

Exhibit 5-7 shows areas where intersections would be congested or highly congested under future conditions for the Tunnel and Elevated Structure Alternatives. In general, both alternatives would maintain or improve congestion on city streets compared to the 2030 Existing Facility. For the Tunnel and Elevated Structure Alternatives, the number of congested intersections would be the same in the south and north ends, since the same improvements are proposed. The primary difference between the two alternatives is seen in the central section near Columbia and Seneca Streets. In this part of downtown, the Tunnel Alternative would have one less highly congested intersection than the Elevated Structure Alternative. The reason for this is that the Tunnel Alternative would replace the Columbia and Seneca ramps with ramps near S. King Street. This would reduce congestion at the intersection of First Avenue and Columbia Street.

How would other design choices affect traffic conditions?

South - The Relocated Whatcom Railyard design choice for both the Tunnel and Elevated Structure Alternatives would operate similarly to the Reconfigured Whatcom Railyard. The only difference is that the Relocated Whatcom Railyard includes an additional southbound on-ramp from E. Marginal Way S. near S. Massachusetts Street. This ramp would provide a new movement that is not available today, but it is not expected to generate a high level of use because of its location and other available connections in the vicinity.

Central - For the Tunnel Alternative, traffic would operate similarly if it were traveling in either a stacked or a side-by-side tunnel. The same is true of choices to build SR 99 under Elliott and Western Avenues or the Steinbrueck Park Lid. However, trucks traveling north from Pine Street up to Elliott and Western Avenues would have 1,600 feet to travel on an incline if SR 99 is built over Elliott and Western Avenues compared to 1,000 feet if SR 99 is built under Elliott and Western. In general, it is easier to maintain traffic flow and travel speeds for vehicles, particularly trucks,

on flat roadways. Therefore, most highways are designed to minimize the distance drivers must travel on an incline.

North - If the Battery Street Tunnel curves are widened, conditions for drivers wouldn't change that much. Travel speeds through the Battery Street Tunnel would be the same whether the curves are widened or not because drivers would still need to slow down while traveling through the Battery Street Tunnel. The only difference is that drivers would be able to see farther in front of them, which could marginally improve tunnel safety.

The Lowered Aurora improvements would include lowering the SR 99 roadway about 25 feet. It would provide one additional traffic movement not provided by Partially Lowered Aurora. This additional movement is a southbound on-ramp at Republican Street. Additionally, this design would connect two more east-west streets (Republican and Roy Streets) over SR 99 than the Partially Lowered Aurora improvements. Connecting these streets across SR 99 would provide drivers with additional east-west travel options. Lowered Aurora would have one less intersection that is congested compared to the 2030 Existing Facility and Partially Lowered Aurora. That intersection is located at Dexter Avenue N. and Roy Street.



These graphs are showing how loud traffic would be at various distances from Alaskan Way. If you were standing where the X is, the noise level would be about 72 dBA. This is similar to the noise you would hear standing 3 feet from a blender.

3 Would noise levels increase?

Tunnel Alternative

Compared to today, the Tunnel Alternative would substantially reduce traffic noise levels along the waterfront, as shown in Exhibit 5-8. Current traffic noise levels approach or exceed Federal Highway Administration (FHWA) noise abatement criteria at 44 out of 52 sites modeled along the corridor. For the Tunnel Alternative, traffic noise levels modeled for the year 2030 indicated that noise levels would

What is a dBA?

Sound levels are expressed on a logarithmic scale in units called decibels (dB). A-weighted decibels (dBA) are the commonly used frequency that measures sound at levels that people can hear.

To the human ear, a 1- to 3-dBA change is hard to distinguish, but a 5 dBA change in noise level is readily noticeable. A 10 dBA decrease would sound like the noise level has been cut in half.

Noise Levels for Each Alternative

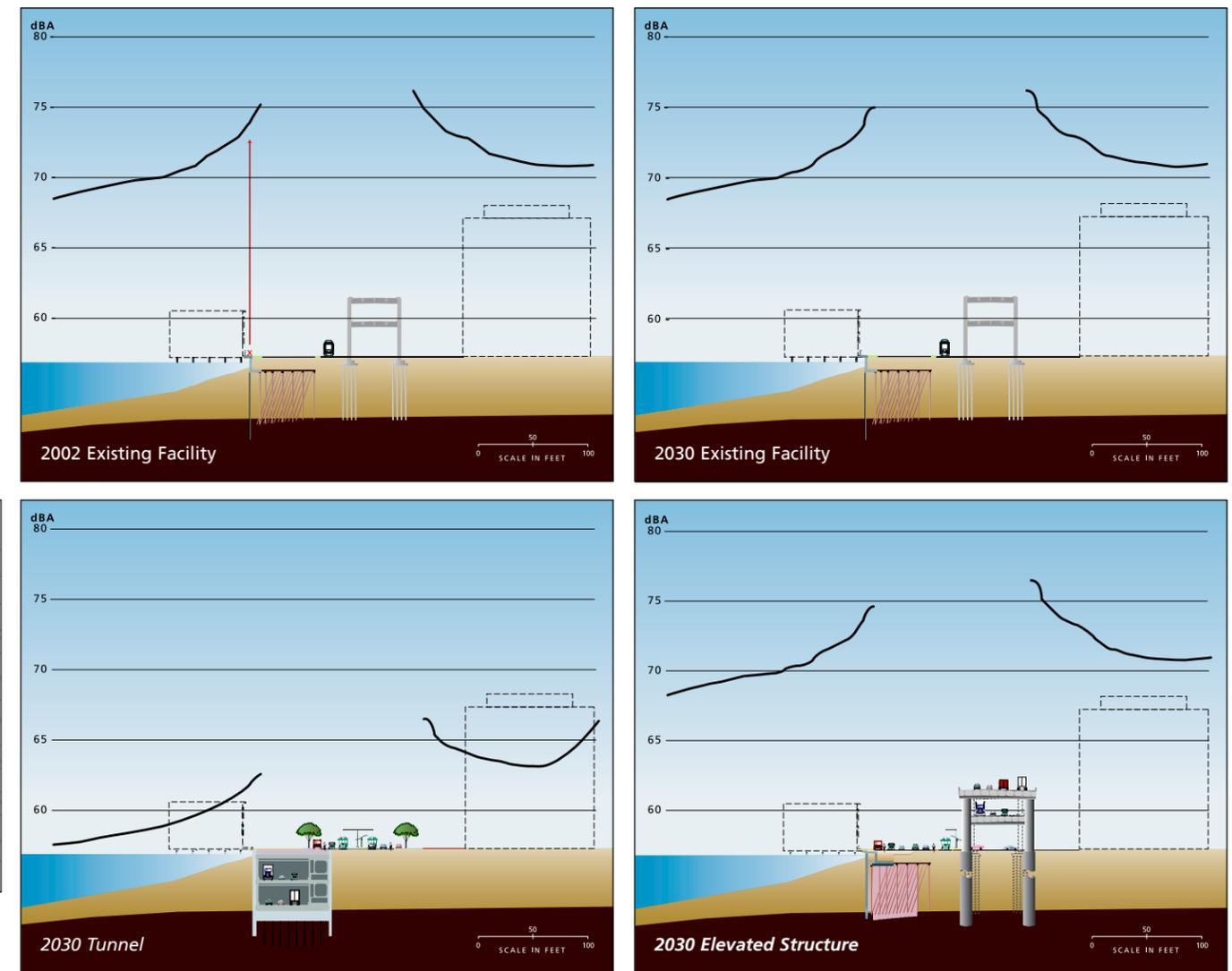


Exhibit 5-8

improve, though they would still exceed the FHWA criteria at 29 out of the 52 modeled sites.

As described in the Draft EIS, noise levels for the Tunnel Alternative would decrease up to 12 A-weighted decibels (dBA) along the central waterfront. Year 2030 noise levels would decrease by 2 or 3 dBA compared to existing conditions between Virginia Street and the Battery Street Tunnel. Noise levels in this



area would decrease because SR 99 would be lowered, crossing under Elliott and Western Avenues.

In the north, traffic noise levels were evaluated to reflect the Partially Lowered Aurora improvements. Ten locations are anticipated to experience increased or decreased noise levels in 2030 within 1 or 2 dBA of the existing conditions. One location along SR 99 near Thomas Street is modeled to experience about a 7 dBA decrease compared to the existing conditions because the lowered roadway would be a little farther away and the retaining walls would shield some of the traffic noise from the property.

Elevated Structure Alternative

Noise along the project area is currently loud and would not change much if the Elevated Structure Alternative were built. Current traffic noise levels approach or exceed FHWA noise abatement criteria at 44 out of 52 sites modeled along the corridor. Year 2030 traffic noise levels for the Elevated Structure

Alternative are modeled to approach or exceed the FHWA noise abatement criteria at 42 out of 52 sites. Conditions would be similar to those described for the Aerial Alternative in the Draft EIS, as shown on the previous page in Exhibit 5-8.

In the north, noise levels would be the same as those described above for the Tunnel Alternative.

How would other design choices affect noise?

The choices would make the following differences:

Central – The choice to construct the Steinbrueck Park Lid would reduce 2030 noise levels at the park by 10 dBA compared to existing conditions.

