Cultural Resources

This option shares the differences in effects described for the No Montlake Freeway Transit Stop option above. In addition, this option would remove two historic houses on Montlake Boulevard that are contributing elements to the potential NRHP-eligible Montlake historic district. It would also affect the setting of the Montlake Bridge, which is listed on the NRHP. However, whether the effect would be severe enough to be considered adverse would depend on the site, scale, siting, and design of the new bridge. Widening a section of Montlake Boulevard to accommodate the new bridge could affect other contributing resources in the potential NRHP-eligible Montlake historic district. Despite the adverse effect from the demolition of two contributing structures to the Montlake historic district, and the loss of landscape buffer for other historic properties on Montlake Boulevard, the addition of the new bridge is not expected to have an adverse effect on the overall historic district.

Under this option, effects on archeological high-probability areas would be considerably reduced in the Montlake neighborhood, while effects would slightly increase on Lake Washington Boulevard East and Foster Island.

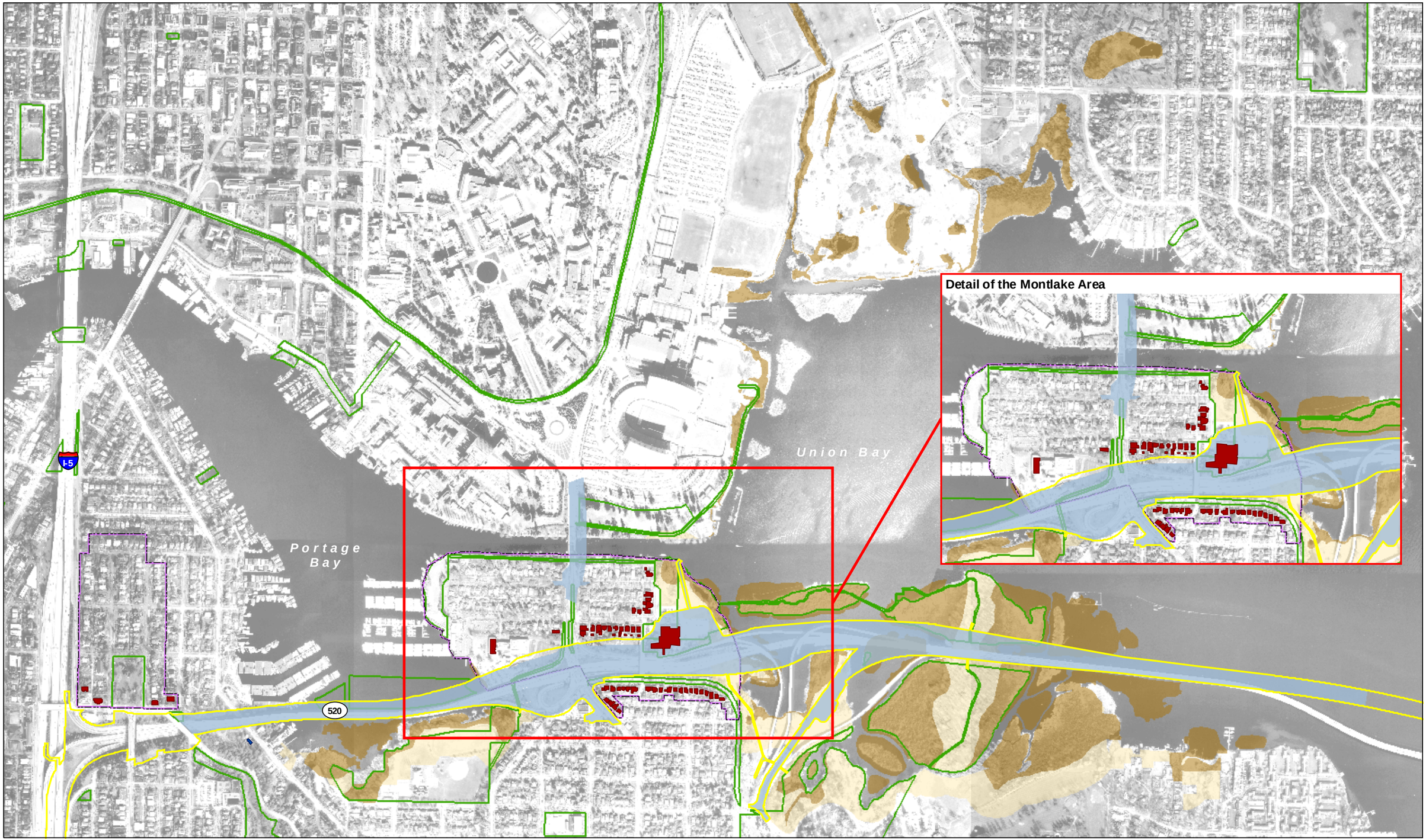
Less of a new landscape buffer would be needed if less of the existing green space behind the East Hamlin Street houses were removed under this option. Mitigation could be required for the demolition of two historic houses on Montlake Boulevard because they are contributing elements to the Montlake historic district. Additional mitigation would be necessary for any effects on the NRHP-listed Montlake Bridge. Effects on other historic houses in the potential Montlake historic district would also have to be addressed through mitigation, possibly with landscape buffers.

This option would have to address the appearance and context of the historic bridge and its associated structures. The design of the second bridge should be in harmony with the character of the older bridge and the University of Washington/Shelby-Hamlin communities.

Ecosystems

Wildlife

In the area of the second Montlake bridge, this option would remove a small area of trees and shrubs adjacent to the Ship Canal and has the



Second Montlake Bridge Option Footprint
Original 6-Lane Alternative Footprint
Wetlands
Wetland Buffer
NRHP Eligible
Contributing
Potentially Eligible Historic District
Parks

N

0 250 500 Feet

Exhibit 17. **Second Montlake Bridge Option**

SR 520 Bridge Replacement and HOV Project

File Path: \\Simba\proj\Parametrix\168395\180171 SR 520 Bridge Replacement\GIS\Layouts\Footprint_Alternatives\Report_6_24_05\Seattle_S2BR_Report.mxd, Date: June 22, 2005 3:16:23 PM

potential to create an interference to flying birds in the area. However, because a bridge is already present here, the second Montlake bridge would likely have little additional effect on flying birds. Noise from the second bridge would not be expected to affect wildlife because wildlife in the area are already adapted to traffic from the existing Montlake Bridge.

Fish Resources

Compared to the original 6-Lane Alternative, the second Montlake bridge could affect aquatic habitat in the Montlake Cut by adding structures that would produce a second shadow on the water surface adjacent to the existing Montlake Bridge. This shadow might influence the migration of some juvenile salmon.

Mitigation for perceived additional interference with juvenile salmon migration may be requested by the resource agencies for this option.

Energy

The construction of a second Montlake bridge is expected to increase mobility compared to the original 6-Lane Alternative. A detailed traffic analysis is necessary to evaluate the effects on fuel consumption.

Energy effects associated with construction of the project are directly related to the cost of the project (see Appendix F, *Energy Discipline Report, How would project construction temporarily affect energy use?*). Because this option is estimated to have a higher construction cost than the original 6-Lane Alternative, it can be expected that energy consumption during construction would also be higher.

Geology and Soils

This option would require abutments for the additional bridge, as well as temporary shoring for the abutment fill of the existing bridge. The underlying glacial till soils are anticipated to provide excellent foundation support. The abutments probably would be founded on spread footings, and drilled shafts could be used to minimize the area of disturbance. Walls would support the embankments.

The greatest geotechnical challenge for construction in this area will be to minimize the area required for equipment and to build a containment system that would prevent excavated material from going over the edge of the steep slope into the Montlake Cut.

Earthwork and drilling at the Montlake Cut would probably be limited to dry weather and during fish windows. Depending on the specific bridge layout, there may be requirements for temporary wood or steel barriers around parts of the site as supplementary erosion and sedimentation control devices to minimize the potential for earth spillage into the Montlake Cut.

Hazardous Materials

The area of the second Montlake bridge was not included in the original visual reconnaissance or historical record review. Additional study is needed to identify possible hazardous materials effects.

Land Use, Economics, and Relocations

Land Use

This option would affect more single-family residential parcels compared to the original 6-Lane Alternative because construction of the second Montlake bridge would take place in an already highly developed neighborhood.

Economics

This option would result in higher construction costs, which could have greater construction-related spending effects. There would also be more construction-related effects such as noise, dust, delays, and access modifications.

Although this option would affect more residential properties than the original 6-Lane Alternative, the overall footprint is approximately the same, and effects on property tax collections are expected to be similar.

Relocations

This option would affect two historic residences located east of the proposed second Montlake bridge. The magnitude of these effects would require more study.

Appropriate replacement housing would have to be located to mitigate for the residential effects of this option.

