

## Cumulative Effects

Cumulative effects are not defined under 36 CFR 800, but NEPA provides guidance on assessing these incremental effects. Cumulative effects are defined under NEPA as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). As noted above, these effects are discussed more thoroughly in the *Indirect and Cumulative Effects Discipline Report* (CH2M Hill 2009h). The Cumulative Effects Discipline Report concludes that the Preferred Alternative would make a minor contribution to the cumulative effect on cultural resources of the central Puget Sound region. Some historic properties would be removed by the project or experience other direct impacts. Other historic properties would experience indirect impacts, such as alterations to the viewshed or other changes to the setting. The project would make a minor contribution to the cumulative effect on traditional cultural properties due to its impacts on Foster Island. The project is not expected to have a cumulative effect on archaeological resources. The analysis of cumulative effects concluded that combining these effects with those from other past or future projects does not result in a significant cumulative effect on cultural resources, and thus there is no adverse effect from cumulative impacts under Section 106.

## Methods for Identifying Potential Effects

To assess the scope of effects on historic properties, both permanent and temporary, during construction, technical reports in the SDEIS (CH2M Hill 2009c) were consulted. These technical studies, summarized in the SDEIS (CH2M Hill 2009c), provided extensive information regarding myriad factors that could affect historic properties. Some of the disciplines that provided information include: Transportation, Land Use and Economic Activity, Social Elements, Visual Quality, Noise, Air Quality, Geology and Soils, and Navigation. Many effects to historic properties are associated with changes in setting and feeling from noise and visual impacts. Therefore, two of the disciplines that were particularly helpful for informing how the Preferred Alternative would affect historic properties were the *Noise Discipline Report Addendum and Errata* (WSDOT 2011) and the *Visual Quality and Aesthetics Discipline Report* (Parametrix 2009a).

For example, the noise analysis for historic properties uses the noise data provided in the *Noise Discipline Report Addendum and Errata* (WSDOT 2011) to evaluate whether the introduction of audible elements or changes in noise levels would diminish the qualities of significance of historic properties. FHWA and WSDOT have developed guidelines regarding noise levels, which are referenced in the effects analysis for historic properties where appropriate (WSDOT 2011). The guidelines indicate that a change in noise levels of 3 A-weighted decibels (dBA) is the smallest change audible to humans, a 5-dBA change is readily perceptible, and a change of 10 dBA is perceived as either halving or doubling the relative loudness. These measurements are used only to gauge the relative changes in noise and to evaluate whether introducing noise or changes to existing noise levels would diminish the qualities of significance of historic properties, which vary by property. Noise modeling completed for the project indicates that where recommended along the SR 520 corridor, noise walls would meet all FHWA and WSDOT requirements for avoidance and minimization of negative noise effects. In areas where noise walls are warranted, they would only be constructed if approved by the affected communities. These measures are taken into account in analyzing noise effects on historic properties.

**Exhibit 6-2. Historic Properties Whose Integrity would be Diminished by the Preferred Alternative**

<b>Property ID</b>	<b>Historic Property</b>	<b>Description</b>	<b>Project Element responsible for the Diminished Integrity</b>
Multiple	All historic properties in the APE along construction haul routes	The Preferred Alternative would temporarily diminish integrity of setting and feeling during construction of the project.	All construction haul routes
4, 10, 20, 23, 22, 25, 26, 27, 36, 39, 45, 48, 52	Chung House, Denny-Fuhrman (Seward) School, Talder House, Sugamura House, East Miller Condominium, Wicklund-Jarr House, Glover Homes Building, Keuss Building, Fire Station #22, Gunby House, Boyd House, Mason House, and Kelley House	The Preferred Alternative would temporarily diminish integrity of setting and feeling during construction of the project.	Delmar Drive/10th Avenue Lid
37	Roanoke Park Historic District	The Preferred Alternative would temporarily diminish integrity of setting and feeling during construction of the project.	Delmar Drive/10th Avenue Lid Portage Bay Bridge
55	NOAA Northwest Fisheries Science Center	The Preferred Alternative would temporarily diminish integrity of setting, feeling, and association during construction of the project.	Portage Bay Bridge Montlake Interchange/Montlake lid
56	Seattle Yacht Club	The Preferred Alternative would temporarily diminish integrity of setting, feeling, and association during construction of the project.	Portage Bay Bridge Second Bascule Bridge Montlake Interchange/Montlake lid
54	Montlake Bridge	The Preferred Alternative would temporarily diminish setting and feeling during construction of the project, and would permanently diminish integrity of setting and feeling by placing a new bridge immediately adjacent to the existing bridge.	Second Bascule Bridge

<b>Property ID</b>	<b>Historic Property</b>	<b>Description</b>	<b>Project Element responsible for the Diminished Integrity</b>
238	Montlake Historic District (including 2904 and 2908 Montlake Boulevard NE; Montlake Boulevard Planting Strips; NOAA; Seattle Yacht Club; Canal Reserve Property)	The Preferred Alternative would temporarily diminish integrity of setting and feeling during construction of the project, and would permanently diminish integrity of setting, feeling, and materials by removing two properties (2904 and 2908 Montlake Blvd); removal of Montlake Boulevard planting strips; permanent acquisition of land in McCurdy Park, East Montlake Park, and Montlake Playfield; permanent acquisition of land on the NOAA property; permanent acquisition of the Canal Reserve Property.	Montlake Interchange/Montlake lid Second Bascule Bridge Portage Bay Bridge West Approach
202	Governor Albert D. Rosellini (Evergreen Point) Bridge	The Preferred Alternative would permanently diminish all aspects of integrity by removing and replacing the bridge.	New floating Bridge and landings
203	Canoe House	The Preferred Alternative would temporarily and permanently diminish integrity of setting and feeling by introducing new visual intrusions in the immediate vicinity of the building.	Second Bascule Bridge West Approach/New Floating Bridge

Evaluating visual impacts on historic properties involves an understanding of the aspects of the property which renders it eligible for inclusion in the NRHP under specific criteria and how introducing visual elements or changes to the existing visual setting would affect the qualities of significance of the property. Visual effects could include removing structures and vegetation in the immediate property vicinity, introducing new visual elements, or other viewshed interruptions that could alter the significance of the historic property. Information from and visualizations developed for the *Visual Quality and Aesthetics Discipline Report* (Parametrix 2009a) aided in assessing the effects of visual changes on historic properties.

## Permanent Effects on Built Environment/Historic Properties

Construction of the Preferred Alternative would result in physical changes within the APE that would permanently affect historic properties. Examples of these changes include a new HOV ramp over I-5; a new lid at 10th Avenue and Delmar Drive; replacement of the Portage Bay Bridge; a second bascule bridge over the Montlake Cut; a new lid in the Montlake district, a new stormwater treatment facility in East Montlake Park; and a new Evergreen Point Bridge. The following paragraphs provide a more detailed analysis of the Preferred Alternative's potential permanent effects to historic properties.

### I-5/Roanoke and Portage Bay Segments

#### Individually Eligible Historic Properties: Indirect

##### New Ramps and Lids

The proposed HOV ramp over I-5 would be roughly 30 feet wide and at approximately the same height as the existing ramp on the east end. It would be approximately 15 feet higher than the existing ramp at the west end as it turns and heads south. The new HOV ramp could be visible from the following historic property locations and would have a minor permanent indirect effect, slightly altering the integrity of setting of these properties:

- Denny-Fuhrman (Seward) School campus (ID 10),
- Talder House (ID 20),
- Sugamura House (ID 23),
- East Miller Condominiums (ID 22),
- Fire Station #22 (ID 36), and
- The southern portion of the Roanoke Park Historic District (to be evaluated separately, below).

This new HOV ramp would be adjacent to the existing ramp and would be consistent with the visual quality of the existing interchange. The ramp is shown in Exhibit 6-3, which is looking northwest toward Lake Union, Queen Anne, and the Aurora Bridge.

### Exhibit 6-3. Visualization Showing the HOV Ramp over I-5 Facing Northwest

#### Existing View

- I-5 and existing on-ramp
- View toward Lake Union, Queen Anne and Aurora Bridge



#### Preferred Alternative

- New HOV on-ramp to SR 520
- View toward Lake Union, Queen Anne and Aurora Bridge



Under the Preferred Alternative, an enhanced bicycle and pedestrian path would be added to the south side of the existing East Roanoke Street Bridge over I-5, which would not affect historic properties. Also, the existing bridges at 10th Avenue East and Delmar Drive East would be replaced by a single lid that would accommodate both streets and would be landscaped to create a visual link with Roanoke Park. It would provide a pedestrian passageway between the North Capitol Hill and the Portage Bay/Roanoke Park neighborhoods currently separated by SR 520, increase landscaped green space in the area, and reduce noise levels for some properties. The lid would serve to visually shield many of the historic properties from the effects of the wider SR 520 roadway.

To a lesser extent, because they are located farther from the lid, the following properties could experience some reduced noise and visual effects from the landscaped lid over SR 520:

- Wicklund-Jarr House (ID 25),
- Glover Building (ID 26),
- Keuss Building (ID 27),

In summary, the new ramps and lids would permanently alter the integrity of setting of these historic properties.

## Noise

Just east of the Roanoke Park Historic District at the Gunby House, noise levels under the Preferred Alternative would be reduced compared to the existing noise levels at this location. .

Noise modeling shows that current sound levels range from 65 to 73 dBA at the following locations (WSDOT 2011):

- Talder House,
- Sugamura House,
- Wicklund-Jarr House,
- East Miller Condominium,
- Glover Homes Building, and
- Keuss Building.

Under the Preferred Alternative, noise levels at the above locations would continue to exceed the noise abatement criterion (NAC) of 66 dBA, although would generally experience a reduction by 1 to 2 dBA; a change not perceptible to the human ear. In one location, noise models demonstrate that noise would increase by 2 dBA, but again, this change would be indistinguishable.

To the north of SR 520, at the Boyd House, the current average sound level is 64 dBA. Under the Preferred Alternative, the level would drop by approximately 3 dBA. In the vicinity of the Mason and Kelley houses, the current sound level is between 67 and 70 dBA, and the Preferred Alternative would potentially reduce noise in this area by 4 to 9 dBA. For more information on the projected noise levels, see the *Noise Discipline Report Addendum and Errata* (WSDOT 2011).

In summary, noise effects of the Preferred Alternative would not alter the integrity of the above-listed historic properties because overall noise in this segment would be reduced compared to existing conditions.

## New Portage Bay Bridge

The new Portage Bay Bridge profile would match the existing profile for the western half of the bridge with a 5% grade. To remove a low point on the eastern half of the existing bridge, the grade would be adjusted to 0.5% beginning at approximately the midpoint of the bridge and continuing to the east. As a result, the new bridge would be less than 15 feet higher than the existing bridge at the lowest existing point of the bridge. The new bridge would not block views from the properties on the east bank to other notable buildings or natural resources within the existing viewshed, including, but not limited to, Portage Bay, Montlake Cut, Seattle Yacht Club, NOAA Northwest Fisheries Science Center buildings, University of Washington, or Queen City Yacht Club.

Compared to the existing bridge, the new Portage Bay Bridge would be 45 to 90 feet wider, less than 15 feet higher at the lowest point of the existing bridge, and would have 35 to 50 fewer columns. Although it would be wider, it would visually seem less dense because of the smaller number of columns. Speed limits on the bridge would be reduced from 60 miles per hour (mph) to 45 mph, and a planted median would be added down the center to make it similar to a park boulevard. Typically, a speed reduction of 10 mph can result in a reduction in traffic noise of up to 3dBA; a change that is perceptible to the human ear. Construction of the new Portage Bay Bridge would slightly alter the integrity of setting of all historic properties with a view of the bridge, but the alteration would be minor.

## Roanoke Park Historic District (ID 37): Indirect

There would be no land acquisition of or direct impacts on any part of the Roanoke Park Historic District, its sidewalks, or other street features outside the WSDOT right-of-way on East Roanoke Street. The 10th Avenue/Delmar lid has been redesigned to avoid the district. The lid would shift to the south, leaving room to reconfigure the 10th Avenue East and East Roanoke Street intersection without changing the sidewalks in the district.

The Preferred Alternative would permanently alter the Roanoke Park Historic District's integrity of setting because of the following project elements:

- visual change to the setting from the new HOV ramp on I-5 for selected properties on the western edge of the district,
- visual change to the setting from the new Portage Bay Bridge,
- decreased noise from a reduced speed limit between I-5 and the Montlake lid, the addition of the 10th and Delmar lid, and from using 4-foot noise-absorptive concrete traffic barriers, and,
- new visual connections to adjacent neighborhoods as a result of the new 10th Avenue/Delmar Drive lid over SR 520.
- Views from some properties within the historic district of the second Bascule Bridge across the Montlake Cut.

As described below, as a result of these changes, the Preferred Alternative would alter the integrity of setting, but would not compromise any other aspect of integrity.

Under the Preferred Alternative, an enhanced bicycle and pedestrian path would be added to the south side of the existing East Roanoke Street Bridge over I-5, which would not affect historic properties. Also, the existing bridges at 10th Avenue East and Delmar Drive East would be replaced

by a single lid that would accommodate both streets and would be landscaped to create a visual link with Roanoke Park. The lid would provide a pedestrian passageway between the North Capitol Hill and the Portage Bay/Roanoke Park neighborhoods currently separated by SR 520, would increase landscaped green space in the area, and would reduce noise levels for some properties. The lid would also serve to visually shield many of the historic properties from the effects of the wider SR 520 roadway.

The new Portage Bay Bridge would have a visual effect on portions of the Roanoke Park Historic District. The new bridge would be less than 15 feet taller than the existing bridge on the eastern end, but would have the same profile on the western end, closest to the district. It would be 45 to 90 feet wider than the existing bridge and approximately 17 feet farther south on the west bank of Portage Bay. Exhibit 6-4 shows the views of Portage Bay Bridge looking southeast from Edgar Street under existing conditions and under the Preferred Alternative. The visual effect from the new bridge would be most pronounced for houses on the east side of 10th Avenue East between East Roanoke Street on the south and just north of East Shelby Street on the north. Those houses currently have direct views of the existing Portage Bay Bridge.

The bridge's wider profile and increased height on the western end would have a minor visual effect on the setting and feeling of the Roanoke Park Historic District and the contributing elements that have a view of the bridge and the bay. A wider west end of the bridge would affect views from the homes next to the bridge on the north side, which would make the bridge more dominant in eastward views. However, the new Portage Bay Bridge would not alter the integrity of design, materials, workmanship, location, or association of the district, which is listed in the NRHP for its association with the broad patterns of history and for its intact architectural features. The new bridge would alter the integrity of setting and feeling. Approximately a third of the contributing properties in the district (roughly 30 to 35 properties, depending on the season) have views of the replacement bridge.

The historic Montlake Bridge is also part of the distant viewshed of the Roanoke Park Historic District. The new bascule bridge on the east side of the historic bridge would be visible primarily from the rear of houses on 10th Avenue East between East Hamlin and East Shelby streets. The new bascule bridge would not obscure the view of the original Montlake Bridge from these houses, and would be only slightly visible beyond the historic bridge from this vantage point. The new bridge would not block views from the district of any other notable buildings or natural resources, including, but not limited to, the Montlake Cut, the Seattle Yacht Club, or the NOAA Northwest Fisheries Science Center buildings. Although it slightly alters the setting and feeling of some contributing properties, this effect would be minor because of the distance of the historic bridge from the district.

