

This chapter looks at indirect and cumulative effects as they relate to the project. It also discusses the irreversible decisions that the project would entail, tradeoffs between short-term resource use and long-term gains, areas of controversy related to the project, and adverse effects that cannot be mitigated.

Chapter 9: Other Considerations

The National Environmental Policy Act (NEPA) asks agencies responsible for highway projects to analyze a number of "big-picture" effects of these projects that extend beyond the immediate confines of the roadway right-of-way. Like most of the work done for this Draft EIS, these analyses assess conditions for the project's design year (in this case, 2030). They are designed to make sure that decisionmakers take into account the way an individual project could affect the regional environment as a whole—both by itself and in combination with other projects that are planned for the same time frame. The State Environmental Policy Act (SEPA) also requires consideration of indirect and cumulative effects.

What are indirect and cumulative effects, and why do we study them?

The project would take place in an area that has changed dramatically in the last century and that will continue to grow and change with or without the project. Like any other major project, this one is part of a complex network of land use and transportation systems, and it is important to consider the project's effects in the context of this network rather than in isolation. Considering the project on a larger scale in terms of both time and distance contributes to an understanding of how it influences, and is influenced by, the broader patterns of development in the area.

The box in the right margin provides NEPA's definitions of indirect effects and cumulative effects. In general, indirect effects are those that are later in time or farther away than the direct effects studied in the rest of this Draft EIS. For example, removing a building to make way for a highway is a direct effect; a gradual change in development patterns over time because of the access improvements the highway provides is an indirect effect. Cumulative effects are those that result when the project's effects combine with those of other past and future actions in the area, such as development of a highway interchange, a light rail route, a housing subdivision, or an office park.

NEPA Definitions of Indirect and Cumulative Effects

NEPA defines indirect effects as those that are caused by the action (i.e., the project) and are later in time or farther removed in distance, but are still reasonably foreseeable.

NEPA defines cumulative effects as the impact on the environment that 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 Section 1508.7).

How do we evaluate indirect and cumulative effects?

When we evaluate indirect and cumulative effects, we look for potential effects at both the regional and local scale. WSDOT evaluated indirect and cumulative effects at the regional scale using forecasts of population and job growth prepared by the Puget Sound Regional Council. These forecasts showed how patterns of population and employment are likely to change between today and 2030 and how those patterns might change depending on the alternative we choose for this project. The changes in these patterns tell us which areas would develop faster under each alternative, and which would develop more slowly. In these forecasts, the total number of people and jobs in the region remain the same for all alternatives; only the distribution of people and jobs would change. The forecasts are based on a computer model that makes these predictions based primarily on the time it would take to travel from one part of the region to another. These travel times are only one of several factors that play a large role in determining whether people will find an area desirable as a place to live or work, but they are the only factor we are able to model quantitatively.

Population and employment have grown considerably on the Eastside and in Seattle since the Evergreen Point Bridge opened in 1963.

To assess regional indirect effects, WSDOT looked at the differences in development patterns among the No Build Alternative, the 4-Lane Alternative, and the 6-Lane Alternative based on the transportation projects assumed to occur as part of the baseline transportation model. The differences in population and employment were calculated for areas called "forecast analysis zones" which are based on the tracts and blocks used by the U.S. Census Bureau. To assess more localized indirect effects, we reviewed the direct effects of the project to identify any that could be a catalyst for other changes.

To assess regional cumulative effects, WSDOT again looked at differences in development patterns among the alternatives, but also included in the model a number of other transportation projects that are planned or proposed to take place in the project area. This provides an indication of how the effects of the SR 520 Bridge Replacement and HOV Project would interact with the effects of other transportation projects in influencing regional development patterns. The other projects included in the cumulative effects analysis are described later in this chapter with the results of the analysis. To assess more localized cumulative effects, we identified projects whose effects would interact with the effects of the SR 520 project.

It is important to note that many of the analyses done for this Draft EIS already consider cumulative effects. For example, the transportation, air quality, and noise analyses all consider past and planned growth in the region in evaluating future conditions; effects of the project are added onto these "background" or No Build levels.

How can we predict where jobs and people will locate within the region?

The Puget Sound Regional Council forecasts economic and demographic changes for the four-county region over time using historical data from 1958 through the present. For example, the forecast projects how many people will live and work in the region, and in what types of jobs. A land use model then is used to distribute jobs and people into smaller areas called forecast analysis zones. This allocation is made using the most current information available from cities and counties about their projected housing and employment growth, and is extensively reviewed by local jurisdictions to verify its accuracy.

What are the project's potential indirect effects?

After performing the indirect effect analysis, WSDOT found very little difference in patterns of population and employment between the No Build Alternative and the build alternatives. The amount of population and employment change within any given forecast analysis zone would differ by less than 1 percent from one alternative to another. In other words, the difference would be extremely small.