Navigable Waterways

The second Montlake bridge would be a bascule (draw) bridge that would be the same size and dimensions as the existing University Bridge (also a bascule bridge). This option could close the Ship Canal to

recreational and commercial boating traffic for brief periods of time during construction. The operational effect of the second bridge would essentially be the same as that of the existing University Bridge—a navigational channel that is 146 feet wide with unrestricted vertical clearance, with the bridges being open for more time to allow vessels to cover the increased distance required to clear both bridges.

All other effects on navigation would be the same as those described for the original 6-Lane Alternative in Appendix L, *Navigable Waterways Discipline Report*.

Any effects from closures of the Ship Canal during construction would be addressed in the Local Notice to Mariners, which would be distributed electronically by the Coast Guard to alert local commercial and recreational boating communities. The notice would allow all potentially affected vessels time to relocate temporarily to prevent being blocked during the construction period. No additional mitigation would be necessary for the operation of the second Montlake bridge because no new effects on navigation would result from its operation.

Noise

Noise would need to be modeled in order to determine future noise levels for this option. The noise levels discussed in this section are based on best professional judgment. This option would move traffic closer to residential receivers on Shelby Street, east of Montlake Boulevard, resulting in an increase in traffic noise levels of up to 3 dBA.

Because of the location of the new bridge and roadway intersections, it is unlikely that any additional noise mitigation would be feasible for this area.

Public Services and Utilities

This option could reduce congestion along Montlake Boulevard, enabling public service vehicles to reduce their response and travel times. This option would have the same effect on the NOAA facility as discussed in the No Montlake Freeway Transit Stop option section above.

Any additional utilities located outside of the original 6-Lane Alternative would need to be located during final design to determine the need for relocation and protection of utilities.

Recreation

This option would have effects similar to the original 6-Lane Alternative, except that the new bridge would require improvements to Montlake Boulevard north and south of the Montlake Cut. In addition to Montlake Boulevard, which is part of the Olmsted Plan for Seattle Parks, Boulevards, and Playgrounds, those improvements would affect:

- The Montlake Bike Path that parallels the boulevard
- The Ship Canal Waterside Trail that passes beneath the existing bridge along the south side of the Montlake Cut
- The bike trail along the north side of the cut

The boulevard improvements would require redevelopment of the Montlake Bike Path. This option would likely remove existing mature trees along the Montlake Cut and the structure would shade the Ship Canal Waterside Trail and the trail to the north, which could change the character of the trail. Additional traffic on Montlake Boulevard could increase noise and air pollution for users of all three trails.

Mitigation measures would be necessary for potential effects on the trails around the Montlake Cut and Montlake Boulevard, which is part of the Olmstead Plan for Seattle Parks, Boulevards, and Playgrounds.

Social

The effects of this option would be similar to those described above for the No Montlake Freeway Transit Stop option, except that the addition of the second bridge across the Montlake Cut could add new disruptions to the Montlake neighborhood. The second bridge would increase shading and change the views along the Ship Canal Waterside Trail. Noise levels along the Ship Canal Waterside Trail, the Montlake Bike Path, and the bike trail along the north side of the Montlake Cut would probably also increase. However, the additional bridge could reduce congestion along Montlake Boulevard, thereby reducing response and travel times of public service and transit vehicles through the neighborhood.

Transportation

The second Montlake bridge would add one lane of capacity in both directions on Montlake Boulevard. The additional capacity would improve overall traffic flow in the northbound direction on Montlake

Boulevard between the SR 520 interchange and Pacific Street. Because overall traffic flow would improve, transit and HOV traffic would also improve. It is assumed that the additional lane may need to be extended as far north as the Montlake Boulevard/25th Avenue Northeast intersection to facilitate higher traffic volumes.

This option would improve southbound traffic flow by removing the roadway capacity constraint at the Montlake Bridge, allowing more traffic to reach the SR 520 interchange in a shorter period of time. This additional traffic would extend the queue on the westbound and eastbound on-ramps. Some modification to the on-ramps would be needed to accommodate the additional queue.

Visual Quality and Aesthetics

This option would have a greater visual effect than the original 6-Lane Alternative because the addition of a new bridge alongside the existing Montlake Bridge would change the context of the older bridge and would changes views in the immediate vicinity. Removing two houses and an 80-foot-wide swath of mature trees and shrubs as far as Pacific Street would be a highly noticeable change to the visual character of the bridge corridor and Montlake Boulevard. The resulting bridge and roadway could appear more open than the current condition, and the combined results would noticeably change views of and from the bridges (Exhibit 18).

Overall visual changes along SR 520 would be similar to the No Montlake Freeway Transit Stop option. This option's light, glare, and shadow effects would be similar to the original 6-Lane Alternative. At the Montlake Cut, the second Montlake bridge would increase shading on the canal waters. On Montlake Boulevard north of the Montlake Cut, the removal of street trees would eliminate shading in the grassy area east of the road.

Water Resources

This option would result in a net increase in impervious surface area. Stormwater from Montlake Boulevard flows to a combined sewer system. The second bridge would increase runoff rates and volumes to

Existing View

Second Montlake Bridge Option

Looking southeast along Montlake Boulevard from just south of the Pacific Street intersection toward the Second Montlake Bridge.

Exhibit 18. **View of Second Montlake Bridge — Viewpoint 13**

SR 520 Bridge Replacement and HOV Project

that system. This option would reduce the amount of impervious surface area that drains to Union Bay because of elimination of the Montlake freeway transit stop. Overall, this option would add more impervious surface area for the north and south approaches to the additional bascule bridge.

Stormwater facility UB-1 and related pollutant loads would be slightly smaller with this option due to a reduction in impervious surface in the SR 520 mainline. Since stormwater generated by the new bridge approaches would be directed to the combined sewer system, detention would be provided to prevent increases in flow rates.

Eastside Project Area

This chapter describes the four options to the original 6-Lane Alternative that could affect the Eastside project area. The four options currently under consideration are:

- Bicycle/Pedestrian Path to the North option
- No Evergreen Point Freeway Transit Stop option
- South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option
- South Kirkland Park-and-Ride Transit Access – Bellevue Way option

Each section below begins with a description of the option, followed by explanations, by discipline, of how that option would differ from the original 6-Lane Alternative.

Those disciplines that do not differ are listed in a text box next to the option description. Section 4(f) changes are discussed in a later chapter in this report.

What is the Bicycle/Pedestrian Path to the North option and how does it differ from the original 6-Lane Alternative?

The intent of the Bicycle/Pedestrian Path to the North option is to (1) eliminate the multiple hard turns and crossings of the SR 520 bicycle/pedestrian path as it extends east from the SR 520 east highrise and (2) combine the alignment of the bicycle/pedestrian path with the local Points Loop Trail, while providing a separation barrier between the two paths. The option also intends to reduce the steep grade for users of the bicycle/pedestrian path at Points Drive. This option would keep the 14-foot-wide SR 520 bicycle/pedestrian path on the north side of SR 520 as it extends east off of the SR 520 east highrise. The path would be coupled with the realigned Points Loop Trail as it moves eastward following the northern edge of the SR 520 footprint. A 4-foot-wide physical barrier, of a type to be determined, would separate the bicycle/pedestrian path and Points Loop Trail. The bicycle/pedestrian path would extend approximately 1,500 feet farther east than under the original 6-Lane Alternative on

The Bicycle/Pedestrian Path to the North Option would not differ from the 6-Lane Alternative in the following discipline areas:

Air Quality
Environmental Justice
Hazardous Materials
Indirect and Cumulative Effects
Land Use
Navigable Waterways
Public Services and Utilities

These disciplines are not discussed in this section.

wall and fill as it follows the alignment of Points Drive. See Exhibit 19 for the footprint of this option as it compares to the original 6-Lane Alternative footprint.

What are the potential effects and mitigation of the Bicycle/Pedestrian Path to the North option?

Cultural Resources

This option would shift the new bicycle/pedestrian path away from the residence at 2857 Evergreen Point Road, which is an eligible Washington State Heritage Register (WSHR) site. Therefore, this property would not experience increased visual intrusion from the new path.

The Bellevue Christian School, an NRHP-eligible property located at 7800 Northeast 28th Street, would lose less of its property, particularly on the west end of the site.

The archeological high-probability area could be slightly more affected by this option.

Ecosystems

Wetlands

This option would affect wetlands and their buffers less than the original 6-Lane Alternative. The shift of the alignment northward would reduce direct effects (wetland fill) on forested/emergent wetlands YBS-1 and YBS-3 by approximately 1.5 acres. It would also reduce effects on the buffers for these wetlands and wetlands YBS-2 and YCN-2.

This option would minimize effects on the valuable forested habitats of YBS-1 and YBS-3. However, effects on their emergent portions would be similar to the original 6-Lane Alternative. Overall, this option would effectively increase the water quality, hydrologic, and habitat functions in the Yarrow Bay watershed relative to the original 6-Lane Alternative.

This option would reduce the amount of required compensatory mitigation for wetlands by 1.5 to 3.0 acres.