If SR 99 is built over Elliott and Western Avenues, 2030 noise levels would increase noise by approximately 1 dBA compared to existing conditions.

2006 Appendix F

In the *2006 Appendix F, Noise and Vibration Discipline Report*, Exhibits 4-1 and 4-2 show the noise measurement locations. Chapter 5 provides additional information on noise and vibration effects.

How has noise information changed since the Draft EIS was published?

Noise in the project area hasn't changed, except that the project area has been extended to Comstock Street. Additional noise measurements taken along Aurora Avenue N. between Prospect Street and Comstock Street ranged between 55 and 70 dBA. These noise levels fall within the range of sound levels typical for metropolitan areas and are typical of the sound levels throughout the corridor.



Visual Simulations Looking Southeast from Yesler Way

North – Year 2030 noise levels for the Lowered Aurora improvements would be similar to those described for the Partially Lowered Aurora improvements. Nine locations are anticipated to experience increased or decreased noise levels within 1 or 2 dBA of the existing conditions. Additionally, the Lowered Aurora improvements would decrease the traffic noise level by 7 dBA at one location along SR 99 near Thomas Street and by 4 dBA at a second location just north of Prospect Street because the roadway would be a little farther away and the retaining walls from lowering Aurora Avenue N. would shield some of the traffic noise from these properties.

SR 99 traffic would be out of sight in tunnels below the surface of Alaskan Way. For the Elevated Structure Alternative, SR 99 traffic would travel on a new larger structure and continue to be a part of the view in the area.

Central and North Waterfront Sections – Tunnel Alternative

As described in the Draft EIS, east-west views between downtown and the waterfront would be improved by replacing the existing viaduct with a tunnel. With the viaduct gone, the waterfront and downtown would seem more connected than they are today.

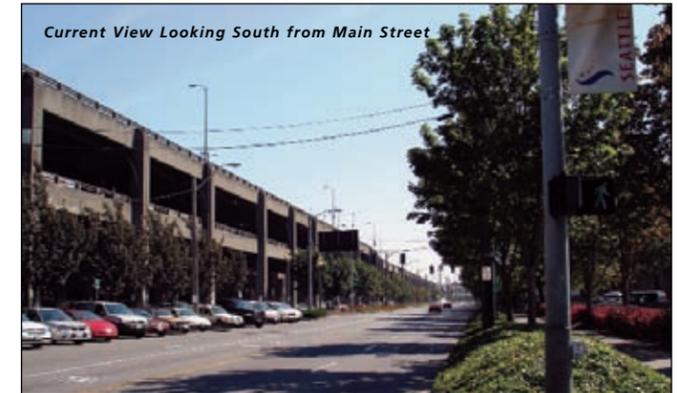
The updated Tunnel Alternative would add several features compared to the Tunnel Alternative evaluated in the Draft EIS, specifically in the area between Pine Street and the Battery Street Tunnel. A 20-foot-wide walkway would be built over SR 99, connecting Steinbrueck Park to the waterfront, as shown in

Exhibit 5-11 on the next page. Additionally, new public open space would be located east of the Alaskan Way surface street on a raised partial lid covering the section of SR 99 that would climb toward the Battery Street Tunnel. The new space would provide a gathering place and an overlook where pedestrians could enjoy scenic views to the west stretching from the waterfront to the Olympic Mountains.

Currently, SR 99 crosses over Elliott and Western Avenues as it approaches the south portal of the Battery Street Tunnel. The SR 99 overpass interrupts views in this area and contrasts with the overall character of the Belltown neighborhood. For the Tunnel Alternative, the existing overpass would be replaced with a lowered roadway section that would route SR 99 under Elliott Avenue in a trench and under Western Avenue in a tunnel. As shown in Exhibit 5-12 on the next page, the views and visual character of the neighborhood above this area would improve as a result of these enhancements.

2006 Appendix D and Appendix E

In the *2006 Appendix D, Visual Quality Technical Memorandum, Chapter 5* provides additional information on visual effects. *Appendix E* contains the visual simulations.



Visual Simulations Looking South to Main Street

Another notable change to the Tunnel Alternative since the Draft EIS is that near Pine Street, the northbound lanes of Alaskan Way would be raised by about 18 feet above the southbound lanes. The northbound and southbound lanes would be separated by a retaining wall. To make sure this retaining wall doesn't detract from views along the waterfront, the project designers have proposed a range of options such as stepping the wall, planting trees and shrubs along the wall, or incorporating texture, color, or pattern into the wall's face. The project team is working to refine the design in this location so that the northbound and southbound lanes won't need to be at different elevations.

The Tunnel Alternative eliminates the portal and access ramps proposed in the Draft EIS that would have connected the SR 99 tunnel to the surface street near Stewart Street. The space where these elements were located now includes broad sidewalks and a waterfront promenade in the area around Pine Street. Additionally, the south portal has been moved farther south of Pioneer Square from S. King Street to near S. Dearborn Street.

Central and North Waterfront Sections – Elevated Structure Alternative

With the Elevated Structure Alternative, effects to views in the project area would be similar to those discussed in the Draft EIS for the Aerial Alternative. For motorists traveling on the new elevated structure, scenic views of the Seattle skyline would still be a part of their driving experience. But views toward the waterfront would be different than today, because roadside barriers would be solid (like concrete Jersey barriers) instead of being topped by railings, and the barriers would be taller than they are now. From an average car, Puget Sound, Bainbridge Island, and the Olympic Mountains would probably still be part of the view, but it's likely that views of much of the waterfront would be hidden by the barriers.

The new viaduct structure would be between 11.5 and 35 feet wider than the existing viaduct between south of S. Main Street up to Union Street. Near S. King Street to south of S. Main Street, the new elevated

structure would be 54 to 74 feet wider than the existing viaduct as SR 99 transitions from a side-by-side at-grade roadway in the south to a new double-level elevated structure. The new elevated structure would also be 3 feet higher than the existing viaduct.

Like the existing structure, the new structure would continue to obstruct views; cast shade over an extensive area; limit future development of parks, trails, and sidewalks; generate overhead traffic noise; and give the impression that the city is separated from its waterfront. However, the Elevated Structure Alternative would make some improvements over existing conditions. The new structure would have fewer support columns and they would be spaced farther apart, reducing visual clutter beneath the structure. The streetscape—things like sidewalks, streetcar stops, landscaping, and lighting—would be part of an integrated design that would create continuity along the waterfront compared to today's conditions. Project designers will continue to look at ways to improve the design of the Elevated Structure Alternative so it would fit in better with its surroundings.

With the Elevated Structure Alternative, SR 99 would continue to be routed over Elliott and Western Avenues. The effects on views from the new elevated structure in this area would be similar to the existing one, and the views and overall character of the surrounding neighborhood would be about the same as they are today.

North Section

For both alternatives, SR 99 would be lowered by up to 45 feet, and two new bridges would be built over the top of the roadway at Thomas and Harrison Streets. For a motorist traveling through this short stretch of lowered roadway, the view would be framed by retaining walls instead of adjacent buildings as it is today. Views from the neighborhoods north of the Battery Street Tunnel would stay about the same as they are today. However, sidewalks on the new bridges and a bicycle/pedestrian path on Mercer Street would look more inviting than the street-level view of SR 99 does currently.

How would other design choices affect views?

Central – The Steinbrueck Park Lid design choice proposed with the Tunnel Alternative would connect from Steinbrueck Park, over SR 99, and down to Alaskan Way. The Steinbrueck Park Lid would provide a new 130-foot-wide public open space between Stewart and Virginia Streets, compared to the Steinbrueck Park Walkway, which would be around 20 feet wide in this same area. The lid would create a physical and visual connection between the waterfront and Pike Place Market above.

The choice to build SR 99 over Elliott and Western Avenues for the Tunnel Alternative would be similar to existing conditions. The replacement overpass would look similar to the existing one and would continue to block views and contrast with the overall character of the Belltown neighborhood.

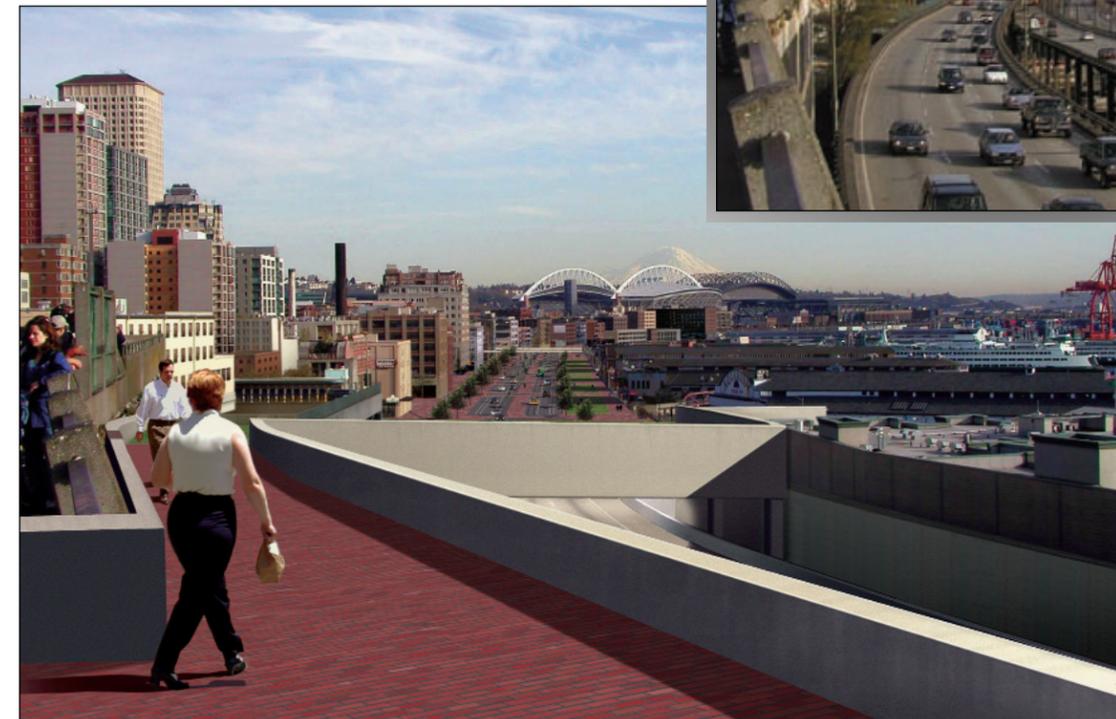
North – The Lowered Aurora design choice for both alternatives would include lowering the SR 99 roadway about 25 feet and building two additional connec-

