

# ALASKAN WAY VIADUCT REPLACEMENT PROJECT

Record of Decision





# SR 99: Alaskan Way Viaduct Replacement Project

FHWA-WA-EIS-04-01-F

Record of Decision

August 2011

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## Decision

The Federal Highway Administration (FHWA) approves the decision to construct and operate the preferred alternative as identified in the Final EIS for the Alaskan Way Viaduct Replacement Project; the preferred alternative is the Tolloed Bored Tunnel Alternative. FHWA selects the Tolloed Bored Tunnel Alternative in this Record of Decision for the reasons described herein.

08/22/2011

Date of Approval

Daniel M. Mathis

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## Acronyms and Abbreviations

ADA	Americans with Disabilities Act
BMP	best management practice
CFR	Code of Federal Regulations
City	City of Seattle
CTS	Commitment Tracking System
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FHWA	Federal Highway Administration
HAER	Historic American Engineering Record
MOA	Memorandum of Agreement
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
PSRC	Puget Sound Regional Council
SHPO	State Historic Preservation Officer
SODO	South of Downtown
SR	State Route
TAC	Tolling Advisory Committee
TBM	tunnel boring machine
USC	United States Code
WSDOT	Washington State Department of Transportation

## **In Memoriam**

This document is dedicated to the memories of Maureen Sullivan (WSDOT), Roland Benito (WSDOT), and James Leonard (FHWA).

Their legacy of dedication and contributions to the delivery of the Alaskan Way Viaduct and Seawall Replacement Program is immeasurable. We will carry forward their spirit and commitment towards delivery of this public safety project in their memories.

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# Record of Decision

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## Introduction

The Alaskan Way Viaduct Replacement Project (project) is located in downtown Seattle, Washington. The project would replace State Route (SR) 99 from approximately S. Royal Brougham Way to Roy Street, and remove the existing viaduct from approximately S. King Street to the Battery Street Tunnel. The existing Alaskan Way Viaduct (SR 99) was built in the 1950s and was damaged in the 2001 Nisqually earthquake. It is seismically vulnerable and at the end of its useful life—it must be replaced. The Federal Highway Administration (FHWA), Washington State Department of Transportation (WSDOT), and City of Seattle (City) plan to replace the existing facility with a structure capable of withstanding earthquakes in order to ensure that people and goods can travel safely and efficiently within and through the project corridor. The Alaskan Way Viaduct provides vital transportation connections into and through downtown Seattle, as well as between various other regional destinations. Failure of the viaduct would create severe hardships for the city and region and could possibly cause injury or death.

The 2004 Draft Environmental Impact Statement (EIS)<sup>1</sup> analyzed five build alternatives and a no build alternative for their potential effects on the natural and built environment. Based on information presented in the Draft EIS, public comments, and further study and design, the lead agencies reduced the number of build alternatives from five to two. The two alternatives, the Cut-and-Cover Tunnel and Elevated Structure, were then evaluated in the 2006 Supplemental Draft EIS.<sup>2</sup> In 2009, the Governor, former King County Executive, and former Seattle Mayor recommended replacing the central waterfront portion of the Alaskan Way Viaduct with a single bored tunnel. The 2010 Supplemental Draft EIS<sup>3</sup> analyzed the new Bored Tunnel Alternative, provided information about design changes to the 2006 Cut-and-Cover Tunnel and Elevated Structure Alternatives, and compared those build alternatives and a no build alternative to the Bored Tunnel Alternative. The Bored Tunnel Alternative was identified as the preferred alternative in the 2010 Supplemental Draft EIS.

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<sup>1</sup> WSDOT et al. 2004.

<sup>2</sup> WSDOT et al. 2006.

<sup>3</sup> WSDOT et al. 2010.

The Final EIS evaluated a no build alternative in addition to the Bored Tunnel Alternative, Cut-and-Cover Tunnel Alternative, and Elevated Structure Alternative. The three build alternatives were analyzed with and without tolls for their potential effects to the natural and built environments. The Tolloed Bored Tunnel Alternative was identified as the preferred alternative in the Final EIS, and it is the selected alternative in this Record of Decision.

## **Purpose and Need**

The Alaskan Way Viaduct is seismically vulnerable and at the end of its useful life. To protect public safety and provide essential vehicle capacity to and through downtown Seattle, the viaduct must be replaced. Because this facility is at risk of sudden and catastrophic failure in an earthquake, FHWA, WSDOT, and the City seek to implement a replacement as soon as possible. Moving people and goods to and through downtown Seattle is vital to maintaining local, regional, and statewide economic health. FHWA, WSDOT, and the City have identified the following purposes and needs the project should address.

The purpose of the proposed action is to provide a replacement transportation facility that will:

- Reduce the risk of catastrophic failure in an earthquake by providing a facility that meets current seismic safety standards
- Improve traffic safety
- Provide capacity for automobiles, freight, and transit to efficiently move people and goods to and through downtown Seattle
- Provide linkages to the regional transportation system and to and from downtown Seattle and the local street system
- Avoid major disruption of traffic patterns due to loss of capacity on SR 99
- Protect the integrity and viability of adjacent activities on the central waterfront and in downtown Seattle

The following paragraphs provide discussion of the needs underlying each of the project purposes that are listed above.

### **Reduce Seismic Vulnerability**

Because of its seismic vulnerability, the Alaskan Way Viaduct must be removed. The viaduct is deteriorating and at risk of sudden and catastrophic failure in an earthquake because of its design, age, and location. The viaduct was constructed in the 1950s and conformed to the design standards of that time. The structure was designed to seismic

criteria that are less than one-third as stringent as today's criteria.<sup>4</sup> The viaduct's existing foundations are embedded in liquefiable soil, and the structure is deteriorating. These factors make the structure vulnerable to earthquakes and necessitate its removal.<sup>5</sup> The replacement for SR 99 must meet current standards for earthquake resistance.

### **Improve Traffic Safety**

The viaduct and Battery Street Tunnel do not meet current roadway design standards and have deficiencies that need to be improved.<sup>6</sup> Current design standards reflect the latest agreement among the states and FHWA on how to safely design new and upgraded highways. As now configured, the viaduct does not meet current standards for lane width, shoulder width, and stopping sight distance.<sup>7</sup> The Battery Street Tunnel does not meet current standards for lane width, shoulder width,<sup>8</sup> and stopping sight distance.<sup>9</sup> North of the Battery Street Tunnel, several streets connect directly to SR 99 without room for drivers to accelerate or decelerate without affecting traffic flow or safety. These deficiencies result in higher than average collision rates for some segments of SR 99 within the project limits compared to similar facilities.<sup>10</sup> The replacement for SR 99 should meet current standards for roadway design.

### **Provide Capacity to Move People and Goods**

The Alaskan Way Viaduct portion of SR 99 provides essential capacity to and through downtown Seattle, carrying 20 to 25 percent of the traffic traveling through downtown. Together, I-5 and SR 99 through Seattle carry over \$80 billion in goods each year.<sup>11</sup>

The central waterfront portion of the SR 99 mainline is one of two primary north-south highway routes through Seattle. Maintaining this north-south through-route is critical to supporting a robust, integrated regional transportation system and the economic vitality of the city, Puget Sound region, and state. The through capacity provided by the viaduct cannot be provided elsewhere in the region if the facility were to close. This section of SR 99 also serves as a transit route to and from downtown for local and express bus service. For these and other reasons, the U.S. Congress has identified it as a project of national and regional

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<sup>4</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2002.

<sup>5</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2002.

<sup>6</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2002.

<sup>7</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2002.

<sup>8</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2002.

<sup>9</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2004.

<sup>10</sup> Parsons Brinckerhoff Quade & Douglas, Inc. 2004.

<sup>11</sup> Larsen et al. 2005.

significance.<sup>12</sup> The replacement for SR 99 should provide sufficient capacity for north-south trips to and through downtown.

### **Provide Transportation System Linkages**

This portion of SR 99 provides important linkages for the regional and local transportation system. Directly south of the central waterfront section of SR 99, the highway interacts with the Port of Seattle and Seattle's Duwamish industrial area. This area is home to one of the West Coast's largest industrial ports and just over 80 percent of Seattle's designated industrial lands.<sup>13</sup> The transportation system in this area plays a crucial role in the movement of freight and goods for the entire state and the Pacific Northwest region. As such, the connection provided by SR 99 to Port facilities and industrial activities is important to the efficient movement of freight and goods to and from Seattle.

Along the central waterfront, SR 99 provides efficient through access for traffic bound for locations north and south of the downtown core. In addition to providing an efficient through connection, the existing viaduct also provides access to and from the south and downtown Seattle via the Seneca Street off-ramp and Columbia Street on-ramp. Furthermore, this section of SR 99 provides a connection for the Interbay, Magnolia, and Ballard neighborhoods in northwest Seattle with areas south of downtown via Elliott and Western Avenues and the Railroad Way on- and off-ramps. This connection is used by many businesses and residents in northwest Seattle and is not easily duplicated by other routes.

Directly north of the central waterfront, SR 99 provides links to the local streets that serve Seattle Center, a major regional civic center that welcomes more than 12 million visitors each year, generating \$1.15 billion in business activity.<sup>14</sup> In this area, SR 99 separates Seattle Center and the Uptown neighborhood from the South Lake Union neighborhood and provides limited connections to these neighborhoods. Improvements to SR 99 should improve these inter-neighborhood connections as well as provide regional access to and from SR 99.

The replacement for SR 99 should provide linkages to the regional transportation system, and to and from downtown Seattle and the local street system.

### **Avoid Major Disruption of Traffic Patterns**

The existing Alaskan Way Viaduct provides substantial capacity for north-south travel to and through downtown Seattle. The loss of substantial capacity on SR 99 for an extended

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<sup>12</sup> SAFETEA-LU 2005 Sec.1301(m).

<sup>13</sup> City of Seattle 2007.

<sup>14</sup> City of Seattle 2008.

period would adversely affect conditions for through traffic by increasing congestion on I-5 and the adjacent local roadway network. Since many of these adjacent facilities are already congested, extended loss of SR 99 capacity would add substantial delay for the traveling public (including transit) and would cause economic hardships for local and regional businesses. While disruption cannot be completely avoided, there is a need to replace the existing viaduct in a manner that minimizes disruption of traffic patterns by minimizing the time between closure of the existing viaduct and opening of a replacement facility or facilities.

### **Protect the Integrity and Viability of Adjacent Activities on the Central Waterfront and in Downtown Seattle**

The presence of the Alaskan Way Viaduct impedes the City's ability to implement its vision for redeveloping the central waterfront. The central waterfront section of the viaduct travels through and adjacent to downtown Seattle's urban core and the Seattle waterfront. The structure is elevated through the city, providing views of the waterfront to drivers but substantially impairing views to and from the waterfront to the city. The high volume of traffic carried by the double-level structure contributes substantial noise that affects the adjacent downtown and waterfront areas.

Since the viaduct was constructed in the 1950s, the Seattle downtown waterfront has been transformed from its origins as a working waterfront, characterized by shipping, warehouse, and industrial activities, to an important area for tourism and recreation. The central waterfront now has a mix of uses that include office, retail, hotel, residential, conference center, aquarium, museum, parks, cruise ship terminal, ferry terminal, and various types of commercial and recreational moorage. As such, the view and noise impacts caused by the existing elevated viaduct structure detract from the land uses found on the Seattle waterfront today.

Seattle's vision for the central waterfront is based on reconnecting downtown with the waterfront, enhancing the waterfront's environmental sustainability, increasing views of Elliott Bay and the landforms beyond, facilitating revitalization of Seattle's waterfront, maintaining transportation access to and through the waterfront, and increasing opportunities for the public to access and enjoy the shoreline and waterfront. Therefore, the replacement for SR 99 should support land use plans for the central Seattle waterfront and downtown as described above.

## **Alternatives Considered**

FHWA, WSDOT, and the City considered four alternatives in the Final EIS: Viaduct Closed (No Build Alternative) and three build alternatives: Bored Tunnel, Cut-and-Cover Tunnel,

and Elevated Structure. Each of the three build alternatives was evaluated for its potential effects to the natural and built environment with and without the application of tolling. The Tolerated Bored Tunnel Alternative was identified as the preferred alternative in the Final EIS. Each alternative is described below, based on information in the Final EIS. In addition to the elements described here, the tolled versions of each build alternative also would include electronic toll collection facilities. Because tolls would be collected electronically, the project would not include toll booths; therefore, tolling would not alter the physical configuration of any of the alternatives.

### **Bored Tunnel Alternative**

The Bored Tunnel Alternative would replace SR 99 between S. Royal Brougham Way and Roy Street. This alternative would remove the viaduct along the Seattle waterfront and would close and fill the Battery Street Tunnel after the bored tunnel is constructed.

#### **South Portal**

Full northbound and southbound access to and from SR 99 would be provided in the south portal area with new ramps at S. Royal Brougham Way and Alaskan Way S. A new signalized intersection at Alaskan Way S. and S. Dearborn Street would provide access to and from East Marginal Way S., which would run along the west side of SR 99. A tunnel operations building would be constructed in the block bounded by S. Dearborn Street, Railroad Way S., and Alaskan Way S.

#### **Bored Tunnel**

Access to downtown would be provided by ramps constructed at the portals. The existing viaduct ramps to and from Columbia and Seneca Streets and Elliott and Western Avenues would not be provided.

The bored tunnel would have two lanes in each direction. Southbound lanes would be located on the top portion of the tunnel, and the northbound lanes would be located on the bottom. Travel lanes would be approximately 11 feet wide, with a 2-foot-wide shoulder on one side and an 8-foot-wide shoulder on the other side.

The bored tunnel will be designed to provide emergency access, evacuation routes, ventilation, and fire suppression systems in accordance with National Fire Protection Association standards and other codes and regulations.

#### **North Portal**

Full northbound and southbound access to and from SR 99 would be provided by new ramps near Harrison and Republican Streets. A tunnel operations building would be constructed between Thomas and Harrison Streets on the east side of Sixth Avenue N.

Surface streets would be rebuilt and improved in the north portal area:

- Aurora Avenue would be built to grade level between Denny Way and Harrison Street.
- John, Thomas, and Harrison Streets would be connected as cross streets with signalized intersections on Aurora Avenue at Denny Way and John, Thomas, and Harrison Streets.
- Mercer Street would become a two-way street and would be widened from Dexter Avenue N. to Fifth Avenue N.
- Broad Street would be filled and closed between Ninth Avenue N. and Taylor Avenue N.
- A new roadway would be built to extend Sixth Avenue N. in a curved formation between Harrison and Mercer Streets.

### **Cut-and-Cover Tunnel Alternative**

The Cut-and-Cover Tunnel Alternative would replace SR 99 from S. Royal Brougham Way to Aloha Street.

#### **South**

In the south portal area, the cut-and-cover tunnel lane configurations and access points are nearly identical to the bored tunnel. Like the Bored Tunnel Alternative, full northbound and southbound access to and from SR 99 would be provided by ramps at S. Royal Brougham Way and Alaskan Way S.; a new intersection at S. Dearborn Street would provide access to East Marginal Way S.; and a tunnel operations building would be constructed in the block bounded by S. Dearborn Street, Railroad Way S., and Alaskan Way S.

#### **Central**

SR 99 would be replaced with a six-lane cut-and-cover tunnel (three lanes in each direction) from approximately Railroad Way S. to Pine Street. The outer wall of the tunnel would serve as the new seawall from S. Washington Street to Union Street. A tunnel operations building would be constructed in the block bounded by Pine Street, SR 99, and the Alaskan Way Surface Street. Between Pine Street and Virginia Street, a new aerial structure would be built, and SR 99 would connect to the Battery Street Tunnel by traveling under Elliott and Western Avenues. The existing Elliott Avenue on-ramp and Western Avenue off-ramp would be replaced. Because SR 99 would cross under Elliott and Western Avenues, Bell Street could be connected across Western Avenue.