The noise levels for the Preferred Alternative would be substantially the same in the Roanoke Park Historic District as analyzed in the *Noise Discipline Report Addendum and Errata* (WSDOT 2011). That report states:

With the Preferred Alternative fewer receivers [in the Portage Bay/Roanoke neighborhood] would exceed the NAC compared to the No Build Alternative noise levels due to noise-reducing effects of the 10th Avenue East/Delmar Drive East lid, the 4-foot noise-absorptive traffic barriers, and the lower posted speed limit of 45 mph across the Portage Bay structure. Twenty-two residences would exceed the NAC under the Preferred Alternative compared to 24 residences with the No Build Alternative.

### Exhibit 6-4. Visualization Looking Southeast toward Portage Bay Bridge from Edgar Street near Roanoke Park Historic District

#### Existing View

- 4-lane Portage Bay Bridge
- Mature residential landscapes



#### Preferred Alternative

- 6-lane Portage Bay Bridge
- Design of aesthetic bridge treatment to be determined



Existing sound levels in the Roanoke Park Historic District range from approximately 56 to 77 dBA. Under the Preferred Alternative, sound levels from operation could range from approximately 61 to 78 dBA.

In summary, the Preferred Alternative would permanently alter the Roanoke Park Historic District's integrity of setting and feeling as a result of the new Portage Bay Bridge, Montlake Bridge, and the 10th Avenue/Delmar Drive lid. Montlake Segment, but would not diminish any of the defining characteristics of the district.

### **Montlake Community Center Tudor Building (ID 126): Indirect**

The new Portage Bay Bridge would be visible from the Montlake Community Center Tudor Building, but it would be a minor change from the view under existing conditions. The existing Portage Bay Bridge is partially screened from the Tudor Building by the adjacent gymnasium building and existing park vegetation. The lower speed limit on the new bridge and the addition four-foot concrete traffic barriers with noise-absorptive coating could reduce the noise levels at the Montlake Community Center Tudor Building.

The integrity of the Montlake Community Center Tudor Building would not be altered by the Preferred Alternative.

### **NOAA Northwest Fisheries Science Center (ID 56): Indirect**

The existing Portage Bay Bridge is roughly 280 feet from the southwest corner of the NOAA Northwest Fisheries Science Center West Wing building, which is the corner closest to SR 520, and the new bridge would be approximately 170 feet from the southwest corner of this building. Therefore, the new Portage Bay Bridge would be about 110 feet closer to the historic NOAA buildings than the current bridge. Also, the Bill Dawson bicycle and pedestrian trail would be expanded along the south and east perimeter of the NOAA property. These elements of the Preferred Alternative would alter the NOAA property's integrity of setting and feeling.

The new Portage Bay Bridge would be less than 15 feet taller on the eastern end, but would have the same profile on the western end and would be 45 to 90 feet wider than the existing bridge, increasing the visual effect of the bridge from this viewpoint. Although there would be a visual effect on the setting and feeling of the historic NOAA buildings, it would not be a significant change from the existing condition. There would be no anticipated increase in vibration from operation of the new bridge; vibration levels would be substantially the same as the current levels from traffic on the existing bridge and is not anticipated to interfere with scientific activities at the center. The current noise level at the NOAA property is between 66 and 69 dBA. Under the Preferred Alternative, the noise level could decrease to between 62 and 64 dBA (WSDOT 2011). The 1931 Fisheries Building—which is individually NRHP-eligible under Criteria A and C, and also is a contributing element to the Montlake Historic District—would maintain its view north to Portage Bay, the property would retain its shoreline on the bay, and all of the property immediately surrounding the historic building would be retained. The two buildings connected to the 1931 Fisheries Building—built in 1965 and 1966 and also eligible for listing in the NRHP under Criteria A and C—would not be affected because their view to the new Portage Bay Bridge would be obscured by it.

The integrity of setting and feeling of the NOAA Northwest Fisheries Science Center would be altered slightly by the new Portage Bay Bridge and by the expansion of the bicycle and pedestrian

path along the south and east perimeter of the NOAA property, but it would retain integrity of location, association, design, workmanship, and materials.

### **Seattle Yacht Club (ID 55): Indirect**

As stated previously, the new Portage Bay Bridge would operate approximately 110 feet north of the current bridge, which makes the bridge closer to the Seattle Yacht Club. Although the setting of the Seattle Yacht Club would be affected by this closer location, the visual effect would not be significant. The current noise level at the Seattle Yacht Club is between 65 and 69 dBA. Under the Preferred Alternative, noise levels could decrease between 5 and 7 dBA (WSDOT 2011), which is a perceptible change.

The Seattle Yacht Club's integrity of setting would be altered slightly by the larger, closer bridge, but the property would retain integrity of feeling, location, association, design, workmanship, and materials.

### **Montlake Bridge (ID 54): Indirect**

A new bascule bridge would be constructed parallel and to the east of the historic Montlake Bridge, permanently diminishing the historic bridge's integrity of setting and feeling. Other aspects of integrity—location, design, materials, workmanship, or association— would not be altered or diminished. There currently is a clear view of the historic bridge from many vantage points east and west of the bridge on the north and south sides of the Montlake Cut, as well as from the cut itself and from Lake Washington. The bridge is primarily a part of the viewshed of the University of Washington, the Canoe House, the Montlake Historic District, and the Montlake Cut, but is also visible as far away as the Roanoke Park Historic District. This is an iconic bridge that is a part of the community's viewscape. Views from the bridge for those crossing it would also be affected by an adjacent bridge. The Montlake Bridge is shown under existing conditions and under the Preferred Alternative in Exhibit 6-5 as seen from the northeast corner East Montlake Park looking west along the Montlake Cut.

### **Canoe House (ID 203): Indirect**

The new bascule bridge over the Montlake Cut would have a visual effect on the Canoe House, which is listed in the NRHP. The Canoe House currently has a clear, unobstructed view of the historic Montlake Bridge. The new bridge would be constructed on the east side of the historic bridge, so the view of the historic bridge from the Canoe House would be somewhat obstructed by the new bridge structure. The Canoe House would also have an open view of the west approach to the floating bridge and the floating bridge itself. These structures would be up to 20 feet higher than they are currently, and would diminish the setting and feeling of the Canoe House. The current sound level of 55 dBA at the Canoe House would increase to approximately 58 dBA under the Preferred Alternative (WSDOT 2011). There would be no other impacts on the Canoe House from the project.

The Preferred Alternative would diminish the Canoe House's integrity of feeling and setting, but would not alter other aspects of integrity.

### Exhibit 6-5. Visualization of the Montlake Bridge Looking West along the Montlake Cut from East Montlake Park

#### Existing View

- Historic Montlake Bridge
- Mature vegetation on both sides of the channel



#### Preferred Alternative

- Second bascule bridge in front of the Historic Montlake Bridge
- Design and aesthetic treatments to be determined



### **Montlake Cut (ID 53): Indirect**

The Montlake Cut is a navigable waterway with an existing bascule bridge crossing. The cut would be indirectly and permanently affected because the view of the historic Montlake Bridge from the east end of the cut would be partially blocked by the new bascule bridge, which would alter its integrity of setting and feeling. Also, a small portion of the shores of the Montlake Cut would be acquired for placement of the second bascule bridge.

Although the presence of an additional bascule bridge of similar size adjacent to the existing bridge would alter the integrity of setting and feeling of the Montlake Cut, it would continue to operate as a navigable waterway, which would not be impeded in any way by operation of the SR 520 project. The small acquisition would only cause a very minor effect to the Montlake Cut. The integrity of design, materials, location, workmanship, and association would remain intact.

### **Lake Washington Boulevard (ID 239): Direct**

The segment of Lake Washington Boulevard surveyed for this project extends from Madison Street on the south to the edge of the University of Washington campus at NE Pacific Avenue. The Preferred Alternative makes direct and permanent physical changes to Lake Washington Boulevard, but it would remain in the same alignment as when it was designed from 1904–1907. As described below, under the Preferred Alternative, Lake Washington Boulevard would be adjacent to the new landscaped lid instead of the current grade-separated SR 520, which would reduce noise overall but alter the setting. The design is intended to be sympathetic to the original conditions of the park boulevard. The changes to Lake Washington Boulevard would alter its integrity of feeling, setting, and design, but would not alter the integrity of association or location of the linear property, which would continue its original purpose as a transportation facility. Integrity of workmanship and materials has already been diminished.

The Preferred Alternative requires the removal of all or part of one of the Montlake Boulevard medians between East Hamlin Street and SR 520. It also includes the addition of a new planted median and the widening of Lake Washington Boulevard in the section between Montlake Boulevard and where Lake Washington Boulevard curves to the south. This area would be south of the new Montlake lid. Exhibit 6-6 shows the location of the planted median.

### Exhibit 6-6. Location of Lake Washington Boulevard Improvements



The existing south curb of the eastbound lane would remain in place, and the westbound lane would move to the north side of the new planted median. At the intersection with East Montlake Boulevard, there would be an added right-turn lane to the north of the westbound lane. Although construction activities would take place on the roadway to make these changes, the historic alignment of Lake Washington Boulevard would be maintained. The roadway materials, sidewalks, light standards, and other features have been previously replaced or upgraded as a part of regular maintenance, so the primary physical integrity lies in the location and alignment of the roadway.

The addition of a planted median on East Lake Washington Boulevard would create an enhanced park boulevard that incorporates visual screening, in keeping with the Olmsted Brothers' philosophy of blending pragmatic and picturesque design, and of providing visually appealing parkway transportation corridors (Takami and Keith 2003; Levee 2000). Exhibit 6-7 shows the existing conditions and the view of the Preferred Alternative of the planted median on Lake Washington Boulevard. To accommodate the median, the westbound lane would be extended northward, closer to the new landscaped lid.

Removal of the SR 520 Lake Washington Boulevard ramps and R. H. Thomson Expressway ramps would eliminate a large intersection that was not part of the original boulevard plan. As a result of the ramp removal and other design features, the average daily trip volume on Lake Washington Boulevard in the Arboretum would be reduced by approximately 18%.

Removal of the Montlake Boulevard median between East Hamlin Street and SR 520, as well as the other changes described above, would alter the setting and feeling of this segment of the historic Lake Washington Boulevard. It was designed as a park boulevard with planted medians, so the loss of this vegetation would alter the integrity of design of this segment. The final design for Montlake Boulevard is not complete, so the extent of the current median that would be removed is not known at this time.

### Exhibit 6-7. Visualization showing the Lake Washington Boulevard Planted Median Looking East

#### Existing View

- West terminus of Lake Washington Boulevard at Montlake Boulevard
- Established planter along the north side of the Park Boulevard



#### Preferred Alternative

- Restored and enhanced plantings along Lake Washington Boulevard
- Montlake lid in background



## Montlake Historic District (ID 238): Direct and Indirect

Elements of the Preferred Alternative would permanently diminish the integrity of setting, design, materials, and feeling of the Montlake Historic District. Direct and indirect effects on the district are listed below.

### Direct Effects

- Removal of 2904 Montlake Boulevard NE, a contributing element to the district.
- Removal of 2908 Montlake Boulevard NE, a contributing element to the district.
- Permanent acquisition of 1.35 acres of McCurdy Park, 2.83 acres of East Montlake Park, and 1.19 acres of Montlake Playfield.
- Permanent acquisition of land in the southeast corner of the NOAA Northwest Fisheries Science Center parcel.
- Potential effects to ongoing research at NOAA Northwest Fisheries Science Center as a result of the proximity of construction activities.
- Permanent acquisition of Canal Reserve Land for construction of the Montlake lid, resulting in the loss of mature trees.
- Removal of all or part of the planted median on Montlake Boulevard.
- Change to the district boundaries resulting from the various property acquisitions.
- Change to setting and feeling of the district caused by the wider and higher profile of the eastern section of the Portage Bay Bridge.
- Change to setting and feeling of the district caused by the presence of the additional bascule bridge immediately adjacent to the historic Montlake Bridge.
- Change to setting and feeling from the loss of the Canal Reserve Land, resulting in the loss of secluded green space and the mature vegetation that provide landscaped buffer.
- Change to setting and feeling from the loss of all or part of the planted median on Montlake Boulevard, a contributing property to the district's listing in the NRHP.
- Change to setting and feeling from removing Lake Washington Boulevard ramps and R. H. Thomson Expressway ramps adjacent to the district.
- Change to setting and feeling from adding a planted median on Lake Washington Boulevard south of the lid and enhancing the roadway.

### Indirect Effect

- Change to setting and feeling in the residential areas of the district as a result of the new Montlake lid.

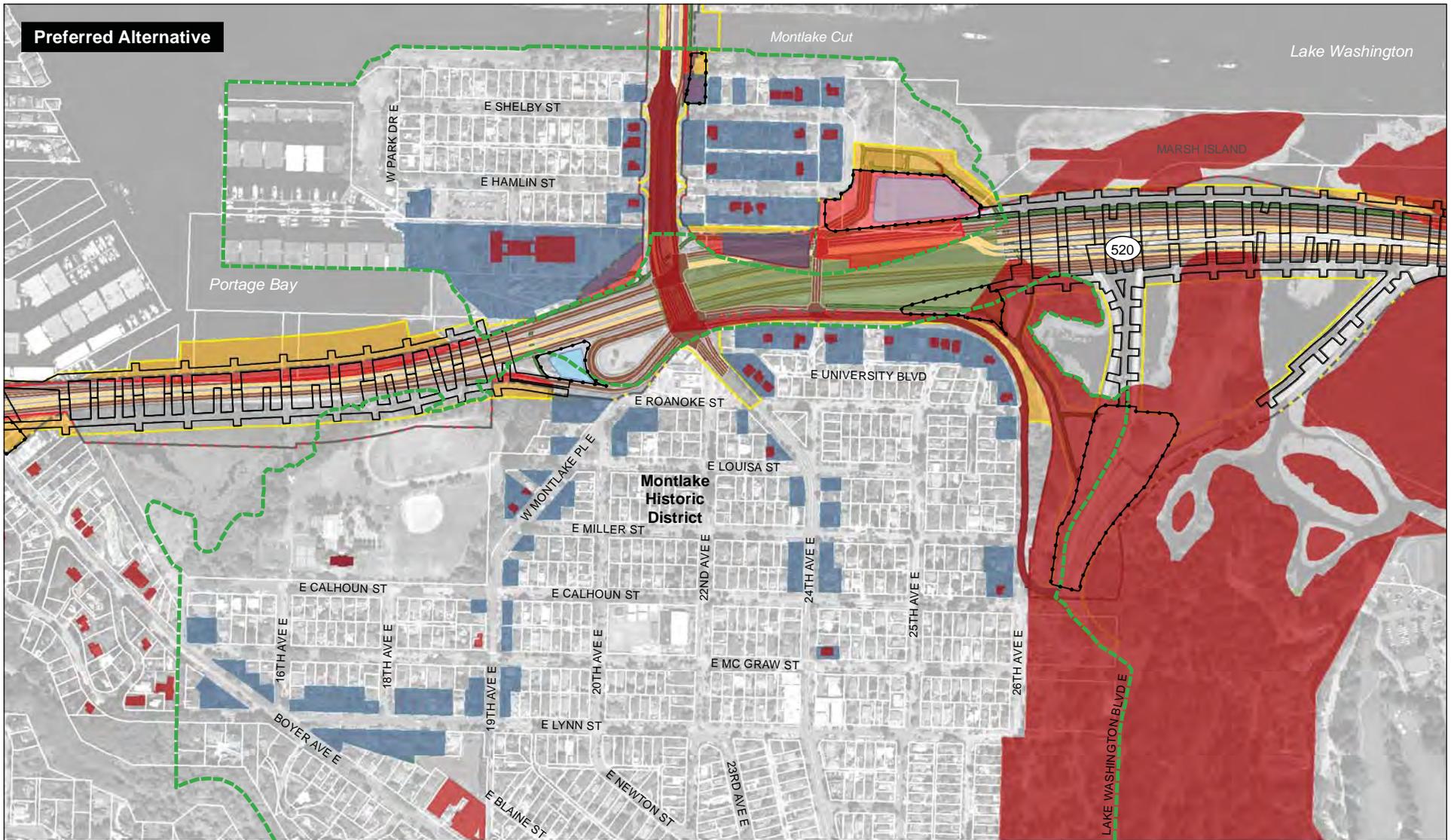
Direct effects include the demolition of two residential properties that contribute to the district, 2904 and 2908 Montlake Boulevard NE (ID 69 and 68, respectively). These houses would be demolished to accommodate the footprint of the new bascule bridge over the Montlake Cut. The project would also remove mature trees and shrubs on these property parcels. A portion of the NOAA parcel would be used as construction easement, and part of that portion would be

permanently acquired for the project. The Canal Reserve Land would be permanently acquired for construction of the Montlake lid, most of the mature vegetation would likely be removed, and part of the Montlake Boulevard median would be converted to roadway. McCurdy Park, part of East Montlake Park and part of Montlake Playfield, and a small portion of the Montlake Cut (where the new bascule bridge would be built) would be permanently acquired. Construction would occur along Lake Washington Boulevard, and construction staging would occur within the district. The demolition of residential buildings, removal of mature vegetation, acquisitions of land, and use of property in the district for construction staging are examples of the direct effects on the historic district. Indirect effects on the district include fugitive dust, increased noise and vibration from demolition, hauling and construction, and visual intrusions.