Wildlife

This option would remove approximately 0.5 acre more of shrubs and grasses within the Urban Matrix cover type. The projected noise levels from highway operations, and consequent disturbance to wildlife, would be very similar to the original 6-Lane Alternative.

Fish Resources

Effects on culverts in Eastside area streams would be slightly less than those for the original 6-Lane Alternative. By shifting the bicycle/pedestrian path north of SR 520, the amount of pipe extension required for three streams (East Tributary to Yarrow Creek, Fairweather Creek, and Cozy Cove Creek) would likely be several feet shorter than the original 6-Lane Alternative. However, the number of culvert replacements and extensions would not change, and all replacement culverts would still be designed and constructed to be fully fish passable in accordance with Washington Department of Fish and Wildlife (WDFW) guidelines (WDFW 2003). Therefore, as far as fish passage is concerned, no substantial differences exist between this option and the original 6-Lane Alternative.

At the current level of design, the project team has not calculated the total net increase in pollutant-generating impervious surface area. Any increase or decrease in pollutant-generating impervious surfaces would be relatively small and would likely not require the additional stormwater facility best management practices (BMPs), but only the resizing of those facilities proposed under the original 6-Lane Alternative. WSDOT, however, will detain and treat all stormwater that drains to fish-bearing streams in the Eastside project area. In addition, all stormwater discharges to Eastside basins will comply with water quality regulations, in accordance with WSDOT's Highway Runoff Manual (WSDOT 2004). Therefore, stormwater discharged from this option would be of similar quality and quantity as the original 6-Lane Alternative, and no adverse effects on aquatic life within Eastside streams are expected.

At the current design level, the project team has not calculated the total amount of affected stream buffer, but it appears that shifting the path to the north side of SR 520 would have slightly fewer effects on vegetation in the riparian buffers of the East Tributary to Yarrow Creek, Fairweather Creek, and Cozy Cove Creek. The change would likely result in a marginal improvement in buffer functions, potentially

Exhibit 19. **Bicycle/Pedestrian Path to the North Option**

SR 520 Bridge Replacement and HOV Project

including large woody debris (LWD) recruitment, contribution of organic material, and temperature regulation.

Depending on specific effects on riparian buffers (to be determined in more detailed design and analysis), mitigation for these areas may be more or less than the original 6-Lane Alternative.

Energy

Although this option would likely increase mobility compared to the original 6-Lane Alternative, it is not expected to have a substantial effect on fuel savings. A detailed traffic analysis is necessary to determine the effect of this option on fuel consumption.

Energy effects associated with construction of the project are directly related to the cost of the project (see Appendix F, *Energy Discipline Report, How would project construction temporarily affect energy use?*). Because this option is estimated to have construction costs similar to the original 6-Lane Alternative, it can be expected that energy consumption during construction would be similar.

Geology and Soils

Effects of this option are similar to those described for the original 6-Lane Alternative, except that the fill section would shift slightly to the north near the area of an historic landslide between 98th Avenue Northeast and 102nd Avenue Northeast. This shift would place the fill downward on the toe of the old slide, which could slightly improve stability. However, the fill would be shifted onto potentially soft, compressible sediments that are likely to be present north of the existing roadway.

The northward shift of the SR 520 alignment in the vicinity of the potentially soft sediments near 98th Avenue Northeast to 102nd Avenue Northeast may require the use of drainage material beneath the fill so that the natural flow of groundwater is not impeded. If the sediments are very soft, the use of reinforced or lightweight fill, or even improvement of the foundation soils, could be necessary to minimize differential settlement or to preserve foundation stability until the foundation soils consolidate and gain strength. Since the amount of shift is relatively small, the differential effect and required mitigation are probably relatively small.

Land Use, Economics, and Relocations

Economics

Construction costs for this option would be about the same as the original 6-Lane Alternative, so effects associated with construction spending would also be similar, as would other construction-related effects such as noise, dust, and traffic delays.

This option would increase mobility for bicyclists and pedestrians, but the travel time savings for motorized vehicle traffic would be similar to the original 6-Lane Alternative. Although the overall footprint is smaller than the original 6-Lane Alternative, this option would displace one additional residence. Without detailed parcel information, it is unclear how property tax collections would be affected compared to the original 6-Lane Alternative.

Relocations

This option would result in one additional residential displacement in Medina compared to the original 6-Lane Alternative.

Noise

Noise would need to be modeled in order to determine future noise levels for this option. The noise levels discussed in this section are based on best professional judgment. Movement of the bicycle/pedestrian path to the north would not result in major changes to the sound-level projections made for the original 6-Lane Alternative. Shifting the roadway to the south to accommodate the bicycle/pedestrian path could slightly increase noise levels at some residences south of the project corridor compared to the original 6-Lane Alternative noise levels without mitigation. Conversely, noise levels at residences north of the corridor could decrease slightly. Overall, noise levels would not vary by more than 1 to 3 dBA without mitigation.

Although noise walls would still be constructed with this option, wall heights could vary by 1 to 3 feet to accommodate the revised highway alignment. The effectiveness of the noise walls would be unchanged from the original 6-Lane Alternative.

Recreation

This option's effects on Fairweather Park and the Points Loop Trail would be similar to the original 6-Lane Alternative.

This option would affect a new park, Hunts Point Park. The footprint for this option would extend beyond the existing WSDOT right-of-way around the westbound on-ramp at 84th Avenue Northeast, encroaching into the southwest edge of the park. A total of 0.15 acre would need to be acquired, or approximately 8 percent of the total park area. Depending on the nature of the proposed work at this specific location, Points Loop Trail could be affected, at least during construction, because the trail extends along the WSDOT/park boundary.

This option would also change the effects on Wetherill Park. The new footprint would extend slightly north of the original 6-lane Alternative footprint into the southern edge of the park (depending on the nature of the proposed work at this specific location, Points Loop Trail could be affected, at least during construction, as the trail extends along the WSDOT/park boundary). On the other hand, this option would make relocation of the Points Loop Trail from its existing alignment in the WSDOT right-of-way to the eastern edge of the park unnecessary. As a result, this option would decrease the amount of parkland area to be acquired from 0.1 acre to 0.01 acre.

Mitigation proposed for the original 6-Lane Alternative related to the relocation and construction of the Points Loop Trail within Wetherill Park would no longer be required under this option. However, mitigation could be required for any new encroachment effects on Hunts Point Park and Wetherill Park.

Social

Overall, differences between this option and the original 6-Lane Alternative would be minimal. This option would displace recreational land in Hunts Point Park that would not have been displaced under the original 6-Lane Alternative. However, the Points Loop Trail would not have to be relocated, and the Wetherill Park land acquisition would be reduced. This option also provides a more direct route for the bicycle/pedestrian path.

Transportation

This option would provide a more direct regional connection. A second benefit includes changing the grade of the bicycle/pedestrian trail from nearly 11 percent to 6 percent. This option would not affect local or freeway vehicular traffic.