Assuming these differences predicted by the model were to occur, there could be several implications. One potential effect could be an increase in impervious surface caused by concentrated growth in less developed areas. Biologists consider impervious surface a key measure of an ecosystem's health; all other things being equal, a basin with a low percentage of impervious surface will have better water quality and better habitat for all types of animals than a basin with more impervious surface. However, potential changes in development between the No Build Alternative and the build alternatives would be so small that they would not result in any discernable indirect effects on water quality and ecosystem health.

While we did not identify any indirect effects at the regional scale, we did identify some locally within the project area. Both build alternatives could indirectly affect East Montlake Park and McCurdy Park as a result of removing the MOHAI building. Demolishing the building would be a catalyst for the redevelopment of the two parks, which could include a smaller replacement building as well as new landscaping and pathways.

Demolishing the MOHAI building would be a direct effect; redevelopment of East Montlake Park would be an indirect effect.

There would also be indirect effects related to the construction of the Evergreen Point Bridge pontoons at a site outside the project area. This work would likely be done at the new WSDOT special projects construction site. The effects of this site are being analyzed in a separate environmental process.

Neither the 4-Lane nor the 6-Lane Alternative would encourage changes in land use or neighborhood character over time because they would not alter "quality of life" conditions, such as air quality and noise, substantially enough from current conditions to encourage changes in local land use planning and zoning. Economic effects would differ slightly compared to the No Build Alternative because population and employment growth would happen sooner with the project than without it in the areas northeast and east of Lake Washington, including southern Snohomish County.

What are the project's potential cumulative effects?

For this analysis, WSDOT considered how past actions combine with present and future actions to affect the natural and build environments. The project area and the entire Puget Sound region have been heavily affected by urbanization over the past 100 years, and especially within

the last 50 years. The development of industry, commercial districts, and urban and suburban neighborhoods has cleared extensive forests, filled thousands of acres of wetlands, dramatically changed natural waterways, and reduced populations of many native birds, animals, and fish. Development has also increased noise levels, generated air and water pollutants, and released other hazardous materials and wastes to the ecosystem. Replacing SR 520 as proposed with either build alternative would contribute to the cumulative environmental effects of many decades of regional urbanization.

What other projects are underway or planned in the project area?

Two main types of projects—development and transportation projects—have the potential to interact with the SR 520 project to create cumulative effects. "Development projects" refers here to the construction of new residential, commercial, industrial, and civic facilities. "Transportation projects" include those proposed or planned by both state and regional agencies, such as WSDOT and Sound Transit, and local agencies in the project area. The major transportation projects are described in this section, and the smaller, local projects are listed in Attachment 1 of Appendix J, Indirect and Cumulative Effects Discipline Report.

Development projects have the potential to interact with the SR 520 project to create cumulative effects.

Development Projects

The transportation model that predicts traffic growth is based on the planned development identified in the land use plans of the region's local communities. WSDOT also looked at specific development projects that are "on the books" within the project area. For the SR 520 project area, few such projects are currently proposed or planned. One potential change is the possible relocation of MOHAI to another building in downtown Seattle, which would take place no earlier than 2007. If this happens, several options have been proposed for using the building. The museum tentatively plans to keep the building for storage and possibly other uses, and the Washington Park Arboretum Master Plan identifies MOHAI as a possible location for 4,000 square feet of office space.

The University of Washington prepared a master plan for campus development in 2004. One of the potential development areas identified in the plan is in the south/southwest zone of the campus, where the University of Washington Medical Center plans to add 226,000 square feet of additional space with construction beginning in 2008. The University of Washington is also developing a master plan for its athletic facilities, including renovation of Husky Stadium. Although the master plan is not complete, the renovation could include relocating buildings and facilities and reconfiguring parking, access, and circulation around the stadium. Discussions with university athletic staff indicate that two new buildings, including 1,500

The University of Washington recently adopted a master plan for campus development.

spaces of structured parking, could be built south of Husky Stadium some time after the 2008 football season.

On the Eastside, the communities of Medina, Hunts Point, Yarrow Point, and Clyde Hill are almost fully developed and do not anticipate further development beyond limited construction of single-family homes. Kirkland and Bellevue have each issued one permit for new commercial construction within the project area, with a net increase of 195,000 square feet of commercial space in Kirkland and 8,700 square feet of commercial space in Bellevue. Neither city is currently aware of any other future development plans in the project area. Bellevue is engaged in a planning process that could change future land use in the Bel-Red/Overlake area, but this would be a long-term redevelopment over several decades; no specific plans or proposals are yet in place.

A development project outside the project area that could potentially affect SR 520 traffic is the Microsoft Campus redevelopment in Redmond. The company plans to add 3.1 million square feet of new space, which will allow it to accommodate approximately 12,000 new employees over the next 3 years. Redmond has identified SR 520 improvements as key in supporting the redevelopment.