The Preferred Alternative would convert 6.33 acres of land within the historic district boundaries from parks, NOAA, residential property, the Montlake Cut, and the Canal Reserve Land to transportation right-of-way. These acquisitions would expand the WSDOT right-of-way into the boundaries of the district and reduce the amount of property included in the district. The expanded right-of-way would alter the footprint of the historic district's boundaries. This change in the district boundaries would diminish the integrity of design, setting, and materials of the overall district (Exhibit 6-8).

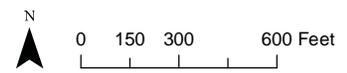
After the two historic properties on Montlake Boulevard NE are removed for bascule bridge construction and the new bascule bridge is completed, this change in view and use of the land would indirectly alter the setting of the northern portion of the district, particularly for three adjacent contributing properties at 2111 East Shelby Street, 2112 East Shelby Street, and 2818 Montlake Boulevard NE. Because of the location of the new bascule bridge, there would no longer be an adjacent property to buffer 2112 East Shelby Street from Montlake Boulevard NE. The bridge approach would be adjacent to the west side of this property, and the new bridge would be approximately 70 feet from the northwest corner of the property. There is already a shared driveway/alley on the west side of this property, which would remain, as well as a side yard, which serves as a partial buffer. WSDOT would also install landscaping or a buffer between the contributing properties and the new bascule bridge. Unlike the houses being removed for bridge construction, the house at 2112 East Shelby Street would not face the bridge approach, but it would be exposed to traffic and an alteration of setting and feeling.

Across the street, the property at 2111 East Shelby Street would still be partially buffered from Montlake Boulevard NE by the adjacent property at 2818 Montlake Boulevard NE. Both bascule bridges would be visible from the house once 2904 Montlake Boulevard NE, the property on the corner, is removed. It too would be exposed to traffic and an alteration of setting and feeling. The 2818 Montlake Boulevard NE property also would be more exposed than it is currently, becoming the last house on the east side of Montlake Boulevard NE before the bascule bridges. It would be open to the view toward both bridges from the front and north side of the property, leaving it more exposed to the roadway and immediately adjacent to the bridge approach. The combined direct changes to these contributing properties in the historic district would permanently diminish the Montlake Historic District's integrity of setting and feeling.



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|----------------------------|--|-----------------------------------|
| Permanent Acquisition      | Contributing Resource                        | Lid                               |
| Construction Easement      | Eligible Structure                           | Proposed Bicycle/ Pedestrian Path |
| Montlake Historic District | General-Purpose Lane                         | Pavement                          |
| Proposed Right-of-way      | HOV, Direct Access, and/or Transit-Only Lane | Parcel                            |
| Existing Right-of-way      | Work Bridge                                  |                                   |
| Limits of Construction     | Stormwater Treatment Facility                |                                   |
| Staging Area               |  |                                   |

Source: King County (2006) Aerial Photo, CH2M HILL (2008) GIS Data (Park and Trails), City of Seattle (2009) GIS Data (Section 6(f) Boundary). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 6-8. Project Elements of the Preferred Alternative in the Montlake Historic District**  
 SR 520, I-5 to Medina: Bridge Replacement and HOV Project

The Montlake lid would be built over the mainline of SR 520. The lid would be landscaped, with pedestrian pathways and open green space. Adding the lid would reduce visual intrusion and noise from SR 520. In addition, the lid would partially reunite the north and south sides of the Montlake Historic District that are currently separated by SR 520 and increase connectivity between these two sides of the district. Exhibit 6-9 shows existing and proposed aerial views of the Montlake lid and interchange over SR 520. The length of the lid would require the use of ventilation fans and specialized fire and safety equipment under the lid. At this stage of design, an above-grade ventilation station is not anticipated to be necessary.

As noted above, all or part of a Montlake Boulevard median between East Hamlin Street and SR 520 would be removed. Removing the planted median would alter the integrity of setting and feeling of the boulevard, and the loss of vegetation would alter the viewshed of the properties on both sides of the street. The final design for Montlake Boulevard is not complete, so the exact portion of the median to be removed has not yet been defined. Montlake Boulevard is part of the Lake Washington Boulevard linear resource that is individually eligible for listing in the NRHP, and is also a contributing element to the district.

The Preferred Alternative includes the removal of the SR 520 Lake Washington Boulevard and R. H. Thomson Expressway ramps, which would indirectly affect the Montlake Historic District. A new planted median on Lake Washington Boulevard would add green space to the viewshed of the contributing properties south of the Montlake lid and the view from the boulevard itself.

After construction, the Canal Reserve Land would no longer be a secluded green space with mature specimen trees, but would be part of the Montlake lid, including SR 520 ramps and a bicycle and pedestrian path. Buildings located on the south side of East Hamlin Street would lose the landscaped buffer provided by the Canal Reserve Land south of the alleyway behind them. Currently, the SR 520 ramp is 135 to 195 feet from the rear of the properties along East Hamlin Street. Under the Preferred Alternative, the ramp would be approximately 65 to 130 feet from the rear of these properties. The new bicycle and pedestrian path would be north of the ramp and below grade with retaining walls on each side. An approximate 45- to 100-foot buffer would remain between the rear yards of the houses and the north retaining wall of the new bicycle and pedestrian path. All of these properties are contributing elements to the Montlake Historic District, and three of them in the center of the block are also individually eligible for listing in the NRHP. Although the Canal Reserve Land and the mature specimen trees would be lost, the land would become part of the landscaped lid, so open green space would remain in the area. The integrity of setting and feeling of this part of the district would be diminished by the loss of this green space and the large-specimen trees dating back as far as 1909.

Current noise levels in the Montlake Historic District within the APE range from 59 to 72 dBA on the north side of SR 520, and from 56 to 74 dBA on the south side. On the north side of SR 520, most locations would experience a decrease in sound levels of approximately 1 to 7 dBA, a few would have no change, and a few would experience an increase of approximately 1 to 5 dBA. On the south side of SR 520, most locations would experience a decrease in sound of from approximately 1 to 9 dBA, a few would have no change, and a few would experience an increase of approximately 1 to 5 dBA.

In summary, the Preferred Alternative would permanently diminish the Montlake Historic District's integrity of setting, feeling, materials, feeling, and design, but would not alter the district's integrity of location, workmanship, or association.

### Exhibit 6-9. Aerial Visualization of the Montlake Lid in the Montlake Historic District

#### Existing View

- View of MOHAI, East Montlake Park, Montlake Historic District and the Washington Park Arboretum
- SR 520 corridor and R. H. Thompson Ramps



#### Preferred Alternative

- New Montlake lid and interchange over SR 520
- Stormwater facility at MOHAI location



## West Approach Segment

### Washington Park Arboretum (ID 200): Direct and Indirect

The Preferred Alternative would permanently alter the Arboretum's integrity of setting and feeling.

#### Direct Effects

In the Arboretum, the highway mainline would be elevated, rising from its existing clearance of approximately 8 feet over the Arboretum Waterfront Trail on Foster Island to a clearance of approximately 16 to 20 feet at this location. Because the mainline would be higher than the existing roadway, the highway would become a more dominant and noticeable feature, causing a visual effect in the northern portion of the Arboretum. The new SR 520 structure would also allow the trail to pass between columns of an elevated structure, replacing the current low and narrow pedestrian underpass, and improving the user experience by opening views at ground level. The columns would be spaced wider than the existing bridge to support the elevated structure.

Removing the Lake Washington Boulevard and R. H. Thomson Expressway ramps in the Arboretum would open views for park users and would enhance the recreational experience of the land and water in this area. Exhibit 6-10 shows the existing ramps and the proposed views of the landscape without the ramps looking northeast and east across the WSDOT peninsula. The new west approach would originate from the shoreline near East Montlake Park and maintain a low profile through the Arboretum. The height of SR 520 at the west transition span would be similar to the existing west transition span. Because of the similarity to the existing condition, this visual change would not alter any aspect of the Arboretum's integrity.

The segment of Lake Washington Boulevard in the Arboretum would be affected by the closure and removal of the Lake Washington Boulevard and R. H. Thomson Expressway ramps. Traffic to and from SR 520 would no longer exit and enter directly to and from this segment of Lake Washington Boulevard, which is a contributing element to the Arboretum. Removal of these ramps would reduce traffic on Lake Washington Boulevard in the Arboretum.

#### Indirect Effects

Current noise levels on Foster Island range from 56 to 72 dBA. Under the Preferred Alternative, these sound levels could be reduced by as much as 11 dBA because of the higher roadway profile, elimination of the Lake Washington Boulevard ramps, and the 4-foot concrete traffic barriers with noise absorptive coating included in the Preferred Alternative. There would be indirect visual effects on the Arboretum from the new bridge and approach, which would alter the resources' integrity of setting and feeling. In summary, as a result of the project changes described above, the Preferred Alternative would permanently, both directly and indirectly, alter the Arboretum's integrity of setting and feeling.

**Exhibit 6-10. Visualization in the Washington Park Arboretum Looking Northeast toward the Former Ramps**

**Existing View**

- R.H. Thompson Ramps
- Informal trail to shoreline



**Preferred Alternative**

- Ramps removed
- Mature trees protected



**Exhibit 6-11. Visualization Looking Northwest from the Edgewater Condominium toward the SR 520 West Approach Bridge**

**Existing View**

- 4-lane bridge
- Column spacing at 100 feet on center



**Preferred Alternative**

- Wider and higher 6-lane bridge
- Column spacing at 250 feet on center



## Edgewater Condominiums (ID 226): Indirect

The Edgewater Condominiums would experience a slight alteration of setting and feeling from the new west approach of the Preferred Alternative. The west high-rise would be shifted westward, and the west approach would be higher, but approximately 70 feet farther north than the existing structures. The alignment shift would reveal more open water views in Union Bay from this residential property. The height of the floating bridge would increase to an elevation of approximately 20 feet above the water surface, which is 13 feet higher than the existing bridge deck. This change to the viewshed would alter the integrity of setting and feeling of the property to some degree, but it would not be a significant change from existing conditions. The existing and proposed viewshed from the Edgewater Condominiums toward the northwest at the SR 520 west approach are shown in Exhibit 6-11.

The current sound level at this property ranges from 63 dBA to 69 dBA. Under the Preferred Alternative, the sound level would decrease to a range of approximately 61 to 63 dBA. The setting and feeling of the Edgewater Condominiums would be altered by these changes, but the changes would be minor. The viewshed from this property currently includes a bridge approach and a floating bridge, so the changes would not be significant. This multi-unit residential complex would maintain integrity of design, materials, workmanship, association and location.

## Lake Washington Segment

### Evergreen Point Bridge (ID 202): Direct

The Preferred Alternative would require the demolition and removal of the existing Evergreen Point Bridge and construction of a new floating bridge across Lake Washington. Physical destruction of the Evergreen Point Bridge would directly and permanently diminish all aspects of this historic property's integrity.

## Eastside Transition Segment

### Eastside Transition Area: Indirect

The Preferred Alternative would slightly alter the integrity of setting and feeling of the Dixon and Arntson houses. The Dixon House is located approximately 1,000 feet north of the existing east approach to the Evergreen Point Bridge. The new bridge and the approach would be about 160 feet closer to the Dixon House, but still far enough away that operation of SR 520 would not diminish the setting and feeling of this property (see Exhibit 6-1g for details on the location of the bridge and the maintenance facility). Once completed, the floating portion of the Evergreen Point Bridge would be located approximately 160 feet north of its present location at the east end, and the east approach structure would be approximately 80 feet north.

The intersection of SR 520 and Evergreen Point Road, near the Arntson house, would be several lanes wider than the existing intersection. This could raise the traffic noise level at this property, but the house would retain the vegetative buffer between it and the roadway. The new floating portion of the bridge would be slightly higher than the existing floating portion, but this additional height would be a minimal visual change to the setting of historic properties in the Eastside Transition segment. The integrity of feeling and setting of the Dixon and Arntson houses would be altered slightly, but no other aspects of integrity would be compromised.

## Section 6(f) Replacement Properties

Four historic properties were identified on sites that were considered for replacement property to fulfill the requirements of Section 6(f): the Bryant Building site at 1139–1299 NE Boat Street, 10034 Rainier Avenue, 10036 Rainier Avenue, and 10038 Rainier Avenue. This undertaking identified and evaluated those historic properties to help inform the decision by the Section 6(f) grantees—the University of Washington and the City of Seattle—of which sites they would select to serve as replacement properties for park and recreation use.

In addition, selected properties that are protected under Section 6(f) of the LWCF Act would be converted by the project from public outdoor recreation land to transportation right-of-way. This includes a portion of Foster Island, a portion of the Arboretum, and a portion of East Montlake Park and the Ship Canal Waterside Trail which are within the Montlake Historic District.

As of publication of this document, the Section 6(f) replacement site selected by the University of Washington and the City of Seattle is the Bryant Building site, a multicomponent warehouse and commercial building with several docks. As discussed in Chapter 5 of this report, the Bryant Building is eligible for listing in the NRHP under Criteria A and C. There would be no effects on any of the remaining potential 6(f) replacement properties identified as part of this study, because they are no longer under consideration as potential replacement properties. As a result of this selection, the three NRHP-eligible properties located on Rainier Avenue would not be affected by this project.

To comply with Section 6(f), the Bryant Building would need to be converted to recreational use, an action that would likely result in full or partial demolition of the property. If this were to occur, the removal of the building would result in an adverse effect on this historic property. However, if these or other future actions taken to develop the property result in an adverse effect, the U.S. National Park Service (NPS), as the responsible federal agency, would initiate Section 106 consultation for that undertaking and would resolve any adverse effects through the Section 106 process. FHWA and WSDOT are not responsible for the development of the property for recreational use; therefore, the Preferred Alternative would have no permanent effect on this historic property.

Further, conversion of portions of Foster Island, a portion of the Arboretum, and a portion of East Montlake Park and the Ship Canal Waterside Trail from public recreation land could result in an adverse effect. According to 36 CFR 800.5(a)(2)(vii), the transfer of property out of federal control, and the resulting removal of restrictions that serve to protect its historic significance, constitute an adverse effect. Therefore, the approval of conversion of property on Foster Island to transportation right-of-way, removing it from NPS protection, could be an adverse effect. The NPS, as the federal agency that would be relinquishing the protection, would be responsible for determining this adverse effect in consultation with the SHPO.

