

Attachment 3

Technical Memoranda Supporting the Responses to Comments on the Final EIS

Title	Date
SR 520 Historical Traffic Volume Technical Memorandum	July 2011
Identification of Section 4(f) Properties in the SR 520, I-5 to Medina Project Area	July 2011

SR 520 Historical Traffic Volume Technical Memorandum



Washington State
Department of Transportation

SR 520 Bridge Replacement and HOV Program



SR 520 Historical Traffic Volume Technical Memorandum

Prepared for
Washington State Department of Transportation

Lead Author
Parametrix, Inc.

Consultant Team
Parametrix, Inc.

July 2011

Table of Contents

Acronyms and Abbreviations	iii
Introduction.....	5
Traffic Modeling.....	5
Population.....	6
Traffic	7
Conclusion.....	2

List of Exhibits

Exhibit 1. Population Data.....	6
Exhibit 2. Traffic Volume Data.....	8
Exhibit 3. Employment Data.....	1

Acronyms and Abbreviations

NEPA	National Environmental Policy Act
WSDOT	Washington State Department of Transportation
FHWA	Federal Highway Administration
PSRC	Puget Sound Regional Council
MPO	Metropolitan Planning Organization
SDEIS	supplemental draft environmental impact statement
FEIS	final environmental impact statement
SR	state route
USC	United States Code
CFR	Code of Federal Regulations

Introduction

Given recent economic conditions in the US and Washington State, some suggestions have been made that traffic volumes on SR 520 are stable or declining and that forecasts of future growth in travel demand for the facility are overstated. To evaluate this possibility, WSDOT developed a historical review of traffic data on the SR 520 and I-90 corridors in conjunction with a look at King County population growth over the last 35 years to understand how SR 520 traffic volumes have fluctuated. This review was intended to help determine whether the future traffic forecasts for SR 520 were reasonable for the NEPA evaluation process. The following sections summarize the findings of this review.

Traffic Modeling

All future traffic volume forecasts for the SR 520 program have been developed using the Puget Sound Regional Planning model. The transportation modeling process for the SR 520 program is defined in Chapter 3 of the Final Environmental Impact Statement Transportation Discipline Report. The model is provided by the Puget Sound Regional Council (PSRC), the region's Metropolitan Planning Organization (MPO). PSRC develops and maintains population and employment information in coordination with the local jurisdictions.

Between the SR 520, I-5 to Medina SDEIS and Final EIS, the PSRC updated the population and employment information in its model. Population growth estimates were reduced by 10 percent compared to the model used for the SDEIS, and employment estimates were decreased by almost 25 percent. WSDOT used the updated PSRC model for the Final EIS analysis, and also included more detailed roadway information within the program area.

The SR 520 program coordinated closely with PSRC to ensure that the most recent travel demand model available would be used for the FEIS. The model version used, Version 1bb, incorporated several rounds of revision to the original 2007 (Version 1) model that improved validation of its output results against existing data. Improvements to the model included an update to its assumptions for the value of time (published in the *Value of Time for Travel Forecasting and Benefits Analysis* memorandum dated May 2008). PSRC also incorporated many comments from the 2008 expert review panel recommendations, which are outlined in a report entitled *Independent Peer Review of Tolling Scenarios and Traffic Model* (September 2008). The updates to the project area roadway network attributes completed by the SR 520 program gave the model its "Version 1bb" designation.

This level of coordination with the MPO is required by 23 USC 134 and 135, as well as 23 CFR 450, for a project to obtain federal funding. The traffic analysis done for the SR 520 program was required to comply with standard practice for assumptions about future growth. Use of the PSRC models meets this standard. The discussion in this paper compares the results of the future growth assumptions "built into" the model with trends that can be discerned from available historical data.

Population

To determine how population in the SR 520 travelshed is changing, the transportation team gathered population data for King County that was available through the state Office of Financial Management website (<http://www.ofm.wa.gov/pop/april1/c1960to2010.xls>).

Exhibit 1, which is based on this data, illustrates the growth in King County from 1960 (just before SR 520 was opened) to 2010. The blue squares indicate where a census count was taken to update the charted data. The blue line shows the growth trend for the last 50 years, and projects this trend out to 2030. Although the rate of growth has fluctuated somewhat since 1960 (most notably in the 1970's as a result of the Boeing downturn), the overall trend is one of positive growth at a rate of approximately 1 percent per year, with King County population in 2030 expected to increase by approximately 20 percent over 2010 levels. This is consistent with the Puget Sound Regional Council's forecasts (<http://psrc.org/data/forecasts/saf/>), which estimate about 2.2 million people in King County in 2030.