Transportation Projects

Two regional transportation projects, which collectively will provide substantial improvements to mobility in the area, are now in the planning stages and were factored into the analysis of cumulative effects. These projects are:

- The Sound Transit North Link Project, which would provide light rail service between downtown Seattle, the University District, and Northgate. The Sound Transit Board selected the final route, station locations, and profile for North Link on April 27, 2006. University Link, the North Link segment between the Pine Street Stub Tunnel in downtown Seattle and the University of Washington, includes a station located near Husky Stadium. University Link will be constructed as part of the Central Link Light Rail Project, which is currently under construction.
- Phase II of WSDOT's I-405 Master Plan, which would provide a continuous multimodal corridor from I-5 in Tukwila to SR 522 in Bothell, adding general-purpose lanes on I-405 and SR 167, a bus rapid transit line with stations, HOV direct access ramps, park-and-ride lots, bus services, and an expanded vanpool program.

The following section describes the potential effects of the SR 520 Bridge Replacement and HOV project in conjunction with these other planned projects.

Conceptual image of Sound Transit Link light rail

Construction along I-405 near Totem Lake

What were the results of the cumulative effects analyses?

After reviewing the cumulative effects modeling analysis, WSDOT found very little difference in patterns of population and employment between the No Build Alternative and the build alternatives. As with the indirect effects analysis, the difference would be virtually indistinguishable.

The small differences in development patterns between the 4-Lane and 6-Lane Alternatives would have no discernable effects on ecosystems, since they would not substantially change the distribution of impervious surface in the project area.

In combination with the other projects considered in the analysis—in particular, the I-405 roadway improvements and various local street improvement projects—the build alternatives could cause cumulative effects on Eastside ecosystems. However, all transportation and development projects would be required to mitigate their effects by replacing or enhancing lost wetlands, treating stormwater runoff, and otherwise complying with federal, state, and local regulations that protect critical areas and water quality. In general, this mitigation would compensate for the cumulative effects.

Wetland in Wetherill Park

While we did not identify any substantial cumulative effects at the regional scale, we did identify some locally within the project area. These effects would occur during construction of the project if the work took place during the construction of other planned projects. These could include increases in construction-related traffic congestion, temporary road closures, temporary parking loss, construction noise and vibration, construction-generated dust and emissions, utility relocations, and resulting effects on neighborhoods. Potential cumulative construction effects could also include slower response times for public services. The exact timing of construction for these projects is not yet known. If they were built concurrently with the SR 520 project, the cumulative effects of simultaneous construction could be substantial.

Both the North Link light rail and I-405 projects could, in combination with the SR 520 project, contribute to cumulative construction effects if two or more were built at the same time. Although all build alternatives have the potential to result in cumulative effects, the potential for cumulative effects with the North Link project would be greatest if the Pacific Street Interchange option were built at the same time that the University of Washington station was under construction near Husky Stadium. Sound Transit would be working in the light rail station area for approximately 5 to 6 years, beginning as early as fall 2008.

The Pacific Street Interchange option could result in additional cumulative effects. Under current design and construction schedules for SR 520, Pacific Street interchange construction could be taking place close to University of Washington light rail station construction. This construction would include the Union Bay Bridge, which is expected to take

2 years to construct, and the Pacific Street/Montlake Boulevard intersection and road widening, which is expected to take 1 year. Construction of these two project components would occur concurrently. Cumulative effects would include cumulative property acquisitions; construction-related traffic congestion; cumulative utility relocations; increased parking displacements; effects on access to the athletic complex and University of Washington Medical Center facilities due to construction-related closures and congestion; and increased dust, noise, and vibration, which are of particular concern for the protection of patients at the medical center and for the University of Washington.

Depending upon timing, all build alternatives could also create cumulative effects with construction of new structures around Husky Stadium proposed in the athletic facilities master plan and those planned for the University of Washington Medical Center, although the Pacific Street Interchange option would have the greatest effects. WSDOT is actively working with Sound Transit and the University of Washington to refine construction schedules, identify and resolve potential design conflicts, and develop methods of minimizing cumulative effects.

Similarly, if I-405 improvements through Bellevue were built at the same time as SR 520, effects on the Eastside could be severe at times, especially in the SR 520/I-405 interchange area and on nearby local streets. Increased truck traffic to haul fill and other construction materials could create additional congestion, which could be compounded by lane, ramp, or local street closures needed for I-405 construction.

Another potential cumulative effect is the combined demand for sand and gravel from the SR 520 project with the I-405, North Link light rail, and Alaskan Way Viaduct projects. However, even using conservatively large estimates, the total use of sand and gravel for all four projects, if they all were built at the same time, is expected to be less than 2 percent of the annual demand for these products in the state.

University of Washington parking lot south of Husky Stadium

Crews demolish a portion of the I-405 bridge over Northeast 116th Street in Kirkland.

Are there any adverse effects that cannot be mitigated?

Many infrastructure projects—even projects that provide substantial public benefit, like this one—have some negative effects on the natural and/or the human environment. WSDOT is strongly committed to avoiding, minimizing, and mitigating such effects whenever possible. Nevertheless, the SR 520 project would have several adverse effects that are not possible to mitigate completely. These include:

- Destruction of the existing Evergreen Point Bridge, which is eligible for the National Register of Historic Places and the Washington State Historic Register. Although WSDOT would mitigate the removal of the

bridge through photo documentation and other measures, it would no longer exist after completion of the project.

