study area.

15.12.6 Mitigation Measures for Cumulative Impacts

AWPOW is unlikely to adversely affect vegetation and wildlife. As a result, no mitigation measures are suggested.

15.13 Energy Resources

15.13.1 Study Area and Time Frame

The cumulative impacts study area for energy resources is the greater Seattle area. The time frame for the evaluation begins in 1910, when SCL was established, and extends to 2030, the project design year.

15.13.2 Current Health and Historical Context

Original providers of energy to the study area were SCL and Enwave Seattle. The energy supplied by these providers facilitated commercial and industrial development in the area and supplied a growing demand for energy as the city expanded. Although hydropower has always been an important source of energy in the area, many early electrical generating facilities were powered by fossil fuels such as oil and coal. With the advent of the personal automobile, fossil fuel consumption increased, and public infrastructure such as highways became more extensive and robust.

Today's demand for energy in the study area is largely influenced by transportation needs that are met by fossil fuels. Beginning in the 1970s, fuel efficiency standards and policies, as well as growth management strategies such as VISION 2040 and Transportation 2040, have contributed to general reductions in energy consumption trends. Because Washington uses hydropower for much of its electricity supply, the electricity sector in the study area contributes a lower percentage of GHG emissions than the national average. However, the transportation sector contributes more than the national average to GHG emissions in both the state and Seattle itself.

GHG emissions have declined in Seattle in recent years, primarily as a result of increased energy efficiency. Between 1990 and 2012, Seattle's population grew roughly 23 percent, but total emissions (after accounting for offsets) dropped by 4 percent. The combination of population growth and emissions reductions means that on a per-person basis, emissions declined by 22 percent between

1990 and 2012 and by 6 percent between 2008 and 2012. Emissions from road transportation increased by 9 percent between 1990 and 2012, primarily due to Seattle's increasing population and economic activity and the associated increase in overall vehicle travel. However vehicle emissions per person declined by 11 percent, as residents drove cleaner cars fewer miles (Seattle Office of Sustainability and Environment 2014).

15.13.3 Project-Related Construction and Operational Impacts

Energy would be consumed during construction to manufacture materials, transport materials, and operate construction equipment. Based on project cost and typical energy consumption factors, the energy expected to be consumed during the construction of AWPOW is approximately 5 million MBtu. Project construction would contribute to GHG emissions through the burning of fossil fuels to operate construction machinery and transport workers. In addition to the construction activities, GHG emissions would occur in the production of concrete and steel for the project. GHG emissions for AWPOW are expected to be proportional to overall energy use. The amount of energy used for AWPOW, and hence the total GHG emissions, would be a small fraction of overall energy consumption in Seattle, and is not expected to contribute significantly to overall GHG emissions or to hinder compliance with City or state GHG reduction targets.

During project operation, the Action Alternative would have similar traffic volumes to the No Action Alternative, but it would reduce congestion and result in more efficient operation of the study area transportation system. The number of intersections on Alaskan Way operating at LOS F would decrease from three to two, and traffic speeds would improve. As a result, vehicles are expected to operate more efficiently, and overall energy consumption is expected to decline slightly compared to the No Action Alternative. Because AWPOW would improve traffic operations and travel times and reduce vehicle miles traveled in the study area, the Action Alternative is expected to result in a slight reduction in GHG emissions compared to the No Action Alternative.

15.13.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Energy column of Table 15-1 are those that may result in construction or operational impacts on energy in the study area. Construction of all the checked projects would consume energy, primarily fossil fuels, and would also result in GHG emissions as a result of fossil fuel combustion. In general, the level of energy use and GHG emissions would be proportional to the project size. Large regional transportation projects, such as the SR 520, I-5 to Medina Bridge Replacement and HOV Project and the Link light rail extensions, would have the largest impacts. However, all of these impacts would be temporary and are not expected to create demand that would exceed the available energy supply. Although their carbon emissions could be substantial, they are not expected to affect compliance with state and City GHG reduction targets.

During operation, all of the checked projects in Table 15-1 would result in some level of energy consumption. Development projects, such as new residential and office buildings and expanded public facilities like the Seattle Aquarium, would result in increased demand for energy for heating, cooling, and lighting. Transportation projects, such as the SR 520, I-5 to Medina Bridge Replacement and HOV Project, the Link light rail extensions, and the City's streetcar and rapid bus projects, would result in energy consumption by vehicles. In all cases, current requirements for energy efficiency in building codes and vehicle design mean that these new facilities would consume less and emit fewer GHGs than under less stringent historical standards. In addition, projects that enhance transit or moderate traffic demand through tolling will result in more people traveling in fewer vehicles, reducing energy use and GHG emissions. Nevertheless, the growth that is served by these projects is likely to require increased use of energy and associated emissions of GHGs.

15.13.5 Potential Cumulative Impacts to Energy Resources

Construction of AWPOW and the projects checked in Table 15-1 would create additional demand for energy and result in additional emissions of GHGs, resulting in a slight cumulative impact compared to No Action. During project operations, AWPOW would slightly reduce energy use and GHG emissions compared to No Action, and therefore would not contribute to the potential incremental increase in energy demand and GHG emissions created by the reasonably foreseeable actions shown in Table 15-1.