2006 Appendix G

In the *2006 Appendix G, Land Use and Shorelines Technical Memorandum*, Chapter 5 provides additional information on effects to land use.



Exhibit 5-11



Steinbrueck Park Walkway Visual Simulation

Looking South from Steinbrueck Park

tions across SR 99 at Republican and Roy Streets. The lowered roadway would extend three blocks farther north than proposed for the Partially Lowered Aurora improvements, and motorists' views would be framed by retaining walls as they passed through this area. Views from the neighborhoods north of the Battery Street Tunnel would stay about the same as they are today. Because this choice includes two more bridges than Partially Lowered Aurora would, it might increase the visual connection between the South Lake Union and Lower Queen Anne neighborhoods.

5 How would land use be affected?

In general, potential effects to land use are similar to those described in the Draft EIS.

In the south section, the Reconfigured Whatcom Railway would use less industrial land than indicated in the Draft EIS and would allow BNSF rail operations to continue in nearly the same configuration as today. The SODO Ramps at S. Atlantic Street and S. Royal Brougham Way would have the same benefits that ramps in this area did in the Draft EIS. They would improve connections for drivers and complement the existing industrial and stadium land uses in this area. Transportation facilities for bicyclists and pedestrians would cover the same areas they do today and would provide a connection point for the planned west terminus of the Mountains to Sound Greenway Trail. Also in the south section, a small part of Port of Seattle property would be taken for use by the project, but in the long term, the Port's operations are not expected to be affected.

In the central section, land uses would be affected in very different ways, depending on which alternative is chosen. For the Tunnel Alternative, removing the existing viaduct could make nearby buildings and land more desirable for land uses that benefit from views, proximity to public open space, and foot traffic—possibly leading to new kinds of uses on adjacent properties. The Tunnel Alternative includes the 20-foot-wide Steinbrueck Park Walkway, which would connect the north end of the Pike Place Market with

SR 99 Under Elliott & Western



Visual Simulation of SR 99 Under Elliott



Current View of Western On-Ramp Looking North



Current View of SR 99 Over Elliott

the waterfront, providing a new pedestrian route between Pike Place Market and the waterfront.

With the Elevated Structure Alternative, the replacement viaduct would occupy approximately the same alignment as the existing one, but the new structure would be wider and 3 feet taller. The larger elevated structure would increase the shaded area below SR 99. Land use effects would be about the same as those described previously for the Rebuild and Aerial Alternatives in the Draft EIS.



Visual Simulation of Western Avenue

SR 99 Under Elliott and Western

Exhibit 5-12



Visual Simulations Looking South from Union Street

Exhibit 5-13



Current View Looking South from Union Street

The main difference between the current alternatives and the Draft EIS alternatives occurs in the north section, where the Partially Lowered Aurora improvements are proposed. These improvements would permanently convert more property to roadway uses than the alternatives evaluated in the Draft EIS. The Partially Lowered Aurora improvements would also

provide better east-west connections between the Lower Queen Anne and South Lake Union neighborhoods and complement existing and planned future land uses in these areas.

For both alternatives, Broad Street—currently running in a trench for part of its length—would be closed and filled in between Fifth and Ninth Avenues N., allowing the street grid to be connected. Local streets that currently dead end at Broad Street would continue through at street level, just as they did years ago. When the project is completed, portions of the former Broad Street right-of-way could provide opportunities for new development. The City would likely vacate the filled-in portion of Broad Street, and the remaining parcels could be developed in a way that would support City planning goals for the neighborhood and would be consistent with zoning regulations in the area.

How would other design choices affect land uses?

South – If the Elevated Structure Alternative were built with the Relocated Whatcom Railyard design choice, an additional 0.8 acre of industrial land would be used than with the Reconfigured Whatcom Railyard.

Central – The Steinbrueck Park Lid would create a 130-foot-wide open space, built over SR 99 in the same location as the Steinbrueck Park Walkway. The new space could have a range of uses, like plantings, seating, overlooks, and even small shops and restaurants. Like the walkway, it would provide a new pedestrian connection between Pike Place Market and the waterfront. The lid would lower noise levels near Steinbrueck Park by about 10 dBA compared to existing conditions. These new improvements might change the way that nearby properties are used in the future.

Section 4(f) and Protection of Public Parks and Recreation Areas

The Alaskan Way Viaduct and Seawall Replacement (AWV) Project is in a part of Seattle that is well-known for its public parks and open spaces. **Section 4(f)**, a provision of federal law pertaining to transportation projects, requires among other things that project proponents carefully consider protection of these resources in order to receive federal funding. The only park or recreation resource potentially affected by the AWV Project is the Washington Street Boat Landing.

The draft **Section 4(f) Evaluation** is included at the end of this document on page 117, and the **Section 4(f)** attachments (Part A, B, C, and D) are provided in the **2006 Appendix N**.



Visual Simulations Looking West from University Street

Exhibit 5-14

North - If the Lowered Aurora improvements are built, more property would be converted to roadway use than for the Partially Lowered Aurora improvements. Lowered Aurora would connect two additional streets across SR 99 (Republican and Roy Streets) compared to Partially Lowered Aurora, which would enhance east-west connections for the surrounding Queen Anne and South Lake Union neighborhoods. Broad Street would be closed and filled as described for Partially Lowered Aurora.

6 How would parks, recreation, and open space be affected?

With a few exceptions, the Tunnel Alternative would affect parks, recreational resources, and open space in the same ways they would have been affected by the Draft EIS Tunnel Alternative, and effects to those resources from the Elevated Structure Alternative

would be similar to effects of the Draft EIS Rebuild and Aerial Alternatives.

At street level, next to the relocated Washington Street Boat Landing and its historic pergola, the greater width of the Elevated Structure Alternative would take up more room along the waterfront than the existing viaduct does, and the sidewalk adjacent to the pergola would need to be about 5 feet narrower than it currently is.

With the Tunnel Alternative, a new pedestrian walkway across SR 99 would connect Steinbrueck Park with a new public open space on the east side of the Alaskan Way surface street, near the Seattle Aquarium and Pier 62/63. Although it hasn't been designed yet, it could be similar in character to the Pike Street Hillclimb or the Harbor Steps. The Elevated Structure Alternative would not include this new public open space.

How would other design choices affect parks, recreation, and open space?

Central - The Steinbrueck Park Lid design choice would provide a new 130-foot-wide public open space between Stewart and Virginia Streets compared to the Steinbrueck Park Walkway, which would be around 20 feet wide in this same area. The lid would be an open space link, creating a continuous park setting between Pike Place Market and the waterfront. It is envisioned as a lively urban landscape that might have features like seating, landscaping, fountains, viewpoints, public art, and possibly even restaurants and shopping.

7 How would neighborhoods be affected?

Except for the north section, effects of the Tunnel Alternative on neighborhoods would be similar to those described for the Draft EIS Tunnel Alternative,



Current View Looking West from University Street

2006 Appendix H

In the *2006 Appendix H, Parks and Recreation Technical Memorandum, Chapter 5* provides additional information on effects to parks and recreation.

and effects on neighborhoods from the Elevated Structure Alternative would be similar to those described for the Draft EIS Rebuild Alternative.

In the project's south section, changes to the designs of both the Tunnel and Elevated Structure Alternatives would result in a few new effects on neighborhoods. In the south section, the south portal of the tunnel has been moved to the south (from S. King Street to S. Dearborn Street), benefiting the Pioneer Square neighborhood by moving SR 99 traffic, noise, and air pollution farther away from the activity hub of the neighborhood. For both alternatives, the U.S. Coast Guard Museum of the Northwest would need to be relocated due to right-of-way acquisition of a portion of Pier 36.

In the central section, the Tunnel Alternative no longer includes access ramps from the tunnel to the Alaskan Way surface street near Stewart Street, which were proposed in the Draft EIS. This eliminates a source of traffic and noise along this part of Alaskan Way that was evaluated in the Draft EIS. The addition of the Steinbrueck Park Walkway over SR 99 would improve pedestrian access between the waterfront and neighborhoods above. The Tunnel Alternative would also route SR 99 under Elliott and Western Avenues, replacing the existing aerial structure with a trench.