- Fill and shading over Portage Bay, Union Bay, and the Arboretum. Wider bridges would increase both fill and shading, particularly in the nearshore waters and wetlands of Union Bay. These changes would reduce wetland and aquatic habitat of a type that is rare in the region and could affect salmon protected under the Endangered Species Act. These effects would be greater with the 6-Lane Alternative and greatest with the Pacific Street Interchange option, which would place four large columns in the path of all fish migrating in and out of Lake Washington. While these effects would be mitigated, the existing habitat would be altered.
- Potential elimination of a known sockeye salmon spawning location along the east shore of Lake Washington. The eastern approach of the new Evergreen Point Bridge would be built directly over this spawning area. WSDOT would enhance nearby habitat to offset the loss, but it is not possible to exactly reconstruct the spawning area.
- The visual effects of the wider roadway, larger structures, and sound walls in Seattle and the Eastside. With the build alternatives, SR 520 would be considerably wider throughout the corridor, higher across Washington Park Arboretum, and lined with sound walls in most locations other than the Evergreen Point Bridge. SR 520 would look considerably different than it does today. While the new structures would include architectural treatments to enhance their aesthetics, some people would likely consider at least some of the visual changes created by the new structures adverse. The Pacific Street Interchange option would have greater visual effects than other alternatives because it would add a new bridge across Union Bay.
- Noise effects from the auxiliary lane east of I-405 in the 6-Lane Alternative. Most of the project area would be dramatically quieter as a result of the project, except for the area just east of I-405 and SR 520. In this area, noise levels would increase and exceed the noise criteria at six residences where the criteria are not exceeded today. Sound walls would not be effective in this location because the residences sit on a hill overlooking the roadway, and they are also affected by noise from Northeast 24th Street.
- The need to pay tolls to cross the Evergreen Point Bridge. If the SR 520 project is built, drivers would have to pay to use the Evergreen Point Bridge—a crossing that is free today. While drivers would be receiving a benefit in return for the payment, the toll could be a hardship for some lower-income people who are unable to use transit or take other routes.
- Effects from construction that would span a period of several years. The primary adverse construction effects include work bridges in Portage Bay and Union Bay, 2-year closure of the westbound HOV lane on

The existing Evergreen Point Bridge, which is eligible for the National Register of Historic Places, would be dismantled and replaced.

The westbound HOV lane on the Eastside would be closed during project construction.

the Eastside, a 3- to 5-year closure of the Lake Washington Boulevard ramps, and closure of the Delmar Drive East bridge for up to 12 months. Construction of the Pacific Street Interchange option could add cumulative construction effects to those of Sound Transit's University Link light rail station and projects proposed under the University of Washington's master plan. Early action projects that may help improve traffic flow during construction will be considered during final design. WSDOT will work with Metro Transit and Sound Transit to find ways to avoid or minimize adverse effects on transit service, including evaluating alternatives to the HOV lane closure and/or ways to provide priority access for transit.

- More restricted navigation on Lake Washington. If SR 520 is replaced by either of the build alternatives, the existing draw span on the floating portion of the Evergreen Point Bridge would not be replaced. Vessels taller than 70 feet would no longer be able to travel south of SR 520. This restriction would be the same as the current restriction on navigation south of the I-90 bridge across Lake Washington. Based on the extremely infrequent use of the SR 520 draw span during recent years, this should not be a substantial hardship on people using the lake for recreational or commercial activities.

What irreversible decisions or irretrievable resources would be committed to building the project?

Some resources would be irretrievable after the project was completed, including the physical materials used to build the project: aggregate to make concrete and asphalt, steel to make rebar and structures, oil to make asphalt, and fill material. These are finite resources, but they are not currently in short supply. Some excavated soils not reused for the new roadway would be disposed of at landfills, and the space used for these soils would not be available for other wastes. However, there is adequate landfill space available to accommodate all wastes that project-area communities will dispose of for the foreseeable future.

The energy used to build the project and keep it operating would not be retrievable. Energy that would be consumed includes the gasoline used by cars to drive on the roadway; the electricity needed to keep lights and electrical systems running; and gasoline, oil, and electricity needed for construction. Project construction is not expected to have a substantial effect on energy sources or fuel available in the region or the state.

In addition, the existing Evergreen Point Bridge and the sockeye spawning location on the shore of Lake Washington discussed in the prior section are irretrievable resources. Both would be eliminated by the project.

What are the tradeoffs between the short-term uses of environmental resources and long-term gains (or productivity) from the project?

Another way of phrasing the question above is to ask whether the project's long-term benefits make it worth the short-term disruption and resource use involved in building it. In the case of the SR 520 Bridge Replacement and HOV Project, the answer is clear. The short-term cost of replacing the bridge and improving the nearby roadway would be a number of years of construction, which would create some level of noise, dust, and traffic congestion, even with the most careful planning and the most diligent use of mitigation measures. The long-term cost of not replacing the bridge, however, would be staggering: intolerable traffic congestion, regional economic losses, reduced quality of life in project area neighborhoods, and—most important of all—the ever-present likelihood that high winds or an earthquake could suddenly cripple the Portage Bay and/or Evergreen Point bridges. The potential consequences range from severe regional traffic disruption to injury and loss of life.