Visual Quality and Aesthetics

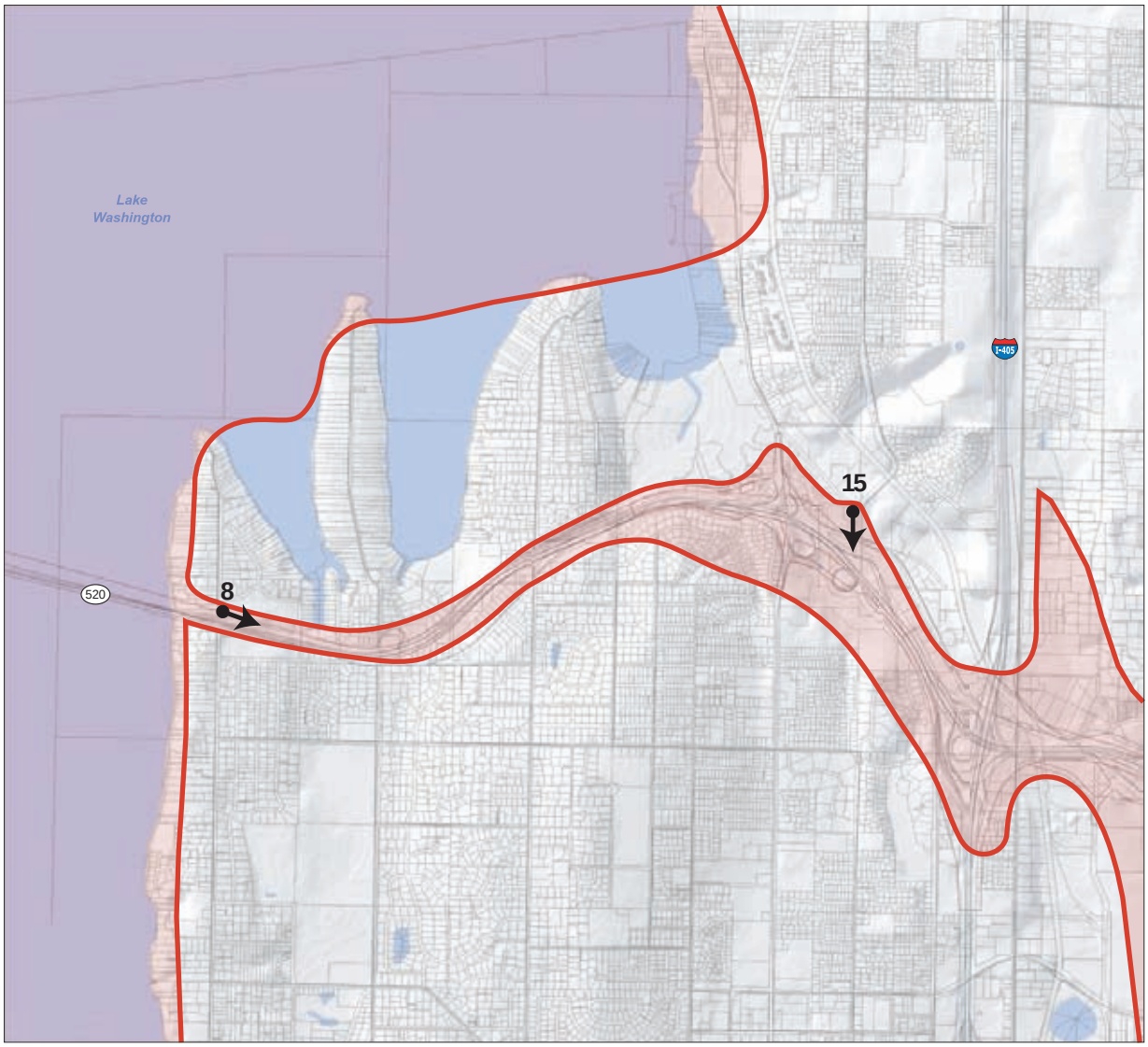
Overall, this option would be similar to the original 6-Lane Alternative, except that the trail area would be wider since the bicycle/pedestrian path would run parallel to the Points Loop Trail (Exhibit 20). Specific areas that would change are just east of 92nd Avenue Northeast and Points Drive. These new areas would become part of the project viewshed. At 92nd Avenue Northeast, less of the tree buffer along both sides of the roadway would be removed. However, this option would remove most or all of the mature trees on the north-facing slope between Points Drive and the westbound lanes of SR 520 to accommodate the new bicycle/pedestrian path and possibly new retaining walls (Exhibit 21). The loss of the tree buffer and the addition of retaining and sound walls would be a highly noticeable change; however, there are few sensitive viewers in this affected area, which is a two-lane, dead-end road serving a few residences.

This option could result in noticeable changes to light and shadow due to the removal of trees that now shade the trail and screen the roadway.

Water Resources

The type of effects identified for this option would not differ from the original 6-Lane Alternative. Visual inspection of an aerial photograph indicates that this option would have a larger impervious surface footprint than the original 6-Lane Alternative.

Any increase in impervious road surface associated with this option would require appropriate discharge to receiving waters or sizing of the flow control facilities already proposed under the original 6-Lane Alternative.



Viewshed Boundary

Viewpoint Location and Direction

N

0 2,500 5,000 Feet

Exhibit 20. **East Lake Washington and Eastside Viewsheds and Viewpoint Locations**

SR 520 Bridge Replacement and HOV Project

Existing View

Bicycle/ Pedestrian Path to the North

Looking east from just east of Evergreen Point Road bridge, above the westbound transit stop along the Points Loop Trail.

Exhibit 21. **View of Bicycle/ Pedestrian Path at Evergreen Point Road — Viewpoint 8**

SR 520 Bridge Replacement and HOV Project

What is the No Evergreen Point Freeway Transit Stop option and how does it differ from the original 6-Lane Alternative?

The intent of the No Evergreen Point Freeway Transit Stop option is the same as the Bicycle/Pedestrian Path to the North option, except that it would further narrow the SR 520 footprint through Medina and eliminate the Evergreen Point freeway transit stop. The function of the Evergreen Point freeway transit stop would be absorbed by the Yarrow Point freeway transit stop. No physical changes to the Yarrow Point freeway transit stop would be necessary or provided. This option would shift the southern SR 520 footprint farther north in Medina than the original 6-Lane Alternative. See Exhibit 22 for the footprint of this option as it compares to the original 6-Lane Alternative footprint.

The No Evergreen Point Freeway Transit Stop Option would not differ from the 6-Lane Alternative in the following discipline areas:

Environmental Justice
Hazardous Materials
Indirect and Cumulative Effects
Navigable Waterways
Noise
Public Services and Utilities
Relocations

These disciplines are not discussed in this section.

What are the potential effects and mitigation of the No Evergreen Point Freeway Transit Stop option?

Air Quality

This option would slightly reduce the effects on air quality because emissions from a diesel-fueled bus are lower while traveling at a steady speed versus during stopping, idling, and starting at the transit stop.

The smaller footprint would result in slightly reduced air quality effects from clearing, grading, and paving during the construction phase.

Cultural Resources

The residence at 2857 Evergreen Point Road, an eligible WSHR site, would experience less visual intrusion. This option would move the project north of the original 6-Lane Alternative footprint, and even north of the existing location of SR 520, away from the historic property.

The Bellevue Christian School, an NRHP-eligible property located at 7800 Northeast 28th Street, would lose only a small portion of land on

the northeast side, resulting in less lost acreage compared to the 6-Lane Alternative.

This option's effects on the archeological high-probability area would not be different from the original 6-Lane Alternative.

Ecosystems

Wetlands

This option would have the same effects and mitigation on wetlands as the Bicycle/Pedestrian Path to the North option.

Wildlife

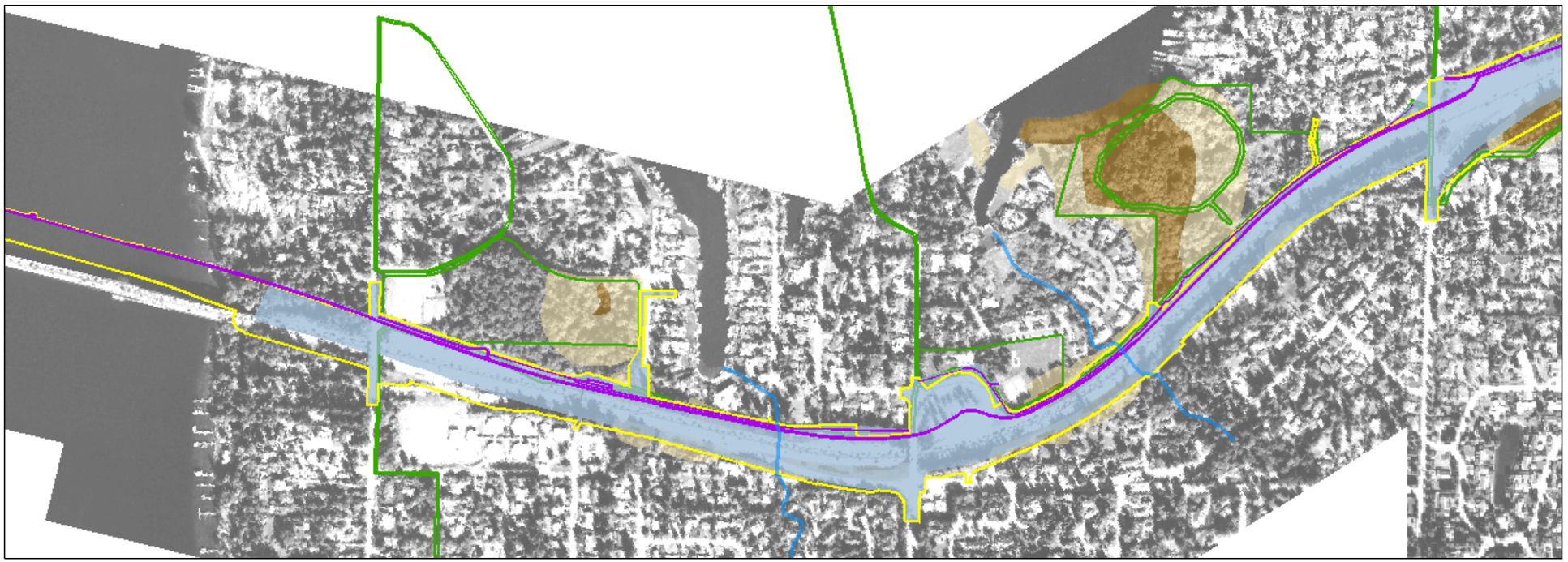
This option would remove approximately .25 acre more of shrubs/grasses and .25 acre less of trees within the Parks and Other Protected Areas cover type. Within the Urban Matrix cover type, this option would remove about .75 acre less of shrubs/grasses, 1.25 acres less of trees, and 1.5 acres less of wetland vegetation than the original 6-Lane Alternative.