The Elevated Structure Alternative would be wider than the existing viaduct, increasing the shaded area beneath the structure and increasing the sense that the waterfront is separate from neighborhoods to the east. Effects in the central section would be similar to those described in the Draft EIS for the Aerial Alternative.

For both the Tunnel and Elevated Structure Alternatives, the biggest change to potential effects on neighborhoods would occur in the north section, north of the Battery Street Tunnel. In the Draft EIS, no improvements were proposed for this area for the Rebuild Alternative, and the Draft EIS Tunnel Alternative included widening Mercer Street. In comparison to the Draft EIS Alternatives, both the updated Tunnel and Elevated Structure Alternatives include

the Partially Lowered Aurora improvements, which would widen and lower SR 99, widen Mercer Street, and construct two new bridges over SR 99. Although SR 99 would continue to be a barrier to east-west travel, the new bridges crossing SR 99 would make it easier to go back and forth between the South Lake Union and Uptown (Lower Queen Anne) neighborhoods at Thomas and Harrison Streets. Additionally, adding new cul-de-sacs on John, Valley, and Aloha Streets would reduce the number of cars and trucks that travel through residential neighborhoods in these areas.

How would other design choices affect neighborhoods?

North – The Lowered Aurora improvements would connect two more streets (Republican and Roy Streets) across SR 99 than the Partially Lowered Aurora improvements, further improving connections between neighborhoods east and west of SR 99.

8 How would community and social services be affected?

In the time since the Draft EIS was published, project changes and new information about community and social services in or near the project corridor have changed our understanding of effects to community and social services.

In the north waterfront section, CASA Latina, a non-profit organization that provides educational and employment opportunities for Latino immigrants, is planning to move from its location on Blanchard Street before project construction begins, so it wouldn't be displaced by the project as described in the Draft EIS.

In the north section, the Partially Lowered Aurora improvements proposed for both the Tunnel and Elevated Structure Alternatives would improve conditions north of the Battery Street Tunnel. People who use and work at community and social services near the expanded project area would benefit from two new bridges that would carry Thomas and Harrison Streets over SR 99, making them through streets for

the first time in decades. Mercer Street would be broadened and reconfigured from an eastbound-only street to a two-way street. Both Mercer Street and the new bridges would include sidewalks, and Mercer Street would also include a bicycle path at sidewalk level. New cul-de-sacs on John, Valley, and Aloha Streets that currently intersect with SR 99 would prevent nonlocal traffic from cutting through the neighborhood, making the streets less busy and safer. These new connections, improvements, and direct routes would make it easier for people to move back and forth between the South Lake Union and Queen Anne neighborhoods, and connections between neighborhoods on either side of SR 99 would be enhanced. Community and social services in these neighborhoods would be more accessible as a result.

How would other design choices affect community and social services?

North – The Lowered Aurora improvements would displace a low-income housing facility. These improvements would connect two more east-west streets than the Partially Lowered Aurora improvements, further improving access to community and social services. Social resources that might be affected by their proximity to the expanded project corridor in the Lowered Aurora improvements are the School of Visual Concepts in the north section along Aurora Avenue N., and Queen Anne Gardens, which has subsidized low-income housing for the elderly.

9 How would low-income populations be affected?

Since publication of the Draft EIS, project changes that might affect low-income populations have come primarily from expansion of the project area north of the Battery Street Tunnel. Like all residents of neighborhoods near the expanded project area north of the Battery Street Tunnel, low-income populations would benefit from bicycle- and pedestrian-friendly improvements and enhanced neighborhood connections. These enhancements would make travel between the South Lake Union and Queen Anne neighborhoods much more direct than it is today, especially for those traveling by public transit, by bicycle, or on foot.

2006 Appendix I

In the *2006 Appendix I, Social Resources Technical Memorandum, Chapter 5* provides additional information on effects to neighborhoods, community, and social services.

2006 Appendix J

In the *2006 Appendix J, Environmental Justice Technical Memorandum, Chapter 6* provides additional information on effects to sensitive populations.

2006 Appendix K

In the *2006 Appendix K, Relocations Technical Memorandum, Chapter 5* provides additional information on properties affected in the project area. Maps that summarize the full and partial acquisitions for each alternative can be found in Attachment A of Appendix K.

What are full and partial acquisitions?

A full acquisition requires the entire property to be obtained. Partial acquisitions only require a portion of the property to be obtained and could include loading areas, parking spaces, vacant property, or other uses.

What is the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970?

This act is meant to ensure that people are treated fairly when their property must be acquired or they are displaced for a project where the federal government is involved or providing funding. For the AWV Project, FHWA is one of the project partners and is providing funding to build the project.

The entire text of the act can be found at:
<http://www.fhwa.dot.gov/realestate/act.htm>

Changes to the project are not expected to affect housing or services used by low-income people.

10 How would the alternatives affect properties located in the area?

A new methodology has been used in the Supplemental Draft EIS to describe the potential effects to parcels within the project area. In the Draft EIS, a broad, worst-case analysis assumed that all affected properties would be fully acquired. For the Supplemental Draft EIS, the approach for determining relocations has been refined to identify the need to acquire all or part of a parcel.

The Tunnel and Elevated Structure Alternatives affect more properties than were estimated in the Draft EIS. Most of the additional properties would be needed to build the Partially Lowered Aurora improvements. Exhibit 5-15 shows the new totals for acquired parcels for each alternative. The Tunnel Alternative requires 14 building acquisitions, and the Elevated Structure Alternative requires 13 building acquisitions. Similar to the Draft EIS, no residential units would be acquired. In addition to the parcels in Exhibit 5-15, there are some parcels that would not be acquired but would have minor modifications made to their access, such as changes to driveways that would not alter the properties' use.

Exhibit 5-15
Parcels Acquired for the Alternatives

	S E C T I O N			TOTAL
	South	Central	North	
Tunnel Alternative				
Number of Partial Acquisitions	8	2	8	18
Number of Full Acquisitions	4	11	14	29
Total Properties Affected	12	13	22	47
Elevated Structure Alternative				
Number of Partial Acquisitions	8	3	8	19
Number of Full Acquisitions	4	10	14	28
Total Properties Affected	12	13	22	47

Although the ramp configuration near S. Atlantic Street and S. Royal Brougham Way has changed since the Draft EIS, part of the eastern edge of Terminal 46

would still be needed to construct the new SODO Ramps. The Tunnel and Elevated Structure Alternatives would need approximately 3 percent of the overall Terminal 46 parcel area. This would affect the Coast Guard Museum, an administrative office building, and some parking spaces on the southeast edge of the Terminal 46 property, but this partial acquisition is not expected to affect normal operations of the container terminal.

The project partners will work closely with all affected property owners and tenants to minimize the level of disruption. If a property needs to be acquired or adequate access cannot be maintained, impacts to affected businesses will be mitigated under policies to be identified in the project's Business Mitigation Plan. If provisions of the Uniform Relocation Act are met, then relocation assistance would be provided.

How would other design choices affect property acquisitions?

South – The Relocated Whatcom Railyard would also require full acquisition of three more parcels and three more buildings than the Reconfigured Whatcom Railyard design currently evaluated with the Tunnel and Elevated Structure Alternatives. The Relocated Whatcom Railyard design choice would also require the partial acquisition of one more parcel and than the Reconfigured Whatcom Railyard design.

Central – The side-by-side tunnel design choice would require the full acquisition of three more parcels and one more building than the stacked tunnel. The same number of properties would be acquired regardless of whether SR 99 is built over or under Elliott and Western Avenues; however, the access changes would be required at fewer locations if SR 99 is built over Elliott and Western Avenues.

North – The Lowered Aurora improvements would require the partial acquisition of 3 fewer parcels and full acquisition of 23 more parcels than the Partially Lowered Aurora improvements. The Lowered Aurora design choice would require the acquisition of 11 buildings, including one building with eight residential units. In addition, 29 residential units are

located on parcels where land would be partially acquired, but the buildings and units would remain.

11 How would historic properties be affected?

The Tunnel and Elevated Structure Alternatives would cause somewhat different effects to historic properties than those described in the Draft EIS. For the Tunnel Alternative, effects to historic properties would be reduced or avoided as compared to the Tunnel Alternative in the Draft EIS. The Elevated Structure Alternative would be narrower than the structure proposed in the Aerial Alternative evaluated in the Draft EIS and wider than both the existing viaduct and the structure proposed in the Rebuild Alternative. On the west side of the Pioneer Square neighborhood, near S. King Street to south of S. Jackson Street, SR 99 would be 54 to 74 feet wider than the existing structure because of the transition from a side-by-side to a stacked elevated structure in this area. Increased width and bulk and resulting shadowed areas below the structure could detract from adjacent historic buildings and districts near SR 99. Elsewhere, the Elevated Structure Alternative would be likely to cause similar effects to historic resources as the existing viaduct does.