A lid would be built above the new aerial structure from Pine to Virginia Streets. The lid would provide new open space and a pedestrian linkage between Victor Steinbrueck Park and Pike Place Market to the waterfront at about University Street.

Alaskan Way would be replaced east of the existing roadway with at least two lanes in each direction and two waterfront streetcar tracks running in the center travel lanes. Alaskan Way would be lined with expanded open space, a wide waterfront promenade, broad sidewalks on both sides of the surface street, bicycle lanes, and parking. Between Union Street and Broad Street, the existing seawall would be replaced because the seawall would serve as the outer wall of the tunnel structure.

The Battery Street Tunnel would be retrofitted for improved seismic safety and the tunnel safety systems and facilities would be updated. Tunnel maintenance and ventilation buildings would be built at each end of the Battery Street Tunnel.

### **North**

North of the Battery Street Tunnel, SR 99 would be improved and widened up to Aloha Street. Access onto SR 99 would be provided at Denny Way and Roy Street, and access off of SR 99 would be provided at Denny Way, Republican Street, and Roy Street. Two new bridges spanning SR 99 would be built at Thomas and Harrison Streets. Broad Street would be closed between Fifth and Ninth Avenues N., allowing the street grid to be connected. Mercer Street would continue to cross under SR 99 as it does today, but it would be widened and converted into a two-way street with three lanes in each direction and a center turn lane.

## **Elevated Structure Alternative**

The Elevated Structure Alternative would replace SR 99 from S. Royal Brougham Way to Aloha Street.

### **South**

In the south area, the Elevated Structure Alternative's lane configurations and access points are nearly identical to the Bored Tunnel and Cut-and-Cover Tunnel Alternatives. Like the other build alternatives, full northbound and southbound access to and from SR 99 would be provided by new ramps at S. Royal Brougham Way and Alaskan Way S., and a new intersection at S. Dearborn Street would provide access to East Marginal Way S.

### **Central**

The Elevated Structure Alternative would transition to a stacked aerial structure at approximately S. Main Street along the central waterfront. The new aerial structure would have three lanes in each direction, and it would have wider lanes and shoulders than the existing viaduct. However, between S. King Street and the ramps at Columbia and Seneca Streets, SR 99 would have four lanes in each direction. The existing ramps at Columbia and Seneca Streets would be rebuilt. SR 99 would cross over Elliott and Western Avenues between Pine Street and the Battery Street Tunnel and the ramps to Elliott and Western Avenues would be rebuilt.

The Alaskan Way surface street would be replaced with at least two lanes in each direction. Northbound lanes would travel under the new viaduct, and southbound lanes would travel west of the new viaduct. The waterfront streetcar would be replaced with two streetcar tracks that would share a travel lane with vehicles. Alaskan Way would be lined with bicycle lanes, sidewalks on both sides, and parking. The seawall, which supports the soil surrounding the foundations of the viaduct, would be replaced from about S. Washington Street up to Broad Street to ensure that the elevated structure is properly supported.

### **North**

Improvements from the Battery Street Tunnel north would be the same as what was described for the Cut-and-Cover Tunnel Alternative.

### **Viaduct Closed (No Build Alternative)**

The Viaduct Closed (No Build Alternative) is the no build alternative. This alternative involves closure of the existing viaduct without providing a replacement facility. For the purposes of NEPA analysis, the no build alternative assumes closure of the viaduct because FHWA and WSDOT have determined that the viaduct must eventually be closed if it is not replaced for reasons of public safety. Based on the deteriorated condition of the viaduct, FHWA and WSDOT believe it would need to be closed well before the 2030 design year for this project. Therefore, an alternative involving “no action” to replace the viaduct would result in closure of the existing facility and re-routing traffic onto the existing street network. The basis for this definition of the no build alternative is more fully explained below and in Chapter 5 of the Final EIS.

The project area is susceptible to earthquakes that could happen at any time. A small earthquake could make the existing viaduct unsafe, requiring immediate closure. A stronger earthquake could cause the structure to collapse, with potentially catastrophic effects. Even without an earthquake, the viaduct is gradually deteriorating from constant exposure to moist marine air, rain, and vibration from traffic. Because of the facility’s continued deterioration, even without an earthquake, the structure will need to be closed at some point in the future.

The Viaduct Closed (No Build Alternative) describes the consequences of suddenly losing SR 99 along the central waterfront. These consequences would last until transportation and other agencies could implement a new, permanent solution and businesses and people could adapt.

The Viaduct Closed (No Build Alternative) is evaluated using 2030 transportation conditions so that it can be compared to the build alternatives, each of which is analyzed using a 2030 horizon year. The 2030 Viaduct Closed (No Build Alternative) assesses traffic conditions if the viaduct were closed between the First Avenue S. ramps and the Battery

Street Tunnel. While we can predict the short-term effects of suddenly closing the viaduct, the long-term effects are harder to predict. Our traffic projections for 2030 are based on adopted local and regional land use and transportation plans, which include SR 99.

## Alternatives Development

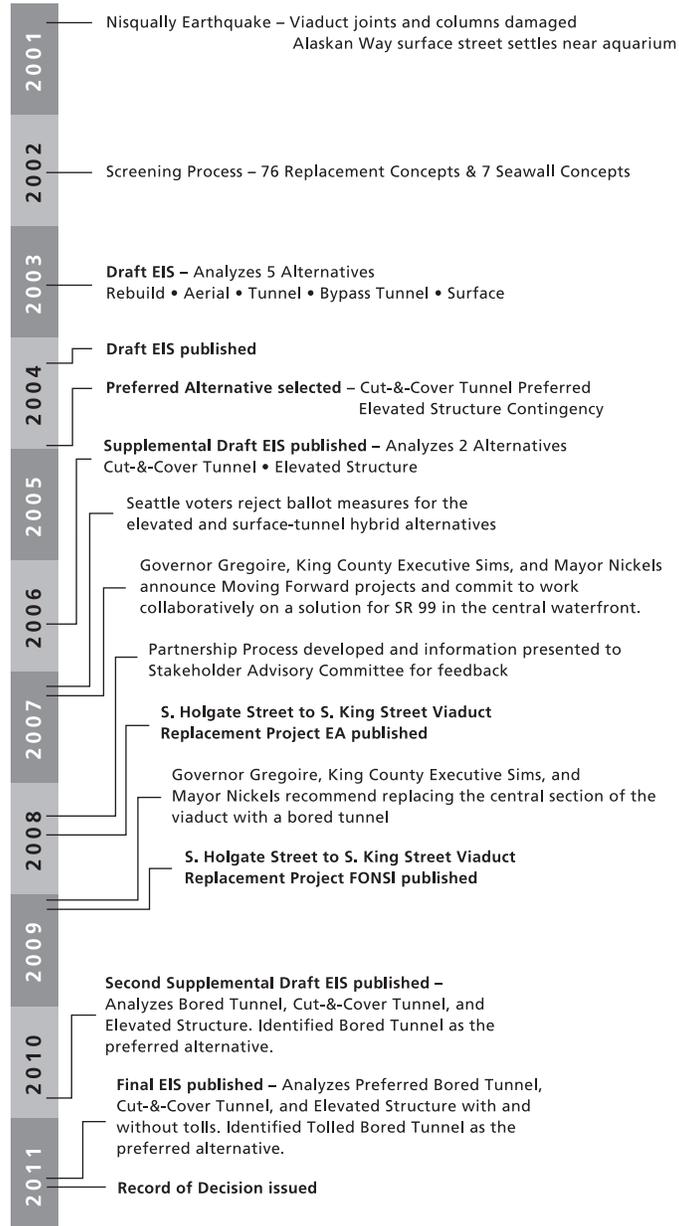
Exhibit R-1 summarizes the history of this project and the alternatives evaluated through the environmental impact statement process.

### 2004 Draft EIS

The June 2001 Notice of Intent (NOI) established that the proposed action would involve improving or replacing the 2-mile-long viaduct structure. The NOI announced that the southern terminus of the project would be the First Avenue South Bridge and the north terminus would be north of the existing Battery Street Tunnel (and would be determined more specifically after project scoping). As the initial study for the project was underway, concerns were raised about the condition of the Elliott Bay Seawall, which holds back the soil that the viaduct's foundations are embedded in. Because of these concerns, the June 2001 NOI was revised in September 2003. The revised NOI included replacing the seawall and moving the southern terminus north from the First Avenue S. Bridge to S. Spokane Street. As a result, 76 viaduct replacement concepts and seven seawall concepts were organized into six groups and the best ideas from the six groups were shaped into the five build alternatives evaluated in the 2004 Draft EIS:

- **Rebuild** – Replace the viaduct in its existing location with a structure similar to the existing one. Replace the seawall.
- **Aerial** – Replace the viaduct in its existing location with a structure that meets roadway standards for lane widths and shoulders where feasible. Replace the seawall.
- **Tunnel** – Replace the viaduct and seawall with a cut-and-cover tunnel along the central waterfront. The tunnel would have three lanes in each direction, and the western wall of the tunnel would replace the seawall.
- **Bypass Tunnel** – Replace the viaduct and seawall with a cut-and-cover tunnel along the central waterfront. The tunnel would have two lanes in each direction, and the western wall of the tunnel would replace the seawall.
- **Surface** – Replace the viaduct with an at-grade roadway along the central waterfront. The roadway would have three lanes in each direction with turn pockets between Yesler Way and Pike Street. Replace the seawall.

**Exhibit R-1  
Project Timeline**



## 2006 Supplemental Draft EIS

In late 2004, after the public comment period for the Draft EIS, these five build alternatives were narrowed down to two based on information presented in the Draft EIS, public comments, and further study and design:<sup>15</sup>

- **Cut-and-Cover Tunnel** – Refined Tunnel Alternative
- **Elevated Structure** – Combined elements of the Rebuild and Aerial Alternatives

The Bypass Tunnel and Surface Alternatives were dropped from further consideration. The Bypass Tunnel Alternative was eliminated from further study because traffic information presented in the 2004 Draft EIS demonstrated that by 2030, the Bypass Tunnel would increase travel times for some through trips. In addition, the number of hours each day that SR 99 was expected to be congested would have increased by 1 to 2 hours per day by 2030. For these reasons, this alternative did not meet the project's purpose to "maintain or improve mobility, accessibility, and traffic safety for people and goods along the existing Alaskan Way Viaduct Corridor."<sup>16</sup>

The Surface Alternative was eliminated because it did not meet the project's purpose. This alternative would remove the viaduct and replace it with a six-lane surface street on Alaskan Way. As a result, it would reduce roadway capacity on SR 99 through downtown by 40 to 50 percent by 2030, leading to projections of increased travel times and congestion for drivers on SR 99 and other parallel roadways such as city streets and I-5. For some trips, travel times with the Surface Alternative would double, and traffic on Alaskan Way itself would have increased nearly sevenfold.

Between 2004 and 2006, design changes were made to the Cut-and-Cover Tunnel and Elevated Structure Alternatives, the project was extended farther north to improve access to and from SR 99 and improve local street connections (documented in an NOI<sup>17</sup> dated August 3, 2005), and different construction approaches were considered in response to public comments received on the 2004 Draft EIS. These changes required further evaluation in a Supplemental Draft EIS that was published in July 2006. The Cut-and-Cover Tunnel Alternative and Elevated Structure Alternative were evaluated in the 2006 Supplemental Draft EIS.

In early 2006, the Washington State Legislature passed new legislation that required an expert review panel to provide an independent financial and technical review of the

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<sup>15</sup> See the Final EIS Appendix W, Screening Reports, for alternative screening details (Parametrix, Inc. 2010).

<sup>16</sup> Chapter 2, page 3 of the 2004 Draft EIS.

<sup>17</sup> Federal Register 2005.

Alaskan Way Viaduct and Seawall Replacement Project's financial and implementation plan. The panel's study included a review of the project's costs, risks, design plans, and environmental process. The expert review panel reported its findings and recommendations to the Governor on September 1, 2006.<sup>18</sup> The panel found the project's overall financial plan to be sound and reasonable; however, they were concerned about the project's 2005 cost estimates. As a result, WSDOT updated the 2005 cost estimates in September of 2006.

After receiving updated cost information and the expert review panel's findings, Governor Gregoire determined that the financial plan for the Elevated Structure Alternative was feasible and reasonable, but that the financial plan for the Cut-and-Cover Tunnel Alternative was not. The Governor also found that the project costs and a lack of consensus surrounding a preferred alternative were contributing to a political stalemate. In an effort to move the project forward, Governor Gregoire called for an advisory vote in December 2006. The advisory vote was intended to allow the citizens of Seattle to provide input on selection of a preferred alternative.<sup>19</sup> The Seattle City Council responded by authorizing a vote and placing the Elevated Structure Alternative and a Surface-Tunnel Hybrid Alternative on the ballot. The four-lane Surface-Tunnel Hybrid Alternative differed from the six-lane Cut-and-Cover Tunnel Alternative evaluated in the 2006 Supplemental Draft EIS. The Surface-Tunnel Hybrid Alternative was a four-lane cut-and-cover tunnel that proposed to use safety shoulders as exit-only lanes and reduce the speed limit during rush hours. On March 13, 2007, the citizens of Seattle voted down both alternatives.

After the March 2007 vote in Seattle, Governor Gregoire, former King County Executive Sims, and former Seattle Mayor Nickels chose to move forward with critical safety and mobility improvement projects at the north and south ends of the Alaskan Way Viaduct. These projects were called the Moving Forward projects because they could proceed while the Governor, County Executive, and Mayor worked together through a collaborative public process to develop a viaduct replacement solution for the central waterfront that would have broad consensus among the lead agencies, cooperating agencies, tribes, and the public. Included in the Moving Forward projects was the S. Holgate Street to S. King Street Viaduct Replacement Project, which has independent utility from the Alaskan Way Viaduct Replacement Project and for which a Finding of No Significant Impact was issued in February 2009.

## **Partnership Process**

Governor Gregoire, former King County Executive Sims, and former Seattle Mayor Nickels also committed to a collaborative effort to forge a solution for replacing the

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<sup>18</sup> WSDOT 2006.

<sup>19</sup> Gregoire 2006.

viaduct along Seattle’s central waterfront. This collaborative effort was referred to as the Partnership Process; see Chapter 2, Question 5 of the Final EIS for details. The three parties formalized this effort in a Memorandum of Understanding in December 2007.

The Partnership Process occurred as part of the National Environmental Policy Act (NEPA) process for the Alaskan Way Viaduct Replacement Project.<sup>20</sup> The Partnership Process looked at how improvements to the broader transportation system could work with different ways to replace the function of the viaduct. A Stakeholder Advisory Committee reviewed and commented on materials and presentations produced through the Partnership Process.

The Partnership Process embraced a new approach that looked more broadly at the Puget Sound region to identify innovative strategies for moving people and goods in and through Seattle. The strategy employed a systems approach and considered a broader study area than just the SR 99 corridor, which had been the focus for developing alternatives through the EIS process that began in 2001. The systems approach considered not only SR 99, but also I-5, Seattle’s city streets, public transit, and policies and management actions designed to influence transportation choices and demand. The approach also expanded the set of potential solutions to include a combination of transit, bicycle, and pedestrian improvements.