For more than 40 years, SR 520 has been a vital artery in the Puget Sound region's transportation system, carrying tens of thousands of vehicles across Lake Washington each day. It connects the major commercial centers on the Eastside with downtown Seattle, a connection that takes on increasing importance as Eastside businesses play larger roles in the state's economy. The importance of SR 520 to this area comes into focus when we think of its closure in March 2006 during the afternoon peak traffic hour. Traffic seeking alternate routes sent the rest of the transportation system into a tailspin, creating gridlock up and down I-5 and I-405, as well as across I-90. Building safe, reliable, well-designed replacement bridges now will allow us to avoid the prospect of losing the existing bridges to an act of nature—a moment that will inevitably come if they are not replaced. For this project, unlike many others, the No Build Alternative is not a viable choice.

KEY POINT

Short-term and Long-term Costs

The short-term costs of replacing the SR 520 bridges and improving the roadway are minimal when compared to the potential long-term costs of doing nothing—which could range from severe regional traffic congestion to loss of life.

Do any areas of controversy remain to be resolved?

Like most projects of its magnitude, the SR 520 Bridge Replacement and HOV Project has generated controversy in several areas. WSDOT is actively working with agencies, elected officials, and members of the public to resolve these issues. The Final EIS will identify how each of these areas has been resolved.

- The width of the 6-Lane Alternative footprint in Seattle has caused concern among residents of Montlake, who see it as too wide to be accommodated in their neighborhood. They describe the 6-Lane Alternative footprint in Montlake as 29 lanes wide—the full outside and inside shoulders, four general-purpose lanes, two HOV lanes, bus acceleration/deceleration lanes into and out of the transit stops on SR 520, multiple

ramp lanes, and the bicycle/pedestrian path. There are also questions about how transit service on SR 520 should connect to service at the University Link light rail station at Husky Stadium. Some of the 6-Lane Alternative options—described in Chapter 3 and evaluated in Chapters 4 through 7—are designed to address these concerns.

- One of the 6-Lane Alternative options—the Pacific Street Interchange—has also generated controversy. The University of Washington, the major landowner that would be affected by this option, has told WSDOT that it does not believe the project's effects on the southeast campus can be mitigated. Effects on land use, parking, and aesthetics, as well as effects during construction, are areas of concern to the university. The Pacific Street interchange ramp could conflict with plans under development for renovating Husky Stadium. The University of Washington and Seattle Parks and Recreation Department are also concerned about the effects of this option on the Arboretum. WSDOT is addressing these concerns through a series of workshops in which University of Washington, City of Seattle, and Sound Transit staff are working with SR 520 team members to clarify and resolve specific issues.
- Several resource agencies have also identified concerns with the effects of the Pacific Street Interchange option on aquatic resources in Union Bay and the Arboretum. Some of the key issues they have raised are the effects of the Union Bay Bridge on the migration of juvenile salmon and the potential for the bridge's columns to provide habitat for salmon predators. Two agencies (NOAA Fisheries and the U.S. Fish and Wildlife Service) have requested that WSDOT analyze a different location for this interchange, farther west over the shore land of Union Bay.

Local Impact Committee

The Local Impact Committee (LIC) provides a forum for Seattle citizens and neighborhood organizations to be involved in the design process and to collectively solve issues. The committee has provided an opportunity for direct dialogue on neighborhood issues with WSDOT, the city of Seattle, and other agencies involved in the project. The LIC members are responsible for discussing project issues with their respective community councils and neighborhood clients.

In 2005, the committee's work focused on identifying alternative street and ramp designs in the Roanoke/North Capitol Hill area near the I-5/SR 520 Interchange. Committee representatives have expressed concern that the Draft EIS alternatives do not adequately address existing or anticipated future traffic issues experienced by the affected neighborhoods. The committee and its consultants identified and analyzed numerous alternative designs that could potentially address these issues and made a formal recommendation to WSDOT and the city of Seattle. One of those designs is shown below.

WSDOT will continue to work with the LIC and the city of Seattle to evaluate the identified design concept. Based on this evaluation and the recommendation of the LIC, Seattle will decide whether to recommend that the concept be included in the preferred alternative for the SR 520 Bridge Replacement and HOV Project. WSDOT will document the environmental effects of the preferred alternative in the Final EIS.

As the project moves closer to reaching a decision on a preferred alternative, the LIC will continue to work with WSDOT, Seattle, and the neighborhood residents they represent. The LIC would participate in the development of mitigation and enhancement plans as part of the Final EIS and design to ensure that community enhancements and traffic effects on adjacent communities are integral elements of the project design.