As described in the Draft EIS, the SODO Ramps proposed in the south section would permanently reduce access to the Bemis Building for both alternatives. However, the Washington-Oregon Shippers Cooperative Association (WOSCA) Freight House (801 First Avenue S.) would not be removed, as previously proposed for the Draft EIS. Similarly, the Tunnel Alternative would preserve the 1 Yesler Building, which was slated for removal with the Tunnel Alternative evaluated in the Draft EIS. New effects from the Tunnel Alternative would include altering the access to the Olympic Warehouse and 51 University Street.

As compared to the Tunnel Alternative evaluated in the Draft EIS, the updated Tunnel Alternative would reduce effects to the Pioneer Square Historic District, because the SR 99 tunnel portal has been moved farther south to S. Dearborn Street—away from the heart of Pioneer Square. Also, the Tunnel Alternative now proposes to build the Steinbrueck Park Walkway,

Section 4(f) and Protection of Historic Resources

The AWW Project is adjacent to some of Seattle's most historic buildings and neighborhoods. Section 4(f) is a provision of federal law pertaining to transportation projects that requires, among other things, that project proponents carefully consider protection of these resources in order to receive federal funding. Historic resources that might be affected by the project are the:

- Bemis Building
- Washington Street Boat Landing
- Battery Street Tunnel
- McGraw Kittenger Case (Blu Canary/MGM) Building

Additionally, the viaduct and seawall themselves are considered to be historic structures, and are included in the **Section 4(f) Evaluation**.

The draft **Section 4(f) Evaluation** can be found at the end of this document on page 117. The **Section 4(f)** attachments (Parts A, B, C, and D) are provided in the **2006 Appendix N** of the **Supplemental Draft EIS**.

2006 Appendix L

In the **2006 Appendix L, Historic Resources Technical Memorandum, Chapter 5** provides additional information on effects to historic resources.

which would connect the Pike Place Market Historic District with the waterfront, enhancing access to historic resources in both areas.

As described in the Draft EIS, both alternatives would still require the Washington Street Boat Landing to be moved west. The Draft EIS Tunnel Alternative required moving the Washington Street Boat Landing about 125 feet west of the existing seawall to the edge of a new pier. The current Tunnel Alternative would move the boat landing 16 feet west of its current site. The boat landing's historic pergola would be placed above the tunnel and would not hang over the water as it does today, though it would still be located at the water's edge. With the Elevated Structure Alternative, the width of the replacement viaduct would require that the boat landing be moved about 35 feet west of the existing seawall, and the boat landing would overhang the water by about 26 feet as it does today.

Both the Tunnel and Elevated Structure Alternatives would substantially alter the Battery Street Tunnel by lowering the tunnel floor to increase vertical clearance to 16.5 feet. Additionally, both alternatives would require some modifications of the basement of Fire Station No. 2 to accommodate a new emergency exit from the Battery Street Tunnel.

How would other design choices affect historic properties?

Central – The side-by-side tunnel design choice would relocate the Washington Street Boat Landing approximately 27 feet west of its current site and place the structure on the edge of the new seawall.

North – Widening the south curve of the Battery Street Tunnel would alter the foundation of the McGraw Kittenger Case (Blu Canary/MGM) Building.

12 How would the local and regional economy be affected?

The Tunnel and Elevated Structure Alternatives would primarily cause new effects to the economy in the north section where additional properties and businesses would be acquired for the Partially Lowered Aurora improvements.

Effects to Businesses and Employees

The Tunnel and Elevated Structure Alternatives would affect more businesses and employees than the Draft EIS, largely because of the additional improvements north of the Battery Street Tunnel. As described in Question 10 of this chapter, property acquisitions have been refined to identify the need to acquire all or part of a parcel and its buildings. The Tunnel Alternative requires 14 building acquisitions, and the Elevated Structure Alternative requires 13 building acquisitions. Once a parcel is acquired for roadway use, property taxes would no longer be collected.

Additionally, businesses and their employees in the acquired buildings would need to be relocated. If the businesses were moved in Seattle, there would be little effect to the local economy. However, if businesses are moved outside of Seattle, Business and Occupation tax revenue would shift out of Seattle. Efforts would be made to encourage businesses to relocate within the city limits.

The Tunnel Alternative would affect an estimated 455 employees, and the Elevated Structure Alternative would affect about 440 employees. The 440 to 455 employees affected represent about 0.3 percent of the total 2000 Seattle central business district workforce.

How would other design choices affect businesses and employees?

South – The Relocated Whatcom Railyard design choice would require acquisition of three more buildings and would affect approximately 90 additional employees compared to the Reconfigured Whatcom Railyard.

Central – For the Tunnel Alternative, the side-by-side tunnel design choice would require acquisition of one more building and would affect an additional 14 employees compared to the stacked tunnel.

North – The Lowered Aurora design choice would require acquisition of 11 more buildings and would

affect approximately 78 additional employees compared to the Partially Lowered Aurora improvements.

Effects to Freight

In the south section, neither alternative is expected to cause additional economic effects to freight access. Both the Tunnel and Elevated Structure Alternatives would provide access to and from SR 99 in all directions with the SODO Ramps. This would benefit freight movements because these ramps would provide more direct access between SR 99, SR 519 (located at S. Atlantic Street and S. Royal Brougham Way), and I-90. The Elliott and Western ramps would provide similar freight connections as the current facility. In addition, the improved ramp connections along SR 99 north of the Battery Street Tunnel would better accommodate freight movements to the South Lake Union area.

Hazardous and flammable cargo would be prohibited in the Battery Street Tunnel as it is today. If the Tunnel Alternative is constructed, hazardous and flammable cargo would also be prohibited in the new tunnel along the waterfront. If hazardous materials are prohibited, freight carrying these materials would need to use different routes, such as the Alaskan Way surface street. This route is expected to affect fewer than 80 one-way trips per day and add 5 to 10 minutes to total truck travel times.

Effects to Parking

Both alternatives would permanently remove more parking spaces than were estimated in the Draft EIS due to proposed improvements in the north section, project design changes, and updated parking counts. The number of available parking spaces estimated in the project area has increased to 3,703 spaces. As shown in Exhibit 5-16 on the next page, the Tunnel Alternative would remove more parking spaces overall than the Elevated Structure Alternative. A total of 1,723 parking spaces would be permanently removed for the Tunnel Alternative, and a total of 882 parking spaces would be permanently removed with the Elevated Structure Alternative.

What conditions and types of businesses are located north of the Battery Street Tunnel?

Generally, local conditions for businesses and the economy have improved compared to those described in the Draft EIS. The three-block extension of the north boundary of the construction area to Comstock Street contains primarily residential housing with some retail services. The area north of the Battery Street Tunnel now contains approximately 300 businesses, 100 more businesses than the total in the Draft EIS. Types of businesses and land uses north of the Battery Street Tunnel include:

- **Commercial 37%**
- **Other Businesses 18%**
- **Residential, Multifamily 15%**
- **Other 15%**
- **Retail 11%**
- **Government Services 3%**
- **Industrial 1%**

**Exhibit 5-16
Parking Effects**

	Short-Term On-Street ¹	Long-Term On-Street ²	Off-Street ³	Total
TUNNEL ALTERNATIVE				
Existing Parking Spaces	1,020	626	2,057	3,703
South End	-1	-415	-374	-790
Central Waterfront	-386	-15	-433	-834
North Waterfront	+22	0	0	+22
North End	-11	0	-110	-121
Total Parking Spaces Removed	-376	-430	-917	-1,723
Total Parking Spaces Remaining	644	196	1,140	1,980
ELEVATED STRUCTURE ALTERNATIVE				
Existing Parking Spaces	1,020	626	2,057	3,703
South End	-22	-261	-314	-597
Central Waterfront	-120	-15	-114	-249
North Waterfront	+85	0	0	+85
North End	-11	0	-110	-121
Total Parking Spaces Removed	-68	-276	-538	-882
Total Parking Spaces Remaining	952	350	1,519	2,821

¹ Short-term metered parking spaces
² Free, long-term parking spaces
³ Pay parking and tenant only parking

Note: The number of parking spaces removed has been estimated by using existing counts and the current project design plans.

Both the Tunnel and Elevated Structure Alternatives would remove many of the existing free, long-term parking spaces under the viaduct south of S. King Street. People currently parking for free would need to pay to park, or they would need to use transit. The effects of losing free, long-term parking in the south would be relatively minor since there is available parking in the area. According to Puget Sound Regional Council’s (PSRC) 2004 Parking Inventory Survey, there are more than 5,800 off-street parking spaces in the SODO neighborhood, which covers a wider area than the project corridor. Many of the spaces in this area are associated with Qwest Field and Event Center and Safeco Field. Currently, only 33 percent of these parking spaces are used on a normal business day, which indicates that there is a surplus of approximately 3,900 parking spaces available on a normal business day.¹

Additionally, the alternatives would remove off-street, paid parking spaces throughout this area; however,

the project area has sufficient parking capacity even if these spaces are removed. The City of Seattle’s parking policies and goals, described in the City of Seattle Comprehensive Plan², do not typically replace long-term parking. The City’s policies (TG18 and T42) recognize the transportation purpose of the street system when making on-street parking decisions.