## Port of Olympia and Port of Tacoma Pontoon Construction Segment

Production and transport of pontoons would only occur during construction of the Preferred Alternative, and would not permanently affect historic properties. The types of activities required for pontoon construction are similar to the current activities and uses of the buildings at the CTC facility. Because the four NRHP-eligible buildings at CTC function as part of an industrial zone, the activities required by this project would not permanently affect these historic properties.

Additionally, the NRHP-listed Fire Station # 15, also part of this industrial zone, would not be used or directly impacted by this project.

The Port of Olympia is no longer being considered as a potential site for pontoon construction, so the NRHP-eligible main office would not be affected by this project.

## Temporary Effects on Built Environment/ Historic Properties

Construction of the Preferred Alternative would result in some impacts on properties in the vicinity of the project, including historic properties. These impacts could include, but are not limited to, temporary lane or roadway closures; fugitive dust; nighttime glare; increased truck traffic; and nonpermanent noise and visual impacts from construction work, bridges, and construction equipment and activities. Construction impacts were analyzed for their potential effect on historic properties using the information available in September 2010. Because the engineering design is not yet final and a contractor has not been hired, specifics of some construction details are not yet defined. The analysis of construction effects is based on all available knowledge for this project.

## All Geographic Segments

### Construction Haul Routes: Direct and Indirect

The Preferred Alternative would temporarily diminish the integrity of feeling and setting of all historic properties along all construction haul routes. Construction haul routes (Exhibit 5-43) would expose historic properties along each route to temporary increases in truck traffic volume, with accompanying potential for increases in fugitive dust, vehicle emissions, and noise. Haul truck volumes estimated for each potential haul route are intended to characterize truck activity anticipated during a typical day of construction for the duration of use as a haul route. For potential routes where haul truck volumes may vary substantially over the construction period, peak volumes are also estimated.

Construction materials would be transported to and from the construction work areas by trucks and barges. Barges would provide access to offshore work areas. Trucks would travel over identified haul routes through Seattle to SR 520, I-5, and I-405. Since publication of the SDEIS (CH2M Hill 2009c), construction staging areas and haul routes have been revised to account for the design of the Preferred Alternative, improve traffic management, respond to comments received on the SDEIS about haul routes, and accommodate changes in the construction schedule.

The project construction assumptions are intended to keep the majority of haul route traffic on major freeways such as I-5, SR 520, and I-405. However, there would be times when city streets would need to be used as secondary haul routes. Secondary haul routes for the SR 520, I-5 to Medina project were identified based on criteria such as shortest off-highway mileage, providing access to locations needed for construction where direct highway access is unavailable, and the ability to accommodate truck traffic. Potential construction haul routes described here include both local and regional roadways. Local jurisdictions can limit the use of non-arterial streets for truck traffic; therefore, efforts were made to identify designated arterial streets for potential use as haul routes. Final haul routes will be determined by local jurisdictions for those actions and activities that

require a street use or other jurisdictional permit. Integrity of setting and feeling of the eligible properties along these construction haul routes would be intermittently and indirectly diminished by the trucks passing the buildings. The properties would maintain integrity of materials, design, workmanship, location, and association and would retain the ability to demonstrate their architectural significance, which is the criterion that makes each of them eligible for listing in the NRHP. In addition, some properties such as Fire Station #22 and the Denny-Fuhrman (Seward) School are also eligible under Criterion A for their association with area history. Fire Station #22 is associated with the development of the Seattle Fire Department. WSDOT has committed to ensure that the historic and current use of the fire station would not be affected by the project. The Denny-Fuhrman School is eligible for listing in the NRHP because of its association with public education in Seattle and the development of the Eastlake neighborhood. The ability of the school to fulfill its educational mission and its involvement in the community would not be impaired by hauling activities (Exhibit 5-43).

The estimated truck peaks and averages represent a worst-case condition for each segment. To generate these estimates, program analysts assumed that all truck trips servicing each work site would need to use more than one haul route. Work sites could be accessed by more than one potential route, which could result in lower actual truck volumes during construction at some locations than presented below. To best represent how truck traffic would be experienced by a single observer, the number of trucks per day reported for this analysis is equal to twice the number of loads delivered. For example, the delivery of one load of concrete is estimated as two trucks per day because the truck is counted both when arriving and when leaving the site.

In general, the estimated number of truck trips along arterials would be relatively low compared to current traffic volumes on arterial routes. These truck volume estimates would continue to be updated as construction planning and schedules are finalized. The *Transportation Discipline Report* (Parametrix 2009b) includes more specific discussion about haul routes, effects on traffic volumes, and scheduling.

More detailed information about construction haul routes on specific geographic segments and their potential effects on historic properties is provided below.

## **I-5/Roanoke and Portage Bay Segments**

The Preferred Alternative would temporarily affect historic properties, largely as a result of the extended project construction period, which includes but is not limited to, construction haul routes, detour routes, staging areas, and temporary work bridges. Construction of the SR 520 project would occur over a period of years and would result in increased noise, dust, and traffic; visual effects; and disruptions in access to some areas near construction sites.

### **Historic Properties Adjacent to the 10th Avenue East and Delmar Drive East Bridges over SR 520: Direct and Indirect**

Historic properties within the APE adjacent to SR 520 have the potential to experience effects that would temporarily alter their integrity of setting and feeling. Construction of the 10th Avenue East and Delmar Drive East bridges over SR 520 could cause the following effects:

### Direct Effects

- Increased vibration from demolition, heavy equipment operation, material hauling, and pile driving.
- Fugitive dust from areas where soils are exposed or stockpiled.

### Indirect Effects

- Visual effects from vegetation removal, temporary structures, construction staging and equipment, glare from nighttime construction lighting, and active construction operations.
- Temporary disruptions in access to homes, businesses, and parks from lane closures and detours. .
- Increased traffic along detour and haul routes.

Although construction of the 10th Avenue and Delmar Drive lid would take approximately 26 months, the noise and other effects would vary in intensity during that period, depending on which activities were occurring. Glare from nighttime construction lighting would also be experienced intermittently. Increased noise, fugitive dust, and possible vibration from demolishing and removing the 10th Avenue East and Delmar Drive East bridges over SR 520, hauling material and constructing the new 10th Avenue/Delmar Drive lid would also affect historic properties. The following properties would experience these temporary, indirect effects to varying degrees. These properties' integrity of feeling and setting would be temporarily diminished as a result of implementing the Preferred Alternative:

- Fire Station #22 (ID 36),
- Denny-Fuhrman (Seward) School campus (ID 10),
- Chung House (ID 4),
- Talder House (ID 20),
- Sugamura House (ID 23),
- East Miller Condominium (ID 22),
- Wicklund-Jarr House (ID 25),
- Glover Homes Building (ID 26),
- Keuss Building (ID 27),
- Boyd House (ID 39),
- Gunby House (ID 45),
- Mason House (ID 48), and
- Kelley House (ID 52).

Some of the vegetative buffer between SR 520 and historic properties (the Gunby House on the north; the Sugamura, Boyd, and Mason houses on the south) would be entirely or partially removed during construction. Although the buffer area contains a variety of mature trees, it also has several invasive species. WSDOT would retain mature trees where possible. During construction of the new roadway and lids, mature vegetation would be protected and retained to the extent reasonable and

feasible. Although some existing buffer might be reduced, adding the lid at 10th Avenue East and Delmar Drive East would provide for a new type of buffer from the roadway that would be more extensive than the existing vegetative buffer. After construction is completed, permanent erosion control measures for areas affected by construction of the project would be implemented, and those areas where invasive species were cleared would be replanted with native plant materials, as appropriate in accordance with WSDOT policy (WSDOT 2010b) and in consultation with the neighborhood. Removal of this vegetation would temporarily alter integrity of setting for the properties listed on the previous page.

The most likely travel route to access the 10th Avenue East/Delmar Drive East lid construction area would be from I-5 to East Roanoke Street. Delmar Drive East is likely to experience truck traffic as a secondary travel route, mostly for egress from the lid construction area to eastbound SR 520. This potential haul route would use Delmar Drive South from SR 520 and continue east onto East Lynn Street, then north on 19th Avenue East (Exhibit 5-43). A haul route along Delmar Drive East as it nears 14th Avenue East could average 20 haul trucks per day during active construction. Estimated peak volume of 160 haul trucks per day could occur intermittently for as many as 30 nonconsecutive days over a period of roughly 21 months.

A potential haul route along Fuhrman Avenue East could be used throughout the construction period (Exhibit 5-43). This route may average 20 trucks per day when in use and may experience peak volumes up to 230 trucks per day, intermittently throughout construction. To provide some context for this volume of truck traffic, more than 170 trucks and buses per day pass along Fuhrman Avenue East at Eastlake Avenue East. A potential haul route along Boyer Avenue East at East Shelby Street could also have the same typical average volume from construction truck hauling as the route along Fuhrman Avenue East.

The Boylston Avenue East haul route would likely be used intermittently for the duration of construction, and could average approximately 25 trucks per day. Integrity of setting and feeling of all historic properties along construction haul routes would be temporarily diminished as a result of the Preferred Alternative.

There are no construction haul routes within the Roanoke Park Historic District. However, haul routes are located on the edges (outside of) the district boundaries. More discussion on potential effects on the Roanoke Park Historic District as a result of haul routes is provided later in this chapter.

## **Construction of the Portage Bay Bridge: Direct and Indirect**

### **Direct Effects**

The Mason and Kelley houses (both on Boyer Avenue East) and the Gunby and Boyd houses (both adjacent to SR 520) would be temporarily and indirectly affected by fugitive dust and possible vibration during demolition, hauling materials hauling, and reconstruction of the Portage Bay Bridge and erecting of the work bridges, including pile-driving for new piers. Potential dust and vibration are unlikely to alter these resources' integrity.

### **Indirect Effects**

The Mason and Kelley houses would likely also experience glare from nighttime construction lighting because they are closer to the bridge and, thus, closer to construction activities.

The following properties are farther away from the Portage Bay Bridge construction activities than the four described above, but could experience some increased noise during demolition and reconstruction of the bridge, erecting the work bridges, and possibly by some nighttime glare, due to the topography. Their integrity of setting and feeling would be temporarily altered during construction.

- Fire Station #22,
- Denny-Fuhrman (Seward) School campus,
- Wicklund-Jarr House,
- Glover Homes Building, and
- Keuss Building.

The work bridges, barges, and heavy equipment used to demolish and construct the Portage Bay Bridge would create new visual effects, particularly due to the topography of the area and the views toward the bridge from the properties on the west side of the bay. The Kelley House would be affected by visual impacts because one of the work bridges is planned to be in the location of the current Portage Bayshore Condominium docks next door to the house. Some moorage at the Portage Bayshore Condominiums would be relocated during construction. Upon completion, the work bridges would be removed and the moorings would be restored. Portage Bay Bridge construction is anticipated to last for 5 to 6 years.

These indirect construction impacts, such as increased noise and visual intrusions would not permanently alter the integrity of the historic properties discussed above. The significance of these properties lies in their distinctive architectural characteristics of type, construction, period, or style, and—for Fire Station #22 and the Denny-Fuhrman (Seward) School—their association with area history. These properties also exhibit a high level of historic and architectural integrity. The construction impacts would temporarily alter the integrity of the setting and feeling of these properties, but the effects on the historic properties would not be permanent. The properties would maintain integrity of materials, design, workmanship, association, and location throughout the construction period.

A discussion on potential effects on the Roanoke Park Historic District as a result of the new Portage Bay Bridge is provided below.

## **Roanoke Park Historic District (ID 37): Direct and Indirect**

Construction of the Preferred Alternative would result in a number of effects on this historic district, and would temporarily diminish the district's integrity of setting and feeling.

### **Direct Effects**

- Change to setting at times during the construction period from increased truck traffic and vibration on the haul routes along East Roanoke Street and Harvard Avenue East.
- Noise, fugitive dust, and possible vibration effects from construction of the reconfigured intersection at East Roanoke Street and 10th Avenue East.
- Fugitive dust and vibration from construction of the work bridges flanking the Portage Bay Bridge, demolition of the existing bridge, and construction of the new bridge.

- Fugitive dust and possible vibrations from demolition of the 10th Avenue East and Delmar Drive East overcrossings and construction of the new lid.
- Fugitive dust, traffic, and possible vibration from construction, and glare from lighting for nighttime construction of I-5/SR 520 interchange and the HOV lane crossing over I-5.

### Indirect Effects

- Increased noise from construction of the reconfigured intersection at East Roanoke Street and 10th Avenue East.
- Increased noise from construction of the work bridges flanking the Portage Bay Bridge, demolition of the existing bridge, and construction of the new bridge.
- Change in setting and feeling during the construction period from the visual interruptions of the work bridges and construction activity related to Portage Bay Bridge.
- Change in setting and feeling during the construction period from the loss of vegetative buffer between East Roanoke Street and SR 520.
- Increased noise from the demolition of the 10th Avenue East and Delmar Drive East overcrossings and construction of the new lid.
- Increased noise from construction and glare from lighting for nighttime construction of I-5/SR 520 interchange and the HOV lane crossing over I-5.

No construction or construction staging would occur within Roanoke Park or the Roanoke Park Historic District. Based on analysis in the *Geology and Soils Discipline Report* (CH2M Hill 2009g), the probability of landslides in the historic district from project construction in the vicinity is expected to be low.

### Detour and Haul Routes

During construction, East Roanoke Street would experience temporary lane closures and detours while the realignment work of the 10th Avenue East and Delmar Drive East intersection occurs. These could include short-term closures during off-peak times, which might require intermittent and brief detours over an approximate 15-month period. This could result in temporarily restricted access along East Roanoke Street. However, at least one lane would be open at all times to allow local traffic access on East Roanoke Street. During construction, Fire Station #22—located on East Roanoke Street and immediately adjacent to the Roanoke Park Historic District—would be fully operational, and access for emergency response would not be affected.

Harvard Avenue East and East Roanoke Street, which border the Roanoke Park Historic District, could provide the most direct access to portions of the project construction sites, and are likely to experience truck traffic while serving as potential haul routes (Exhibit 5-43). As previously noted, the main travel route to access the 10th Avenue East/Delmar Drive East lid construction area would likely be from I-5 to East Roanoke Street, and Delmar Drive East could operate as a secondary route for egress from the lid to eastbound SR 520. Most trucks coming from westbound SR 520 would likely use the Harvard/Roanoke exit. On East Roanoke Street at Delmar Drive East, the potential route could average as many as 30 trucks per day intermittently for approximately 21 months. Worst-case peak levels could reach as many as 170 trucks per day, which could occur periodically over 21 months.

On Harvard Avenue East, north of East Roanoke Street, haul route volumes could average 15 trucks per day for the duration of construction (approximately 66 months). The existing truck and bus count at this location is more than 690 per day, so an additional 15 trucks per day would not be a significant change. Worst-case peak volumes could reach up to 70 trucks per day, occurring for 60 nonconsecutive days throughout the active construction period. This means approximately 3% of total construction days could experience peak volume levels. As noted above, average haul truck volumes are estimates meant to approximate construction truck activity during a typical day for the duration of a potential haul route's use; these estimates would be updated as construction planning and scheduling progress.

These potential haul routes would diminish the integrity of setting and feeling of the Roanoke Park Historic District and its contributing elements, including the William H. Parsons House, located on Harvard Avenue East. These properties could experience higher traffic volume, fugitive dust, and increased noise from the intermittent truck traffic along these haul routes.