- Some resource agencies disagree with the method that WSDOT uses to calculate pollutant levels in stormwater runoff. WSDOT's method uses the roadway surface area as a basis for calculating the quantities of pollutants that will be discharged in stormwater runoff. NOAA Fisheries and the U.S. Fish and Wildlife Service prefer a method that uses the average daily traffic volumes on the roadway to estimate pollutant quantities. These agencies also make different assumptions than WSDOT about the effectiveness of some best management practices in removing pollutants from runoff prior to discharge. In addition, they calculate water quality results in terms of pollutant concentrations (the amount of pollutant per given unit of water), rather than in pounds per year as WSDOT does. This issue is not unique to the SR 520 project, and is being discussed at the management levels of WSDOT and the resource agencies.
- Some citizens, particularly those interested in moving traffic out of the Washington Park Arboretum, have requested that the Lake Washington Boulevard ramps be permanently closed, or at least closed during off-peak and weekend hours. This would shift traffic from the Lake Washington Boulevard ramps to the Montlake Boulevard ramps, exacerbating traffic in Montlake. Therefore, a Lake Washington Boulevard ramp closure would not be supported by the Montlake neighborhood. WSDOT is not considering permanent closure of these ramps as part of the build alternatives.
- Foster Island and other nearby areas have a high probability for the discovery of archaeological sites. WSDOT is currently researching and investigating these areas, and is conducting subsurface explorations in some high-probability areas to see whether archaeological resources are present or absent. WSDOT is also conducting ethnographic research to learn whether any of these areas could be classified as traditional cultural properties. If archaeological resources are identified, WSDOT's preferred approach is to avoid them. If this is not possible, WSDOT will develop and implement appropriate mitigation measures.
- WSDOT identified early on in the project's traffic analyses that an 8-lane SR 520 would increase traffic on an already severely congested I-5. However, some representatives of Eastside communities have expressed continuing interest in evaluating an alternative that includes eight travel lanes. Further evaluation of an 8-Lane Alternative is possible only if WSDOT finds that there are other design configurations that would not affect traffic on I-5, I-405, or local streets. Chapters 3 and 4 of this Draft EIS contain information on WSDOT's analysis of an 8-Lane Alternative and why it was not carried forward for environmental analysis within the Draft EIS.

Based on its history of use by Native Americans, there is a high probability that archaeological sites could be discovered on Foster Island.

Attachments

Acronyms and Abbreviations

ADA	Americans with Disabilities Act
BA	Biological Assessment
CEVP	cost estimating validation process
Coast Guard	U.S. Coast Guard
Corps	U.S. Army Corps of Engineers
dB	decibel
Draft EIS	Draft Environmental Impact Statement
Ecology	Washington State Department of Ecology
EIS	environmental impact statement
ESA	Endangered Species Act
FHWA	Federal Highway Administration
GMA	Growth Management Act
HABS/HAER	Historic American Buildings Survey/Historic American Engineering Record
HOV	high occupancy vehicle
LOS	level of service
MBtus	million British thermal units
MOHAI	Museum of History and Industry
mph	miles per hour
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric
NRHP	National Register of Historic Places
SDOT	Seattle Department of Transportation
SEPA	State Environmental Policy Act
SPCC	spill prevention, controls, and countermeasures
SUV	sport utility vehicle
TESC	temporary erosion and sediment control
USDOT	U.S. Department of Transportation
U. S. EPA	U.S. Environmental Protection Agency
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

Cross Reference of NEPA and SEPA Elements of the Environment

NEPA (FHWA T 6640.8A)	SEPA (WAC 197-11-444 & 448)	WSDOT Environmental Procedures Manual Reference	Location in the Environmental Impact Statement	Appendix
Purpose of and Need for Action		411	Chapters 1, 3	
Alternatives		411	Chapter 3	A
Natural Environment				
Construction Impacts	Earth Geology; Soils; Topography; Unique Physical Features; Erosion	420	Chapters 2, 4, 8	H
Air Quality	Air Air Quality; Odor; Climate.	425	Chapters 2, 4	C
Water Quality, Floodplain, Water Body Modifications	Water Surface; Runoff; Flood; Groundwater; Public Water Supply.	431 432 433	Chapters 2, 3, 4, 5, 6, 7, 8	L, T
Wetlands, Threatened & Endangered Species, Wildlife	Plants & Animals Habitat; Eelgrass; Unique Species; Migration Routes.	436 437	Chapters 2, 4, 5, 6, 7, 8	E
Energy, Local Short-Term vs. Long-Term Productivity, Irreversible and Irretrievable Commitment of Resources	Energy & Natural Resources Amount Used; Source/ Availability; Non-renewable; Conservation & Renewable Resources; Scenic Resources.	440 480	Chapters 4, 9	F