Overall, on-street short-term parking would be reduced, as shown in Exhibit 5-16. Many businesses in the Pioneer Square and central waterfront areas, particularly retail shops, restaurants, and tourist destinations, rely on short-term parking for customer and user access. Reduced short-term parking in these areas could affect waterfront users and local businesses unless these losses are mitigated. According to the 2004 PSRC Parking Inventory, 73 percent of the off-street parking spaces in Pioneer Square are used on a normal business day, which indicates approximately 450 spaces are available. In the central waterfront area, 66 percent of the off-street parking spaces are used on a normal business day, which indicates that there is a surplus of approximately 500 parking spaces.³ These areas have the capacity to absorb the estimated number of short-term spaces that would be removed by the Tunnel or Elevated Structure Alternatives.

Although overall short-term parking would be reduced with the Elevated Structure Alternative, the number of on-street short-term parking spaces provided would increase by about 85 spaces in the north waterfront area compared to the existing conditions. These spaces would provide additional short-term parking for people visiting the waterfront or downtown businesses. There would be space for parking on Alaskan Way between Pine and Broad Streets with the Elevated Structure Alternative because there would be only one streetcar track on Alaskan Way. For the Tunnel Alternative, the surface street would have two streetcar tracks, so there would not be space for parking.

North of the Battery Street Tunnel, 11 short-term, metered parking spaces and 110 off-street parking spaces would be removed for both alternatives. Many

of the adjacent businesses have their own off-street parking lots in this area. Because short-term and off-street parking are available, no parking mitigation is proposed in the north section.

Overall, the Tunnel Alternative would remove a total of 917 off-street parking spaces in the project corridor, which represents 1.7 percent of the long-term parking available within the Seattle central business district. The Elevated Structure Alternative would remove a total of 538 off-street parking spaces throughout the project corridor, which represents 1 percent of the long-term parking available within the Seattle central business district. For both alternatives, most of these parking spaces would be in the south and central waterfront sections where there is adequate off-street parking capacity available.

How would other design choices affect parking?

Central – If SR 99 is built over Elliott and Western Avenues, 131 fewer off-street parking spaces would be removed along the central waterfront.

North – The Lowered Aurora design choice would remove 162 more parking spaces than Partially Lowered Aurora. It would remove 193 off-street spaces and add 31 more on-street short-term spaces compared to Partially Lowered Aurora.

13 How would public services (such as police and fire) and utilities be affected?

Effects from the Tunnel and Elevated Structure Alternatives on public services, emergency vehicles, and utilities would be similar to those described for the Draft EIS alternatives, only the project area has been extended farther north. As with the Draft EIS alternatives, overall conditions for these services would improve as compared with today.

The SODO Ramps would provide traffic movement in all directions, which would benefit emergency service providers such as ambulances, police, and fire trucks. In the central section, the Tunnel Alternative would add a third northbound lane on the Alaskan Way surface street between S. Dearborn and Columbia Streets, and a center turn lane would be added

2006 Appendix P

In the *2006 Appendix P, Economics Technical Memorandum, Chapter 5* provides additional information on effects to businesses and the economy.

2006 Appendix C

In the *2006 Appendix C, Transportation Discipline Report, Section 5.8* provides additional information on parking.

What is on-street parking?

There are two types on on-street parking, short-term and long-term. On-street short-term parking includes metered spaces, time-restricted public parking spaces (such as 1-hour parking and loading zones), bus/taxi zones, and spaces reserved for police parking. On-street long-term parking includes unmetered, unrestricted on-street public parking spaces.

What is off-street parking?

Off-street parking includes parking garages and lots where people pay to park. Most off-street parking is privately owned or operated.

2006 Appendix O

In the *2006 Appendix O, Public Services and Utilities Technical Memorandum, Chapter 4* provides additional information on effects to public services.

¹ PSRC Parking Data 2004.

² Seattle 2005b.

³ PSRC Parking Data 2004.

between Pike and Broad Streets. The added lanes would improve access for emergency service vehicles, particularly those at Fire Station No. 5, located next to Colman Dock. For both alternatives, emergency service would be enhanced by closing the existing ramps at the south portal of the Battery Street Tunnel to all but emergency vehicles. New bridges over SR 99 in the Partially Lowered Aurora improvements would improve east-west connections across SR 99, and new on- and off-ramps would improve access to SR 99. These improvements north of the Battery Street Tunnel would improve response times in some instances for Fire Stations No. 2 and No. 8, Seattle Police Department's West Precinct, and emergency medical aid.

How would other design choices affect public services?

North – The Lowered Aurora improvements would connect two more surface streets across SR 99 than the Partially Lowered Aurora improvements, potentially improving response times for emergency service providers.

14 How would air quality be affected?

Under the Clean Air Act, the United States Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS), which specify maximum concentrations for carbon monoxide (CO), particulate matter less than 10 micrometers in size (PM₁₀), particulate matter less than 2.5 micrometers in size (PM_{2.5}), ozone, sulfur dioxide, lead, and nitrogen dioxide. The entire project lies within a CO maintenance area (see sidebar), and the project area south of S. Royal Brougham Way lies within a PM₁₀ maintenance area.

In the Draft EIS, the future pollutant concentrations for CO and particulate matter were estimated to be below (within) the NAAQS. CO and PM₁₀ concentrations near congested intersections for the Tunnel and Elevated Structure Alternatives would be similar to those described for the Tunnel, Rebuild, and Aerial Alternatives in the Draft EIS and are still estimated to be within requirements of the NAAQS.

North of the Battery Street Tunnel, which is a CO maintenance area only, traffic volumes and operations would change with either alternative. Additional information for CO concentrations at congested intersections for both alternatives showed no exceedances of air quality standards in 2030. Compared to the existing facility, CO concentrations in 2030 would decrease slightly because vehicle emissions will decrease as newer vehicles that emit less CO replace older vehicles. In the north section, the worst-case 1-hour average CO concentration predictions ranged between 5.5 and 7.9 parts per million (ppm), well below the 35 ppm limit. The worst-case 8-hour average CO concentration predictions ranged between 4.1 and 5.8 ppm, also below the 9 ppm limit. In addition to CO concentrations, the Tunnel and Elevated Structure Alternatives are not expected to cause exceedances of the NAAQS.

For this document, a qualitative analysis of mobile source air toxics was conducted. Both alternatives are unlikely to substantially increase mobile source air toxics emissions because the project would replace an existing facility without adding substantial new capacity. Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year (2030) as a result of EPA's national control programs.

The Tunnel Alternative would include six ventilation buildings adjacent to the tunnel near S. Dearborn Street, S. King Street, Yesler Way, Spring Street, Union Street, and Pine Street and would have similar impacts to those analyzed for the Tunnel Alternative in the Draft EIS. Both the Tunnel and Elevated Structure Alternatives would add vents to each of the Battery Street Tunnel portals. Negative air quality effects are not expected at vent openings.

15 How would fish and aquatic habitat be affected?

There would be no new effects for fish and aquatic habitat compared to those described in the Draft EIS, but there have been important updates to potential effects between Pier 48 and Colman Dock. We are no longer proposing to build a permanent 33,000-square-foot over-water pier in this area that would connect to Colman Dock. This is an improvement compared to

the Draft EIS because the aquatic habitat in this area would not be permanently shaded. Instead, we are proposing to build a temporary 15,000-square-foot ferry access bridge that would only be used during construction to get vehicles to and from the ferry terminal. Once construction is complete, the bridge would be removed.

Both alternatives would replace the seawall from about S. Washington Street to Broad Street. In the Draft EIS, seawall improvements extended up to Myrtle Edwards Park. Now, the section from just north of Broad Street to Myrtle Edwards Park is being improved by the Olympic Sculpture Park project, so it is no longer part of this project. The new seawall would be constructed in the same location or slightly landward of the existing seawall, except between Pier 48 and Colman Dock where each of the alternatives would remove some aquatic habitat. The amount of shallow water habitat that would be filled for either alternative is within the range of aquatic effects described in the Draft EIS.

The Tunnel Alternative would replace the seawall with the new tunnel wall from about S. Washington Street to Union Street. The seawall would be replaced between about Union Street and Broad Street. The Tunnel Alternative's wall would extend approximately 42 feet out into Elliott Bay at Pier 48 and curve to about 10 feet out in the water at the edge of Colman Dock. Approximately 10,000 square feet (0.23 acre) of shallow underwater habitat would be filled along Elliott Bay in the vicinity of Pier 48 and Colman Dock, as shown in Exhibit 5-17 on the next page. Approximately 2,260 square feet (0.05 acre) of this area is currently shaded by the existing Washington Street Boat Landing. Once the tunnel is built, the boat landing would be relocated on top of the new tunnel, adjacent to rather than extending over Elliott Bay.

The Elevated Structure Alternative would also replace the seawall from about S. Washington Street to Broad Street. Between Pier 48 and Colman Dock, the Elevated Structure Alternative would extend out up to 35 feet into Elliott Bay, as shown in Exhibit 5-17. About 6,100 square feet (0.14 acre) of shallow under-

What is an air quality maintenance area?

Air quality maintenance areas are regions that have recently attained compliance with the National Ambient Air Quality Standards.

2006 Appendix Q

In the *2006 Appendix Q, Air Quality Discipline Report, Chapter 5* provides additional information on air quality effects.

What are Mobile Source Air Toxics?