### **Vegetation Removal and Replanting**

Some of the vegetative buffer between SR 520 and the Roanoke Park Historic District would be entirely or partially removed during construction. During construction of the new roadway and lids, mature vegetation would be protected and retained to the extent reasonable and feasible. As noted above, although the buffer area contains a variety of mature trees, it also has several invasive species that would be cleared and replaced with native vegetation, in accordance with WSDOT policy (WSDOT 2010b). Although some existing buffer might be reduced, adding the lid at 10th Avenue East and Delmar Drive East would provide for a new type of buffer from the roadway that would be more extensive than the existing vegetative buffer. After construction is completed, permanent erosion control measures for areas affected by construction of the project would be implemented, and those areas where invasive species were cleared would be replanted with native plant materials, as appropriate. During replanting, WSDOT would consult with members of the Roanoke Park Historic District to identify and select plantings compatible with the historic character of the area to the extent feasible. Vegetation removal and replanting would temporarily alter the district's integrity of setting.

## **Montlake Segment**

### **Montlake Community Center Tudor Building (ID 126): Direct and Indirect**

#### **Direct Effects**

The Montlake Community Center Tudor Building, located at the Montlake Playfield within the boundaries of the Montlake Historic District, could be affected by fugitive dust and possible vibration during demolition and reconstruction of the Portage Bay Bridge and erecting of the work bridges, and possibly by some nighttime glare during these construction activities. Dust or vibration is extremely unlikely to alter integrity of setting of this resource.

#### **Indirect Effect**

Although the Montlake Community Center Tudor Building would experience effects from project construction, the existing gymnasium building and park vegetation would visually screen the building from most of these effects. The building's integrity of setting would be temporarily and

indirectly altered during construction, but the facility would still be able to function as an active community center, and the character-defining elements of the Tudor building would not be diminished, which are significant in terms of Tudor Revival architectural design and for its associations with area history.

## **NOAA Northwest Fisheries Science Center (ID 56): Direct and Indirect**

The NOAA facility's three historic buildings house functions for the NOAA Northwest Fisheries Science Center campus. Implementation of the Preferred Alternative would temporarily diminish this resource's integrity of setting, feeling, and association (Exhibit 6-12).

### **Direct Effects**

Demolition of the existing Portage Bay Bridge and construction of the work bridges and the new Portage Bay Bridge immediately adjacent to the NOAA property would generate additional dust and equipment emissions. Pile-driving for the construction bridges and use of heavy equipment could cause vibration effects on the property. If not adequately mitigated, these impacts have the potential to disrupt the biological experiments underway in the NOAA fish-rearing facilities and to affect sensitive equipment used for measurement and monitoring. These effects are anticipated to be minor and would not alter the integrity of this property.

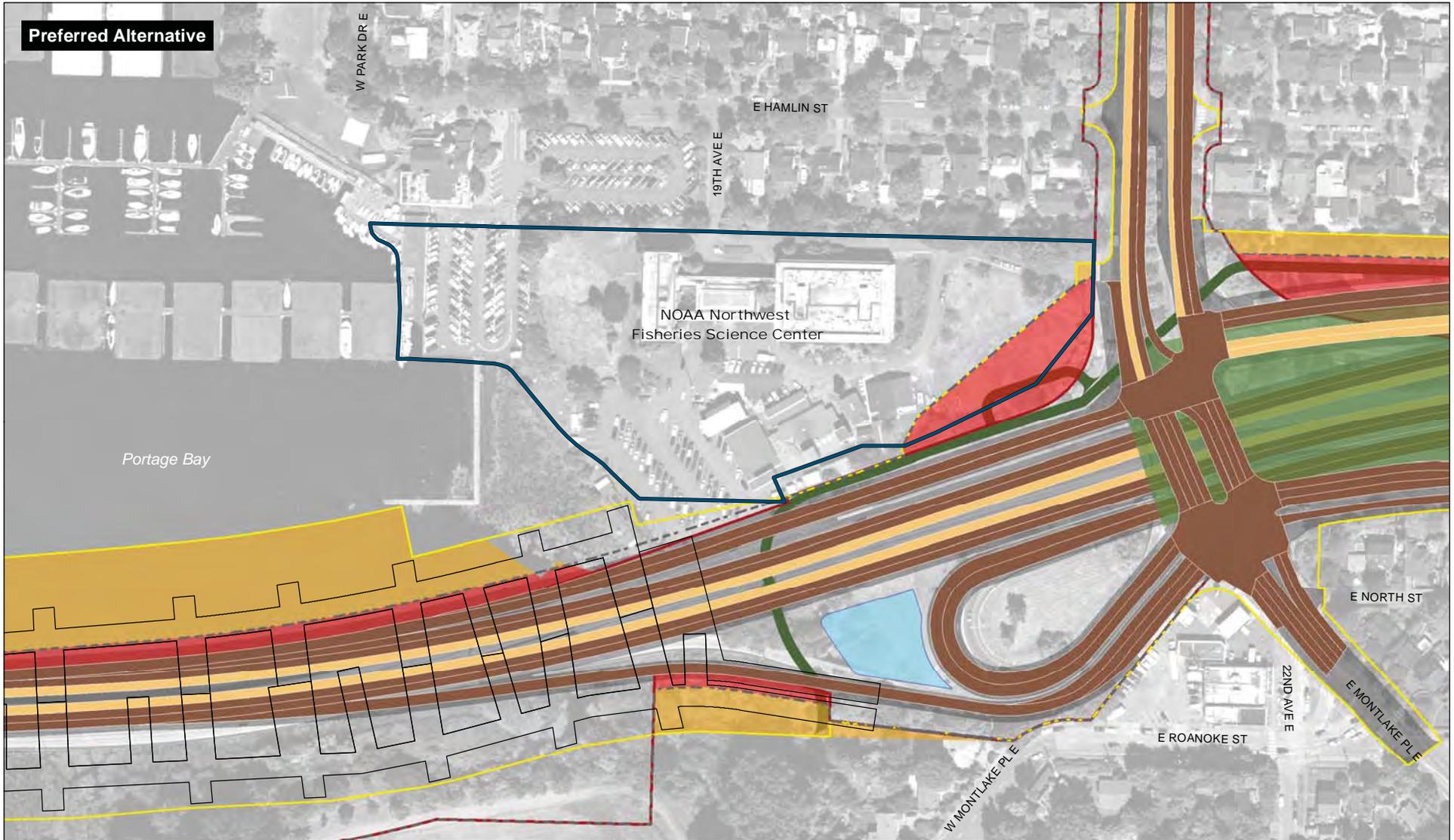
### **Indirect Effects**

Demolition of the existing Portage Bay Bridge and construction of the work bridges and the new Portage Bay Bridge immediately adjacent to the NOAA property would generate additional noise and create visual effects on the NOAA Northwest Fisheries Science Center buildings.

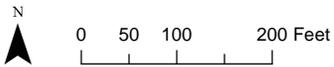
The construction impacts could create an acoustic environment that makes it more difficult to validate analytical results. Discussions are ongoing with NOAA officials to determine monitoring, construction management, and other measures to minimize construction effects on marine experiments and scientific activities.

To minimize potential effects disclosed in the SDEIS, the Preferred Alternative has narrowed the width of the Portage Bay Bridge and shifted its alignment to the south to avoid a direct impact on the structures at the NOAA facility. The Preferred Alternative would acquire 0.52 acre from the NOAA property, which does not contain any structures. There would be a construction easement on the east side of the NOAA property; after construction, most of this easement would be permanently acquired for use as a bicycle and pedestrian path. Construction would also require use of a portion of the area currently used as parking for the NOAA facility. This area is on WSDOT property, so although it would no longer be used as parking for the NOAA facility, using this portion of the parking area would not be an acquisition of NOAA property. The driveway that encircles the North Campus on three sides would remain intact, so access within the property would not be altered. Exhibit 6-13 illustrates the effects on the NOAA Northwest Fisheries Science Center buildings from the Preferred Alternative.

Despite WSDOT's continuing efforts to minimize construction effects, it is likely that the setting, feeling, and association of the property would be temporarily diminished during construction as a result of visual, noise, dust, and vibration effects. It is also likely that some aspects of the ongoing scientific activities of NOAA would be affected, which would diminish the integrity of association with the important research conducted there.



- |                        |                                  |
|------------------------|----------------------------------|
| NOAA Property          | Proposed Bicycle/Pedestrian Path |
| Permanent Acquisition  | General Purpose Lane             |
| Construction Easement  | HOV Lane                         |
| Proposed Right-of-way  | Work Bridge                      |
| Existing Right-of-way  | Stormwater Facility              |
| Limits of Construction | Lid                              |
| Pavement               |                                  |



Source: King County (2006) Aerial Photo, CH2M HILL (2008) GIS Data (Park and Trails), City of Seattle (2009) GIS Data (Section 6(f) Boundary). Horizontal datum for all layers is NAD83(91); vertical datum for layers is NAVD88.



**Exhibit 6-12. Project Elements of the Preferred Alternative at the NOAA Northwest Fisheries Science Center**

SR 520, I-5 to Medina: Bridge Replacement and HOV Project

## Seattle Yacht Club (ID 55): Indirect

The Preferred Alternative would temporarily affect the Seattle Yacht Club. Temporary indirect effects, which diminish the resource's integrity of setting, feeling, and association, are discussed here.

The Seattle Yacht Club, listed in the NRHP under Criterion A for its association with the social and maritime history of Seattle, traditionally holds Opening Day ceremonies through the Montlake Cut and on Portage Bay at the beginning of May each year. Increased noise, fugitive dust, glare from nighttime construction lighting, and possible vibration from demolition of the existing Portage Bay Bridge and construction of work bridges and the new Portage Bay Bridge could temporarily diminish the Seattle Yacht Club's integrity of setting, feeling, and association.

Work bridges and barges used to demolish and construct the Portage Bay Bridge could occasionally interfere with the club's marine activities in Portage Bay; similarly, temporary supports and barges used to construct the new bascule bridge adjacent to the historic Montlake Bridge could occasionally interfere with the club's activities on the Montlake Cut. WSDOT has committed to not transport pontoons through these areas during Opening Day events, including the week before and the week after the ceremonies.

Although access to the Seattle Yacht Club would be maintained at all times, there could be periods during construction when some limitations on access to the Seattle Yacht Club and Portage Bay could be necessary. Access to Seattle Yacht Club facilities, both by land and by water, is critical for the continued operation of this historic property. The ability to maintain the historic structure depends on the economic and operational viability of the Club; its operational and economic viability depends on the revenues generated by members and guests having unimpeded access to the facility. Access and usage limitations could impair the Seattle Yacht Club's ability to manage its historic structure and conduct its traditional activities.

For the reasons described above, construction of the Preferred Alternative would diminish the Seattle Yacht Club's integrity of setting, feeling and association that may affect the historic maritime activities there, which are a character-defining feature under Criterion A. If not mitigated, these effects on the setting, feeling and association could also result in economic effects on the facility if reduced patronage were to occur as a result of the proximity of construction activities. These economic effects could impair the ability of the club to fulfill its historic maritime role. As the association with the social and maritime history of Seattle is the sole reason for NRHP listing of the Seattle Yacht Club, these activities are the primary character-defining feature of the club, and diminution of the ability to perform these activities would affect the club's integrity of association.

## Montlake Bridge (ID 54): Indirect

Montlake Bridge is listed in the NRHP under Criterion C for its engineering and architectural design. The Preferred Alternative includes a new bascule bridge immediately east of the existing historic Montlake Bridge. Because of the close physical proximity, constructing a new bascule bridge immediately adjacent to the historic Montlake Bridge would alter the historic bridge's integrity of setting and feeling.

## Montlake Cut (ID 53): Indirect

The Montlake Cut is a navigable waterway with an existing bascule bridge crossing. The new bascule bridge would span the official navigation channel in the Montlake Cut. The cut must be open to ship traffic year-round, and bridge construction would not be allowed to interfere with marine navigation. The only exception would be a few short periods of time when the spans are being erected, requiring the Montlake Cut to be temporarily closed to marine traffic. This would involve brief closures (up to five total), ranging from several hours to 2 days. None of these closures would occur during traditional Opening Day ceremonies for boating season. As an active navigational channel listed in the NRHP for engineering significance, the integrity of the Montlake Cut would not be altered by building a new bascule bridge across it or by towing pontoons through it.

## Canoe House (ID 203): Direct and Indirect

The Canoe House is listed in the NRHP under Criterion C for its architectural significance. Its integrity of setting and feeling would be temporarily altered during construction.

### Direct Effects

Construction of the new bascule bridge, which is expected to last approximately 29 months, would introduce fugitive dust surrounding and possible vibration on the Canoe House. This would temporarily alter the Canoe House's integrity of setting and feeling.

### Indirect Effects

Construction of the new bascule bridge would introduce increased noise and glare from nighttime construction on the Canoe House. Construction of the Preferred Alternative would also have a visual effect on the Canoe House, as construction of the second bascule bridge, the new floating bridge, and the west approach to the floating bridge would all be visible for the duration of the construction period. Construction of the Preferred Alternative would not diminish the architectural features that make the Canoe House significant. However, the integrity of setting and feeling would be temporarily diminished, particularly to the west, in the direction of the new bascule bridge, but overall, the integrity of association, materials, workmanship, location and design would remain.

## Lake Washington Boulevard (ID 239): Direct and Indirect

The segment of Lake Washington Boulevard within the Montlake Historic District is eligible for listing in the NRHP under Criterion A for its association with the Olmsted Brothers' plan for parks and parkways in Seattle. Where it falls within the boundaries of the Montlake Historic District, it is a contributing element to that district. The portion of the boulevard within the Arboretum also contributes to that historic property. Implementation of the Preferred Alternative would temporarily—directly and indirectly— affect Lake Washington Boulevard, compromising the resource's integrity of setting and feeling, are discussed here.

### Direct Effects

Construction of the Preferred Alternative could include using portions of Lake Washington Boulevard from 26th Street to Montlake Boulevard East as a potential haul route and detour route after the Lake Washington Boulevard and R. H. Thomson ramps are closed. The setting and feeling of the boulevard could be somewhat affected during times of higher traffic use for construction Traffic

increases from these project activities on Lake Washington Boulevard, however, would not alter the significance of this linear resource, because the historic alignment and transportation purpose of the road would remain intact, and its association with the Olmsted plan would not be diminished. Because Lake Washington Boulevard is a transportation facility, its integrity of setting and feeling would be altered, but not diminished, during construction.

### **Indirect Effects**

There would be a construction staging area located on the WSDOT right-of-way near the Arboretum, just south of the existing SR 520 (for more information about the staging area, see the Arboretum discussion below). This staging area would be adjacent to Lake Washington Boulevard and could temporarily alter the setting and feeling of the roadway for the duration of construction resulting from continuous use of the area by heavy construction vehicles and machinery. The viewshed in this area near the Arboretum would be affected by the presence of the staging area to the northeast of the boulevard, even though the current viewshed includes the SR 520 exit and entrance ramps. The setting and feeling of Lake Washington Boulevard would be altered during construction by the use of the adjacent staging area. This effect on the boulevard would not alter the significance of this linear resource, however, because its association with the Olmsted plan would not be diminished and the characteristics of the historic transportation facility would remain intact.

Construction of the Preferred Alternative would introduce periods of increased traffic from haul and detour routes, visual effects from the adjacent staging area, and physical construction to make median and lane changes to the roadway. The setting and feeling of Lake Washington Boulevard would be temporarily altered by project construction. This resource's association with the Olmsted plan would not be diminished, and the intact characteristics of the historic transportation facility—location, alignment and design—would remain.

## **Montlake Historic District (ID 238): Direct and Indirect**

The Montlake Historic District is eligible for listing in the NRHP under Criterion C as a significant, cohesive collection of primarily residential architecture typical of the early twentieth century. It also contains the individually listed Seattle Yacht Club and several individually eligible properties as contributing elements. Construction of the Preferred Alternative would result in numerous direct and indirect effects on the Montlake Historic District (Exhibit 6-9). Many effects are associated with construction haul routes, which are described below.