Eight scenarios were created to test the performance of various combinations of SR 99, I-5, surface street, transit, and transportation demand management elements; the scenarios are listed below:

**Scenarios without SR 99 as a Limited-Access/Bypass Facility**

- Scenario A: Demand Management and Low Capital Investment
- Scenario B: Surface Boulevard and Transit
- Scenario C: Alaskan Way and Western Avenue One-Way Couplet

**Scenarios with SR 99 as a Limited-Access/Bypass Facility**

- Scenario D: Independent Elevated
- Scenario E: Integrated Elevated
- Scenario F: Twin Bored Tunnel
- Scenario G: Cut-and-Cover Tunnel
- Scenario H: Lidded Trench

The limited-access bypass scenarios considered in the Partnership Process proposed to replace SR 99 with a four-lane bypass facility rather than the six-lane facilities evaluated

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<sup>20</sup> Federal Register 2008.

in previous EISs. For most of the four-lane bypass scenarios, improvements were needed outside of the SR 99 corridor to provide for the efficient movement of people and goods through Seattle.

### **Hybrid Scenarios Developed**

After evaluating the eight systems scenarios, it was clear that substantial tradeoffs existed among the various choices. As a result, two classes of hybrids were developed: an I-5, surface, and transit hybrid without a limited-access bypass and hybrids with a limited-access bypass in the SR 99 corridor. The following three hybrid scenarios were developed by assembling the best-performing combinations from the original eight systems scenarios, based on the findings of the evaluation.

- Scenario L: I-5, Surface, and Transit Hybrid
- Scenario M: Elevated Bypass Hybrid
- Scenario O: Twin Bored Tunnel Hybrid

The Partnership Leadership Team concluded that only two of the three hybrid scenarios were affordable with WSDOT's \$2.8 billion budget: Scenario L: I-5, Surface, and Transit Hybrid and Scenario M: Elevated Bypass Hybrid. In response to the Partnership Leadership Team's recommendations, the Stakeholder Advisory Committee generated the following broad themes:

- The State's contribution should be limited to \$2.8 billion, and other partners and the region should identify funding sources able to cover costs associated with transit service, improvements to city streets, and other aspects.
- Any solution should reliably meet the area's mobility needs now and in the foreseeable future, but the City should take advantage of this rare opportunity to reconnect the central waterfront with downtown.
- While many members saw the I-5, Surface, and Transit Hybrid as an attractive approach, and possibly a first phase of an ultimate recommendation, there was also interest in taking a bored tunnel forward for further consideration. Many felt that the tunnel's costs might be reduced as a result of evolving technology and that additional funding might be found for a scenario with such broad appeal. At the urging of some members of the Stakeholder Advisory Committee, a panel of independent tunnel experts was convened and reported that with a single bore and new techniques a bored tunnel would likely be less expensive than originally thought.
- There was support from only a handful of Stakeholder Advisory Committee members for an elevated solution.

### **2010 Supplemental Draft EIS**

The Partnership Process concluded in December 2008. In January 2009, Governor Gregoire, former King County Executive Sims, and former Seattle Mayor Nickels

recommended replacing the central waterfront portion of the Alaskan Way Viaduct with a large-diameter, single-bore tunnel. In addition, they recommended a package of improvements that includes replacing Alaskan Way with a new waterfront surface street and making other improvements, including a promenade, transit investments, streetcar on First Avenue, restored seawall, a 1 percent motor vehicle excise tax for transit, and downtown city street improvements. Their recommendation was grounded in the potential for a bored tunnel and other improvements to meet the six guiding principles established as part of the Partnership Process;<sup>21</sup> technical analysis; strong support of diverse interests; and the willingness of the partners, with the support of the Port of Seattle, to develop a funding program that supplements the State's contribution of up to \$2.8 billion.

In April 2009, the Washington State Legislature passed Engrossed Substitute Senate Bill (ESSB) 5768, which urged the State to expedite environmental review and authorized state funds to build a replacement tunnel and remove the existing structure. On May 12, 2009, Governor Gregoire signed ESSB 5768, which commits no more than \$2.8 billion in state funding to the project. The Legislature's action led to the preparation of the 2010 Supplemental Draft EIS, which considered the Bored Tunnel Alternative along with other build alternatives and a no build alternative; the action did not limit or influence FHWA's consideration of alternatives.

After the bored tunnel was recommended, a revised NOI was issued in June 2009 and the project purpose and need statement was updated, design concepts were reevaluated and screened, additional traffic analysis was completed for the Surface and Transit Hybrid Concept (which supported eliminating it for further evaluation), and the alternatives to be evaluated in the 2010 Supplemental Draft EIS were defined. The concepts advanced for further evaluation in the 2010 Supplemental Draft EIS were:

- 2006 Supplemental Draft EIS Elevated Structure
- 2006 Supplemental Draft EIS Cut-and-Cover Tunnel
- Partnership Process Bored Tunnel Hybrid
- Viaduct Closed (No Build Alternative)

These concepts were developed further into the build alternatives evaluated in the 2010 Supplemental Draft EIS. In the 2010 Supplemental Draft EIS, the Bored Tunnel Alternative was analyzed and its effects compared to the updated Cut-and-Cover Tunnel and Elevated Structure Alternatives previously evaluated in the 2006 Supplemental Draft EIS. The 2010 Supplemental Draft EIS also addressed tolling-related issues; Chapter 9 of

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<sup>21</sup> For a list of the six guiding principles see Chapter 2, Question 1 in *SR 99: Alaskan Way Viaduct Replacement Project Final Environmental Impact Statement* (WSDOT et al. 2011). The lead agencies updated the project's purpose and need statement to reflect these principles in 2009.

the 2010 Supplemental Draft EIS informed readers that tolls could be implemented on the SR 99 replacement facility in the future, and included an analysis of the potential effects of tolling.

## Final EIS

As requested by the public and agencies, the issue of tolling was discussed more extensively in the Final EIS. The Final EIS evaluated the Bored Tunnel Alternative, Cut-and-Cover Tunnel Alternative, and Elevated Structure Alternative, each with and without tolls, as well as the Viaduct Closed (No Build Alternative). In response to continued interest in the Surface and Transit Hybrid Concept further transportation analysis was provided in the Final EIS, which again supported its elimination from detailed consideration. The Tolloed Bored Tunnel Alternative was identified as the preferred alternative in the Final EIS.

## Rationale for Selected Alternative

The Tolloed Bored Tunnel Alternative (Exhibits R-2, R-3, and R-4) is the selected alternative to replace the Alaskan Way Viaduct for the following reasons:

- The Tolloed Bored Tunnel Alternative is the only build alternative that can be constructed without closing or substantially restricting SR 99 for years. Given the importance of the highway to local and regional transportation, this is a very important advantage. Both the Cut-and-Cover Tunnel Alternative and the Elevated Structure Alternative would have significant construction impacts on transportation to and through downtown Seattle, with related effects on surrounding community and economic health of the Puget Sound region and Washington State. The Tolloed Bored Tunnel Alternative can also be built more quickly than the other alternatives,<sup>22</sup> reducing the overall period of construction impacts.
- Both the Cut-and-Cover Tunnel Alternative and the Elevated Structure Alternative would require extended construction along the central waterfront with substantial economic impacts on the businesses in that area.

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<sup>22</sup> The Bored Tunnel Alternative is expected to take 5.4 years to build, the Cut-and-Cover Tunnel Alternative 8.75 years, and the Elevated Structure Alternative 10 years.

# Bored Tunnel Alternative



- █ Surface
- █ Lowered Roadway
- █ Cut-&-Cover Tunnel
- █ Bored Tunnel
- █ Elevated Roadway
- █ Aerial



Exhibit R-2

# Bored Tunnel South Portal

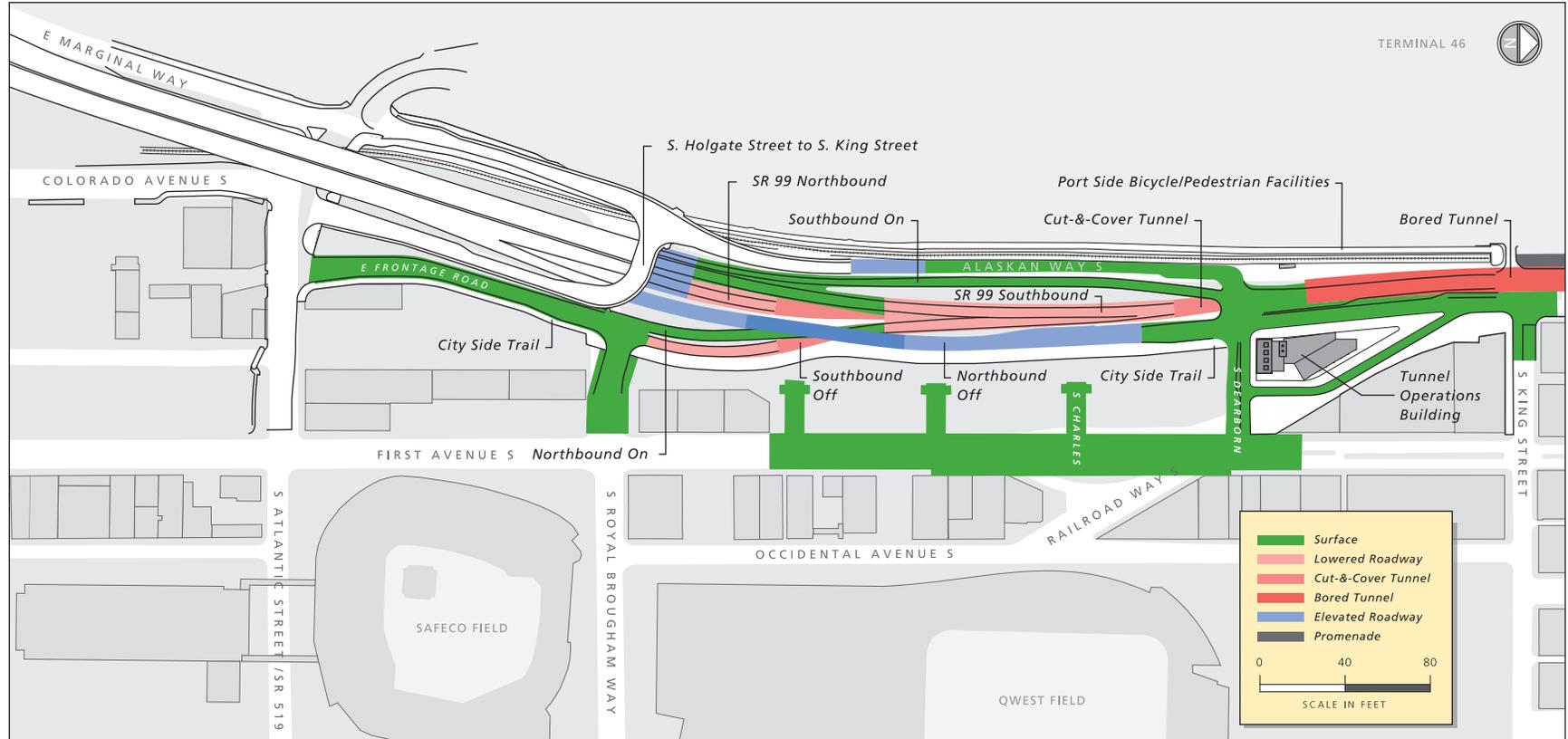


Exhibit R-3

# Bored Tunnel North Portal

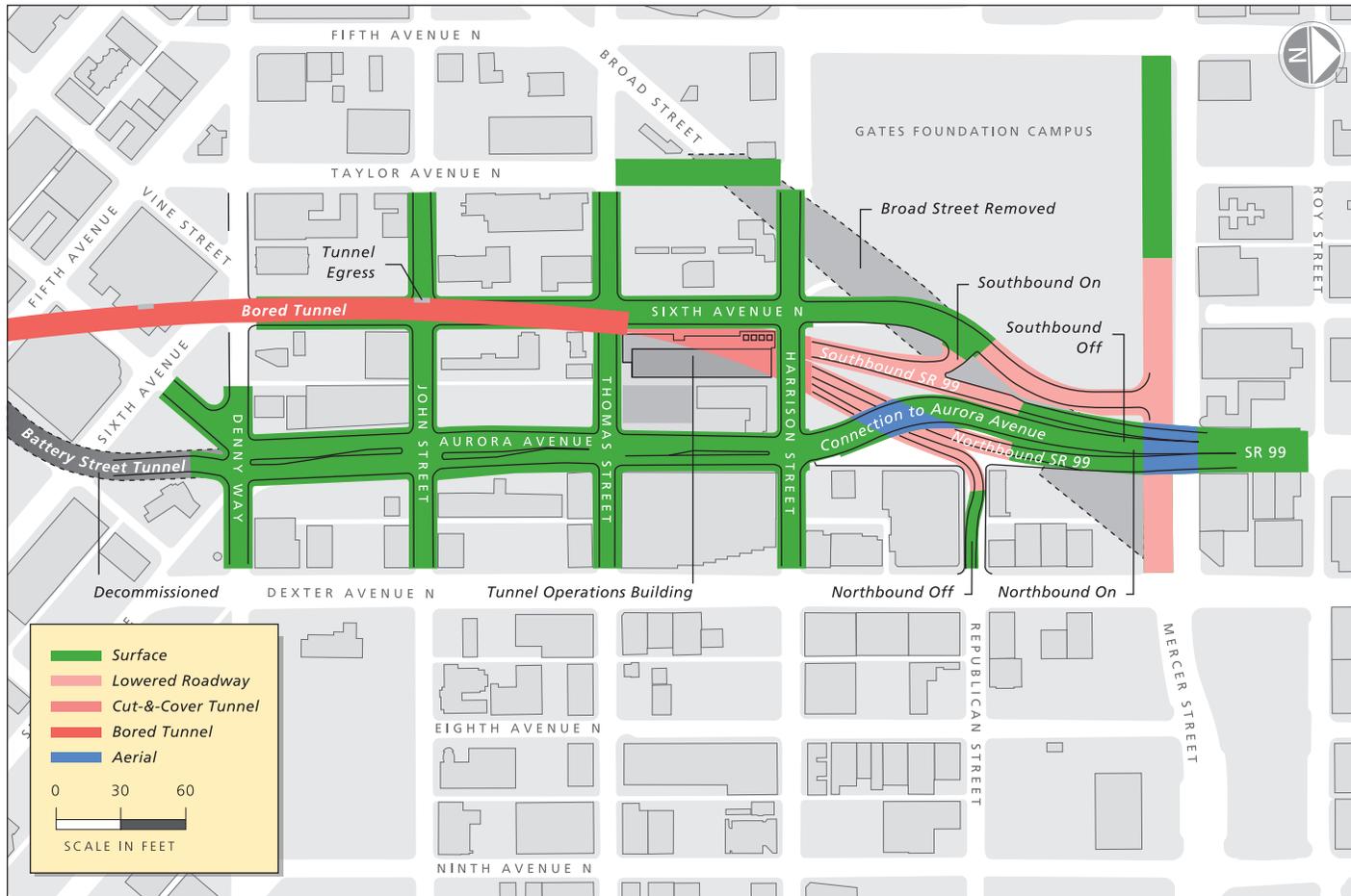


Exhibit R-4

- The Tolloed Bored Tunnel Alternative gives the City the most latitude in planning for its central waterfront by removing both aboveground and subsurface constraints on development. Although the Cut-and-Cover Tunnel Alternative removes aboveground constraints, it would determine the location of the seawall and limit the location and type of landscaping that could be placed above the tunnel. The Elevated Structure Alternative would determine the location of the seawall and continue many of the noise and visual impacts created by the existing viaduct.
- The Tolloed Bored Tunnel Alternative integrates with surface streets north of downtown better than either the Cut-and-Cover or Elevated Structure alternatives. In the north portal area, new connections across Aurora Avenue at John, Thomas, and Harrison Streets and the extension of Sixth Avenue N. to Mercer Street would improve vehicle, bicycle, and pedestrian mobility between the Uptown, Belltown, and South Lake Union neighborhoods. The Cut-and-Cover Tunnel and Elevated Structure alternatives provide fewer connections across Aurora Avenue and hence fewer benefits.
- The Section 4(f) Evaluation finds that all alternatives require the “use” of Section 4(f) resources and that the Tolloed Bored Tunnel Alternative has the least overall harm (note that tolling does not result in the use of Section 4(f) resources).