To help protect air quality, the Environmental Protection Agency (EPA) identified a group of 21 pollutants as mobile source air toxics, which are set forth in an EPA final rule, Control of Emissions of Hazardous Air Pollutants from Mobile Sources (66 FR 17235). From the list of 21, EPA has identified six priority mobile source air toxics. These are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. Currently, EPA has not established regulatory concentration targets for relevant mobile source air toxics appropriate for use in the project development process.

More information on mobile source air toxics can be found in **Sections 2.2, 3.1, 4.1.2, and 5.1.2** of the *2006 Appendix Q, Air Quality Discipline Report*.

New Species Evaluated?

The habitat conditions and species present in the project area are the same as described in the *Draft EIS*; however, two species have been added to those protected under the Endangered Species Act. They include the southern resident killer whale and the marbled murrelet. National Marine Fisheries Service also proposed to list the Puget Sound steelhead as a threatened species in March 2006, with the final listing decision to be made in 2007. Potential effects to these species will be evaluated in a biological assessment and in consultation with National Marine Fisheries Service and the United States Fish and Wildlife Service, as required by the Endangered Species Act.

water habitat would be covered by fill in this area. The Elevated Structure Alternative would cover an additional 2,100 square feet (0.05 acre) of shallow underwater habitat to provide space for relocating the existing sidewalk. The Washington Street Boat Landing would be relocated slightly west of its current location, but it would continue to shade 2,260 square feet (0.05 acre) of Elliott Bay as it does today.

North of Colman Dock up to Broad Street, the new seawall would be built landward of the existing seawall. Final design will determine the extent to which sections of the new seawall can be built landward. By moving the new seawall landward, new opportunities to make improvements to habitat may be available. Once the old seawall face is removed, a narrow strip of previously filled area between Colman Dock and Broad Street would be returned to Elliott Bay's aquatic habitat along approximately 5,750 feet of shoreline. This change would increase the bottom area of Elliott Bay by an estimated 20,565 square feet and the water volume by about 265,574 cubic feet. Additionally, building a new seawall would remove the risk of severe effects to habitat that would result if the existing seawall failed.

We will be working with the regulatory agencies to improve any affected habitat. Similar to the possibilities described in the Draft EIS, efforts could include removing in-water fill outside of the project area to restore habitat.

How would other design choices affect fish and aquatic habitat?

Central - If the side-by-side tunnel is chosen, the tunnel's wall would extend approximately 53 feet out into Elliott Bay at Pier 48 and curve to about 10 feet out in the water at the edge of Colman Dock. Approximately 13,900 square feet (0.32 acre) of shallow underwater habitat would be filled along Elliott Bay in the vicinity of Pier 48 and Colman Dock.

16 How would water resources be affected?

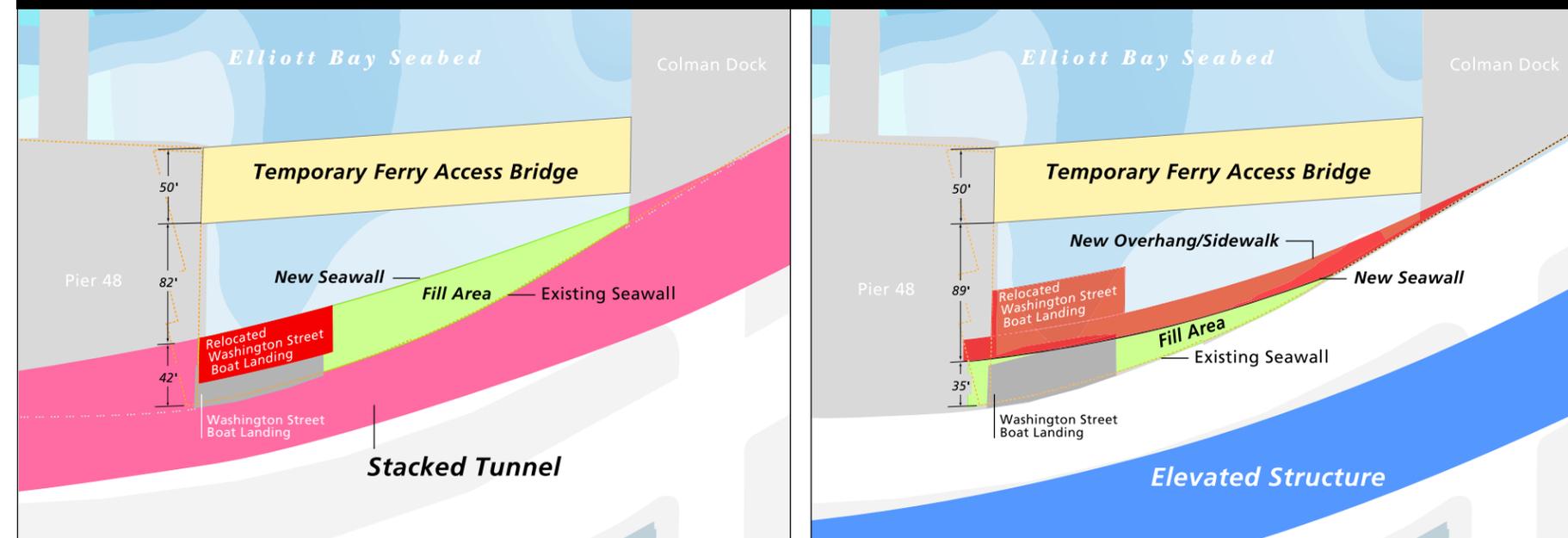
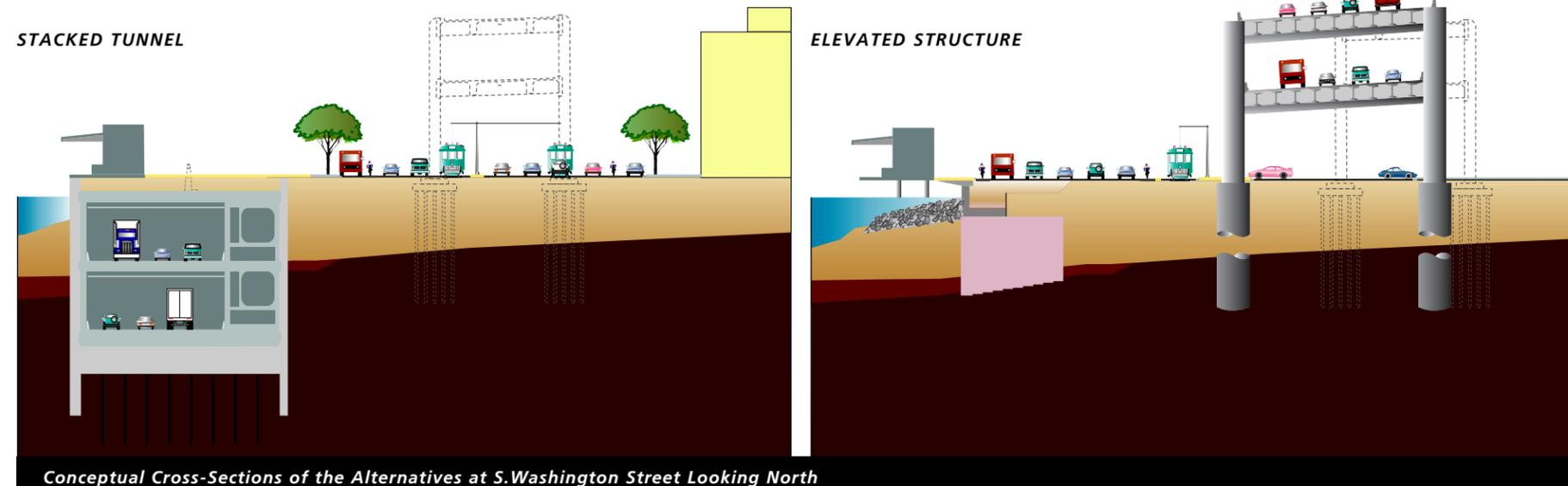
The existing project area has been developed for over a hundred years and is assumed to be covered with

100 percent impervious surfaces. Stormwater from any impervious surfaces that are replaced by the project will be treated before it's discharged. For most of the project area, this will result in an improvement to water quality, since only a small portion of the stormwater is currently treated.

Effects to water resources are similar to those described in the Draft EIS. There would be a slight increase in stormwater runoff from the project area



2006 Appendix R
 In the *2006 Appendix R, Fisheries, Wildlife, and Habitat Discipline Report, Chapter 5* provides additional information on effects to fish and aquatic habitat.



Changes to Elliott Bay at S. Washington Street

because a small amount of new roadway and sidewalk would be added. The amount of new roadway and sidewalk would be less than it was for the alternatives in the Draft EIS because a permanent over-water pier between Pier 48 and Colman Dock is no longer proposed. As shown in Exhibit 5-17 on the previous page, both the Tunnel and the Elevated Structure Alternatives would extend slightly into Elliott Bay between Pier 48 and Colman Dock, increasing the amount of roadway and sidewalk in this area. For the Tunnel Alternative, this new area includes the space above the fill that is not occupied by the Washington Street Boat Landing, which is about 7,740 square feet (0.18 acre). This area would be covered by sidewalk. The new area for the Elevated Structure Alternative includes the space above the fill and the new sidewalk overhang, for a total of 8,200 square feet (0.19 acre). The Elevated Structure Alternative would cover the fill with sidewalk and a small portion of the Alaskan Way surface street.