15.13.6 Mitigation Measures for Cumulative Impacts

The following measures, if implemented by AWPOW and the proponents of the projects checked in Table 15-1, would contribute to improved energy efficiency during construction:

- Limiting idling of equipment
- Encouraging carpooling of construction workers
- Locating staging areas near work sites

15.14 Air Quality

15.14.1 Study Area and Time Frame

The study area for air quality is the area within 1,000 feet of the project footprint. The time frame for the evaluation begins in 1953, when the Alaskan Way Viaduct was constructed, and extends through 2030, the project design year.

15.14.2 Current Health and Historical Context

Although widespread air quality monitoring was not established until after passage of the Clean Air Act in 1970, emissions of criteria pollutants in the study area before that time likely followed a similar trajectory to the area's development as a commercial and industrial area. Before the Clean Air Act's requirements for emission controls and fuel efficiency, industrial activities were major contributors of particulate matter, VOCs, NOx, and CO. Vehicle emissions included all of these pollutants as well as lead, but were a particularly high source of CO. Emissions from these sources probably peaked in the late 1960s, before the waterfront had begun its transition to tourist-oriented uses and after the Alaskan Way Viaduct and I-5 were in full operation. Industrial development in the Duwamish industrial corridor starting in the 1950s also added to air pollution in the area.

After passage of the Clean Air Act, the study area was classified as non-attainment for CO and particulate matter. This resulted in a variety of actions to improve air quality. These actions, along with a general tightening of emissions standards and permitting requirements for air pollution sources, gradually reduced levels of pollution in the study area. The Puget Sound region is currently in attainment or unclassified for all criteria pollutants except for CO; EPA designated the region as being in maintenance status for CO in 1996. The AWPOW footprint is also just north of the Seattle Duwamish maintenance area for PM_{10}. Within the study area, transportation is the primary source of both pollutants. Emission projections and ongoing monitoring throughout the Puget Sound region over the past decade indicate that the ambient air pollution concentrations for CO have been decreasing. The decline of CO is due primarily to improvements made to emission controls on motor vehicles and the retirement of older, higher-polluting vehicles. Attainment status is not expected to change by 2017, when AWPOW is planned to begin construction.

15.14.3 Project-Related Construction and Operational Impacts

During construction of AWPOW, soil-disturbing activities, operations of heavy-duty equipment, commuting workers, and the placement of concrete and asphalt may generate emissions that would temporarily affect air quality. Fugitive dust would be generated during excavation, grading, loading and unloading activities, and demolition of structures and equipment; also, increased engine exhaust emissions would result from traffic congestion and the use of construction vehicles and equipment. These impacts would be localized and temporary.

Air emissions during project operation would result from traffic on the main corridor. Because AWPOW's improvements would reduce congestion compared to the No Action Alternative, these emissions are not expected to increase but may decrease slightly. Emissions of air toxics would decrease proportionally to emissions of CO and other criteria pollutants.

15.14.4 Other Reasonably Foreseeable Actions that May Affect the Resource

The projects checked in the Air Quality column of Table 15-1 are those that may result in construction or operational impacts on air quality in the study area. Construction of all the checked projects would result in air pollutant emissions as a result of construction disturbance and fossil fuel combustion. In general, the level of emissions would be proportional to the project size. All of these impacts would be temporary and are not expected to affect the study area's attainment status for CO or particulate matter.

During operation, the checked transportation projects in Table 15-1 would result in some level of air quality emissions. Roadway projects, such as the SR 520, I-5 to Medina Project, and bus transit projects such as the Madison Corridor Bus Rapid Transit Project, would result in vehicle emissions of CO. Streetcar and light rail projects in the study area, although operating under electrical power, would likely consume some power generated by fossil fuels whose combustion would cause air emissions. However, because these projects would improve the efficiency of the transportation system and provide alternatives to single-occupant vehicles, their implementation is expected to contribute to long-term reductions in air pollutant emissions over time.

15.14.5 Potential Cumulative Impacts to Air Quality

During construction, AWPOW and the projects being constructed concurrently (listed in Section 15.2) would have a slight adverse cumulative impact on air quality in the study area. This would be due to dust generated by construction activities and emissions resulting from traffic congestion and the operation of construction vehicles and equipment. During project operation, the cumulative impact of AWPOW and the projects checked in Table 15-1 is expected to be positive, with overall air pollutant emissions showing a slight decline through enhanced efficiency of the transportation system in the study area.

15.14.6 Mitigation Measures for Cumulative Impacts

For temporary impacts during construction, state law requires that construction site owners and operators take reasonable precautions to prevent fugitive dust from becoming airborne. Fugitive dust may become airborne during demolition, material transport, grading, driving of vehicles and machinery on and off the site, and wind events. Implementing these measures for AWPOW and all reasonably foreseeable actions would reduce the level of impact. Because cumulative impacts during project operation would be positive, no mitigation is required.

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