### **Direct Effects**

- Construction on Lake Washington Boulevard to add a new planted median and a right-turn lane at Montlake Boulevard.
- Increased dust and possible vibration from construction of the Portage Bay Bridge, west approach, and Montlake lid.
- Increased dust and possible vibration from demolition of MOHAI, the Portage Bay Bridge, the west approach, the SR 520 overpasses, and the Lake Washington Boulevard and R. H. Thompson ramps.
- Possible increased dust and vibration from construction at the staging areas, which could be utilized around the clock.

- Possible increased dust and vibration from construction at the staging area south of SR 520, adjacent to the Arboretum and the Montlake Historic District.
- Intermittent increases in dust and possible vibration from haul routes on East Lynn Street, 19th Avenue East, Montlake Place, East Roanoke Street, and 24th Avenue from East Roanoke Street to SR 520.
- Intermittent increases in dust and possible vibration from use of Lake Washington Boulevard as a potential secondary haul route and detour route.

### Indirect Effects

- Visual effects of construction of the new bascule bridge parallel to the Montlake Bridge for properties on the north side of the district; the view of the historic bridge would be impeded during construction.
- Effects on Seattle Yacht Club resulting from the proximity of construction and related effects on boating or commercial activities.
- Increased noise and visual effects from demolition of MOHAI, the Portage Bay Bridge, the west approach, the SR 520 overpasses, and the Lake Washington Boulevard and R. H. Thompson ramps.
- Increased noise, visual effects, and possible glare from lighting for nighttime construction of the Portage Bay Bridge, west approach, and Montlake lid.
- Temporary traffic detours, congestion, and intermittent restricted access to selected areas in the district.
- Possible increased noise, visual effects, and glare from lighting for nighttime construction at the staging areas, which could be utilized around the clock. Possible increased noise, visual effects, and glare from lighting for nighttime construction at the staging area south of SR 520, adjacent to the Arboretum and the Montlake Historic District
- Intermittent increases in noise and traffic from haul routes on East Lynn Street, 19th Avenue East, Montlake Place, East Roanoke Street, Lake Washington Boulevard, and 24th Avenue from East Roanoke Street to SR 520.

### Detour and Haul Routes

Local jurisdictions can limit the use of non-arterial streets for truck traffic; therefore, efforts were made to identify designated arterial streets for potential use as haul routes. A potential secondary haul route from Delmar Drive would pass along East Lynn Street, north on 19th Avenue East to Montlake Place to East Roanoke Street, and along the northernmost portion of 24th Avenue from East Roanoke Street to SR 520 (Exhibit 5-43). Average haul truck volume along E. Lynn Street could be 15 trips per day when used, while the peak number of haul trucks could range up to 120 trucks per day. These peak truck trips could occur over a total of approximately 60 non-consecutive days, spread intermittently over the construction duration (70 months). Haul route traffic on East Roanoke Street at Montlake Place East could average up to 20 trucks per day for the duration of construction in the area (66 months). Construction activity would likely peak for 60 nonconsecutive days, and could result in peak haul route volumes as high as 290 trucks per day.

Lake Washington Boulevard from the SR 520 exit ramps north and west to the intersection with Montlake Boulevard East could be used as a potential haul route. Construction could also include using portions of Lake Washington Boulevard from 26th Street to Montlake Boulevard East, as a potential haul route and detour route after the Lake Washington Boulevard and R. H. Thomson ramps are closed.

As described earlier, the integrity of setting and feeling of all historic properties along haul routes would be temporarily diminished during construction. Hauling could diminish the setting and feeling of the historic district by exposing the contributing elements of the district and individually eligible properties along Montlake Place, East Roanoke Street, East Lynn Street, 19th Avenue East, Lake Washington Boulevard, and a small part of Boyer Avenue East to increased traffic, noise, and fugitive dust from the haul trucks. Construction effects would occur intermittently, and none would be permanent.

### **Stormwater Treatment**

A constructed wetland for stormwater treatment would be built on most of the site currently occupied by MOHAI, necessitating removal of the MOHAI building and acquisition of the land. This project element would also have permanent effects, to be discussed later in this analysis, but temporary, construction-related effects are discussed here. The demolition of MOHAI would bring additional noise, and possibly dust and vibration, to the properties along the east end of East Shelby and East Hamlin streets, and to some properties along Lake Washington Boulevard East. This area would also be used as a staging area, which would be active for the duration of the construction period. This staging area would be available for use 24 hours per day to support mobilization and demobilization of construction. It would house construction vehicles, equipment, materials, and related construction activities. These construction activities would generate dust, noise, and visual interruptions in the district for the duration of construction. The visual and audible impacts associated with the construction staging area would temporarily diminish the district's integrity of setting and feeling.

### **Noise/Dust/Glare/Vibration**

Properties that are contributing elements of the Montlake Historic District and are located near SR 520 would experience increased noise, fugitive dust, possible vibration, visual effects, and possible glare from lighting for nighttime construction during demolition of the 24th Avenue East bridge over SR 520; demolition of the Montlake Boulevard bridge over SR 520; and construction of the Montlake lid. Properties along Lake Washington Boulevard East and 26th Avenue East would also experience these effects in association with demolishing and removing the Lake Washington Boulevard ramps and R. H. Thomson Expressway ramps, and demolishing and reconstructing the west approach to the floating bridge. Throughout the construction period of approximately 56 months, areas of this historic district would experience increased traffic congestion, along with detours and brief and intermittent restricted access to selected areas. These disruptions would temporarily alter the district's integrity of setting.

### **Montlake Boulevard Median**

The Preferred Alternative design requires the removal of all or part of one Montlake Boulevard median planting strip between East Hamlin Street and SR 520. Some portion of the median may be replaced with another median of context-sensitive design once construction is complete. Design is

ongoing, so the precise actions at this location are not certain. This is not expected to alter any aspect of the district's integrity.

In summary, there would be temporary effects on the Montlake Historic District from construction of the Preferred Alternative. The combined construction effects on the historic district as a whole would exert considerable pressure on the district. Construction staging would occur both within and immediately adjacent to the historic district. In addition the district would experience indirect effects from construction activities in Lake Washington, Union Bay, and Portage Bay for the duration of construction in these areas (lasting for five to six years). Despite WSDOT's efforts to avoid and minimize effects from construction, the overall construction effects of the Preferred Alternative on the Montlake Historic District would temporarily diminish the integrity of the characteristics that qualify the historic district for listing in the NRHP, including feeling and setting.

## West Approach Segment

### Washington Park Arboretum (ID 200): Direct and Indirect

The Arboretum is eligible for listing in the NRHP as a historic designed landscape under Criterion A for its association with the Alaska-Yukon-Pacific Exposition, the University of Washington, the WPA, and Olmsted Brothers Parks and Parkways system of Seattle, and under Criterion C for its design by the Olmsted Brothers as well as the many other talented designers and architects who have contributed to it. In the Arboretum, SR 520 would cross Foster Island with a pier and span bridge that would require acquisition of 0.5 acre of land on Foster Island. Construction activities would include a work bridge located on the island that would be removed after the permanent structure is completed. There would also be 1.6 acres of construction easements on Foster and Marsh islands for the duration of construction. Construction for the west approach area adjacent to the Arboretum is planned to take approximately four to five years.

Temporary effects on the Arboretum are both direct and indirect, and may temporarily alter the Arboretum's integrity of setting and feeling during construction.

#### Direct Effect

- Potential dust and vibration from demolition of the Lake Washington Boulevard and R.H. Thomson ramps

#### Indirect Effect

- Potential visual intrusion from construction staging area

Demolition of the Lake Washington Boulevard and R. H. Thomson ramps would occur entirely on WSDOT-owned property, but adjacent park areas could experience fugitive dust, noise, visual effects, and vibration. This construction activity would be an indirect effect that would affect the setting and feeling of the northern portion of the Arboretum. Construction effects from the demolition of the ramps would not lead to a loss of significance for the historic property, because the existing visual and audible intrusion of the existing ramps and elevated SR 520 bridge already affects the setting in this area.

The WSDOT right-of-way area south of SR 520 between the ramps and Lake Washington Boulevard was historically part of the Arboretum, and is included within the historic property boundaries, but

lacks integrity. During construction, this area would be a construction staging area. The staging area would be active for the full 66-month duration of the construction period. This would be the largest of the project staging areas and would be heavily used because of its proximity to all major project elements and because it is located on WSDOT right-of-way. This staging area would be available for use 24 hours per day to support mobilization and demobilization of construction. It would house construction vehicles, equipment, materials, and related construction activities. These construction activities would generate dust, noise, and visual interruptions near active park areas for the duration of construction. No staging would occur on Arboretum property, but the construction activity would be near some park activities in the northern part of the Arboretum. The construction staging area would cause a visual and audible effect on the setting and feeling of the park during construction, but it would not diminish these, or other, aspects of integrity.

During construction of the Preferred Alternative, the Lake Washington Boulevard ramps to and from SR 520 would be closed and traffic would use the Montlake interchange instead. When the ramps are closed, more traffic would travel through the Montlake/SR 520 interchange during periods of construction, instead of through the Arboretum. Temporary effects on the Arboretum are both direct and indirect, and may temporarily alter the Arboretum's integrity of setting and feeling during construction, but the Preferred Alternative would not diminish any aspect of this resource's integrity. The features of this designed landscape were created to provide education and public beautification. The construction effects would not reduce the Arboretum's historic associations or the architectural features that make the Arboretum significant.

### **Edgewater Condominiums (ID 226): Indirect**

The easternmost historic property in the West Approach segment, the Edgewater Condominiums are eligible for listing in the NRHP under Criterion C as part of a multiple property nomination for Seattle apartment buildings. They are recognized as a distinctive architectural type and as the work of master architect John Graham Jr. The property is located on the shoreline south of the existing floating bridge and east of the Arboretum, and has a clear view of the bridge (Exhibit 6-1g). The Edgewater Condominiums would experience increased noise from demolition and construction of the west approach to the Evergreen Point Bridge, as well as potential glare from nighttime construction activities. These indirect construction impacts would occur during demolition and reconstruction of the west approach, as well as construction of the work bridges and the replacement floating bridge. Furthermore, WSDOT has determined that to most efficiently construct the replacement floating bridge, an additional barge may be needed in this location for construction staging, and it may be anchored there temporarily during construction. The period such a barge would be needed for is unknown at this time. This would temporarily alter the Edgewater Condominiums' integrity of setting and feeling. Integrity of setting and feeling of the historic property would also be temporarily altered by increased noise and glare during construction, but these effects would be very minor.

## **Lake Washington Segment**

There are no temporary, construction-related effects on historic properties in the Lake Washington Segment.

## Eastside Transition Segment

### Historic Properties: Indirect

The NRHP-eligible Arntson (ID 234) and Dixon (ID 227) houses would experience moderately increased noise levels, fugitive dust, and possible vibration associated with demolishing the east approach of the Evergreen Point Bridge and construction of the new east approach structure (Exhibit 6-1g). Both the Arntson and Dixon houses could experience fugitive dust and noise increases associated with construction of the bridge operations facility and dock located under the approach area. Most of these effects would occur intermittently, and none would be permanent. These resources' integrity would not be altered during construction.

### Section 6(f) Replacement Properties

The Section 106 regulatory framework was discussed earlier in this chapter. The Preferred Alternative would have no temporary effects on Section 6(f) replacement properties.

## Port of Olympia and Port of Tacoma Pontoon Construction Segment

Construction of the pontoons would not affect any known historic properties within the APE for this project. The types of activities required for pontoon construction are similar to the current activities and uses of the buildings at the CTC facility. Because the four NRHP-eligible buildings at CTC function as part of an industrial zone, the activities required by this project would not temporarily alter or diminish any aspect of these historic properties' integrity. Additionally, the NRHP-listed Fire Station # 15, also part of this industrial zone, would not be used or directly impacted by this project, and no aspect of integrity would be altered or diminished.

## Summary

The prolonged construction period, as well as some direct and indirect effects once the project is built, would affect historic properties within the APE. As described, the Preferred Alternative would adversely affect historic properties. Currently, a PA is being developed, in consultation with SHPO, ACHP, and other Section 106 consulting parties, which will identify means to avoid, minimize, and mitigate adverse effect. Potential measures that may be included in the PA are presented in Chapter 7.

## Chapter 7

# Determination of Adverse Effect

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Pursuant to 36 CFR 800(5)(a), the previous chapter describes how WSDOT, on behalf of FHWA, applied the criteria of adverse effect to historic properties located in the APE. As previously stated, several historic properties would see at least one aspect of integrity diminish, either temporarily or permanently, as a result of the Preferred Alternative. The changes in integrity, which occur within a very tight and culturally sensitive APE, have resulted in WSDOT's determination that the Preferred Alternative would adversely affect historic properties. The determination of adverse effect is based on both temporary, construction-related impacts and permanent impacts that result in an alteration of setting and feeling.

Permanent effects that would diminish one or more aspects of historic properties' integrity include the following:

- The Preferred Alternative's construction of a new bascule bridge over the Montlake Cut, immediately adjacent to the existing Montlake Bridge, would permanently diminish the historic bridge's integrity of setting and feeling.
- The Preferred Alternative would convert 6.5 acres of land within the Montlake Historic District's boundaries from parks, a portion of the NOAA property, residential property, and the Canal Reserve Land to transportation right-of-way. These acquisitions would expand the WSDOT right-of-way into the boundaries of the district and reduce the amount of property included in the district. The expanded right-of-way would alter the footprint of the historic property's boundaries, which would diminish the integrity of design, setting, and materials of the overall district.
- The Preferred Alternative's construction of a new bascule bridge in close proximity to the Canoe House would permanently diminish the Canoe House's integrity of setting and feeling.
- The Preferred Alternative would require the demolition and removal of the existing Evergreen Point Bridge and construction of a new floating bridge across Lake Washington. The physical destruction of the Evergreen Point Bridge would directly and permanently diminish all aspects of this historic property's integrity.

During construction of the Preferred Alternative, some historic properties would see aspects of integrity temporarily diminish. Construction of the project would occur over a period of several years and would result in increased noise, dust, and traffic; visual effects; and disruptions in access to some areas near construction sites. Because of its extent and duration, construction would have significant effects in the vicinity of active construction areas. Some of the specific effects of temporary construction activities include, but are not limited to:

- increased noise and vibration from demolition, heavy equipment operation, material hauling, and pile driving;
- fugitive dust from areas where soils are exposed or stockpiled;
- visual effects from vegetation removal, temporary structures, construction staging and equipment, and active construction operations; or
- temporary disruptions in access to homes and businesses.

Because the project area encompasses many historic properties, the impacts described above would be experienced at one level or another by most historic properties in the APE. For some properties, the proximity of construction activities, the intensity and duration of construction in that area, and the nature of the property's historic characteristics would combine to result in an adverse effect under Section 106. Construction effects on other historic properties—even though they might not meet the definition of adverse effect under Section 106—would still have the potential to create substantial disruptions in community activities and residents' quality of life.

One specific effect of the Preferred Alternative—increased traffic along detour and haul routes—would temporarily diminish integrity of setting and feeling of all historic properties along the proposed haul routes, if used. Construction haul routes would expose historic properties along the route to temporary increases in truck traffic volume, with accompanying potential for increases in fugitive dust, vehicle emissions, and noise. Haul truck volumes estimated for each potential haul route are intended to characterize truck activity anticipated during a typical day of construction for the duration of use as a haul route. For potential routes where haul truck volumes may vary substantially over the construction period, peak volumes are also estimated. The Preferred Alternative would temporarily diminish integrity of feeling and setting of all historic properties, including both historic districts in the APE, along all construction haul routes.