The projected noise levels from highway operations, and consequent disturbance to wildlife, would be similar to the original 6-Lane Alternative.

Fish Resources

At the current level of design, the project team has not calculated the total net change in impervious surface. However, impervious surface on the Eastside is expected to decrease compared to the original 6-Lane Alternative. This would, in turn, result in a slight decrease in the size of stormwater facilities in some basins (e.g., near Evergreen Point), while stormwater facilities in other basins may need to be somewhat expanded. However, stormwater discharged from this option would be of similar quality and quantity to the original 6-Lane Alternative, and the overall short-term and long-term effects from this option on Eastside streams, aquatic habitat, and fish resources would be identical to the Bicycle/Pedestrian Path to the North option discussed above.

Depending on specific effects on riparian buffers (to be determined in more detailed design and analysis), mitigation for these areas may be more or less than the original 6-Lane Alternative.



No Evergreen Point Freeway Transit Stops Option Footprint
Original 6-Lane Alternative Footprint
Location of Bicycle/Pedestrian Path in Option
Wetlands
Wetland Buffer
Stream
Parks

N

0 250 Feet

Exhibit 22. **No Evergreen Point Freeway Transit Stop Option**

SR 520 Bridge Replacement and HOV Project

Energy

Although this option would increase mobility compared to the original 6-Lane Alternative, it is not expected to have a substantial effect on fuel savings. A detailed traffic analysis is necessary to determine the effect on fuel consumption.

Energy effects associated with construction of the project are directly related to the cost of the project (see Appendix F, *Energy Discipline Report, How would project construction temporarily affect energy use?*). Because this option is estimated to have a lower construction cost than the original 6-Lane Alternative, it can be expected that energy consumption during construction would also be lower.

Geology and Soils

This option would involve slightly less excavation near Evergreen Point Road. Other effects would be similar to those described above for the Bicycle/Pedestrian Path to the North option.

Land Use, Economics, and Relocations

Land Use

Removal of the Evergreen Point freeway stop would make access to transit more difficult compared to the original 6-Lane Alternative. This would be inconsistent with the plans and policies in the City of Medina's Comprehensive Plan and Clyde Hill's Comprehensive Plan.

Economics

Because of its relatively smaller footprint, this option is expected to have less effect on property taxes than the original 6-Lane Alternative.

Construction costs are anticipated to be lower than for the original 6-Lane Alternative, resulting in lower construction-related spending effects. Other construction-related effects (i.e., noise, dust, travel delays) are expected to be similar to those described for the original 6-Lane Alternative.

No additional relocations are expected under this option.

Recreation

This option would have effects similar to the Bicycle/Pedestrian Path to the North option described above.

Social

In addition to the effects listed for the Bicycle/Pedestrian Path to the North option, this option would improve travel time for transit by reducing the number of transit stops. However, there would be the loss of transit access for those who lived in the area or used the park-and-ride associated with this stop.

Transportation

Closing the Evergreen Point freeway transit stop would improve the travel time for buses on SR 520. The number of bus stops along the corridor would be reduced by one, thus saving time for deceleration, dwell time, and acceleration.

This option would provide further benefits by removing two conflict points from the HOV lane on SR 520. Conflict points are locations where traffic is forced to enter or exit the traffic stream. Reducing the number of conflict points on a freeway reduces the probability of an accident.

Because the Evergreen Point freeway transit stop would no longer exist, at least one transit transfer point would be needed between I-405 and Evergreen Point to service future passenger transfers and the forecast bus service.

Visual Quality and Aesthetics

This option would have less visual effect than the original 6-Lane Alternative because the roadway would be much narrower around the Evergreen Point Road bridge and for several hundred feet east of 92nd Avenue Northeast. Removing the Evergreen Point freeway transit structures and lanes would narrow the roadway. This extra room could allow for a buffer to be planted between SR 520 and the Bellevue Christian School and houses south of the roadway.

The effects described for the Bicycle/Pedestrian Path to the North option east of 92nd Avenue Northeast and along Points Drive would also occur for this option.

This option's light, glare, and shadow effects would be similar to the original 6-Lane Alternative.

Removal of the eastbound lanes and transit stop at Evergreen Point would allow for landscaping of that area, providing more opportunity

for visual enhancement. Maintenance or enhancement of the existing, preserved tree buffer here would also help preserve the tree-lined corridor character of the Eastside along SR 520.

Water Resources

The type of effects on surface water resources identified for this option would not differ from the original 6-Lane Alternative. A visual inspection of the project outline on an aerial photograph indicates a slight reduction in impervious surface area relative to the original 6-Lane Alternative that is unlikely to result in any major changes in pollutant loading or runoff volumes.

The decrease in impervious surface area associated with this option would require the appropriate sizing adjustment of the treatment and flow control facilities already proposed for the original 6-Lane Alternative.

What is the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option and how does it differ from the original 6-Lane Alternative?

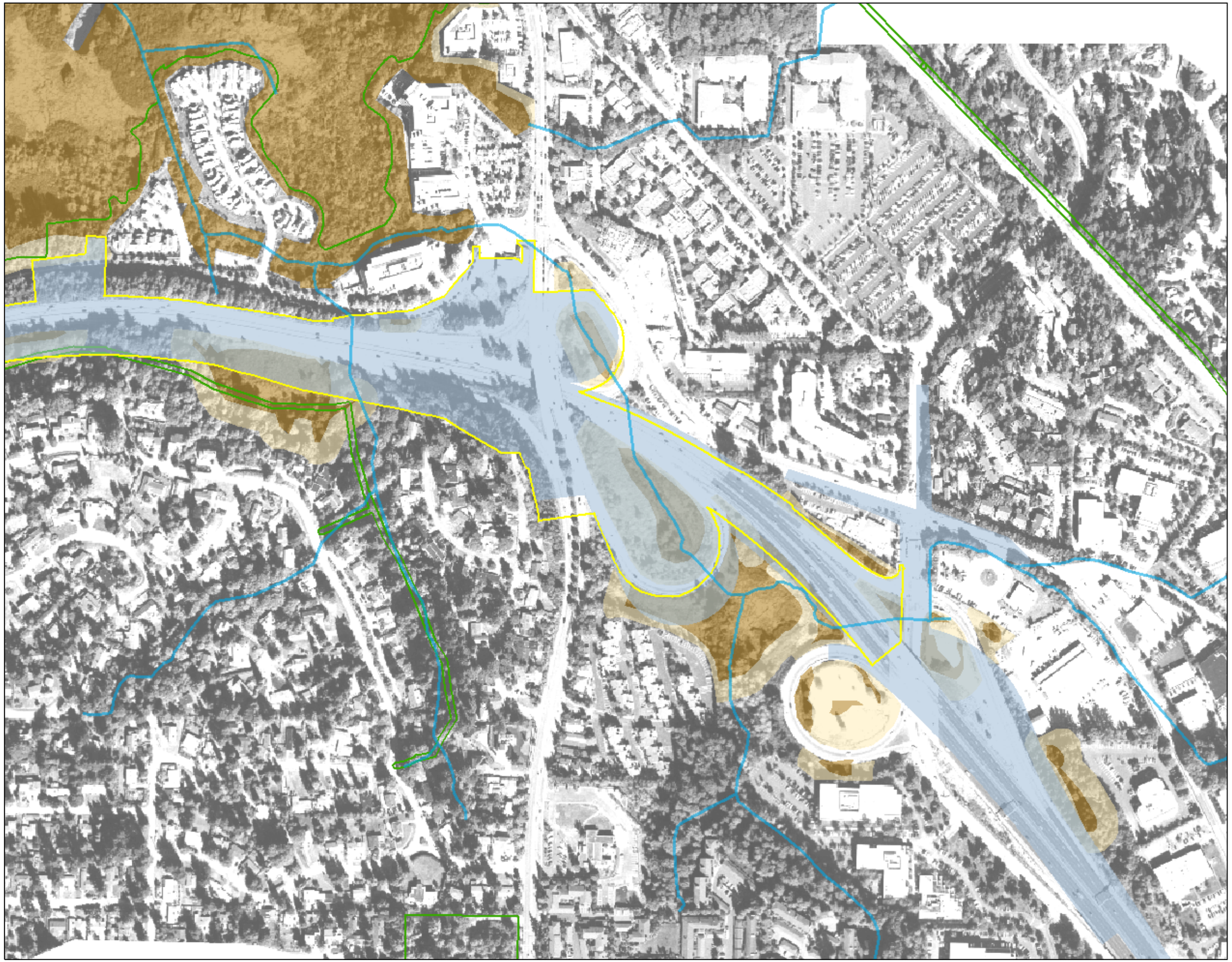
The South Kirkland Park-and-Ride Transit Access Option would not differ from the 6-Lane Alternative in the following discipline areas:

Cultural Resources
Environmental Justice
Indirect and Cumulative Effects
Navigable Waterways
Noise
Recreation
Relocations

These disciplines are not discussed in this section.