WSDOT recommended identifying the Tolloed Bored Tunnel Alternative as the preferred alternative in a letter to the FHWA Washington Division Office dated May 24, 2011. As stated in the letter, WSDOT recommended the Tolloed Bored Tunnel Alternative based on the Washington State Legislature’s direction to develop a financial plan that includes \$400 million in revenue from tolling, as well as consideration of the tolling policies in the region’s long-range transportation plan, *Transportation 2040*, which was adopted by the Puget Sound Regional Council (PSRC) in May 2010. FHWA concurred in identification of the Tolloed Bored Tunnel Alternative as the preferred alternative in a letter to WSDOT dated May 25, 2011. The Final EIS identified the Tolloed Bored Tunnel as the preferred alternative for the reasons described in the Final EIS Summary, Question 6. This Record of Decision identifies the Tolloed Bored Tunnel Alternative as the selected alternative.

The Washington State Legislature has authorized WSDOT to commit expending up to \$2.8 billion to replace the Alaskan Way Viaduct. WSDOT will work with the Legislature to identify other funding sources if tolling is not authorized in order to meet the State’s funding commitment and contractual obligations. The Alaskan Way Viaduct Replacement Project is included in PSRC’s fiscally constrained plans, as discussed further in the *Metropolitan Transportation Plan* section of this Record of Decision.

Implementation of the Tolloed Bored Tunnel Alternative will require additional approvals following the issuance of this Record of Decision. FHWA’s approval is needed to convert this portion of State Route (SR) 99 to a tolled facility because SR 99 is part of the federal-aid highway system. This approval is known as a “Section 129 agreement” because it is

granted under 23 USC 129, which allows FHWA to approve tolling on federally funded highways under certain conditions. FHWA anticipates entering into a Section 129 agreement with WSDOT prior to the approval of the *Initial 2011 Financial Plan* for this project. In addition, tolling the facility will require further authorization from the Washington State Legislature. WSDOT will take appropriate steps to obtain legislative approval for tolling. If the legislature does not authorize tolling, the project could be opened as a non-tolled facility. If WSDOT proposes to open a non-tolled facility, WSDOT would request that FHWA issue a revised Record of Decision to modify the selected alternative and to revise the relevant mitigation measures. Such a modification would be authorized only if other funding sources are identified to replace the funding that is currently assumed to come from tolling.

## Measures to Minimize Harm

FHWA and WSDOT have included practicable means to avoid and/or minimize harm in the design of the selected alternative, such as designing the ventilation systems in the tunnel operations buildings to meet specific noise limits. All practicable means to avoid or minimize environmental harm have been incorporated into the selected alternative.

The approach to avoid and/or minimize effects of the project includes the following key measures:

- Minimal disruption to SR 99 traffic during construction
- Settlement protection, such as compensation grouting
- Utility relocation
- Vibration monitoring at critical locations during construction

The project also will use appropriate best management practices (BMPs) developed by WSDOT to prevent or reduce construction effects. Construction BMPs are designed to assure compliance with all applicable regulations and permit conditions. The use of BMPs to avoid or minimize effects on specific resources is discussed in Chapter 8 of the Final EIS, as appropriate, and in the discipline reports prepared for each element of the environment. Compliance with WSDOT BMPs is required by this Record of Decision. Other mitigation measures are discussed below in the Project Commitments section.

## Project Commitments

Project commitments include performance standards incorporated into environmental BMPs, preventative measures from regulatory permits, and mitigation measures developed to address specific impacts, such as temporary noise barriers during

construction. Funding for BMPs and mitigation is included in the cost of construction for the project, unless noted otherwise, and WSDOT will have the final responsibility for implementation. Pursuant to 23 Code of Federal Regulations (CFR) 771.109(d), WSDOT will ensure that all environmental mitigation listed in the Final EIS and this Record of Decision is implemented unless it receives concurrence from FHWA to modify or delete such mitigation.

## Transportation Mitigation

WSDOT, King County, and the City have developed and are implementing transportation improvements to minimize traffic effects during construction to keep people and goods moving. These measures are designed to increase transit options, shift traffic away from construction areas, and provide drivers with the information they need to choose less congested routes. These improvements, which are all completed except for the one noted as under construction, include the following:

- A transit-only lane will be provided for northbound SR 99 traffic exiting to Alaskan Way S. during the peak hour.
- A northbound and southbound transit-only lane will be provided from approximately Denny Way to Harrison Street on Aurora Avenue.
- Installing and operating variable speed signs and travel time signs on I-5 to help maximize safety and traffic flow.
- Providing funding for the SR 519 Phase 2 Project to improve connections from I-5 and I-90 to the waterfront.
- Providing funding for the S. Spokane Street Viaduct Widening Project, which includes building a new Fourth Avenue S. off-ramp for West Seattle commuters. This project is under construction.
- Providing funding for increased bus service in the West Seattle, Ballard/Uptown, and Aurora Avenue corridors during parts of the construction period, as well as a bus travel time monitoring system. Increased bus service is currently provided for the S. Holgate Street to S. King Street Viaduct Replacement Project into 2014. Funding for this service may be extended as mitigation for this project, but funding for this extension has not yet been secured.
- Installing new traffic technology on SR 99 and major routes leading to SR 99 to keep people and goods moving.
- Upgrading traffic signals and driver information signs for the Elliott Avenue W./15th Avenue W., West Seattle, and South of Downtown (SODO) corridors to support transit and traffic flow.
- Providing information about travel alternatives and incentives to encourage use of transit, carpool, and vanpool programs.

In addition, WSDOT will develop localized mitigation measures, such as constructing temporary signals, as construction details are refined.

Before construction begins, WSDOT will prepare a traffic management plan to ensure that construction effects to local streets, property owners, and businesses are minimized; see Chapter 8, Mitigation, in the Final EIS for specific measures included in the traffic management plan.

WSDOT will seek a practicable long-term tolling solution to minimize traffic diversion in order to optimize operation of the transportation network for all users. Strategies for optimization will be developed by the Tolling Advisory Committee (TAC), which will be established by WSDOT and the City, as outlined in Section 2.12 of Memorandum of Agreement (MOA) GCA 6486. When the TAC completes the first phase of its work in 2012 and in further phases, WSDOT and the City will jointly review the recommendations developed by the TAC. For improvements on state facilities or requiring state funding, WSDOT will recommend the strategies developed by the TAC (or other strategies, as appropriate) to the State Transportation Commission and seek funding for such strategies. WSDOT will work with the State, City, Port of Seattle, and King County in order to implement TAC strategies or other tolling mitigation strategies. Subject to legislative appropriation, WSDOT will fund recommendations agreed to by WSDOT and the City. If needed, additional environmental analysis may be performed to evaluate the potential effects of proposed strategies before implementation.

Mitigation strategies developed by the TAC will be monitored by measures of effectiveness developed by WSDOT and the City with input from the TAC. The measures of effectiveness will be developed to monitor the specific recommendations from the TAC; measures would likely include vehicle volumes in the bored tunnel and on specific city streets and I-5, travel times between specific points, levels of service at specific intersections surrounding the south and north portals, and revenue generation. The public will have an opportunity to comment on the measures of effectiveness to WSDOT and the City.

The TAC is expected to refine its analysis and recommendations through 2015 when toll implementation is expected to begin. Once the mitigation strategies recommended by the TAC are implemented, regular reporting will be provided to the TAC and the public based on the measures of effectiveness. The TAC will continue its work for up to 1 year after tolling begins to review the effects of tolling and strategies to minimize diversion. If measurements show that mitigation strategies are not achieving the desired results, they may be modified or additional mitigation may be recommended.

## Noise Mitigation

WSDOT will obtain Major Public Project Construction Noise Variances from the City, which involves the preparation of a Noise Management and Mitigation Plan and Noise Monitoring Plan; see Chapter 8, Mitigation, of the Final EIS for specific mitigation measures. Temporary noise variances also will be obtained, as needed, during construction. All noise variances will be obtained prior to the start of nighttime construction activities.

WSDOT will implement measures to minimize nighttime and weekend construction noise to prevent exceeding the noise variance noise level limits (except in the case of emergency) between the hours of 10:00 p.m. and 7:00 a.m. on weekdays, or between the hours of 10:00 p.m. and 9:00 a.m. on weekends and legal holidays. WSDOT will control nighttime construction noise levels through two methods: noise-level limits and noise-control measures. This approach provides the flexibility of either avoiding certain noise-generating activities during nighttime hours or implementing noise-control measures (e.g., temporary noise barriers) to assure the noise level limits are met.

For the selected alternative, noise barrier walls are planned at both south and north portal construction areas depending on construction activities. The location(s) and dimensions of the noise barrier walls will be determined during final design and in accordance with the City of Seattle Department of Planning and Development.

WSDOT will provide up-to-date information on construction activities and construction noise to project area neighbors and project stakeholders. WSDOT will provide a 24-hour hotline and project e-mail, and an answering service to respond to calls during nighttime hours. For the Major Public Project Construction Noise Variances, an Independent Noise Monitor will ensure compliance with the issued variances and Noise Management and Mitigation Plan.

## Vibration Mitigation

WSDOT will measure, analyze, and mitigate ground vibration by continuously gathering comprehensive vibration data during construction. Before the start of construction, WSDOT will implement the following measures, which are in addition to those used for the Final EIS analysis, as necessary:

- Develop a detailed Vibration Mitigation and Monitoring Plan according to WSDOT requirements.
- Identify and categorize potentially impacted receptors (building occupants), buildings (especially historic buildings in the Pioneer Square area), aboveground structures (including the Seattle Monorail), and underground utilities.

- Determine appropriate vibration measurement and/or monitoring locations.
- Perform a baseline ambient vibration survey at selected locations.
- Identify expected sources of vibration during construction activities, including the tunnel boring machine, muck conveyor system, pile driving, and demolition of the existing viaduct.
- Estimate ranges of expected vibration levels at potentially impacted receptors, buildings and underground utilities.

If determined to be necessary and practical for specific receptors, WSDOT will implement the following mitigation measures:

- Develop an empirical industry-accepted ground vibration propagation model to improve accuracy of predictions, as necessary.
- Perform ground vibration propagation tests at selected locations along tunnel alignment in conjunction with geotechnical consultant.
- Compare predictions with specified criteria, summarize expected impacts, and recommend vibration mitigation measures, where needed.

During construction, WSDOT will implement the following mitigation measures:

- Review vibration data according to the Vibration Mitigation and Monitoring Plan.
- Perform ongoing refinement of predictions of building vibration levels as directly measured ground vibration data become available, especially with regard to portal operations, as necessary.
- Support the project communications effort to ensure that outreach activities and materials address vibration issues.
- Respond to construction vibration issues and/or complaints quickly to reassure the public that their concerns are being heard.

## **Views Mitigation**

WSDOT has developed architectural (tunnel operations buildings) and portal design guidelines for the project to create a consistent visual palette and to match the character of the surrounding streetscape. The guidelines are appropriate for the urban environment in the project area and apply to the tunnel portals, ramps, connections to the urban street system, city streets, sidewalks, bicycle and pedestrian trails, and the urban landscape.

The Seattle Design Commission will review the design features of buildings and above-grade elements, and WSDOT will consider the Commission's comments for incorporation into the project design. However, highway project elements are not subject to approval from the Seattle Design Commission.

To mitigate for effects on visual quality during construction, WSDOT will design and place construction screens or barriers to limit the visibility of work areas that would intrude on adjacent activities, such as pedestrians or those gathering for sports events. WSDOT will also direct temporary construction site lighting away from nearby residences and businesses.

## **Land Use Mitigation**

Mitigation for potential effects on land use during construction will include providing advance notice to property owners in the project area regarding demolition and construction activities, utility disruptions, and detours. In addition, a construction website with a 24-hour project information line will be established and updated regularly.

WSDOT is coordinating with the Port of Seattle to address potential effects on terminal operations that would result from the use of Terminal 46 for construction staging. WSDOT will ensure that safety, access, security, and operations during the use of the terminal for the project activities are not compromised.

## **Economics Mitigation**

WSDOT will prepare a traffic management plan to ensure that construction effects on local streets, property owners, and businesses are minimized; see Chapter 8, Mitigation, in the Final EIS for specific measures included in the traffic management plan.

WSDOT will implement the following mitigation measures to maintain access and the general setting for businesses and potential customers:

- Minimize obstructions and/or delays along the routes to facilitate access to businesses, homes, cruise ships, ferry terminals, and waterfront attractions.
- Avoid all construction work in the City streets or sidewalks from Thanksgiving Day through January 1 in the area bounded by Columbia Street, Second Avenue, S. King Street, and Alaskan Way unless a City-approved variance is obtained.
- Use signage and a communications plan to inform people about businesses open during construction.

WSDOT will continue to prepare a public outreach and communications plan each year during construction, which will include, among other things, outreach activities designed to provide notification about construction activities, pedestrian detours, and parking changes during construction so that businesses can inform their clients, customers, and vendors. Public outreach activities and communications will be ongoing during project construction.

## **Parking Mitigation**

WSDOT will provide \$30 million to the Seattle Department of Transportation (SDOT) to mitigate parking effects during project construction, and specific strategies are being developed. SDOT, in coordination with WSDOT, has conducted parking studies as part of the process to develop mitigation strategies and better manage the City's parking resources. Potential strategies to offset the loss of short-term parking in the central waterfront include providing new or leased parking and increased utilization of and access to existing parking. The City-led Waterfront Seattle project is currently evaluating these strategies in the context of improved access to the central waterfront. The City will recommend strategies that could be implemented between 2011 and 2018. SDOT will implement the final parking mitigation strategies based on these recommendations.

WSDOT will identify appropriate parking options for construction workers, as necessary, and will discourage their use of short-term visitor or customer parking in the project vicinity.

## **Historic and Archaeological Resources Mitigation**

To conclude the Section 106 consultation process for this project, FHWA, WSDOT, and the Washington State Historic Preservation Officer (SHPO) have executed an MOA<sup>23</sup> that outlines measures to be taken to avoid, minimize, and/or mitigate adverse effects to historic properties as a result of this project. The MOA was developed in consultation with the following consulting parties and tribes: City of Seattle, King County, the National Trust for Historic Preservation, the Washington Trust for Historic Preservation, Historic Seattle, the Alliance for Pioneer Square, 4Culture, Benjamin and Lois Mayers, the Muckleshoot Indian Tribe, the Suquamish Tribe, the Tulalip Tribes, the Snoqualmie Indian Tribe, and the Confederated Bands and Tribes of the Yakama Nation. All of the consulting parties and tribes were offered concurring party status for the MOA.

The MOA recognizes adverse effects to the following historic properties:

- Alaskan Way Viaduct and Battery Street Tunnel
- Polson Building
- Western Building
- Pioneer Square Historic District
- Dearborn South Tideland site (archaeological site 45KI924)
- Lake Union Sewer Tunnel

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<sup>23</sup> FHWA et al. 2011.

WSDOT will implement the avoidance, minimization, and mitigation measures for each of the historic properties listed above as outlined in the MOA (Attachment 1 of this Record of Decision).