Additional historic properties whose integrity would be temporarily diminished during construction include:

- All historic properties along construction haul routes, as described above,
- Historic properties near the 10th Avenue and Delmar Drive lid,
- Roanoke Park Historic District,
- Montlake Historic District,
- NOAA Northwest Fisheries Science Center, and
- Seattle Yacht Club.

The Preferred Alternative would also cross Foster Island with a pier and span bridge that would require acquisition of 0.5 acre of land on Foster Island and expansion of the right-of-way to the north of the existing alignment. Construction effects would include a construction work bridge located on the island that would be removed after the permanent structure was completed. Construction activities would generate dust and construction-related noise and vibration on Foster Island; during construction, access to the north part of the island would be restricted. Construction in this area would take approximately 5 years (60 months). Once construction is completed, construction easements on Foster Island would be returned to park use.

Volume 1 discusses the Foster Island TCP located in the APE. The Foster Island TCP was determined eligible for listing in the NRHP. The Preferred Alternative would have an effect on the TCP that contributes to the project-wide adverse effect determination.

The net impact of considering all historic properties that would experience a diminishment in one or more areas of integrity, either temporarily or permanently, results in the determination that the Preferred Alternative would have an adverse effect on historic properties. Resolution of adverse effects is ongoing, and subject to consultation with DAHP, affected tribes, and other Section 106 consulting parties. However, Chapter 8 provides an overview of potential mitigation measures that have been identified at the time of this document's publication.

## Chapter 8

# Potential Avoidance, Minimization, and Mitigation Measures

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Section 106 of the NHPA stipulates that the agency official, in consultation with the SHPO and other consulting parties, must “develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize, or mitigate adverse effects on historic properties (36 CFR 800.6(a)).” This chapter provides an overview of avoidance and minimization measures of both permanent and temporary effects on historic properties. Where adverse effects cannot be avoided or minimized, they will be resolved through mitigation measures and memorialized in a Programmatic Agreement (PA), pursuant to 36 CFR 800.14(b).

WSDOT has elected to use a PA to resolve adverse effects because the specific effects on all historic properties may not be fully known prior to project approval. The PA binds FHWA with responsibility to mitigate known adverse effects on historic properties, while allowing for completion of cultural resources investigations and providing a process to govern the actions to be taken if historic properties are discovered during the phased identification. The PA is currently in development, and may still be modified during the Section 106 process. Potential mitigation measures are presented in this chapter.

As provided for in 36 CFR 800.2(b), WSDOT invited the ACHP to participate in the consultation process for this project on May 20, 2010. After receiving additional information regarding the project, the ACHP accepted the invitation to participate in developing the PA on July 22, 2010.

Throughout the design and planning process, WSDOT has taken care to avoid and minimize adverse effects on historic properties. General measures taken through planning and design to avoid and minimize adverse effects on historic properties include the following:

- Reducing the footprint and/or shifting the alignment of SR 520 to avoid or minimize effects on historic properties, including the Montlake Historic District, the NOAA Northwest Fisheries Science Center, the Arboretum, and the Foster Island TCP.
- Reducing noise levels in the two historic districts, the Seattle Yacht Club, the NOAA Northwest Fisheries Science Center, Lake Washington Boulevard, the Arboretum, and the Foster Island TCP by incorporating noise-reduction measures such as quieter concrete pavement and 4-foot concrete traffic barriers with noise-absorptive coating, noise-absorptive materials around the lid portals, and a reduced speed limit on the Portage Bay Bridge. Adjusting construction haul and detour routes to avoid or minimize construction effects on the Montlake Historic District and Roanoke Park Historic District as much as possible.
- Involving the affected communities in context-sensitive design of the new lids as part of SR 520 design development and under existing processes of the City of Seattle and the Seattle Design Commission, which will help preserve the setting and feeling of the Montlake Historic District and Roanoke Park Historic District, as well as contributing and individually NRHP-eligible properties within those districts.

As described in previous chapters, even with WSDOT and FHWA’s ongoing efforts to avoid adverse effects on the greatest extent feasible, it will not be possible to avoid all adverse effects on historic

properties from construction or operation of the Preferred Alternative. Where the project causes adverse effects on historic properties, those adverse effects will be mitigated, and the mitigation measures are part of the PA development process.

## Project Modifications that Would Avoid or Minimize Effects

As a result of ongoing consultation, WSDOT has made alterations in the original project description. The new project elements, which are components of the Preferred Alternative, will avoid or minimize some effects on historic properties. These measures include the following changes:

- WSDOT has changed the project alignment to avoid direct physical effects on the Roanoke Park Historic District. These changes avoid direct effects on the sidewalk, street, and planted median within the district.
- WSDOT has changed the Portage Bay Bridge width and alignment to avoid demolition of buildings at the NOAA Northwest Fisheries Science Center that would have occurred under Option A of the SDEIS. As described in the SDEIS, these demolitions could have resulted in permanent displacement of the property's historic use.
- WSDOT will post a 45- mph speed limit along the Portage Bay Bridge to help reduce noise levels at nearby properties, including the Roanoke Park Historic District, the Seattle Yacht Club, and the NOAA Northwest Fisheries Science Center.
- WSDOT will develop context-sensitive designs for the Portage Bay Bridge, the new bascule bridge, and the West Approach bridge that will maintain or enhance the historic setting and feeling of the Roanoke Park and Montlake Historic Districts, the Seattle Yacht Club, NOAA Northwest Fisheries Science Center, and the Arboretum.
- WSDOT will minimize the number of columns across Foster Island to reduce effects on the Foster Island TCP and the Arboretum.
- The project will enhance the historic setting of the Arboretum by removing the existing ramps, incorporating noise reduction measures, and providing improved pedestrian and bicyclist connections under the highway.
- WSDOT has included a number of noise reduction strategies into the design of the Preferred Alternative, including 4-foot concrete traffic barriers with noise-absorptive coating, noise-absorptive materials around lid portals and on bridge expansion joints, and a reduced speed limit on the Portage Bay Bridge. WSDOT has also committed to using quieter concrete pavement throughout the corridor.

## Measures to Avoid and Minimize Construction Impacts

Construction of the Preferred Alternative would occur over a period of 6 to 7 years and would result in noise, dust, and visual effects on many historic properties in the APE. The proximity of construction activities, the intensity and duration of construction in that area, and the presence of a large number of significant cultural resources all contribute to the effect on historic properties.

A major minimization element is the development of a Community Construction Management Plan (CCMP). The purpose of a CCMP is to provide an ongoing opportunity for the consulting parties of this agreement and the public to provide input on construction management decisions that can help avoid or minimize the effects of construction activities on historic properties. The CCMP will be developed with input from the consulting parties and the public prior to the beginning of construction.

Through standard best management practices (BMPs), WSDOT will take precautions to protect historic properties from excessive noise, vibrations, excavations, and damage from heavy equipment. Applicable BMPs also include those for traffic control, glare, vibrations, noise, and fugitive dust management. Although the proposed CCMP is in its very early stages of development and is subject to change as the PA process continues, the components of a CCMP are expected to include the following:

- A plan for access by emergency service providers to homes and businesses.
- A plan for maintenance of basic services (water, gas, electric, internet, etc.) and for timely response in case of accidental interruptions of service as a result of construction activities.
- A communications plan covering the following:
  - A process for making up-to-date construction information (schedules, schedule changes, potential delays, current work areas, street closures and detours, results of monitoring, etc.) available to the public; potential notification mechanisms could include a website, smart phone application, and/or automated traffic management signs;
  - Development and maintenance of an email list to be used to inform communities of upcoming construction information; email notification will include Community Council officers so that timely information can be distributed through community online forums;
  - A single-point communications center established for the duration of construction, which will include a 24/7 contact phone number and an email address to which problems, questions, and concerns can be sent; these communications will be directed to the appropriate jurisdiction or agency for resolution; and
  - Routine construction updates/outlooks to Section 106 consulting parties, as well as notifications of applicable permit conditions such as periods when noise variances will be in place.
- A vegetation management plan to include provisions for:
  - Surveying mature trees within and near the limits of construction along the entire corridor; the report of this survey will be made available to the concurring parties to the PA when it is completed;
  - Protecting trees and other screening vegetation located outside the construction work area from construction effects;
  - Replacing removed trees following City of Seattle street tree standards;
  - Monitoring by WSDOT of contractor adherence to this plan; and
  - Developing and implementing treatment plans for significant or heritage trees, funded by WSDOT.

- An erosion control plan to be implemented throughout the construction period.
- A plan for traffic management during construction to keep traffic flowing, limit detour routes through residential areas, and ensure access for residents, etc.
- A haul route management plan including the following commitments:
  - WSDOT will ensure that, to the maximum feasible extent, the construction contractor uses the mainline of I-5 and SR 520 for all material hauling during construction;
  - Construction traffic will be limited to city-designated arterials; and
  - If the haul routes change after execution of the PA, WSDOT will consult with the SHPO and consulting parties regarding any additional potential effects on historic properties following the Section 106 framework.

In addition, WSDOT has engaged the services of a vibration expert to evaluate the project corridor, including any potential haul routes along city arterial-streets, and to identify areas where vibration may be of concern. WSDOT will avoid or minimize vibration effects from construction on historic properties by implementing BMPs for vibration currently being developed by this expert. Areas under study include historic properties on steep hillside, the NOAA facility, East Lake Washington Boulevard, and the Lynn/19th Avenue potential haul route, among others.

Implementation of the CCMP, as determined in the forthcoming PA, will avoid and minimize adverse effects onto historic properties. Potential measures to mitigate adverse effects will be determined in the forthcoming PA and are listed below.

## Potential Measures to Mitigate Effects on Historic Properties

The following potential mitigation measures are conceptual at this time. Mitigation measures of the Preferred Alternative will be determined through the development of the PA among WSDOT, FHWA, ACHP, the SHPO, affected tribes, and other consulting parties.

If WSDOT, on behalf of FHWA and in consultation with the SHPO, ACHP, and other consulting parties, does not include some or all of the following potential mitigation measures in the PA, additional mitigation measures, as determined by these parties, will resolve the Preferred Alternative's adverse effect on historic properties.

Mitigation of permanent adverse effects on historic properties may include the following commitments on the part of WSDOT:

- In consultation with the SHPO and consulting parties, WSDOT will create a web-based interpretive site on the history of the project area. Topics to be presented on the site might include information on the historic properties within the APE; the Olmsted plan and the Alaska Yukon Pacific Exposition; summarized findings of archaeological investigations; and a redacted, non-confidential report on the ethnography of the project area and Lake Washington.
- If the FEIS for the project determines that noise walls are warranted at any locations within the APE, WSDOT will consult with affected property owners, the City of Seattle Landmarks Preservation Board, DAHP, and the concurring parties of the PA to determine the aesthetic

treatment of the noise walls and ensure compatibility with the historic character of nearby historic properties. Consultations will follow WSDOT policy and procedures.

- WSDOT and the Seattle Department of Transportation (SDOT) will coordinate to ensure that one of these agencies or another specifically identified party will be responsible for maintenance of landscaping installed as part of the project.
- WSDOT will ensure that permanent lighting throughout the corridor is designed to minimize glare into homes and parks and out over the water; lighting on the lids will be reviewed by the Seattle Design Commission and DAHP to ensure compatibility with the historic setting and residential character of surrounding areas.
- In consultation with the concurring parties to the PA, WSDOT will consider requests to install landscaping or landscaped buffers where practicable in areas where buffer zones are being removed or reduced and where new or relocated traffic lanes would intrude on the character of a historic district or the settings of individual historic properties.

## Potential Mitigation of Permanent Direct Effects

### Governor Albert D. Rosellini Bridge (Evergreen Point Bridge) Demolition

To A mitigation measure that would document the Evergreen Point Bridge, is the preparation of Level II Historic American Engineering Record (HAER) documentation of the bridge, including photographs, reproductions of selected as-built drawings, and a written history. Copies of the documentation will be provided to local repositories and will be presented on a project website.

### West Approach Area

Possible options for mitigating effects associated with the new west approach area include the following measures:

- WSDOT will consult with the Arboretum and Botanical Garden Committee, affected area Indian tribes, and other stakeholders, including homeowners in surrounding areas and Friends of Seattle's Olmsted Parks, to develop a plan for aesthetic design of the west approach and surrounding area.
- WSDOT will consult with the Arboretum and Botanical Garden Committee, affected area Indian tribes, and other stakeholders, including homeowners in surrounding areas and Friends of Seattle's Olmsted Parks, to develop a plan for landscape design, including grading and planting, within the WSDOT peninsula and current ramp locations. The plan would likely include habitat and wetland restoration and enhancement projects.
- WSDOT will facilitate coordination between tribes and the Arboretum and Botanical Garden Committee concerning landscape planning and management of Foster Island.

## Montlake Boulevard and Lake Washington Boulevard

Possible options for mitigating effects associated with changes to Montlake Boulevard and Lake Washington Boulevard include the following measures:

- WSDOT will consult with DAHP, the concurring parties of the PA, and local homeowners, about the final design for changes to Lake Washington Boulevard.
- WSDOT will ensure that changes to Lake Washington Boulevard are consistent with the Olmsted plan, including park furniture standards.
- WSDOT will ensure that the median in Montlake Boulevard that will be partially removed is reestablished such that it reflects the Olmsted plan as much as possible.
- Within areas of Montlake Boulevard where WSDOT plans modifications to medians, WSDOT will coordinate with appropriate concurring parties to the PA on design, wording, and placement of a sign about the Alaska-Yukon-Pacific Exposition and the Olmsted plan.
- WSDOT will prepare an NRHP Multiple Property Documentation Form for Seattle's Olmsted parks and boulevards and prepare the associated nomination form for Lake Washington Boulevard.
- WSDOT will cooperate with the Seattle Parks and Recreation Department, Friends of Seattle Olmsted Parks, and the Montlake Community Council to design signage or some other indicator of the significance of Lake Washington Boulevard as an Olmsted property. The signage or similar indicator will be placed on the small piece of Seattle Parks and Recreation Department property at the southeast corner of Montlake Boulevard and Lake Washington Boulevard.

## New Montlake Lid and Interchange

Possible options for mitigating effects associated with changes to the new Montlake lid and interchange include the following measures:

- To facilitate future historic preservation planning efforts within the Montlake community, WSDOT will complete a survey and nomination of contributing and noncontributing properties within the Montlake Historic District. This effort will be completed once the project has received all necessary permits but prior to construction of the Montlake lid. Survey materials will be compiled in a format compatible with the City of Seattle's historic property database.
- Once construction of the lid is complete, WSDOT will reestablish a visual buffer on the remaining Canal Reserve Lands south of historic properties on East Hamlin Street. This buffer will be designed in consultation with the affected property owners.
- WSDOT will assist the concurring parties of the PA to develop a sign plan for historic markers or signage for the Montlake Historic District. Once the sign plan is approved by WSDOT in consultation with DAHP and the City of Seattle, WSDOT will fund fabrication and installation of up to five historic markers or signs within the district. The information from the markers/signage may become part of a project-wide educational website.
- The MOHAI clock tower, bell, and cannon are iconic features of the Montlake Historic District. If MOHAI does not relocate these features to its new facility, WSDOT will coordinate with MOHAI, the appropriate offices within the City of Seattle (including the Department of Parks and Recreation), and the concurring parties to this Agreement to determine whether these features

can be preserved and reused in the East Montlake Park or elsewhere within the Montlake Historic District. If the clock tower, bell, and cannon remain within the historic district, WSDOT will coordinate with the City of Seattle to identify maintenance responsibilities and to establish a long-term preservation plan for these items.