The intent of the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option is to provide improved access for buses to the South Kirkland Park-and-Ride from eastbound SR 520 and from the South Kirkland Park-and-Ride to westbound SR 520. This option would add a new transit/HOV-only eastbound off-ramp to 108th Avenue Northeast and a new transit/HOV-only westbound off-ramp to 108th Avenue Northeast. The footprint of SR 520 east of Bellevue Way would be widened slightly to accommodate the new ramps. Both 108th Avenue Northeast and Northup Way would be widened and improved under this option. One lane would be added to 108th Avenue Northeast between the eastbound on-ramp and 38th Place Northeast. Along with the additional through lane on 108th Avenue Northeast, the northbound leg of the 108th Avenue Northeast/Northup Way intersection would be channelized to include two exclusive left-turn lanes, a through lane, and a shared through/right-turn lane. There is also a possibility for adding a westbound second left-turn lane at the 108th Avenue Northeast/Northup Way intersection to facilitate clearing the left-turn queue and serving a higher number of westbound left-turn and through trips.

See Exhibit 23 for the footprint of this option as it compares to the original 6-Lane Alternative footprint.



South Kirkland Park-and-Ride Transit Access – 108th Avenue NE Option Footprint
Original 6-Lane Alternative Footprint
Parks
Wetlands
Wetland Buffer
Stream

N

0 250 500 Feet

Exhibit 23. **South Kirkland Park-and-Ride Transit Access —108th Avenue Northeast Option**
SR 520 Bridge Replacement and HOV Project

What are the potential effects and mitigation of the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option?

Air Quality

Additional traffic volumes traveling to and from the South Kirkland Park–and-Ride lot would likely increase localized effects on air quality at the intersections of Lake Washington Boulevard and Northup Way, Northup Way and 108th Avenue Northeast, and the SR 520 on- and off-ramps at 108th Avenue Northeast. Higher volumes of traffic traveling through these intersections could delay vehicles queued up during the red phase of the traffic signal. Longer delays translate to higher vehicle idling emissions. This increased effect would likely only occur during peak hours. At the same time, air quality would likely improve near the SR 520/Bellevue Way interchange because transit and HOV vehicles would be able to bypass this interchange to get to and from the South Kirkland Park-and-Ride lot.

There would also be a slight increase in air quality effects due to clearing, grading, and paving during the construction phase.

Ecosystems

Wetlands

This option would fill approximately 1.4 acres more of wetlands than the original 6-Lane Alternative. Most of these effects would occur because of the expansion of the eastbound off-ramp to northbound Bellevue Way, where it crosses Wetland YCS-2. The reconfiguration of the westbound off-ramps at 108th Avenue Northeast would affect wetland YCN-3A and the buffers of wetlands YCN-3A, YCN-4, and YCN-4A.

YCS-2 and YCN-3A are riparian wetlands associated with the mainstem of Yarrow Creek. Yarrow Creek is a salmonid-bearing stream potentially used by coho salmon. The riparian wetlands produce and export organic matter to Yarrow Creek for stream invertebrates. They also provide habitat for passerine birds and connectivity to upstream reaches. The additional loss of riparian wetlands along Yarrow Creek from this option would increase effects on stream and habitat functions.

Currently, blockages downstream preclude coho salmon from using the affected stream reaches adjacent to YCS-2 and YCN-3B. Replacement of existing culverts proposed by the original 6-Lane Alternative to remove downstream blockages would make the upstream reaches accessible to salmon. The increased effects of this option on these riparian wetlands could partially offset the benefits of the improved culverts.

This option would require 1.4 to 2.8 acres more compensatory mitigation for wetlands.

Wildlife

This option would remove approximately 1.5 more acres of wetland vegetation (within the Urban Matrix cover type).

The projected noise levels from highway operations, and consequent disturbance to wildlife, would be very similar to the original 6-Lane Alternative.

Fish Resources

This option would have substantially greater effects than the original 6-Lane Alternative. Additional effects would occur in Yarrow Creek because of:

- Extension of the proposed alignment along SR 520 nearly 2,000 feet farther east than the original 6-Lane Alternative
- Widening of Northup Way and 108th Avenue Northeast
- The increased footprint in the eastbound SR 520 off-ramp to Lake Washington Boulevard

Specific effects on Yarrow Creek would include those associated with culvert extensions, increased clearing of riparian buffers, possible channel modifications due to road widening along Northup Way and 108th Avenue Northeast, and increased impervious surface and stormwater.

This option would affect substantially more culverts on Yarrow Creek than the original 6-Lane Alternative. Up to four additional culvert extensions on Yarrow Creek could be necessary, including the potential replacement of a 240-foot-long culvert under SR 520, which is an identified fish passage barrier due to insufficient water depth within the pipe (WSDOT and WDFW 2003). In addition, culverts under 108th Avenue Northeast and the westbound SR 520 off-ramp to 108th Avenue Northeast would need to be assessed for fish passage, and upgraded or

replaced if necessary. Overall, compared to the original 6-Lane Alternative, the status of fish passage in the Eastside project area would likely not decrease over the long term because all extended or replaced culverts would be designed and constructed to be fully fish passable in accordance with WDFW guidelines (WDFW 2003).

At the current level of design, the project team has not calculated the total net increase of impervious surface along this option's alignment. However, this option would substantially increase impervious surface on the Eastside due to the expansion of the alignment to the east and the expansion of Northup Way and 108th Avenue Southeast. It is likely that this option's alignment would require construction of a new stormwater treatment/detention facility near the SR 520/108th Avenue Northeast interchange because of the amount of new impervious surface, the lack of existing stormwater treatment facilities, and the land gradients at the site. In addition, the stormwater facility near the SR 520/Bellevue Way Interchange may have to be enlarged. However, WSDOT would construct and size any stormwater runoff facility to detain and treat all stormwater drainage to Yarrow Creek. All stormwater discharges to the stream would comply with water quality regulations, in accordance with WSDOT's Highway Runoff Manual (WSDOT 2004). Therefore, stormwater discharged from this option would be of similar quality to that in the original 6-Lane Alternative, but the peak flow timing would be different. Other than the Yarrow Creek Basin, all other stormwater effects would be identical to those of the original 6-Lane Alternative.

Although the project team has not calculated the total amount of stream buffer effects at the current level of design, this option would have substantially greater effects on vegetation within the riparian buffers of Yarrow Creek due to the increased size of the option footprint. In addition, portions of the Yarrow Creek channel along Northup Way may be affected by intersection improvements at 108th Avenue Northeast. The stormwater treatment facility near SR 520/108th Avenue Northeast may result in additional temporary or permanent clearing effects within the buffer of Yarrow Creek. These changes would likely result in some reduction of buffer functions, potentially including LWD recruitment, contribution of organic material, and temperature regulation. Riparian buffer enhancement in other areas could mitigate for most of these effects.

Riparian buffer mitigation for additional effects on Yarrow Creek would be greater than under the original 6-Lane Alternative. In

addition, the original 6-Lane Alternative included a number of culvert replacements or retrofits on pipes that did not require extensions as additional project mitigation. Under this option, some of these culverts would need to be replaced or retrofitted as part of the project, and would therefore not be considered project mitigation.

Energy

Compared to the original 6-Lane Alternative, this option would increase mobility to the South Kirkland Park-and-Ride. Travel time savings in the eastbound direction are expected to be 16 minutes. Although it is not possible to evaluate fuel consumption without a detailed traffic analysis, fuel savings could be expected because of the travel time savings associated with this option.

Energy effects associated with construction of the project are directly related to the cost of the project (see Appendix F, *Energy Discipline Report, How would project construction temporarily affect energy use?*). Because this option is estimated to have a higher construction cost than the original 6-Lane Alternative, it can be expected that energy consumption during construction would also be higher.

Geology and Soils

The footprint of the off-ramp from westbound SR 520 to northbound Bellevue Way would be slightly larger. A cut catch-line or wall would come to the edge of the right-of-way, which abuts a parking lot on the adjacent property. The soils in this area are mapped as glacial till, so walls or cuts should be relatively easy to construct.

Construction of this off-ramp would place slightly more fill on potentially soft or liquefiable soils.

The footprint of the SR 520/108th Avenue Northeast interchange would be slightly larger and would involve slightly wider fills to the north of the existing embankments. The soils in this area are anticipated to be suitable for spread footings, so the effects of the fill would likely be limited to the change in topography.

A retaining wall may be needed between the parking lot and the eastbound SR 520 to northbound Bellevue Way ramp. Depending on the geometry, a temporary easement could be necessary for construction of the wall.

Hazardous Materials

This alternative extends north from the original 6-Lane Alternative on 108th Avenue Northeast. This area was not included in the visual reconnaissance and historical record review. The effects identified for the original 6-Lane Alternative (Appendix I, *Hazardous Materials Discipline Report*) are the same, but additional study is needed to identify possible effects in this new area of the footprint.