For the Alaskan Way Viaduct and Battery Street Tunnel, mitigation for adverse effects was included in a previous MOA executed in 2009 by FHWA, WSDOT, and the Washington SHPO for the S. Holgate Street to S. King Street Viaduct Replacement Project. In fulfillment of that MOA, WSDOT completed and submitted Historic American Engineering Record (HAER) documentation to the National Park Service.<sup>24</sup> This documentation includes photographs and narrative essays of the viaduct and Battery Street Tunnel. Implementation of other mitigation measures is ongoing and includes the creation of podcasts and an interactive website about the history of the Alaskan Way Viaduct and surrounding neighborhoods, as well as original education materials derived from the HAER documentation.

For the Polson Building, a contributing element to the Pioneer Square Historic District, WSDOT will minimize adverse effects during construction through compensation grouting and monitoring of the building for settlement. In addition, WSDOT has committed to specific provisions for intervention in the case of an emergency as well as to the creation of a claims and repair process in the event of damage. WSDOT will also ensure that all work is done in compliance with the City of Seattle's Municipal Code as required and appropriate.

For the Western Building, a contributing element to the Pioneer Square Historic District, WSDOT will mitigate adverse effects during construction through the implementation of a building protection solution that includes foundation and structural stabilization, temporary shoring and bracing, compensation grouting, and monitoring of the building. In addition, WSDOT has committed to specific provisions for intervention in the case of an emergency as well as to the creation of a claims and repair process in the event of damage. WSDOT will also ensure that all work is done in compliance with the City of Seattle's Municipal Code as required and appropriate.

For the Pioneer Square Historic District, the measures to minimize and mitigate adverse effects during construction to the Polson and Western buildings are the only measures taken to resolve adverse effect to the historic district as adverse effect is limited to these buildings. However, WSDOT will avoid potential indirect adverse effect that may occur to the Pioneer Square Historic District by developing and implementing a communications plan, a traffic management and construction coordination plan, marketing activities, and a project information center. The purpose of these efforts is to inform and educate the

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<sup>24</sup> Sheridan 2009.

community, both within and outside of the district, about the project and the steps that WSDOT will take to avoid disruption to the district during the project.

FHWA and WSDOT considered the potential for the Tolled Bored Tunnel Alternative to cause increased traffic within the Pioneer Square Historic District as a result of traffic diversion caused by tolling the facility. The Section 106 consultation resulted in a determination that traffic diversion would not cause an adverse effect on the historic characteristics of the district. Therefore, mitigation measures for traffic diversion were not included in the MOA. However, as part of the NEPA process, WSDOT has committed to address the effects of traffic diversion on city streets, including Pioneer Square, through the Tolling Advisory Committee; see the *Transportation Mitigation* section above in this Record of Decision.

For the Dearborn South Tideland site (archaeological site 45KI924) and other archaeological sites and sensitive areas, WSDOT will avoid, minimize, and/or mitigate adverse effects during construction through the development of an Archaeological Treatment Plan (Treatment Plan). The Treatment Plan will guide the actions of cultural resources professionals for all identified archaeological sites, archaeologically sensitive areas, and all areas to be monitored for significant archaeological deposits. The Treatment Plan also will include a protocol for the discovery of unanticipated archaeological finds and human remains. This plan will be developed before excavation begins and will remain in effect until construction is completed.

For the Lake Union Sewer Tunnel, WSDOT will mitigate adverse effects during construction by recording the structure and researching its history as part of a National Register of Historic Places nomination form. WSDOT will prepare the nomination form and send copies to the Washington State Department of Archaeology and Historic Preservation and King County (the owner of the resource) upon completion.

In addition to the above mentioned measures to resolve the adverse effects of the project to historic properties, the MOA for the project also includes measures to avoid adverse effect to the 1 Yesler Building, a contributing element to the Pioneer Square Historic District, and to avoid or minimize adverse effect to historic built environment properties within the area of potential effect.

For the 1 Yesler Building, WSDOT will avoid adverse effects during construction through the installation of a micropile wall, before tunnel boring begins, and monitoring of the building for settlement. In addition, WSDOT has committed to specific provisions for intervention in the case of an emergency as well as to the creation of a claims and repair process in the event of damage. WSDOT will also ensure that all work is done in compliance with the City of Seattle's Municipal Code as required and appropriate.

For all historic built environment properties within the area of potential effect, WSDOT will avoid or minimize adverse effects during construction through the following measures:

- For effects related to settlement, WSDOT will develop a deformation analysis report, before tunnel boring begins, that will identify the amount of ground deformation that each individual building within the zone of influence can tolerate. The deformation analysis report will include the proposed type and location of instrumentation and installation methods used to monitor historic buildings within the zone of influence. The zone of influence is the area within the area of potential effects in which ground deformation resulting from the project may occur.
- The monitoring of 62 historic built environment properties within the zone of influence for the duration of tunneling.
- The development of a settlement management plan for each historic built environment property prior to the start of tunneling. These plans will identify general actions to be taken if ground deformation thresholds outlined in the deformation analysis report are triggered.
- The development of a claims and repair process to repair any damage to historic built environment properties.
- The commitment to repair damage caused by the project in kind and in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties and in compliance with the City Municipal Code, as required and appropriate.
- The commitment to follow protocols outlined in the MOA in the unlikely event that any one of the historic built environment properties suffers significant structural damage warranting emergency measures.

## **Parks, Recreation, and Open Space Mitigation**

WSDOT will implement the following mitigation measures to address potential adverse effects during construction on parks, recreation, and open space:

- Provide Americans with Disabilities Act (ADA)-compliant detour routes when trails, pedestrian bridges, or other pathways are closed temporarily. Detours will be within a reasonable distance of the closed facility.
- Coordinate regularly with park and recreation facility operators to ensure that changes in viaduct removal activities and associated changes in access points and corridors are known in advance.
- Continue public outreach through project construction to keep the community informed about temporary closures or rerouting of facilities, and other potential effects.
- Provide way-finding signage to indicate detour routes along the corridor and on streets surrounding the construction areas, as appropriate.

## **Neighborhoods and Community Resources Mitigation**

WSDOT will develop each year during construction of the project a comprehensive public outreach and communications plan, which will incorporate the use of a variety of communication methods, such as websites, community e-mail updates, media relations, public meetings, interviews with social service providers, presentations to neighborhood groups, written materials, and information booths at community events to communicate project information and engage the public.

The purpose of the communications plan is to make sure that the public is informed about construction activities, such as detours and road closures. An informed public will result in less confusion and frustration for the communities located near the project area, and better trip planning for those traveling near construction activities.

During construction, WSDOT will continue to hold community briefings, maintain a presence at community events, and provide project information to the public via communications, such as e-mails and folios. WSDOT will also maintain a 24-hour project hotline and e-mail so that people can call to receive information about the project or express a concern. If a concern is expressed by a member of the public, WSDOT will respond in a timely manner and work to address the issue.

In addition, WSDOT will implement the following mitigation measures to address potential effects on neighborhoods and community services or resources:

- Coordinate with community service or resource providers to determine whether additional or special mitigation measures are needed.
- Work with representatives of Seattle Center, Safeco Field, CenturyLink Field (formerly Qwest Field), and other organizations planning major events to coordinate vehicle and transit access and parking issues related to workers and attendees at large events, as needed.
- Work with representatives of religious institutions close to construction zones to develop mitigation measures to address potential adverse noise effects to services, meditation sessions, or other events, as needed.
- Include government agencies located near the project construction areas on distribution lists to notify them about planned construction activities.

All the tenants of the Western Building (approximately 118 individuals) will be permanently relocated. The building will be unavailable for 12 to 20 months during the construction period. Most of the tenants of this building are artists that use the building for studio or work space. The artists benefit from their proximity to each other and the associated opportunities to share ideas and inspiration. Because of this, WSDOT is actively working to support the efforts of the artists to find replacement accommodations

nearby, either in the Pioneer Square neighborhood, if feasible, or other locations in the greater Seattle area where the individual artists may choose to relocate. Relocation assistance will be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the Washington Relocation Assistance – Real Property Acquisition Policy Act of 1970, as amended.

## **Minority and Low-Income Populations Mitigation**

As part of the public outreach program that will take place during construction, WSDOT will communicate news about the new roadway facilities to disadvantaged populations, including low-income people, persons with limited English proficiency, accessibility or mobility disabilities, the elderly, and the transit-dependent. The outreach would use English and, when appropriate, materials would be translated into other languages such as Chinese, Spanish, Tagalog, and/or Vietnamese to accommodate the area's diverse population.

As discussed in the Final EIS, tolling the selected alternative will not result in disproportionately high and adverse impacts to low-income or minority populations. However, WSDOT will employ the following measures to reduce the inconveniences of tolling, such as the requirement to purchase transponders, on low-income and minority populations:

- Establish customer service center storefronts in the travelshed. Find locations online at: <http://www.wsdot.wa.gov/goodtogo/contacts.htm>.
- Provide public service announcements in languages that meet the U.S. Department of Justice's Recipient LEP Guidance,<sup>25</sup> such as Chinese, Spanish, Tagalog, and/or Vietnamese, regarding the Good To Go!™ accounts and transponders.
- Sell Good To Go!™ transponders at convenient locations, such as grocery stores, convenience stores, or pharmacies throughout the travelshed and convenient to lower-income neighborhoods.
- Share information with and through other public service providers.
- Promote rideshare opportunities such as those in Rideshareonline.com, carpoolworld.com, commuteseattle.com, and vanpool providers.
- Enable people without credit cards or checking accounts to obtain transponders by paying with cash or Electronic Benefit Transfer (Quest) cards issued by the Washington State Department of Social and Health Services.
- Provide social service agencies with tolling information and options to avoid the tolls.

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<sup>25</sup> USDOJ 2002.

WSDOT will implement the following measures to address effects to specific adjacent providers of services to minority and/or low-income people during project construction:

- Identify a safe and ADA-compliant pedestrian route between Pioneer Square/downtown and the St. Martin de Porres shelter to allow movement of people to and from the shelter throughout the construction period. Information about the route would be distributed to social service providers and placed in proper notification areas. The route will be marked with directional signs.
- Work with The Compass Housing Alliance (formerly The Compass Center), Heritage House, Bread of Life Mission, Pike Market Senior Center, Plymouth Housing Group, Catholic Seamen's Club, and Rose of Lima House to identify concerns and solutions for potential construction-related effects.

WSDOT will implement these measures to address general effects on minority and/or low-income populations during project construction:

- Ensure access to buildings, properties, and loading areas used by social service providers during construction.
- Hold briefings and interviews with social service providers to keep them up to date on the project and to gather feedback as the project progresses from design through construction.
- Work with citizen participatory groups and service providers, such as committees, task forces, advisory bodies, housing authorities and social services to identify, communicate and assist disadvantaged populations with transportation options.
- Cooperate with social service providers on emergent issues that affect minority and low-income populations.
- Ensure continuous utility service during construction to the extent feasible. If periodic outages are unavoidable, provide ample notice.
- Work with homeless service providers, neighborhood groups, the City, and King County to ensure the safety and survival of nearby homeless people during construction of the new transportation facilities. Nearby homeless people include those living outdoors or in vehicles located under or near transportation facilities in the project area.
- Secure construction sites to prevent entry and injuries (especially by homeless persons). Light construction areas during the night and conduct security sweeps to look for unauthorized people seeking shelter within construction sites.
- Train construction workers on appropriate interactions with homeless persons they may encounter at construction sites.
- Maintain regular communication with minority-owned businesses, if identified, affected by construction-related traffic congestion.
- Distribute flyers to service providers, ethnic media, and local businesses and place flyers on windshields of cars parked in long-term parking areas; these flyers

should specify when vehicles should be moved. List other long-term parking alternatives in the area, if any exist.

## Public Services Mitigation

WSDOT will coordinate with public service providers throughout project design and construction to ensure that project effects are understood in advance, planned for, and minimized.

WSDOT will coordinate with the City and Port of Seattle police and fire departments, regional transportation agencies, and other related agencies during the final design of the selected alternative. This coordination will make sure that reliable emergency access and alternative plans or routes to avoid preventable delays in response times are developed, and to ensure that general emergency management services are not compromised. Providers of emergency and nonemergency public services will be notified early on of detours and lane restrictions.

When water lines and fire hydrants are being relocated, WSDOT will coordinate in advance and provide schedule notifications to the affected fire stations to allow advanced planning and to reduce the effects associated with service interruptions.

WSDOT will coordinate with construction personnel and, if necessary, with the City and Port of Seattle police departments to ensure that adequate staffing is available during construction for traffic and pedestrian movement control and other necessary policing efforts.

WSDOT will implement the following mitigation measures to address effects to specific public services:

- **School Buses** – The Seattle School District has established rerouting plans for use when the existing viaduct is unusable. It is anticipated that these rerouting plans would be implemented when SR 99 is closed.
- **Solid Waste Collection, Disposal, and Recycling** – Waste processing haulers and facilities will be informed that additional loads would be delivered during construction. The area transfer stations and regional landfills have sufficient capacity to accommodate the construction waste and debris generated from construction activities associated with any of the build alternatives.

## Utilities Mitigation

During project construction, WSDOT will coordinate with utility providers on utility relocation plans that identify impacts (such as exposed utilities that require protective measures during construction) and temporary and final relocations. WSDOT will develop construction sequence plans and coordinate schedules for utility work to minimize service

disruptions and provide ample advance notice when service disruptions are unavoidable, consistent with utility owner policies. Affected utility providers will review and approve relocation plans and service disruptions before construction that will affect utilities begins. WSDOT will implement mitigation measures necessary to adhere to Washington State law and standard specifications during project construction.

Specific mitigation measures for effects on utilities will be developed during the ongoing coordination process between WSDOT, Seattle Public Utilities, Seattle City Light, and other providers.

### **Air Quality Mitigation**

An MOA between WSDOT and the Puget Sound Clean Air Agency is in place to identify appropriate mitigation measures to help eliminate, confine, or reduce construction-related emissions, in the form of fugitive dust, for WSDOT projects. The MOA will apply to this project.

Per the MOA, WSDOT will create a plan for controlling fugitive dust during construction. This fugitive dust control plan will control fugitive dust generated during construction activities in order to minimize dust effects to neighbors and other projects.

Other measures WSDOT will use to reduce dust generated during construction include:

- Spray exposed soil with water or other dust palliatives to reduce emissions and deposition of particulate matter.
- Remove particulate matter deposited on paved public roads to reduce mud and windblown dust on area roadways.
- Enclose conveyor systems used to transport spoils from the tunnel excavation sites to the waterfront, if barges are used.

WSDOT's traffic management plan will include BMPs to reduce activities such as idling and traffic congestion, which produce concentrated vehicle emissions. Implementation of this plan will mitigate for vehicle emission effects to air quality.

### **Energy and Greenhouse Gas Emissions Mitigation**

Measures that WSDOT will implement to reduce operational energy consumption (reduced fuel or electricity use) include, but are not limited to, the following:

- Encourage use of carpools and transit to reduce vehicle miles of travel on roadways.
- Build energy-efficient tunnel operations buildings. The buildings will be designed to achieve the equivalent of LEED Silver.
- Use energy-efficient ventilation equipment, lighting, signals, and signage.

- Use variable-message signs to help drivers avoid congested areas. WSDOT will determine sign locations by using existing condition traffic counts in conjunction with the project's maintenance of traffic plan, both of which would identify the congested areas.

The traffic management plan that WSDOT will develop for the project during construction includes detours and strategic construction planning to continue moving traffic through the area and reduce backups to the extent possible. This traffic management plan will help minimize energy consumption through the promotion of reduced vehicle and equipment idling, which leads to reduced fuel consumption. Because fuel consumption is directly related to greenhouse gas emissions, any steps taken to minimize fuel consumption will reduce greenhouse gas emissions as well.