The total area covered by impervious surfaces, such as asphalt and concrete, would not increase in the rest of the corridor, but the existing impervious surfaces, such as roadways, would be replaced with new ones. Once the project is built, stormwater runoff generated within the project area will be collected and either directed to the combined sewer system and sent to a treatment plant, or treated using best management practices (BMPs) consistent with applicable stormwater codes. The project would also provide some detention, which would help to moderate peak flows and reduce the likelihood of overflow events. This would result in an improvement over existing conditions because only a portion of the stormwater is treated today.

The total amount of impervious surface estimated to be replaced in the Draft EIS ranged from approximately 68 acres for the Rebuild Alternative to 75 acres for the Tunnel Alternative. Primarily because of the improvements north of the Battery Street Tunnel, the total estimated area of impervious surface to be replaced has increased to 81 acres for the Tunnel Alternative and 85 acres for the Elevated Structure Alternative. In the Draft EIS, the Rebuild Alternative

did not propose any improvements north of the Battery Street Tunnel and the Tunnel and Aerial Alternatives proposed to replace 7 acres. Now, the Partially Lowered Aurora improvements would replace approximately 21 acres of impervious surface north of the Battery Street Tunnel for both the Tunnel and Elevated Structure Alternatives.

How would other design choices affect water resources?

South – The Relocated Whatcom Railyard would replace an additional 14 acres of impervious surface compared to the Reconfigured Whatcom Railyard.

Central and North Waterfront – The side-by-side tunnel would add approximately 11,640 square feet (0.27 acre) of new roadway and sidewalk in the central section where the new fill would be placed near Colman Dock. This does not include the existing area covered by the Washington Street Boat Landing, as that is already a sidewalk. Additionally, in the central and north waterfront areas, the side-by-side tunnel would replace about 6 more acres of existing impervious surfaces than the stacked tunnel.

North – The Lowered Aurora improvements would replace an additional 7 acres of impervious surface compared to the Partially Lowered Aurora improvements.

17 How would soil conditions change once the project is built?

The soil in the project area is mainly loose fill, soft sediment, sand, gravel, and dense glacial deposits. Soil improvements are needed to strengthen loose fill material found in the south and behind the seawall. Soil improvements would make the soil more stable so it wouldn't liquefy in an earthquake. Effects to soil would be similar to those described for the Tunnel, Aerial, and Rebuild Alternatives in the Draft EIS. The extent of the proposed soil improvements has changed as the development of the updated Tunnel and Elevated Structure Alternatives progressed.

For both the Tunnel and Elevated Structure Alternatives, the extent of soil improvements south of

S. Royal Brougham Way would be made within an area about 170 to 260 feet wide and 70 to 80 feet deep. Depending on the method used for the soil improvements, between 7.5 and 35 percent of this area would be improved. The Reconfigured Whatcom Railyard would improve a larger area of soil than the Relocated Whatcom Railyard because of the soil improvements needed for the aerial structure that crosses above the railroad tracks.

Both alternatives require soil improvements as part of replacing the failing bulkhead located between S. Jackson Street and S. Washington Street. The Tunnel Alternative would remove much of the loose material behind the seawall and replace it with the new tunnel structure up to about Union Street. Between Union and Broad Streets, the Tunnel Alternative would make soil improvements behind the new seawall within an area about 40 feet wide and 30 to 50 feet deep (starting 15 feet below ground level). For the Elevated Structure Alternative, soil improvements between S. King Street and Broad Street behind the new seawall would be made within an area about 40 feet wide and 30 to 70 feet deep (starting 15 feet below ground level). Behind the new seawall, 100 percent of the soil would be improved. The Elevated Structure Alternative would require a larger volume of soil improvements because the improvements are needed to support the proposed aerial structures.

No changes to soil conditions are anticipated in the north section of the project.

18 How would we develop mitigation plans for the project, and what types of mitigation measures could be utilized?

Once the AWV Project is built, it is expected to have few adverse effects on the surrounding area since the intent of the project is to replace the existing viaduct and seawall with another roadway and seawall. Most of the effects of the project that will require mitigation are related to construction effects. Many of the potential long-term, adverse effects from the project will be addressed through design. After consideration of public input provided through community brief-

How are conditions for stormwater different than what was described in the Draft EIS?

Since the Draft EIS was issued, drainage area for stormwater has increased by approximately 21 acres for the Partially Lowered Aurora improvements and 28 acres for the Lowered Aurora improvements. In the Draft EIS, the Tunnel Alternative collected stormwater from about 7 acres north of the Battery Street Tunnel and the Rebuild Alternative did not include improvements.

Under normal conditions, the stormwater runoff in the north section is collected in pipes that combine both stormwater and sewage and convey it to the West Point Treatment Plant for treatment before it's released into Puget Sound. In heavy wet weather, flows can exceed the capacity of the sewer system, leading to the direct discharge of a portion of the combined stormwater and sewage to Elliott Bay or Lake Union.

2006 Appendix S

In the *2006 Appendix S, Water Resources Discipline Report, Chapter 5* provides additional information on effects to water resources.

What is a BMP?

A best management practice (BMP) is an action or structure that reduces or prevents pollution from entering the stormwater or treats stormwater to reduce possible degradation of water quality.

2004 and 2006 Appendix T

The *2004 and 2006 Appendix T, Geology and Soils Technical Memorandum*, include additional information on the geologic setting and hazards in the project corridor.

ings, open houses, and comments on the 2004 Draft EIS and this Supplemental Draft EIS, the project partners will develop other mitigation measures for most of the remaining adverse effects that cannot be avoided. These mitigation measures will be finalized and a commitment to implementation will be made in the Final EIS and the Record of Decision. The following paragraphs discuss in more detail how some of the long-term effects might be avoided through design or mitigated by other actions.

The best way to mitigate long-term effects of a project is by avoiding and minimizing them where feasible through design. For example, the fans for the vent buildings proposed along the waterfront for the Tunnel Alternative and for the Battery Street Tunnel improvements proposed with both alternatives can be designed not to exceed decibel levels stipulated in local and federal regulations. Noise generated on the lower deck of the new elevated structure might be mitigated by including sound-absorbing materials to reduce the reflected noise. Noise conditions in the corridor would be better overall with either of the alternatives; however, the FHWA noise abatement criteria would continue to be exceeded in several locations. At those locations, mitigation would be applied where it meets both feasible and reasonable criteria set out in the WSDOT environmental guidelines⁴.

Through context-sensitive design, the effects of the Elevated Structure Alternative on historic districts could be lessened by designing it to complement its historic surroundings, though there would still be view blockage and effects on specific historic structures. These and other design measures will continue to be examined in the coming months, with specific commitments contained in the Final EIS.

Though many negative project effects can be avoided or minimized by good design, the project will cause some long-term effects. On-street parking would be reduced compared to existing levels for both the Tunnel and Elevated Structure Alternatives. The Tunnel Alternative would remove 376 short-term, on-street spaces and 430 long-term, on-street spaces. The Elevated Structure Alternative would remove 68 short-

term, on-street spaces and 276 long-term, on-street spaces. The short-term, on-street spaces are largely in the Pioneer Square and central waterfront areas. A formal parking mitigation strategy for the loss of short-term, on-street parking will be developed and presented in the Final EIS. Parking mitigation measures that are being considered might include using other existing parking facilities in the area or purchasing property and building new short-term parking.

In addition to parking, some properties would be needed to build new ramps and other improvements included in the project. The project partners will provide relocation assistance to the affected property owners and tenants. Relocation assistance will comply with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

The project also requires fill in Elliott Bay between Pier 48 and Colman Dock. At this time, the project partners are identifying opportunities to reduce or eliminate this permanent effect to Elliott Bay habitat. If the effects remain, efforts to mitigate the loss of habitat could include removing existing fill to restore habitat and/or designing innovative surface treatments for the face of the new seawall to mimic natural habitat where possible. A specific plan for addressing the habitat loss will be developed in cooperation with the appropriate resource agencies.

Stormwater runoff generated within the project area will be either directed to the combined sewer system or treated using BMPs consistent with applicable stormwater codes. This would be an improvement over existing conditions, where only a portion of the stormwater from SR 99 and the Alaskan Way surface street is treated before it is discharged. The project will also be providing some detention, which will help to moderate peak flows in the combined sewer system and potentially reduce the likelihood of overflow events.

2006 Appendix U

In the *2006 Appendix U, Hazardous Materials Discipline Report, Chapters 3 and 4* provide additional information on contaminated sites.

Soil and Groundwater Testing Results

In 2004 and 2005, additional soil and groundwater samples were collected throughout the project area, including the area north of the Battery Street Tunnel where the project area has been extended. Summaries of soil and groundwater testing results are provided in the *Geotechnical and Environmental Data and Considerations Report (Shannon and Wilson 2005a)* and the *Geotechnical and Environmental Data Report – North of the Battery Street Tunnel (Shannon and Wilson 2005b)*.

What is the difference between long-term and short-term effects?

Long-term effects are those that are a permanent feature of the project or result from the operation of the roadway. Short-term effects or temporary effects of this project include the effects of construction activities. This section discusses potential mitigation for permanent effects. Mitigation for temporary or construction effects is discussed in **Chapter 7 in Questions 23 and 24**.

⁴WSDOT 2006a.