Additional study of potential hazardous materials in the option area should be conducted to identify any potential effects or mitigation required.

Land Use, Economics, and Relocations

Land Use

This option would widen the intersection at 108th Avenue Northeast. As a result, more nonresidential land would be needed to provide access to the South Kirkland Park-and-Ride, compared to the original 6-Lane Alternative.

Kirkland's Comprehensive Plan highlights working with Metro Transit to provide local bus service and connections to the regional transit system. This would be accomplished by constructing new transit/HOV-only eastbound and westbound off-ramps to 108th Avenue Northeast, thereby providing a direct connection for local and regional transit routes to the South Kirkland Park-and-Ride.

Economics

Effects associated with construction spending would be greater than the original 6-Lane Alternative because construction costs are estimated to be higher. Other construction-related effects (i.e., noise, dust, traffic delays, access constraints) would also be greater because project construction would affect additional properties to the east of the original footprint.

This option would increase mobility by improving the eastbound HOV off-ramp time by approximately 16 minutes, resulting in greater travel time savings for transit passengers and carpoolers. Total property tax effects would be similar to those for the original 6-Lane Alternative.

No additional relocations are expected under this option.

Public Services and Utilities

The direct access ramp would benefit emergency service and any other public service vehicles by providing a direct access route that would reduce response and travel times for these vehicles.

Additional utilities located outside of the original 6-Lane Alternative design limits would have to be located during final design to determine the need for relocation and protection of utilities.

Social

The direct access ramp would benefit any emergency services, public service vehicles, and transit vehicles by providing direct access to SR 520, which would result in reduced response and travel times.

Transportation

This option provides a direct transit/HOV access point from SR 520 to 108th Avenue Northeast, which would serve traffic traveling to and from the west on 108th Avenue Northeast. Transit and HOV vehicles would enter and exit the SR 520 corridor from ramps tied directly into the center HOV lanes that are part of the original 6-Lane Alternative.

This option would improve transit travel time between SR 520 and the South Kirkland Park-and-Ride lot. Under the No Build and original 6-Lane Alternatives, congestion on northbound Bellevue Way in 2030 would be severe and transit vehicles would experience a substantial travel time delay. This option would provide a direct access ramp for buses and HOV that bypasses traffic congestion at Bellevue Way.

Visual Quality and Aesthetics

This option would result in additional visual changes at the 108th Avenue Northeast intersection. The widening of 108th Avenue Northeast, Northup Way, and the westbound off-ramp would be noticeable, but not out of character with existing conditions, because the affected area is already a busy interchange and intersection. Permanent removal of several street trees of various ages on the WSDOT property and at the Yarrowood Condominiums complex would increase the overall visual effect, however. Removing the trees would give the intersection a more urban character, and reduce the visual screen into and from nearby affected properties. The sidewalk and landscaping along the front of the daycare center at the southwest corner of 108th

Avenue Northeast and Northup Way could be narrowed, bringing the roadway closer to the outside play area adjacent to Northup Way.

This option's light, glare, and shadow effects would be similar to the original 6-Lane Alternative, but with additional effects at the 108th Avenue Northeast interchange because of the removal of shade-providing trees.

Water Resources

The type of effects identified for this option would not differ from the original 6-Lane Alternative. A visual inspection of an aerial photograph indicates that this option would have more impervious surface than the original 6-Lane Alternative. The increase in impervious surface area along Northup Way, 108th Avenue Northeast, and on SR 520 east of 108th Avenue Northeast would increase the amount of stormwater being directed to the existing outfall at Yarrow Creek, near the intersection of Northup Way and 108th Avenue Northeast (see Exhibit 14 in Appendix T, *Water Resources Discipline Report*). More impervious surface area would increase the amount of pollutant loading and runoff volume estimated for this project.

The increase in impervious surface associated with this option would require appropriate sizing of additional treatment and flow control facility(ies) in the vicinity of the option. Additionally, the increase in pollutant loading and stormwater runoff volume from Northup Way, 108th Avenue Northeast, and SR 520 highway pavement east of 108th Avenue Northeast would likely require installation of an additional flow control and water quality treatment facility(ies) near this outfall location.

What is the South Kirkland Park-and-Ride Transit Access – Bellevue Way option and how does it differ from the original 6-Lane Alternative?

The intent of the South Kirkland Park-and-Ride Transit Access – Bellevue Way option is the same as the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option, but uses a different approach. A new lane would be provided on the eastbound SR 520 to northbound Bellevue Way loop ramp. This lane would be striped to serve transit vehicles only. The lane would continue north on Bellevue Way and connect with Northup Way east of the Bellevue Way/Northup Way intersection. There would be a signal installed at this intersection to control the northbound right-turn movement.

The northbound Bellevue Way to westbound SR 520 loop ramp would be reconfigured to originate from Northup Way just west of the Northup Way Park-and-Ride lot. A second eastbound lane would be added to Northup Way between the new intersection and the location on Northup Way where there are two through lanes in the existing configuration. See Exhibit 24 for the footprint of this option as compared to the original 6-Lane Alternative footprint.

The South Kirkland Park-and-Ride Transit Access – Bellevue Way Option would not differ from the 6-Lane Alternative in the following discipline areas:

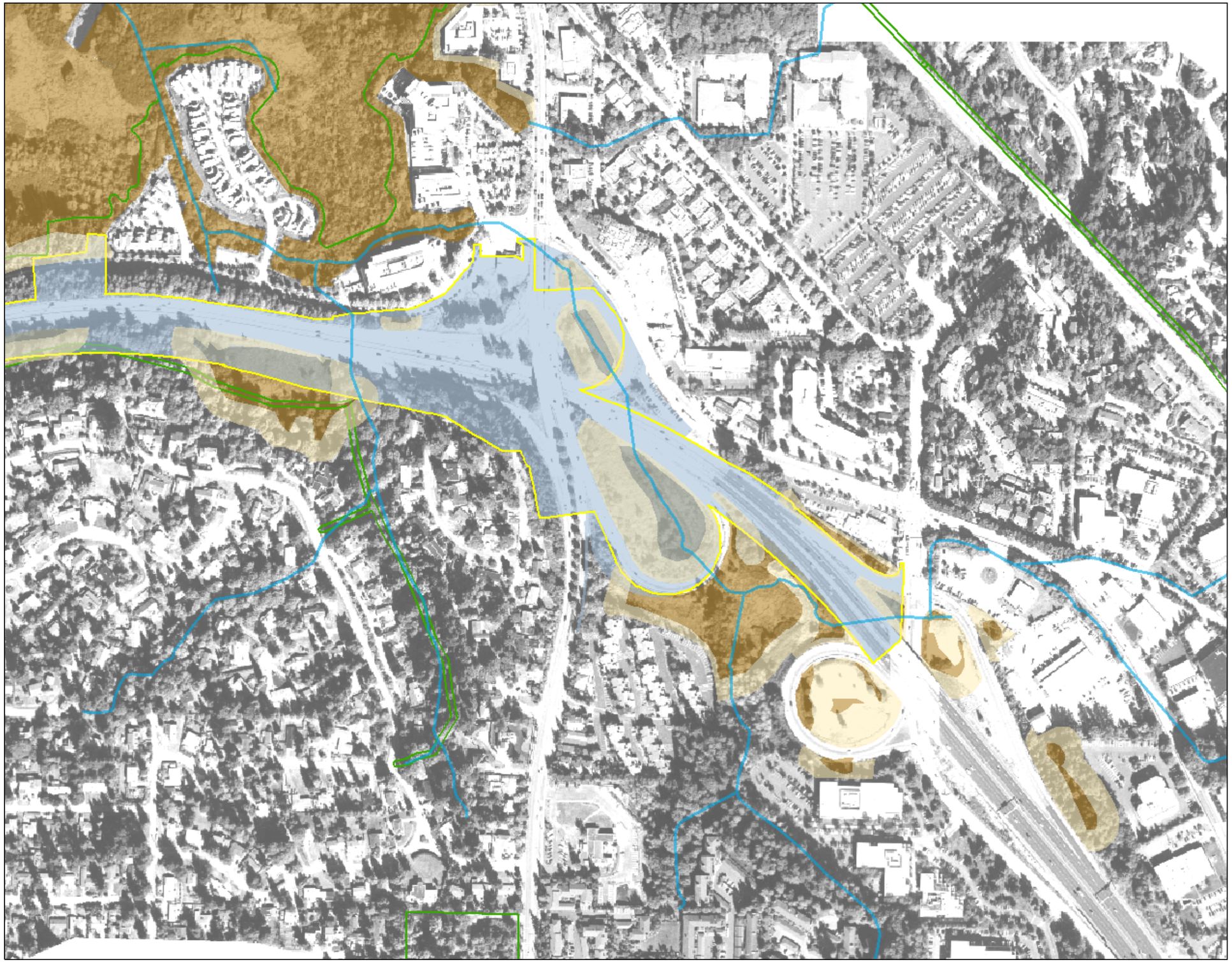
Cultural Resources
Ecosystems – Wildlife
Environmental Justice
Hazardous Materials
Indirect and Cumulative Effects
Navigable Waterways
Noise
Recreation
Relocations
Visual Quality and Aesthetics

These disciplines are not discussed in this section.