WSDOT will implement the following other measures to reduce energy consumption during construction:

- Use electrical equipment where feasible. Feasibility depends on the specific type of work, environment/location, and safety requirements.
- Use relatively new, well-maintained equipment.
- Promote ridesharing and other efforts, such as WSDOT's Commute Trip Reduction program, to reduce commute trips for employees working on the project.
- Coordinate construction activities with other projects in the area to reduce the cumulative effect of concurrent construction projects.

## **Water Resources Mitigation**

WSDOT will treat stormwater runoff from active construction areas and any dewatering water that reaches contaminant thresholds to meet the requirements of King County before discharge to either the combined sewer or to meet State water quality regulations prior to discharging to the separated storm system, as necessary. If required, WSDOT will obtain a wastewater discharge permit or authorization from King County before discharging construction stormwater or dewatering water to the combined sewer. Depending on the volumes and timing, if discharging dewatering flows to the stormwater or combined sewer system is not feasible, WSDOT will use off-site disposal.

WSDOT will avoid, minimize, and mitigate construction effects on water resources by developing, implementing, and updating as site conditions change throughout the duration of project construction the following:

- Temporary Erosion and Sediment Control Plan
- Spill Prevention, Control, and Countermeasures Plan
- Concrete Containment and Disposal Plan

Each of these plans includes performance standards based on state regulations that are established to eliminate or reduce pollutants entering bodies of water.

WSDOT may be required to obtain a National Pollutant Discharge Elimination System (NPDES) construction permit from the Washington State Department of Ecology (Ecology) if the project is engaged in clearing, grading, and excavating activities that disturbs 1 or more acres of earth and discharges stormwater to surface waters of the State.

### **Fish, Aquatic, and Wildlife Mitigation**

The National Marine Fisheries Service (NMFS) Biological Opinion outlined terms and conditions related to stormwater management to avoid effects to fish and aquatic resources:

- WSDOT will ensure compliance with the biological effects thresholds for dissolved copper and dissolved zinc at the established points of compliance in Elliott Bay and Lake Union. The thresholds are 2.0 µg/L over ambient levels not exceeding 3.0 µg/L for dissolved copper, and 5.6 µg/L over ambient levels between 3.0 µg/L and 13.0 µg/L for dissolved zinc.
- If the final stormwater design differs from the design evaluated in the Biological Opinion, then WSDOT will evaluate pollutant loadings and concentrations for that design to determine if they differ significantly from those considered in this consultation. If the predicted pollutant loadings or concentrations exceed those addressed in the Biological Opinion, WSDOT will provide to NMFS a description of the design change(s) and a revised stormwater analyses.
- WSDOT will implement the programmatic approach to stormwater monitoring, as outlined in the “Programmatic Monitoring Approach for Highway Stormwater Runoff in Support of Endangered Species Act (ESA) Section 7 Consultation,” dated June 2009.<sup>26</sup> WSDOT will notify NMFS immediately, if the results of this program trigger any of the relevant reinitiation requirements.

During construction, WSDOT will handle all pollutants to avoid contaminating surface water in the study area. Materials that modify pH, such as cement, cement grindings, and cement saw cutting, will be managed or isolated to minimize the spread of these materials by surface water runoff or other means of entering the area waterways. WSDOT will ensure that all work activities comply with the necessary water quality requirements.

### **Soils and Groundwater Mitigation**

The potential for groundwater mounding will be analyzed prior to construction as part of final design. If the magnitude of the groundwater mounding is found to be less than the

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<sup>26</sup> FHWA et al. 2009.

current measured natural fluctuation of groundwater in the soil, then no mitigation measures will be necessary. If higher mounding is anticipated, WSDOT will implement appropriate mitigation measures into the design of the facility. Such measures could consist of providing a path for groundwater via pipes or drainage trenches, through the retaining walls or soil improvement zones.

The tunnel liner of the selected alternative will be monitored on a long-term basis to determine whether openings are developing in the liner segments and whether groundwater seepage and soil migration are occurring through the openings. Maintenance will be performed as needed based on the monitoring results.

To mitigate for effects related to settlement, WSDOT will:

- Perform soil improvement in areas where existing structures need to be protected from settlement; to be determined during final design.
- Use reinjection wells near the excavation area, supplied by water from the dewatering operation, to minimize settlement that may result from dewatering activities.
- Establish a claims and repair process by which owners of buildings, including historic buildings, can file claims for damages to their properties that result from the project.
- Use structural fill material appropriate for site conditions to construct fills.
- Perform construction sequencing so that project structures that could be sensitive to settlement are installed after most of the fill settlement has occurred, if necessary.
- Avoid placing stockpiles directly over utilities or pavements without appropriate subsurface support to prevent potential damage. In areas where this is not possible, stockpile heights will be limited to avoid damage to underlying utilities or pavement.
- If necessary, shore temporary excavations to mitigate potential sloughing of soils and lateral movement or settlement of nearby existing roadways, railways, structures, and utilities.
- Control and monitor the tunnel boring machine to minimize ground loss and settlement during tunnel boring.

WSDOT will implement soil improvement measures during project construction, such as jet grouting and compensation grouting, to stabilize soft soils where necessary (except between S. Main Street and S. Washington Street to avoid potential archaeological deposits).

Temporary erosion and sediment control plans will be prepared in accordance with Ecology BMPs included in the WSDOT *Highway Runoff Manual*,<sup>27</sup> the current Seattle Municipal Stormwater Code (Ordinance 123105) and, as appropriate, the Seattle Municipal Grading Code (Ordinance 123107), whichever has requirements that are more stringent. Proposed mitigation measures will be consistent with stormwater design and treatment procedures in the current version of the WSDOT *Highway Runoff Manual* and also will follow the permits necessary for this project.

The dewatering systems will be designed to minimize the drawdown of the water table outside of the excavation in areas where adjacent structures may be affected. Potential mitigation measures include the use of groundwater recharge wells, dewatering in small sections, or use of barriers (e.g., sheet piles) to isolate the water table within the excavation.

### **Hazardous Materials Mitigation**

WSDOT will prepare a Spill Prevention, Control, and Countermeasures Plan, which will outline procedures to be used if a spill of hazardous materials occurs; a fugitive dust plan to control dust-generating activities; a water quality monitoring plan; and a Soil and Groundwater Management Plan that addresses handling and disposal of known and unanticipated contamination. These plans will be finalized before the construction activities they address begin.

For contamination already identified by WSDOT, additional investigations and characterization may be performed to determine whether the project would disturb contaminants present, and the appropriate mitigation, if necessary.

WSDOT will manage and dispose of contaminated soil in accordance with applicable permits and regulations and will implement construction techniques that minimize disturbance, release, and migration of contaminants in the project area during construction. WSDOT will treat contaminated dewatering water to acceptable standards according to the Washington State Surface Water Quality Standards prior to discharging to waters of the State or King County sewerage, or WSDOT will dispose of it offsite at a facility permitted to accept contaminated water.

To reduce the effect of odors due to contaminants that could become airborne during construction or demolition activities, engineering controls will be implemented, such as ventilation with fans to dissipate volatile contaminants and air filtration methods to remove particulates and volatile compounds.

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<sup>27</sup> WSDOT 2010a.

## Monitoring and Enforcement

WSDOT has a department-wide program that identifies and manages commitments, including environmental mitigation measures. Projects are assigned a Commitment Lead who reviews project commitment documents such as interagency agreements, requests for proposals, environmental documents, permits, and agency directives and concurrence letters. From these, the Commitment Lead develops an inventory of commitments that are entered into an electronic Commitment Tracking System (CTS). The CTS allows the Commitment Lead to assign staff to monitor commitments and to identify existing guidance documents that help them successfully comply with the commitment. The CTS facilitates contract development during the plans, specifications, and estimates process. It also allows the design and construction offices to manage the status of their commitments. The CTS provides compliance recording and reporting features that are consistent with existing program policy and permit requirements. Updating and tracking commitment status from project design to construction and closeout is coordinated via team meetings. Regular updates to the CTS are made in order to generate current commitment status reporting, which is reviewed during meetings by project and program management. WSDOT will use the CTS, or an equivalent system, for tracking implementation of all commitments that are required in this Record of Decision. If a mitigation measure is found to be ineffective, WSDOT will develop other appropriate mitigation.

## Permits and Approvals

Exhibit R-5 lists the anticipated permits and approvals required for the Alaskan Way Viaduct Replacement Project and the agencies from which they would be obtained.

### Exhibit R-5: Permits and Approvals

Agency	Permit or Approval	Status
<b>Federal</b>		
Federal Highway Administration in consultation with Washington State Department of Archaeology and Historic Preservation	National Historic Preservation Act, Section 106 Consultation	Complete
National Marine Fisheries Service	Endangered Species Act, Section 7 Consultation	Complete
	Magnuson-Stevens Fisheries Conservation and Management Act Consultation	Complete
U.S. Fish and Wildlife Service	Endangered Species Act, Section 7 Consultation	Complete
U.S. Department of Transportation	Section 4(f) Evaluation	Complete
<b>State</b>		
Department of Ecology	Coastal Zone Management Act Consistency Certification	Anticipated Fall 2011
	National Pollutant Discharge Elimination	To be determined

## Exhibit R-5: Permits and Approvals

Agency	Permit or Approval	Status
	System (NPDES) Construction Stormwater General Permit*	
	Underground Injection Control Registration*	To be determined
	Notice of Intent for Installing, Modifying, or Removing Piezometers*	To be determined
	Notice of Intent for Installing, Modifying, or Decommissioning Wells*	To be determined
	Chemical Treatment Letter of Approval*	To be determined
	Model Toxics Control Act, Removal of Underground Storage Tanks*	To be determined
<b>Local</b>		
City of Seattle	Major Public Project Construction Noise Variance	Anticipated Summer 2011
	Shoreline Substantial Development Permit	Anticipated Fall 2011
	Pioneer Square Historic District Certificate of Approvals	Anticipated 2011/2012
	Pike Place Market Historic District Certificate of Approval	Anticipated during construction
	Street Use Permit	Anticipated during construction
	Demolition Permit*	To be determined
	Building Permit*	To be determined
	Master Use Permit	Anticipated during construction
King County	Trade Permits: Mechanical, Electrical, Sign, Elevator, Fire Alarm, Side Sewer	Anticipated during construction
King County	Wastewater Discharge Approval or Permit*	To be determined
<b>Other</b>		
Puget Sound Clean Air Agency	Notice of Intent for Demolition Activities*	To be determined
	Notice of Construction for Concrete Batch Plants*	To be determined

\*The need for this permit will be determined during project final design.

## Comments Received on the Final EIS and Responses

Issuance of a Final EIS does not require a formal comment period under NEPA regulations, however, FHWA's Technical Advisory T 6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents*, calls for new substantive comments received on a Final EIS to be responded to in the Record of Decision. This section summarizes substantive comments received on the Final EIS and provides general

responses. All substantive comment letters and emails with specific responses are included in Attachment 2.

WSDOT received 21 submittals with substantive comments pertaining to the Final EIS.

Public notification of availability of the Final EIS included the following:

- Tribal and agency briefings about the Final EIS
- Project Web site announcement
- Press release to local media along with a media briefing event
- Legal notices in Seattle Times, Federal Register and SEPA Register

The Final EIS was distributed to agencies, tribes, and libraries, and a copy of the Executive Summary (which includes a DVD of the complete Final EIS and discipline reports) was distributed to members of the public who commented on the Draft EIS or Supplemental Draft EISs. The Final EIS was also available online at the project Web site, <http://www.wsdot.wa.gov/projects/viaduct>. The public was able to submit written comments on the Final EIS via email or regular postal mail.

The comments were reviewed and common themes were identified. The common themes of the comments and FHWA's summary responses are presented below.

## **Project Alternatives**

Comments about the project alternatives include statements suggesting that more work should be done to identify other possible alternatives, or to further refine or modify the current build alternatives. Some comments question the revised purpose and need statement and identification of the Bored Tunnel as the preferred alternative; others indicate concern that building a bored tunnel is too risky. Several commenters want the surface and transit hybrid scenario evaluated as one of the build alternatives.

## **Response**

The lead agencies have studied a wide range of possible viaduct replacement options as documented in the 2004 Draft EIS, the 2006 Supplemental Draft EIS, the 2010 Supplemental Draft EIS, and the Final EIS in Chapter 2. The alternatives development process has been subject to extensive public review. In addition, due to continued interest from some individuals and groups in a surface and transit hybrid concept, the lead agencies evaluated transportation effects of a surface and transit hybrid to test the rationale for screening it out.

The Tolloed Bored Tunnel was identified as the preferred alternative (and is the selected alternative) for the reasons described previously in the *Rational for Selected Alternative* section in this Record of Decision.

The Final EIS contains information on this subject in the following locations: Chapter 2, Questions 2–7 for alternatives development; Chapter 2, Question 11–15 for public review opportunities; and Summary, Question 6 for the preferred alternative rationale.

## **Environmental Review Process**

There were some comments received that questioned the integrity of the project’s environmental process, such as whether all NEPA procedural requirements were met, changes to the purpose and need statement, and statements by State and local officials appearing to commit to the Bored Tunnel while the environmental review process was ongoing.

### **Response:**

The lead agencies have studied a wide range of possible viaduct replacement options as documented in the 2004 Draft EIS, the 2006 Supplemental Draft EIS, the 2010 Supplemental Draft EIS, and the Final EIS in Chapter 2. The alternatives development process has been subject to extensive public review. Changes to the project’s purpose and need statement have been based on public comments and information gained from continued planning and analysis.

The Tolled Bored Tunnel has been identified as the preferred alternative because it best meets the project’s stated purposes and needs, and it has received support from diverse interests. Statements by public officials in support or opposition to the project have not affected the integrity of the NEPA process.

## **Tolling**

The possibility of tolling the viaduct’s replacement facility has become one of the main areas of interest for this project. Several comments included concerns about the traffic effects from drivers diverting onto adjacent surface streets to avoid paying a toll, as well as concerns about the cost of the toll. Other comments suggested that tolling the viaduct should be part of a regional tolling strategy. In general, the tolling comments request that the lead agencies provide more information about how the toll would be implemented and what its associated potential effects would be.

### **Response**

The Final EIS evaluates all of the build alternatives with tolls or without tolls. WSDOT will be working with SDOT and other agencies to refine and optimize how to toll the facility in a manner that minimizes traffic diversion to city streets. A TAC has been formed to monitor and provide input to the decision-making process.

The Final EIS contains information on this subject in the following locations: Chapter 5 for the comparison of the build alternatives with and without tolls; and Chapter 8, Question 1 for the TAC.

## **Effects on Pioneer Square and Pike Place Market**

Several comments included concerns about effects on Pioneer Square and Pike Place Market during construction and operation of the Tolloed Bored Tunnel. During construction, the primary concerns are settlement, noise, traffic congestion, and access. Once the project is completed, the primary concerns are congestion resulting from traffic diversion.

### **Response**

#### Settlement

With the Bored Tunnel, the primary construction effects to historic resources would occur from settlement due to soil subsidence as the tunnel boring machine moves beneath buildings in the northwest corner of the Pioneer Square Historic District. The anticipated amount of settlement along most of the alignment is small because of the depth of the tunnel boring. However, near the portals where the tunnel is shallower, there is greater potential for settlement. Of particular concern is settlement-related damage to the Western Building (619 Western Avenue) and Polson Building (61 Columbia Street). WSDOT has identified a high potential for settlement damage to the Western Building due to tunnel boring beneath the building and the building's poor condition. Engineering evaluations of the building found it to be in very poor structural condition. WSDOT has defined a program of protective measures that would protect the building by constructing structural reinforcements and bracing for the interior and exterior of the building.