NEPA (FHWA T 6640.8A)	SEPA (WAC 197-11-444 & 448)	WSDOT Environmental Procedures Manual Reference	Location in the Environmental Impact Statement	Appendix
Built Environment				
Noise, Hazardous Waste Sites, Construction Impacts	Environmental Health Noise; Risk of Explosion; Hazardous Materials.	446 447	Chapters 2, 4, 5, 6, 7, 8	I, M
Land Use, Farmland, Coastal Barriers, Coastal Zone Impacts, Historical/ Archaeological/ Cultural, Visual, Joint Development, Social Impacts, Economic Impact, Environmental Justice, Wild & Scenic Rivers, Relocation	Land & Shoreline Use Land Use Plans/Population; Housing; Light & Glare; Aesthetics; Recreation; Historical/Cultural; Agricultural, Social Impacts, Economic Impact.	450 - 459	Chapters 2, 4, 5, 6, 7, 8	D, K, O, P, Q, S
	Transportation Transportation Systems; Vehicular Traffic; Water, Rail & Air Traffic; Parking; Movement of People or Goods; Traffic Hazards.	460	Chapters 1, 2, 4, 5, 7, 8	R
	Public Services & Utilities Fire; Police; Schools; Parks/ Recreational; Maintenance; Communications; Water/ Stormwater; Sewer/Solid Waste; Other.	470	Chapters 2, 4, 5, 6, 7, 8	N
Cumulative Impacts	Secondary and Cumulative Impacts	480	Chapter 9	J

List of Preparers

Name/Affiliation	Project Role	Education	Years of Experience
James C. Bard/ CH2M HILL	Author, Cultural Resources Appendix	PhD, Anthropology and Archaeology Register of Professional Archaeologists	27
Anne Behn/CH2M HILL	Environmental Team Coordinator; Author, Description of Alternatives and Construction Techniques Appendix and 6-Lane Alternative Options Report	BA, Ecology and Evolution	11
Guy Caley/ CH2M HILL	Author, Water Resources, Stormwater Design, All Known and Reasonable Technologies Report	BS, Civil Engineering BA, Humanities Professional Engineer	18
Rachel Chang/CH2M HILL	Author, Hazardous Materials Appendix	MS, Environmental Engineering BS, Biomedical Engineering	15
Jaime Crawford/ CH2M HILL	Lead GIS Analyst	MS, Environmental Science BS, Environmental Science	10
Karen Dawson/ CH2M HILL	Author, Geology and Soils Appendix	MS, Civil Engineering BS, Civil Engineering BS, Forest Engineering Professional Engineer	19
Roy DeLeon/ CH2M HILL	Lead Graphic Artist	BA, Graphic Design	34
Lori Durio/ CH2M HILL	Author, Cultural Resources and Section 4(f) Evaluation Appendices	MA, Historic Preservation BA, English and Political Science	11
Denise Evans/ WSDOT	Environmental Lead, Author, Pacific Street Interchange Option Location Analysis	BA, Geography	13
Lisa Fall/CH2M HILL	Author, Indirect and Cumulative Effects, Land Use, and Social Appendices	BA, American Studies	20
Karin Fusetti/CH2M HILL	Environmental Team Coordinator	BA, Planning and Design	15

Name/Affiliation	Project Role	Education	Years of Experience
Julie Grialou/ Parametrix	Author, Ecosystems Appendix (Wildlife)	MS, Wildlife Science BA, Biological Anthropology	12
Erika Harris/Parametrix	Author, Environmental Justice Appendix	BA, Economics	9
Michael Horntvedt/ Parametrix	Author, Transportation Appendix	BS, Civil Engineering	12
Jill Irwin/CH2M HILL	Editor	BA, Art History	13
Dennis Kirby/ CH2M HILL	Graphic Artist	BA, Fine Arts	26
Paul Krueger/ WSDOT	SR 520 Environmental Manager	Master of Landscape Architecture BA, Art History	10
Pete Lawson/ Parametrix	Author, Ecosystems Appendix (Fisheries)	MS, Environmental Science BS, Biology	9
Jim Leonard/FHWA	Urban Area Engineer	MBA, Business Administration BA, Environmental Engineer	41
Marion McDermott/CH2M HILL	Author, Hazardous Materials Appendix	MS, Geology BS, Geology	15
Douglas B. McDonald, WSDOT	Management Oversight, Editorial Review	JD AB, History	30
Julie Meredith, WSDOT	SR 520 Project Engineering Manager	BS, Forest Resources	17
Jeff Meyer/Parametrix	Author, Ecosystems Appendix (Wetlands)	MS, Range Ecology BS, Environmental Biology	20
Alexa Miller/EnviroIssues	Public Involvement and Communications; Author, Agency Coordination and Public Involvement Appendix	BA, Public Communications	6
John Milton/WSDOT	SR 520 Project Director	PhD candidate, Civil Engineering MS, Civil Engineering MS, Engineering Management BS, Civil Engineering	20