What are the potential effects and mitigation of the South Kirkland Park-and-Ride Transit Access – Bellevue Way option?

Air Quality

The addition of a transit bypass lane would slightly improve air quality near the SR 520/Bellevue Way interchange and the Bellevue Way/Northup Way intersection. Transit vehicles would be able to bypass the congestion at this intersection, thereby reducing idling emissions.



South Kirkland Park-and-Ride Transit Access–Bellevue Way Option Footprint
Original 6-Lane Alternative Footprint
Parks
Wetlands
Wetland Buffer
Stream

N

0 250 500 1,000 Feet

Exhibit 24. **South Kirkland Park-and-Ride Transit Access –Bellevue Way Option**
SR 520 Bridge Replacement and HOV Project

Ecosystems

Wetlands

This option would affect only slightly more wetlands and buffers than the original 6-Lane Alternative. These additional minor effects would occur to the emergent portion of YCS-1 and to the buffers of YCS-1 and YCN-2. In addition, all of wetland YCN-1 (less than 0.01 acre) and its buffer would be affected. In total, effects on wetlands and buffers from this option would be minor relative to the original 6-Lane Alternative.

Only slightly more compensatory mitigation for wetlands would be required.

Fish Resources

This option's effects on culverts in Eastside area streams would be slightly greater than those for the original 6-Lane Alternative. The larger option footprint at the SR 520/Bellevue Way ramps would require more culvert extensions on Yarrow Creek, increasing the number from one to possibly three or four. In addition, a longer stretch of the stream would be routed through a pipe in the interchange area (at the current level of design, the project team has not calculated the exact number and length of the culvert extensions). However, all culvert extensions or replacement culverts would be designed and constructed to be fully fish passable in accordance with WDFW guidelines (WDFW 2003). Therefore, overall fish passage in the Eastside project area would likely not decrease over the long term compared to the original 6-Lane Alternative.

At the current level of design, the project team has not calculated the total net increase of impervious surface; however, it would increase slightly, which could increase the size of the stormwater facility BMPs necessary near the SR 520/Bellevue Way interchange. Otherwise, the short-term and long-term effects from this option on Eastside streams, aquatic habitat, and fish resources would be identical to those of the original 6-Lane Alternative, with no adverse effects on aquatic life in Eastside streams.

Although at the current level of design, the project has not calculated the total amount of stream buffer effects, this option would have slightly greater effects on vegetation in the riparian buffers of Yarrow Creek because of the larger footprint at the SR 520/Bellevue Way interchange. The change would likely result in a somewhat short-term

decrease in buffer functions, potentially including LWD recruitment, contribution of organic material, and temperature regulation. Project mitigation would minimize any long-term effects on buffer functions.

Depending on the exact amount of effects on riparian buffers from the proposed option, the mitigation areas might be slightly larger than those for the original 6-Lane Alternative. In addition, the original 6-Lane Alternative included a number of culvert replacements or retrofits on pipes that did not require extensions as additional project mitigation. Under this option, some of these culverts would need to be replaced or retrofitted as part of the project, and would therefore not be considered project mitigation.

Energy

The effects of this option are expected to be less than those described for the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option because construction costs would be less.

Geology and Soils

This option would add a lane to the south loop off-ramp to Bellevue Way, which would result in additional excavation and filling. No secondary effects, such as settlement or changes to slope stability, are anticipated other than the usual effects of dust and increased traffic volumes associated with earthwork.

Additional excavation may require the use of retaining walls under this option.

Land Use, Economics, and Relocations

Land Use

Compared to the original 6-Lane Alternative, this option would affect slightly more nonresidential land in order to widen the SR 520 eastbound Lake Washington Boulevard off-ramp. Relocation of the Bellevue Way westbound on-ramp could make that land available for other project needs, such as stormwater treatment or mitigation.

Economics

Effects of this option would be the less than those described for the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option because construction costs would be less.

Public Services and Utilities

Effects of this option would be the same as those described for the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option.

Social

Effects of this option would be the same as those described for the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option.

Transportation

This option would provide a transit bypass lane on the eastbound to northbound Bellevue Way off-ramp. This lane would extend north across the Bellevue Way undercrossing and tie into Northup Way at a signalized intersection east of the Bellevue Way/Northup Way intersection. This lane would provide transit vehicles with an exclusive lane that would allow them to bypass congestion on Bellevue Way. The travel time benefit with this option would be similar to the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option. This option would also relocate the origin of the northbound Bellevue Way to westbound SR 520 on-ramp to Northup Way. By relocating the ramp's origin, the complexity of traffic operations on Bellevue Way would improve.

Water Resources

Effects and mitigation of this option would be the same as those described for the South Kirkland Park-and-Ride Transit Access – 108th Avenue Northeast option.

Section 4(f) Effects for All Options

For this project, the Section 4(f) analysis addresses public parks, recreational areas, and historic properties. The *Recreation* and *Cultural Resources* sections throughout this report have identified the effects on those Section 4(f) resources of the new options under consideration, and how those effects would differ from those of the original 6-Lane Alternative. As noted in the *Recreation* sections, several new Section 4(f) resources were identified as being affected by the options:

- **Marsh Island** is part of the Washington Park Arboretum. Although the park was previously identified as a Section 4(f) resource, Marsh Island was not directly affected by the original 6-Lane Alternative, but would be affected by the 6 Lanes with Pacific Street Interchange and High 6 Lanes with Pacific Street Interchange options.
- **University of Washington recreational facilities** on the north side of the Montlake Cut (boat center and shoreline trail) were not affected by the original 6-Lane Alternative, but would be affected by the 6 Lanes with Pacific Street Interchange and High 6 Lanes with Pacific Street Interchange options.
- **Lake Washington Boulevard** would be affected by the Second Montlake Bridge option.
- **Ship Canal Waterside Trail** would be affected by the Second Montlake Bridge option.
- **Hunts Point Park** would be affected by the new Bicycle/Pedestrian Path to the North and the No Evergreen Point Freeway Transit Stop options.

The *Cultural Resources* sections, on the other hand, identified three new Section 4(f) resources associated with the new options. These are:

- **Two historic houses** that are contributing elements to the potential NRHP-eligible Montlake historic district would be affected by the Second Montlake Bridge option.
- **NRHP-listed Montlake Bridge** would be affected by the Second Montlake Bridge option.

New Section 4(f) resources may be identified on the north side of the Montlake Cut. If so, they may need to be analyzed for additional effects. That information is currently unknown because that area has not been surveyed for cultural resources at this time.

Marsh Island (Washington Park Arboretum) would experience a direct use, in large part because of the required acquisition of land to accommodate the support columns for the low or high Union Bay bridge over the Montlake Cut. In addition, this recreational resource would experience proximity effects related to increased noise, visual encroachment, and change of character. Despite the fact that the height of the bridge above Marsh Island may help to lessen the effect, the use and enjoyment of the island and the well-used Arboretum Waterfront Trail could be greatly degraded.

The University of Washington's recreational spaces, including the boat center and nearby shoreline trail, would experience proximity effects. However, because the overlying bridge would be between 60 and 90 feet above ground level, depending on the option, the noise, shading, and other changes of character effects on these resources should not substantially impair their continued use, and thus would not constitute a constructive use.

Lake Washington Boulevard and the Ship Canal Waterside Trail would be affected by the second Montlake bridge. Their character could be changed (removal of trees, increased noise and air pollution), although it is not anticipated that the change would be so severe as to substantially impair the use of these resources.

A small portion of Hunts Point Park would need to be acquired, thus constituting a direct use of the resource. The area to be acquired is along the perimeter of the existing SR 520 right-of-way and provides little recreational value. There may also be proximity effects as the option footprint encroaches into the park. None of these effects, however, would substantially impair continued use of this park.

Two historic houses that are contributing elements to the potential NRHP-eligible Montlake historic district would experience a direct use because they would be displaced by the second Montlake bridge.

The NRHP-listed Montlake Bridge would be affected by the Second Montlake Bridge option by having its setting dramatically affected by the installation of a new parallel bridge. However, it is unlikely that this

effect would be so severe as to substantially impair the historic qualities of the bridge.

Additional mitigation measures would be required for these effects on the new Section 4(f) resources, including replacement land for direct use of parkland. Section 4(f) guidelines also require an evaluation of feasible and prudent alternatives that would avoid use of the affected resources and documentation of those measures included in the project to minimize harm to these resources. If any of the options are selected to move forward, an evaluation of feasible and prudent alternatives would be conducted.

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