The Polson Building may also experience settlement, if unmitigated. However, this building is in good structural condition and would be protected by compensation grouting to prevent ground loss during tunnel boring. Along with high levels of monitoring during construction, compensating for ground loss underneath the building would prevent major structural damage, and the remaining structural and aesthetic damage could be repaired.

Several comments expressed concern regarding construction effects on the Pike Place Market Historic District. The district is located outside of the area where tunnel boring would have settlement effects; however, monitoring will be conducted in several buildings nearest the tunnel alignment. Other construction effects to this area would occur when the viaduct is removed in 2016 and are not expected to adversely affect the historic district.

The Final EIS contains information on this subject in the following locations: Summary, Question 36; and Chapter 6, Question 19.

### Noise

Noise during construction would be disruptive to nearby residents and businesses because it would make it unpleasant to be outside and to hold conversations. Construction noise from the viaduct demolition is anticipated to be the loudest construction activity in Pioneer Square. The viaduct demolition would be performed in two-block segments over the course of several months. Employees, customers, and residents would be able to continually occupy the buildings but would be affected by noise for a period of time. The project will obtain Major Public Project Construction Noise Variances as described in the noise mitigation portion of the Project Commitments section in this Record of Decision.

The Final EIS contains information on this subject in the following location: Chapter 6, Question 14.

### Traffic Congestion, Vehicle Delay, and Access

Vehicle delays would be influenced by SR 99 restrictions and detours during construction that would reduce speeds, modify access, and lead to the redistribution of SR 99 traffic to local arterials and other parallel roadways. During construction of the Bored Tunnel some drivers may choose to use other routes such as First, Second, and Fourth Avenues, which would increase congestion and delay at intersections along these routes. This diverted traffic would affect local streets through Pioneer Square.

Construction would inconvenience or disturb businesses and customers of businesses adjacent to the project area. Construction-related effects would vary considerably over time and area. Effects can also vary according to the methods used to stage and construct the tunnel. Mitigation measures would be in place to minimize or avoid economic impacts, as described in Chapter 8, Question 15 of the Final EIS. These measures would provide local connections and access to buildings and businesses for pedestrians, bicyclists, motorists, and movers of freight.

The Final EIS contains information on this subject in the following locations: Chapter 6, Questions 6 and 18.

### Traffic Diversion

Tolling is not expected to increase traffic enough to threaten the viability of the historic district or the historic buildings. Although tolling would cause drivers to divert to other routes and increase traffic volumes in the downtown area, the effect on historic buildings and on the Pioneer Square Historic District would not be adverse.

The traffic analysis indicates that the diverted traffic would spread over several parallel routes, such as Alaskan Way; First, Second and Fourth Avenues; and I-5. Because of this distribution and because traffic in downtown Seattle is controlled by signals, the increased traffic volume is not expected to affect the pedestrian character of the historic areas or make

it more difficult for people to get to work or patronize shops or restaurants. The increased traffic may pose an inconvenience to some businesses, employees, residents, and customers, and make it more difficult for trucks to make pickups and deliveries. The Bored Tunnel would negatively affect four Pioneer Square intersections. The Final EIS Appendix C, Transportation Discipline Report, and the transportation mitigation portion in the Project Commitments section in this Record of Decision discuss measures that would be implemented to mitigate the traffic effects.

In some cases, vibration from traffic can potentially damage vulnerable historic buildings. However, each intersection has a traffic signal and the vehicles would be moving relatively slowly. The amount of vibration from traffic is not expected to affect the buildings.

The Final EIS contains information on this subject in the following location: Appendix I, Chapter 7, pages 145–146.

#### Impacts to Historic Properties

The Western Building and Polson Building are contributing elements of the National Register of Historic Places-listed Pioneer Square Historic District. Therefore, effects to these buildings during construction of the Bored Tunnel would affect the district itself. Adverse effects to these resources are addressed in an MOA between FHWA, WSDOT, and the SHPO, which outlines the measures to be taken to avoid, minimize, and/or mitigate adverse effects to historic properties as a result of this project.

The Final EIS contains information on this subject in the following location: Chapter 5, Question 21 and Chapter 6, Question 16.

### **Potential for Cost Overruns**

The comments about cost overruns expressed concern that the bored tunnel could exceed its budget and require additional funding to complete. Because of language in state legislation authorizing the project, some commenters are concerned Seattle residents would be responsible for additional funding.

#### **Response**

The bored tunnel cost estimate is based on WSDOT's Cost Estimate Validation Process for large projects, which was developed in 2002. This process uses outside experts to help establish a more comprehensive budget, including appropriate risk reserves, at the early stages of a project and identify risks that need to be actively managed. It takes into account project changes, mitigation, inflation and risk—something projects that experience cost overruns generally fail to do.

To help manage risk and prevent cost overruns, independent experts and cost estimators experienced in tunnel construction, underground construction, and megaproject delivery have reviewed the bored tunnel cost estimate. The Alaskan Way Viaduct Replacement Project has a technical advisory team with extensive experience delivering projects around the world that provides guidance on risk management, construction methods, and oversight.

In addition, an expert review panel will be convened fall of 2011 to review the project independently. The panel will be made up of three technical experts in the areas of finance, transportation, and economics. These experts will be selected jointly by the chairs of the Washington State Legislature House of Representatives and Senate transportation committees, the Secretary of Transportation and the Governor. The panel will give technical review of the financial plan and project implementation assumptions for the construction of the bored tunnel, and will report annually to the transportation committees and to the Governor's Alaskan Way Viaduct Oversight Committee until the project is complete.

The legislation authorizing WSDOT to proceed with the project obligates \$2.8 billion in state funds. Although the legislation has a provision that those in Seattle who benefit from the project should be responsible for cost overruns, WSDOT and the State's attorney general interpret this as a statement of legislative intent that would need further legislative action to become operative.<sup>28</sup>

The Final EIS contains information on this subject in the following locations: Summary, Question 6 and Chapter 2, Question 8.

## **Project Funding**

The lead agencies received several comments about project funding, including funding for transit service. Some comments voiced the opinion that the state cannot afford the bored tunnel. Other comments expressed concern that the amount of transit service originally intended will not be provided due to lack of funds.

### **Response**

In the January 13, 2009, letter of agreement, the State agreed to be responsible for funding components of the Program with an estimated cost of \$2.82 billion; King County is responsible for funding components with an estimated cost of \$190 million in capital and \$15 million annual in operating expenses; the City of Seattle is responsible for funding components with an estimated cost of \$937 million; and the Port of Seattle has been asked to contribute \$300 million to the Program.

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<sup>28</sup> McKenna 2010.

The legislation authorizing WSDOT to proceed with the project obligates \$2.8 billion in state funds. In order to fund this obligation, the legislation identified two sources of funding: state funding of \$2.4 billion and toll funding of \$400 million. In the absence of toll funding, new or reprioritized federal, state, or local funding sources would be necessary. WSDOT has submitted a federally required finance plan to FHWA, entitled *Initial 2011 Financial Plan SR 99 Alaskan Way Viaduct Replacement Project*, which is currently under review. FHWA expects to complete its review and approve the finance plan after the authorization of this Record of Decision.

The recommendation signed by the Governor, King County Executive, and Seattle Mayor in January 2009 described a program of independent yet complementary projects for replacing the Alaskan Way Viaduct and providing a strategy for overall mobility in Seattle. The State is responsible for replacing the viaduct, the City for the seawall and central waterfront, and the County for additional RapidRide and express bus service, with some identified as construction mitigation. These future transit service improvements have benefits independent of replacing the Alaskan Way Viaduct. WSDOT recognizes that the funding anticipated in the recommendation has not been realized, and that the recent economic downturn has reduced other funding sources King County currently relies on for providing transit service throughout King County.

Subsequent to the issuance of the Final EIS, cuts to King County Metro transit services were threatened unless additional revenue was secured. The cuts were due to a steep decline in sales tax revenue. On August 15, 2011, the King County Council approved a \$20 car license tab fee to prevent King County Metro transit from a 17 percent cut in service.<sup>29</sup>

The analysis of transit ridership in the Final EIS was based on conservative assumptions about transit service level growth, assuming only a modest 1 percent growth in transit ridership after 2015 (Year of Opening). The discussion of permanent effects on transit ridership can be found in Chapter 5, Question 14, including the discussion of transit mode share projections to and from Seattle's City Center.

Currently, WSDOT is providing funding to King County as part of the S. Holgate Street to S. King Street Viaduct Replacement Project to provide additional transit service hours to help mitigate the effects of construction. This program is ongoing and regularly monitored to evaluate its effectiveness. For the Alaskan Way Viaduct Replacement Project, WSDOT, using data provided by King County Metro, will continue to evaluate the need for increased bus service in the West Seattle, Ballard, Uptown, and Aurora Avenue corridors during the initial portions of the construction period, as well as a bus travel time

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<sup>29</sup> King County 2011.

monitoring system. WSDOT will also work with the County to identify funding sources for the service originally contemplated in the January 2009 agreement.

The Final EIS contains information on this subject in the following location: Summary, Question 12 and Chapter 9, Question 4, for project costs; Chapter 2, Question 5 for the 2009 recommendation from the Governor, King County Executive and Seattle Mayor; and Chapter 5, Question 14 for information about transit effects during operation of the project.

## **Greenhouse Gas Emissions and Climate Change**

Some commenters expressed concern about the project's greenhouse gas emissions and effects related to climate change.

### **Response**

Greenhouse gas emissions are a concern in the region because they contribute to global warming and climate change. During operation, the Tolled Bored Tunnel will not substantially affect regional greenhouse gas emissions (greenhouse gas emissions are measured regionally). Regional greenhouse gas emissions are predicted to be higher in 2030 than for the 2015 Existing Viaduct, but lower than for the Viaduct Closed. Projected increases in greenhouse gases are due primarily to the increases in future vehicle traffic and fuel use in the region. Tolling would increase greenhouse gas emissions by less than 1 percent compared to non-tolled operation, which is not a meaningful difference. During construction of the project, the greenhouse gas emissions produced each day is will be a negligible amount of the total daily regional emissions projected for the 2015 Existing Viaduct.

WSDOT is working closely with PSRC and other government jurisdictions in the region to address these important issues. In 2009, WSDOT developed Guidance for Project-Level Greenhouse Gas and Climate Change Evaluations.<sup>30</sup> WSDOT's current guidance is compatible with the proposed national approach from the White House Council on Environmental Quality.<sup>31</sup> The project team considered climate change, including sea level rise, with regard to the design of the facility. To ensure that WSDOT facilities can function as intended for their planned 50-, 70-, or 100-year lifespan, they are designed to perform under the variable conditions expected as a result of climate change. The standard design for this project has incorporated features that will provide greater resilience and function to withstand the potential effects brought on by climate change.

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<sup>30</sup> WSDOT 2009a.

<sup>31</sup> CEQ 2010. (The guidance was released in draft form.)

The Final EIS contains information on this subject in the following locations: Summary, Question 25; Chapter 4, Question 24; Chapter 5, Question 29; Chapter 6, Question 27; and Chapter 7, Question 4.

## **Construction Impacts**

The lead agencies received many comments that expressed concern about settlement, noise, and traffic impacts during construction.

### **Response**

#### Settlement

Settlement from tunnel boring could affect nearby surface streets, various utilities (including traffic signals), and buildings over the proposed bored tunnel alignment. Effects would vary depending on soil conditions, tunnel depth, and other variables. Settlement at the surface is anticipated to be less than an inch over the tunnel for most of the alignment. The area where settlement is of the most concern is located between the south portal and Yesler Way where the tunnel boring machine (TBM) would begin boring in relatively shallow fill material. The excavation at the face of the TBM would be performed with positive pressure acting at the face to prevent soil from moving. From about S. Main Street to about S. Washington Street, drilled shafts would be installed only along the east side of the tunnel to mitigate potential viaduct settlement.

Any surface settlement would generally occur incrementally as the TBM advances, with some final settlement occurring over several weeks. Where needed, protective measures such as compensation grouting or compaction grouting would be used during tunnel boring to prevent or limit damage to buildings and utilities from settlement. Experience in Europe indicates that these measures control settlement to within 22 millimeters (less than 1 inch).<sup>32</sup> The use of these measures is expected to prevent damage to most buildings.

The Final EIS contains information on this subject in Chapter 6, Question 13.

#### Noise

Noise during construction would be disruptive to nearby residents and businesses because it would make it unpleasant to be outside and hard to hold conversations. Construction could occur up to 24 hours a day, 7 days a week depending on the construction activity and will be determined during final design. The project will obtain Major Public Project Construction Noise Variances and temporary noise variances, and implement measures to minimize nighttime and weekend construction noise to prevent exceeding the noise

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<sup>32</sup> Littlejohn 2009.

variance levels (see Noise Mitigation in the Project Commitments section of this Record of Decision).

The Final EIS contains information on this subject in the following locations: Chapter 6, Question 14; and Chapter 8, Question 11.

#### Traffic Congestion, Vehicle Delay, and Access during Construction

During construction of the Bored Tunnel, daily vehicle volumes through the central waterfront section of SR 99 are expected to decrease by about one-third. Vehicles are expected to shift to city streets and, to a lesser degree I-5, and use different access points on SR 99.

For the Bored Tunnel, increased congestion on city streets would cause vehicle delays at some intersections. Vehicle delays would be influenced by SR 99 restrictions and detours that would reduce speeds, modify access, and lead to the redistribution of SR 99 traffic to local arterials and other parallel roadways such as I-5. This diverted traffic would have little effect on I-5 trips, but it would have a larger effect to local streets south of downtown, and in Pioneer Square, the Central Business District, Belltown, and the Seattle Center area. Some drivers may choose to use other routes such as First, Second, and Fourth Avenues, which may add congestion and increase delay at intersections along these routes.

Construction would inconvenience or disturb businesses and customers of businesses adjacent to the project area. Construction-related effects would vary considerably over time and area. Effects can also vary according to the methods used to stage and construct the project. Mitigation measures would be in place to minimize or avoid economic impacts, as described in Chapter 8, Question 15 of the Final EIS. These measures would provide local connections and access to buildings and businesses for pedestrians, bicyclists, motorists, and movers of freight.

The Final EIS contains information on this subject in the following locations: Chapter 6, Question 6; and Chapter 6, Question 18.

## **Determinations and Findings**

The Alaskan Way Viaduct Replacement Project 2004 Draft EIS, 2006 Supplemental Draft EIS, 2010 Supplemental Draft EIS, 2011 Final EIS, and Section 4(f) Evaluation, incorporated here by reference, constitute the statements required by NEPA and Title 23 USC on the following:

- The proposed action's environmental impacts
- The adverse environmental impacts that cannot be avoided should the proposed action be implemented

- Alternatives to the proposed action
- Irreversible and irretrievable impacts on the environment that might be involved with the proposed action if it is implemented

At this time, the project funding identified by the Washington State Legislature includes \$400 million in revenue from tolling; therefore, a non-tolled alternative is not considered practicable.

## **Environmentally Preferable Alternative**

The build alternatives considered for this project have two components, their design (Bored Tunnel, Cut-and-Cover Tunnel, and Elevated Structure) and operation (with or without tolls). The analysis completed for this project clearly shows the Bored Tunnel Alternative is the design with the least adverse environmental effects. However, tolling any of the three designs causes some traffic to divert away from SR 99 and creates some additional adverse effects compared to non-tolled operation, such as longer travel times, more congested intersections, and increased mobile source air toxics and carbon dioxide equivalents emissions. Therefore, based on the impacts identified in the Final EIS, FHWA considers the Bored Tunnel Alternative without tolls to be the environmentally preferred alternative. The Tolled Bored Tunnel Alternative is the selected alternative because, at this time, the funding identified by the Washington State Legislature includes \$400 million in revenue from tolling. This approach is more consistent with the regional transportation plan, *Transportation 2040*, adopted by PSRC in May 2010, which calls for tolls to be adopted on all major highways throughout the region by 2040.