Name/Affiliation	Project Role	Education	Years of Experience
Michael Minor/ Michael Minor & Associates	Author, Noise Appendix	BA, Physics BA, Mathematics	18
Lorie Parker/ CH2M HILL	First Environmental Team Manager, Reviewer	JD MA. Library Science BA, English	25
Stephanie Parsons/ CH2M HILL	Editor and Production Coordinator	BA, English	13
Shannon Patterson/Parametrix	Author, Transportation Appendix	MS, Transportation Planning BA, Psychology	7
Suanne Pelley/EnviroIssues	Public Involvement and Communications; Author, Agency Coordination and Public Involvement Appendix	BA, Community Organizing	20
Dan Piztler/ CH2M HILL	Senior Reviewer, Economics Appendix	MA, Economics BA, Economics	22
Kurt Playstead/ CH2M HILL	Author, Economics and Energy Appendices	MBA, Business Administration BS, Business Economics	7
Rob Rodland/ CH2M HILL	Author, Public Services and Utilities Appendix	BA, Geography	5
Rene Rodriguez Lara/ CH2M HILL	GIS Analyst	BA, Geography	2
Robert Swope/ CH2M HILL	Author, Parks and Recreation and Section 4(f) Evaluation Appendices	MS, Urban and Regional Planning BA, Political Science	32
Andrea Tull/Sound Transit	Senior Reviewer, Draft EIS	Masters of Public Administration BA, Political Science, BA, English	25
Don Weitkamp/ Parametrix	Author, Ecosystems Appendix (Fisheries and Aquatic Habitat)	PhD, Fisheries	33

Name/Affiliation	Project Role	Education	Years of Experience
Susan Wessman/ Parametrix	Author, Visual Quality and Aesthetics Appendix	MS, Landscape Architecture	12
Lynette White/ CH2M HILL	Graphic Artist	AAS, Visual Communication	27
Alene Wilson/ CH2M HILL	Author, Recreation and Land Use Appendices	BA, Economics	6
Charlie Wisdom/Parametrix	Author, Navigable Waterways and Water Resources Appendices	PhD, Chemical Ecology BA, Biology	24
Lindsay Yamane/ Parametrix	Project Development Manager	MS, Civil Engineering (Structural) BS, Civil Engineering	24
Mary Beth Yansura/ CH2M HILL	Author, Air Quality Appendix	BA, Chemistry	16
Jenifer Young/CH2M HILL	Environmental Team Manager, Draft EIS Author	MA, Public Administration BA, English	17

List of Appendices

Distribution List

Government Agencies

Federal Agencies

Federal Highway Administration

Federal Transit Administration

National Oceanic and Atmospheric Administration National Marine Fisheries Service

National Park Service

U.S. Coast Guard

U.S. Army Corps of Engineers

U.S. Department of the Interior

U.S. Environmental Protection Agency, Region 10

U.S. Fish and Wildlife Service

State Agencies

Office of the Attorney General

Office of the Interagency Committee

Office of the Governor

University of Washington

Washington State Department of Archaeology and Historic Preservation

Washington State Department of Ecology

Washington State Department of Fish and Wildlife

Washington State Department of Natural Resources

Washington State Department of Transportation

Washington State Transportation Commission

Regional Agencies

King County METRO Transit

King County Department of Transportation

Metropolitan King County Council

Puget Sound Clean Air Agency

Puget Sound Regional Council

Puget Sound Regional Council Bicycle Pedestrian Advisory Committee

Regional Transportation Investment District

Sound Transit

Local Jurisdictions

City of Bellevue

City of Clyde Hill

City of Kirkland

City of Medina

City of Mercer Island

City of Redmond

City of Seattle

Town of Hunts Point

Town of Yarrow Point

Native American Tribes

Duwamish Tribe

Muckleshoot Tribe

Suquamish Tribe

Snoqualmie Tribe

Tulalip Tribe

Yakama Nation

SR 520 Bridge Replacement and HOV Project Committees

SR 520 Executive Committee Members

SR 520 Technical Committee Members

Libraries

Agency Libraries

Municipal Research and Services Center of Washington

Sound Transit Information Center

U.S. Army Corps of Engineers Technical Library

U.S. Environmental Protection Agency, Region 10 Library

Washington State Natural Resources Library

Washington State Department of Ecology Library

Washington State Department of Transportation Library

Washington State Library

Public Libraries

King County Library System - Bellevue Regional Library

King County Library System - Kingsgate Library

King County Library System - Kirkland Library

King County Library System - Lake Hills Library

King County Library System - Library Connection @ Crossroads

King County Library System - Newport Way Library

King County Library System - Redmond Regional Library

Seattle Public Library – Broadview Branch

Seattle Public Library – Central Library

Seattle Public Library – International District/Chinatown Branch

Seattle Public Library – Madrona-Sally Goldmark Branch

Seattle Public Library – Montlake Branch

Seattle Public Library – Northeast Branch

Seattle Public Library – University Branch

University and College Libraries

Bellevue Community College Library/ Media Center

Lake Washington Technical College, Technical Library

North Seattle Community College Library

Seattle Central Community College Library

University of Washington Suzzallo Library

Community and Special-Interest Organizations

Arboretum Foundation

Betterbridge.org

City/University Community Advisory Committee (CUCAC)

Eastside Transportation Association

Laurelhurst Community Club

Madison Park Community Council

Montlake Community Club

Museum of History and Industry (MOHAI)

North Capitol Hill Community Council

Portage Bay/Roanoke Community Council

Queen City Yacht Club

Transportation Choices Coalition

Wetherill Nature Preserve

Grays Harbor Locations

Aberdeen City Hall

Aberdeen Timberland Library

Hoquiam City Hall

Port of Grays Harbor

Timberland Regional Library

Index

R

S

T

U

V