## New Montlake Bridge

Possible options for mitigating effects associated with construction of the new bascule bridge include the following measures:

- WSDOT will facilitate efforts to relocate the two contributing houses (2904 and 2908 Montlake Boulevard) in the Montlake Historic District that are planned for demolition in advance of construction of the second bridge.
- If these houses cannot be relocated and must be demolished, WSDOT will record them to DAHP Level III standards prior to demolition and allow salvage of architectural elements including, but not limited to, doors, windows, or molding for reuse.

## Potential Mitigation of Permanent Indirect Effects

### West Approach Area

Possible options for mitigating effects associated with changes to the west approach area include the following measures:

- WSDOT will use quieter concrete pavement throughout the corridor, including on the west approach bridge.
- WSDOT will place sound-absorptive material on the inside face of the currently planned 4-foot barriers along the west approach bridge.
- WSDOT will consult with affected property owners and the Arboretum and Botanical Garden Committee about the possibility of establishing visual buffers between Lake Washington Boulevard residences and the west approach bridge as part of planning for the WSDOT peninsula once the SR 520 ramps are removed.

### New Montlake Lid and Interchange

Possible options for mitigating effects associated with changes to the new Montlake lid and interchange include the following measures:

- In collaboration with the Seattle Design Commission, the Landmark Preservation Board, DAHP, and the concurring parties to the PA, WSDOT will create a landscape design plan for the Montlake lid that is compatible with the historic character of the Montlake Historic District. This plan could include urban design elements for the reconstruction and restoration of streets and landscapes, such as median and planter strip design, interpretive signage, and bus shelter coordination and design.
- WSDOT may include in the lid design historically compatible interpretive exhibits and markers describing the evolution of the Olmsted landscape and the effects of SR 520 on the landscape. Exhibits should note that the lid reconnects communities and recovers the landscape connections that were important historically within the landscape of Seattle.

- WSDOT will ensure that the design of the median strip on Montlake Boulevard where it crosses the lid reflects the historical connection between Montlake Boulevard and Lake Washington Boulevard; this median should reflect the original design principles of Lake Washington Boulevard and other Olmsted-designed boulevards in Seattle to the degree possible.
- WSDOT will provide for the use of underground wiring on the Montlake lid to the extent feasible.

## Montlake Bridge

Possible options for mitigating effects associated with changes to the new bascule bridge include the following measures:

- In consultation with DAHP, the Seattle Design Commission, the Seattle Landmarks Preservation Board, the concurring parties of the PA, and the public, WSDOT will develop a design-review process for the new bascule bridge that will ensure context-sensitive design and consistency with the Secretary of the Interior's *Standards for the Treatment of Historic Properties* and the City of Seattle's historic preservation standards.
- WSDOT will ensure that the design for the new bascule bridge is compatible with the existing bridge and neither competes with nor replicates that bridge.
- If necessary, WSDOT will secure the services of an outside design expert with the appropriate experience in historic bridge design and compatibility.
- WSDOT will consult with nearby property owners, the Montlake Community Council, and DAHP on feasible ways to provide a buffer between the adjacent properties and Montlake Boulevard and the new bridge.

## Portage Bay Bridge

Possible options for mitigating effects associated with changes to the Portage Bay Bridge include the following measures:

- WSDOT is committed to a context-sensitive-solutions approach for the replacement of the Portage Bay Bridge. In consultation with the Seattle Design Commission, DAHP, the concurring parties to the PA, and the public, WSDOT will develop a design-review process for the new Portage Bay Bridge that will address overall urban design. If necessary, WSDOT will secure the services of an outside design expert with appropriate experience in designing new bridges within historically sensitive areas.
- WSDOT will use quieter concrete pavement on the new Portage Bay Bridge and approaches monitor quieter concrete pavement for effectiveness.
- WSDOT will place sound-absorbing material on the inside face of the currently planned 4-foot barriers along both sides of the structure.
- WSDOT will place noise-absorbing materials along expansion joints and will reduce the speed limit to 45, which would further reduce noise.
- Through the design of the Preferred Alternative, WSDOT will re-establish the link between the Bill Dawson trail and the Ship Canal Waterside Trail via the Arboretum Waterfront Trail.

- In partnership with Seattle Parks and Recreation Department, WSDOT will install appropriate retaining wall treatments and lighting along the Bill Dawson Trail to enhance the user experience and promote safety. Interpretive features about marine resources and historic properties in the trail locale will be incorporated in trail design.
- In consultation with the concurring parties to this agreement, WSDOT will include improved open space as part of bridge design, especially the space under the west end of the bridge, making it usable space while not creating an attractive nuisance.
- WSDOT will make parking under the bridge available to NWFSC employees again after completion of construction, pending application for and approval of an airspace lease.
- To assist the Roanoke Park/Portage Bay community in future historic preservation planning efforts, WSDOT will record and evaluate for NRHP eligibility, both individually and as a potential district, the houseboats currently docked on the west shore of Portage Bay between University Bridge and the Queen City Yacht Club docks. The resulting data will be in a form compatible with the City of Seattle historic property data base.

## 10th Avenue and Delmar Lid

Possible options for mitigating effects associated with changes to the 10<sup>th</sup> Avenue and Delmar Lid include the following measures:

- WSDOT will adopt the design for the 10th Ave/Roanoke intersection that was negotiated between SDOT and the adjacent neighborhoods, provided the neighborhoods continue to support the agreed upon design. This design agreement with the communities must be in place prior to the start of construction.
- In collaboration with the Seattle Design Commission, Seattle Landmarks Preservation Board, DAHP, and the concurring parties to this Agreement, and using the services of a landscape architect, WSDOT will create a landscape design plan for the Delmar/10<sup>th</sup> Ave lid, including the Delmar Drive bridge and Bagley Viewpoint that is compatible with the historic character of the Roanoke Park Historic District and other adjacent historic properties. This collaborative plan should include:
  - provisions for design, fabrication, and installation of historically compatible interpretive markers describing the evolution of the Olmsted landscape and the effects of SR 520 on the landscape, if adopted as part of the design plan. Exhibits should note that the lid reconnects communities and recovers the landscape connections that were important historically within the landscape of Seattle;
  - provisions for incorporating Olmsted characteristics, perhaps using the Seattle Olmsted design standards as guidelines, into the design of the lid and the Bagley viewpoint;
  - provisions articulating the lid gracefully into the hillslope to the south;
  - provisions for retaining or replacing existing fences on the south side of the lid to protect the security of surrounding homes;
- Previous conceptual design plan elements will be considered in the final design, but details such as curb bed design, retention or replacement of the current features of Bagley Viewpoint, and location of signage will be determined through the collaborative design process.

- WSDOT will maintain as much mature vegetation as possible on all sides of the lid. This issue will also be addressed with vegetation management component of the Community Construction Management Plan.
- WSDOT will provide for the use of underground wiring on the Delmar/10th Avenue lid to the extent feasible
- WSDOT will assist the Portage Bay/Roanoke Park Community Council, as a concurring party to this Agreement, to develop a sign plan for historic markers or signage for the Roanoke Park Historic District. Once the sign plan is approved by WSDOT, in consultation with DAHP and the Seattle Design Commission, WSDOT will fund fabrication and installation of historic markers or signage at the major entrances to the district. WSDOT will consult with City of Seattle and Portage Bay/Roanoke Park Community Council on a plan for ensuring maintenance of the signs. Information from the markers or signage may become part of the project-wide educational website.

## I-5 Interchange

Possible options for mitigating effects associated with changes to the I-5 Interchange include the following measures:

- WSDOT will use quieter concrete pavement on all parts of SR 520 west of the Portage Bay Bridge, including ramps, and will monitor quieter concrete pavement for effectiveness.
- WSDOT will place noise-absorptive material on the inside face of the currently planned 4-foot barriers along both sides of this structure.
- WSDOT will provide a landscaped bicycle/pedestrian path on the south side of the I-5 overpass at East Roanoke Street.
- WSDOT will consult with appropriate concurring parties to this Agreement about the aesthetic treatment of the flyover HOV ramp and other potential measures for protecting views from historic properties.
- WSDOT will preserve the trees along the north and south sides of SR-520 between I-5 and the Portage Bay Bridge in place to the maximum practicable extent. Trees that must be taken down during construction will be replaced after construction, where practicable, per City of Seattle requirements. There will be public involvement with both the Roanoke Park and North Capitol Hill communities in developing the vegetation management plan for this area.
- WSDOT will revegetate the SR 520 roadside areas from I-5 to the 10th/Delmar lid according to WSDOT standards but will consult with the Roanoke Park and North Capitol Hill communities to identify and select plantings compatible with the historic character of the area to the extent feasible.
- Where right-of-way fence is required, WSDOT will consult with the Portage Bay/Roanoke and North Capitol Hill communities about the possibilities for visually compatible fencing.
- To assist the North Capitol Hill community in future historic preservation planning efforts, WSDOT will record and evaluate for NRHP eligibility the Billodue House at 2333 Broadway Avenue East.

## Potential Mitigation of Temporary Direct Effects

### Montlake Bridge

Possible options for mitigating effects associated with changes from constructing the second Bascule Bridge include the following measures:

- In consultation with DAHP, the Seattle Landmarks Board, and the concurring parties to this Agreement, WSDOT will ensure that safeguards are in place such that, to the greatest extent possible, the historic Montlake Bridge is protected from inadvertent physical damage during construction of the new bascule bridge.
- In consultation with DAHP and the University of Washington, and any other concerned concurring parties to this Agreement, WSDOT will ensure that safeguards are in place such that, to the maximum extent feasible, vibrations, excavations, and heavy equipment do not affect the Canoe House during construction of the new bascule bridge. No construction staging or storage will occur in the vicinity of the Canoe House.
- WSDOT will ensure that access to the Ship Canal Waterside Trail will be maintained throughout construction of the new bridge by means of temporary detours. Full access to the trail will be re-established once bridge construction is completed; the nature of this access will be determined as part of the bridge design process.
- During construction of the second bascule bridge, WSDOT will maintain access through the Montlake Cut for marine traffic, except for 6 days of closure over a 9-day period, when the bridge spans are being erected.
- If 2904 and 2908 Montlake Boulevard are demolished, WSDOT will undertake planning for and disposal of any resultant hazardous materials.

### Portage Bay Bridge

Possible options for mitigating effects associated with changes to the Portage Bay Bridge include the following measures:

- WSDOT will develop a coordination plan with the Seattle Yacht Club to minimize disruption of traditional activities at the Seattle Yacht Club Main Station and on Portage Bay, the Montlake Cut, and Union Bay during construction. At a minimum, the plan will address the following issues:
  - key periods during which Seattle Yacht Club considers both water access and land access to its facilities particularly crucial;
  - ongoing coordination relative to special events being held at the Seattle Yacht Club or on the water;
  - provisions for water, vehicular, and pedestrian access to the Seattle Yacht Club Main Station for members and guests throughout the construction period;
  - mechanisms for WSDOT to communicate with Seattle Yacht Club about construction schedules on Portage Bay;
  - prohibition on the use of West Montlake Park for construction staging or other construction-related activities;

- provisions for coordination between WSDOT and Seattle Yacht Club regarding construction activities in Portage Bay and the Montlake Cut during Opening Day Events (one week before the first Saturday of May and one week after);
- a moratorium on towing of pontoons through Portage Bay, the Montlake Cut, and Union Bay during the Opening Day Events period; and
- a commitment from WSDOT that barge activity (transport, moorage, construction, etc.) will be timed to avoid interfering with Opening Day Events in Portage Bay.
- WSDOT will negotiate an agreement with the NOAA Northwest Fisheries Science Center to avoid damage to their historic structures and interruption of historic research functions at their facility during SR 520 construction.

## Other Historic Properties

Possible options for mitigating other effects on historic properties include the following measures:

### Access to Historic Properties

- Except for unavoidable brief periods, WSDOT will maintain access to all historic properties during construction.
- WSDOT will coordinate with St. Demetrios Church to develop a plan for ensuring access to the church grounds and facilities in the event that the Lynn/19th Avenue potential haul route is chosen for use at any time during Project construction. This plan will include the following:
  - A prohibition on any use of the potential Lynn/19th haul route during the weekend of the annual Greek Festival and on the day of the annual fund-raising auction.
  - A requirement that the contractor provide a flagman to assist parishioners entering and exiting the St. Demetrios parking lot during any use of the potential Lynn/19th Avenue haul route one half hour before, during, and one half hour after regularly scheduled Sunday services.
  - A process for ensuring safe access to the St. Demetrios parking lot for special events scheduled during any period of use of the potential Lynn/19th Avenue haul route.
- To minimize effects on the Roanoke Park Historic District, WSDOT will offer to develop a coordination process with St. Patrick's Church to ensure access to the church grounds and facilities during construction.
- To minimize effects on the Roanoke Park Historic District, WSDOT will maintain pedestrian access to St. Patrick's Church, Seward School, St. Demetrios Church, and local bus stops throughout the construction period.

### Project-wide Direct Effects from Construction, including Demolition of Existing SR 520 Features and Hauling of Debris and Materials

- WSDOT will develop measures to protect traffic circles and planters from construction/hauling traffic and will restore islands and planters to their original condition should any modifications be necessary or should any inadvertent damage occur as a result of construction hauling.

- WSDOT will repair potholes and other pavement breaks that occur as a result of construction and hauling activities in a timely manner.
- WSDOT will repair local streets and curbs damaged by construction activities during and after construction.
- Through the construction management planning process, WSDOT will identify appropriate best management practices (BMPs) to control fugitive dust; these practices may include some or all of the following:
  - avoiding grading and scraping activities during high winds;
  - keeping soils moist by using water trucks and sprays;
  - covering loads of soil and keeping dumpsters covered;
  - washing wheels and fender wells of haul trucks immediately prior to exiting the construction area;
  - cleaning the haul routes with a street sweeper;
  - using water sprays before, during, and after use of a wrecking ball or bulldozer for demolitions;
  - using covers or spray stabilizers on soil stockpiles;
  - using plants, bushes, rock walls, or wood fences to provide erosion control;
  - using filter fabric around catch basins to collect sediment from runoff;
  - installing a stabilized construction entrance (gravel buffer area) at the exits from construction areas.
- WSDOT will use visual barriers (e.g., orange snow fence, flagging) to mark limits of allowed disturbance in order to protect trees (including their root systems out to drip line) and other screening vegetation identified as being retained and protected in place.
- To the maximum extent feasible, WSDOT will avoid placement of temporary work bridges and other short-term construction features where they would require permanent removal of mature trees.

## Potential Mitigation of Temporary Indirect Effects

### Potential Mitigation Measures of Temporary Indirect Effects Associated with the Montlake Bridge

Possible options for mitigating other effects on historic properties include the following measures:

#### **Project-wide Indirect Effects from Construction, including Demolition of Existing SR 520 Features and Hauling of Debris and Materials**

- WSDOT will monitor and ensure compliance with local noise regulations for construction and equipment operation.

- Where feasible, WSDOT will locate construction sheds, barricades, and material storage away from historic properties, and avoid obscuring views of or from historic properties, as much as is practicable.
- Where feasible, WSDOT will install temporary construction screens/barriers (fencing, plantings) around construction areas so that visual impact of construction activities on historic properties are minimized.
- WSDOT will limit use of construction lighting as much as possible and keep necessary lighting pointed away from residences and other sensitive areas to the maximum extent feasible

## Summary

Development of avoidance, minimization, and mitigation measures are ongoing, and are not yet completed. The PA is currently being developed in consultation with SHPO, ACHP, and other Section 106 consulting parties. The purpose of this section was to identify potential means for resolving the project's adverse effects on historic properties. These potential measures represent the mitigation measures presented in a draft PA that were provided to DAHP, ACHP, and other consulting parties on January 10, 2011.

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