## **Clean Air Act**

Under the Clean Air Act, EPA has established National Ambient Air Quality Standards (NAAQS), which specify maximum allowable concentrations for certain criteria pollutants.<sup>33</sup> Washington State and the Puget Sound Clean Air Agency have adopted these standards. Proposed roadway projects requiring federal funding or approval must demonstrate compliance with EPA's Transportation Conformity Rule (40 CFR 93). Conformity is demonstrated by showing that a project would not cause or contribute to any new violation of any NAAQS, increase the frequency or severity of any existing NAAQS violations, or delay timely attainment of the NAAQS.

The study area is within a carbon monoxide (CO) maintenance area. Projects located in a maintenance area must comply with the project-level and regional conformity criteria in EPA's Transportation Conformity Rule (40 CFR 93) and with Washington Administrative Code 173-420. The air quality analysis results presented in the Final EIS indicate that the

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<sup>33</sup> EPA 2010.

Bored Tunnel Alternative (with or without the tolls) would not cause or exacerbate an exceedance of the NAAQS for CO. Therefore, it would meet the project-level conformity requirements in accordance with 40 CFR 93.123. In addition, the project is included in the Metropolitan Transportation Plan<sup>34</sup> and the Statewide Transportation Improvement Program,<sup>35</sup> demonstrating that the project conforms to the Puget Sound region's Air Quality Maintenance Plan.

Because the total construction period is projected to last longer than 60 months, the project is also subject to the Transportation Conformity Rule during construction. The results of the screening-level mobile source CO analysis indicate that a more in-depth mobile source air quality analysis is not required and that the project would meet the project-level conformity requirements in accordance with 40 CFR 93.123.

### **Clean Water Act**

The Clean Water Act (33 USC § 1251 et seq.) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. As authorized by the Clean Water Act, the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. The project will comply with all regulations based on the Clean Water Act.

WSDOT may be required to obtain an NPDES construction permit from Ecology if the extent of exposed soils and anticipated discharge locations require one. This determination would be made after final project design and during the permitting phase for the project.

The selected alternative will not include in-water construction activities; therefore, a Section 404 permit from the U.S. Army Corps of Engineers is not needed for this project.

### **Endangered Species Act**

The Endangered Species Act (ESA) of 1973 (16 USC § 1531 et seq.), as amended, is intended to protect threatened and endangered species and the ecosystems on which they depend. When the federal government takes an action subject to the ESA, it must comply with Section 7 of the ESA [found at 16 USC § 1536(a)(2)]. Section 7 (a)(2) states:

“Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an ‘agency action’) is not likely to

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<sup>34</sup> PSRC 2010.

<sup>35</sup> WSDOT 2010b.

jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined by the Secretary, after consultation as appropriate with affected States, to be critical, unless such agency has been granted an exemption for such action by the Committee pursuant to subsection (h) of this section. In fulfilling the requirements of this paragraph each agency shall use the best scientific and commercial data available.”

NMFS issued a Biological Opinion for the project on January 27, 2011, which analyzed the project effects on listed species and designated critical habitat. In this Biological Opinion, NMFS concluded that the action, as proposed, is not likely to jeopardize the continued existence of Puget Sound Chinook salmon and will not result in the destruction or adverse modification of designated critical habitat for Chinook salmon. The Biological Opinion also included terms and conditions related to stormwater management. The selected alternative will incorporate the measures identified in the Biological Opinion.

The U.S. Fish and Wildlife Service issued a letter of concurrence<sup>36</sup> with the project’s Biological Assessment’s determination of “may affect, not likely to adversely affect” for bull trout and designated critical habitat on December 8, 2010.

The ESA consultation assumed a non-tolled project. FHWA and WSDOT reviewed the expected effects of tolling on threatened and endangered species and their habitat and determined that tolling the facility would not require a consultation reinitiation because the effects would be the same with or without tolling. Following coordination with NMFS, FHWA and WSDOT informed NMFS of this determination in a letter dated June 15, 2011.

## **Magnuson-Stevens Fisheries Conservation and Management Act**

Under the 1996 Magnuson-Stevens Fisheries Conservation and Management Act (Magnuson-Stevens Act) (Public Law 94-265), as amended, federal fisheries management regulations require identifying and conserving habitat that is essential to federally managed fish species. Essential fish habitat is defined as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” If an action will adversely affect essential fish habitat, then NMFS is required to provide the federal action agency with essential fish habitat conservation recommendations (Magnuson-Stevens Act Section 305[b][4][A]). Section 4 of the NMFS Biological Opinion<sup>37</sup> contains an essential fish habitat assessment in response to requirements of the Magnuson-Stevens Act. NMFS concluded that

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<sup>36</sup> USFWS 2010.

<sup>37</sup> NMFS 2011.

the proposed action will have adverse effects on essential fish habitat for at least some species and life history stages due to changes in water quality associated with increased loading of dissolved copper and/or dissolved zinc in operational stormwater discharges to Elliott Bay and Lake Union. WSDOT will ensure that the project complies with the essential fish habitat conservation recommendations outlined in the Biological Opinion.

### **Marine Mammal Protection Act**

The Marine Mammal Protection Act was enacted in 1972 and prohibits, with certain exceptions, the “take”<sup>38</sup> of marine mammals in U.S. waters and by U.S. citizens on the high seas and the importation of marine mammals and marine mammal products into the United States. The project includes avoidance and minimization measures to protect sensitive species, including marine mammals. The selected alternative will fully comply with the Marine Mammal Protection Act and not lead to the “take” of marine mammals. The project will not require in-water work and the potential barging of materials is consistent with the marine vessel traffic currently occurring in Elliott Bay.

### **Coastal Zone Management Act**

The Coastal Zone Management Act requires federal activities within coastal counties, including projects requiring federal permits or with federal funding, to be consistent with state-adopted Coastal Zone Management Programs; for Washington, Ecology is the agency responsible for making this determination. Projects performed by or for federal agencies must submit a statement to Ecology demonstrating that the project is consistent to the “maximum extent practicable” with the state program. The “maximum extent practicable” requirement refers to situations in which federal law might constrain the agency action, such as in the case of national security. Ecology will then object, concur, or concur with conditions to the Consistency Determination. Ecology will issue its determination after the State Environmental Policy Act (SEPA) environmental review process is complete and the City Shoreline Substantial Development permit is issued. WSDOT expects to receive Ecology’s determination in fall 2011.

The Alaskan Way Viaduct Replacement Project is consistent with the City’s shoreline codes and State’s Shoreline Management Act; therefore, the project complies with the Coastal Zone Management Act. The project, including potential barging of materials, would not affect the ecological functions of the shoreline. The viaduct is considered “upland” in Seattle’s Comprehensive Plan and Shoreline Master Program, and demolition of the viaduct and its replacement with a bored tunnel would be allowed.

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38 “Take” means to harass, hunt, capture, collect, or kill or to attempt to harass, hunt, capture, collect, or kill any marine mammal.

## Environmental Justice

Environmental justice is analyzed in Chapter 5, Question 26; and in Chapter 6, Question 24, in the Final EIS. The FHWA has concluded that the selected alternative would not result in disproportionately high and adverse effects on low-income or minority populations. The selected alternative is consistent with Presidential Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,<sup>39</sup> and FHWA Order 6640.23, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.<sup>40</sup>

## Section 106 of the National Historic Preservation Act

The National Historic Preservation Act of 1966 (16 USC 470) establishes government policy and procedures regarding “historic properties”, which include districts, sites, buildings, structures, and objects that are included in or eligible for the NRHP. Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their actions on historic properties.

WSDOT has consulted with the Washington State Department of Archaeological and Historic Preservation because the project has the potential to affect properties that are listed or eligible for NRHP listing. These properties are listed below:

- **Alaskan Way Viaduct and Battery Street Tunnel** – The Alaskan Way Viaduct will be demolished, and the Battery Street Tunnel will be decommissioned.
- **Western Building** – High potential for settlement-related damage due to tunnel boring.
- **Polson Building** – Potential for settlement-related damage due to tunnel boring.
- **Pioneer Square Historic District** – Potential for adverse effects to the Western and Polson Buildings, which are contributing elements to this historic district.
- **Dearborn South Tideland site (archaeological site 45KI924)** – This archaeological site will be affected by the construction of the south portal.
- **Lake Union Sewer Tunnel** – Approximately 5 feet of this brick-lined manhole will be removed to construct the off-ramp from SR 99 at Republican Street.

Adverse effects to the Alaskan Way Viaduct and Battery Street Tunnel are addressed by an MOA dated February 11, 2009, and the adverse effects to the remaining historic and archaeological resources are addressed by an MOA dated May 27, 2011. Both of these

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<sup>39</sup> The White House 1994.

<sup>40</sup> FHWA 1998.

MOAs were developed in consultation with the SHPO, tribes, and consulting parties. This Record of Decision requires compliance with the MOA stipulations.

### **Section 4(f) of the U.S. Department of Transportation Act**

Section 4(f) of the U.S. Department of Transportation Act of 1966 prohibits the FHWA from approving transportation projects that use land from important public parks, recreation areas, wildlife refuges, or land containing historical sites of local, state, or federal significance unless (a) there is no feasible and prudent alternative, and (b) the project includes all possible planning to minimize harm to these resources (49 USC 303). If resources protected by Section 4(f) are involved in a project's planning, a determination whether there is a "use" of those resources is required.

As defined in Section 4(f), a "use" occurs when a project permanently incorporates land from a Section 4(f) property, even if the amount of land used is very small. In addition, a use can result from a temporary use of land within a Section 4(f) property, unless the temporary use meets specific criteria that allow an exception to a use. A use also can result from proximity effects (such as noise, visual impacts, or vibration) if those effects "substantially" impair the protected features of the property. A use that results from proximity effects is known as a "constructive use."

The selected alternative will affect four Section 4(f) resources in a manner that constitutes a use. These resources are:

- Alaskan Way Viaduct and Battery Street Tunnel
- Pioneer Square Historic District (Western Building)
- Seattle Maintenance Yard (archaeological site 45K1958)
- Lake Union Sewer Tunnel

These properties are historic resources, and their use is largely the result of the direct impacts of removing the existing SR 99 facilities, some of which are historic, and constructing the tunnel and its related facilities. The use of the Pioneer Square Historic District is specific to adverse effects on the Western Building, which is a contributing element to the historic district.

The Section 4(f) evaluation finds that all alternatives require the "use" of Section 4(f) resources and the selected alternative has the least overall harm because construction of this alternative is the shortest duration of all the proposed build alternatives and would allow for a much more rapid transition to a replacement facility, greatly reducing the project's construction period transportation and mobility impacts, including to the Pioneer Square Historic District. In addition, the selected alternative avoids the most severe construction impacts to the central waterfront area, including the Pioneer Square Historic

District, because most of the heavy construction for the selected alternative will be underground, compared to the surface level construction and seawall replacement activities required throughout the central waterfront area for the other build alternatives.

## **Metropolitan Transportation Plan**

The transportation conformity rule (40 CFR 93.114 and 93.115) requires that a currently conforming regional transportation plan and the transportation improvement program must be in place at the time of project approval, and the project must come from the conforming plan and transportation improvement program. PSRC's *Transportation 2040*, the Metropolitan Transportation Plan for the Central Puget Sound Region, was adopted by the General Assembly on May 20, 2010.<sup>41</sup> *Transportation 2040* addresses critical issues, such as congestion and mobility, the environment, and transportation finance in the central Puget Sound region. The Alaskan Way Viaduct Replacement Project is included in *Transportation 2040*.

Project approval in the Regional Transportation Improvement Plan (TIP) by the PSRC is one of the approvals needed to move forward toward construction authorization for the replacement project. PSRC provides two sets of approvals for inclusion in to the Regional TIP: one approval prior to design commencing and the second approval prior to construction. The PSRC Executive Board gave WSDOT conditional approval to amend the TIP for the design phase of the project on April 22, 2010 and included it in the State Transportation Improvement Plan (STIP) on May 4, 2010. The approvals for construction were conditionally granted by PSRC to amend the Metropolitan Transportation Plan (MTP) on June 23, 2011 and final approval will be given following PSRC receipt of this Record of Decision. Following this final action, the TIP and STP will be updated in August and early September 2011.

## **Agency and Tribal Coordination**

FHWA has involved agencies and tribes since the 2001 NOI through the development of the 2004 Draft EIS, 2006 Supplemental Draft EIS, 2010 Supplemental Draft EIS, and Final EIS. Agencies and tribes have participated in many ways, including the Resource Agency Leadership Forum (which met until 2006) and ongoing consultation and coordination through NEPA scoping, e-mails, phone calls, field visits, and meetings. Agencies and tribes also have been given the opportunity to review draft discipline reports and appropriate sections of the Draft EIS and Supplemental Draft EISs prior to publication. In addition to coordination among the resource agencies and tribes, FHWA,

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<sup>41</sup> PSRC 2010.

WSDOT, the City, King County, and the Port of Seattle work together and meet regularly at both management and staff levels to carry the project forward.

FHWA implemented the process outlined in Section 106 of the National Historic Preservation Act (Section 106) and the WSDOT Tribal Consultation Policy adopted as part of the WSDOT Centennial Accord Plan to address the concerns of tribal nations.<sup>42</sup> Section 106 requires federal agencies to consult with tribes where projects could affect tribal areas with historic or cultural significance. In addition, FHWA consulted with tribes on potential effects to treaty fishing rights (usual and accustomed areas) near the project area. Since the project began in 2001, FHWA has communicated with affected and interested tribes by providing project updates, coordinating and attending meetings, sharing information, and soliciting feedback. The tribes have also been given the opportunity to review and provide input on background project information, including the project purpose and need statement and draft discipline reports. Communication with tribes will continue throughout project construction to provide project updates and consult on cultural resources and fishing rights issues.

## Conclusion

FHWA selects the Tolled Bored Tunnel Alternative for the Alaskan Way Viaduct Replacement Project because, as outlined in this Record of Decision, it can be constructed with the least amount of disruption to SR 99 during construction, it provides the City with the most latitude in planning for its central waterfront, and it integrates surface streets north of downtown the best out of the build alternatives. The Tolled Bored Tunnel Alternative is consistent with the region's long-range transportation plan, *Transportation 2040*, and the funding identified by the legislature at this time includes \$400 million in revenue from tolling.

FHWA finds that WSDOT incorporated all practicable means to avoid or minimize environmental harm into the selected alternative. FHWA will ensure that the commitments outlined herein and in the Final EIS will be implemented as part of the project design, construction, and post-construction monitoring.

To expedite construction of the project and encourage design innovation, WSDOT is using the design-build process. In January 2011, WSDOT signed a design-build contract for the bored tunnel portion of the Bored Tunnel Alternative as authorized under 23 USC § 112(b)(3)(D) and 23 CFR 636.109. Since executing the design-build contract, WSDOT and its contractor have complied with all applicable limits in the design-build regulations regarding activities that can be conducted prior to completion of the NEPA

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<sup>42</sup> WSDOT 2009b.

process. The design-build contract contained termination provisions in the event that another alternative was selected. WSDOT will construct other portions of the selected alternative through design-bid-build contracts. Upon approval of this Record of Decision, the WSDOT and project contractors will complete final design, obtain remaining permits, and begin construction.

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