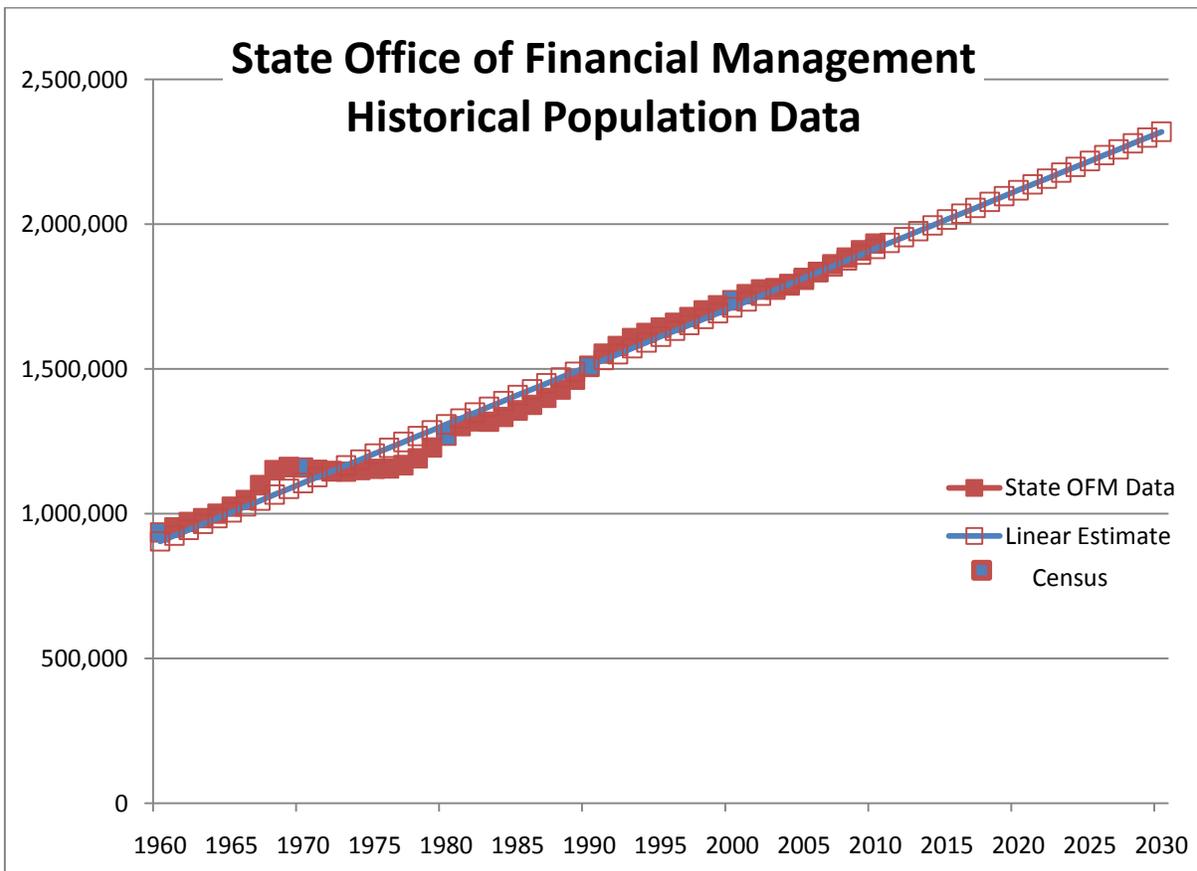


EXHIBIT 1. POPULATION DATA

Traffic

Exhibit 2 illustrates WSDOT historical average weekday traffic volume data from 1984 through 2010 for the SR 520 corridor (data prior to 1984 were not available for this analysis). As with the population data, a line has been plotted to forecast the historical trend in traffic growth through 2030. In 2030, the blue bar illustrates the Final EIS daily traffic volume forecast for the No Build Alternative. This can easily be compared to the linear forecast, which is based on weekday traffic growth trends from 1984 to present. Across the top of Exhibit 2 is a listing of regional events that could have affected the traffic volume growth in the area.

Several things can be learned from Exhibit 2. First, this graph shows that even with the expansion of the I-90 corridor from 1989 to 1993, the SR 520 corridor showed continued growth in traffic volumes. This growth was steady from 1984 through to 1998, when it began to level off and/or slightly decrease. The post-1998 decreases correlate with national economic events that affected the Puget Sound region. The first event was the crash of “dot-com” businesses in 1999-2000. A large number of dot-com businesses were based east of Lake Washington and had employees who commuted across the lake; during this time period, many of these businesses became economically unstable and ultimately closed or reduced their staff. In the recession that followed the dot-com crash, the Puget Sound region lost nearly 67,000 jobs (“Recession and Rebound in Industry Target Groups,” Puget Sound Regional Council, November 2007). The majority of these were within King County. This is likely to have had a substantial effect on traffic volumes in the SR 520 corridor.

Exhibit 2 is also useful for comparing a linear forecast of traffic growth on SR 520 with the Final EIS modeled forecast. The linear forecast (which does not account for the completion of the SR 520, I-5 to Medina project) predicts that daily traffic will grow from the existing volume of about 115,000 vehicles to approximately 126,000 vehicles by 2030, an increase of approximately 10 percent. The Final EIS forecast for No Build is 1,400 vehicles per day higher than the linear estimate, which is a difference of less than 1 percent.

For the Preferred Alternative, the SR 520 Final EIS estimates a 2030 traffic volume that is about 6,500 vehicles per day lower than the No Build Alternative. This difference can be explained by the fact that the Final EIS model included a toll on the Preferred Alternative. Since the toll’s tendency to reduce traffic would be partially offset by improvements in reliability and traffic flow under the Preferred Alternative, a modest reduction in daily traffic is a reasonable result. This data illustrates that the linear forecast based on an average of historical traffic volumes tracks closely with the results predicted by the Puget Sound regional model used for the Final EIS.

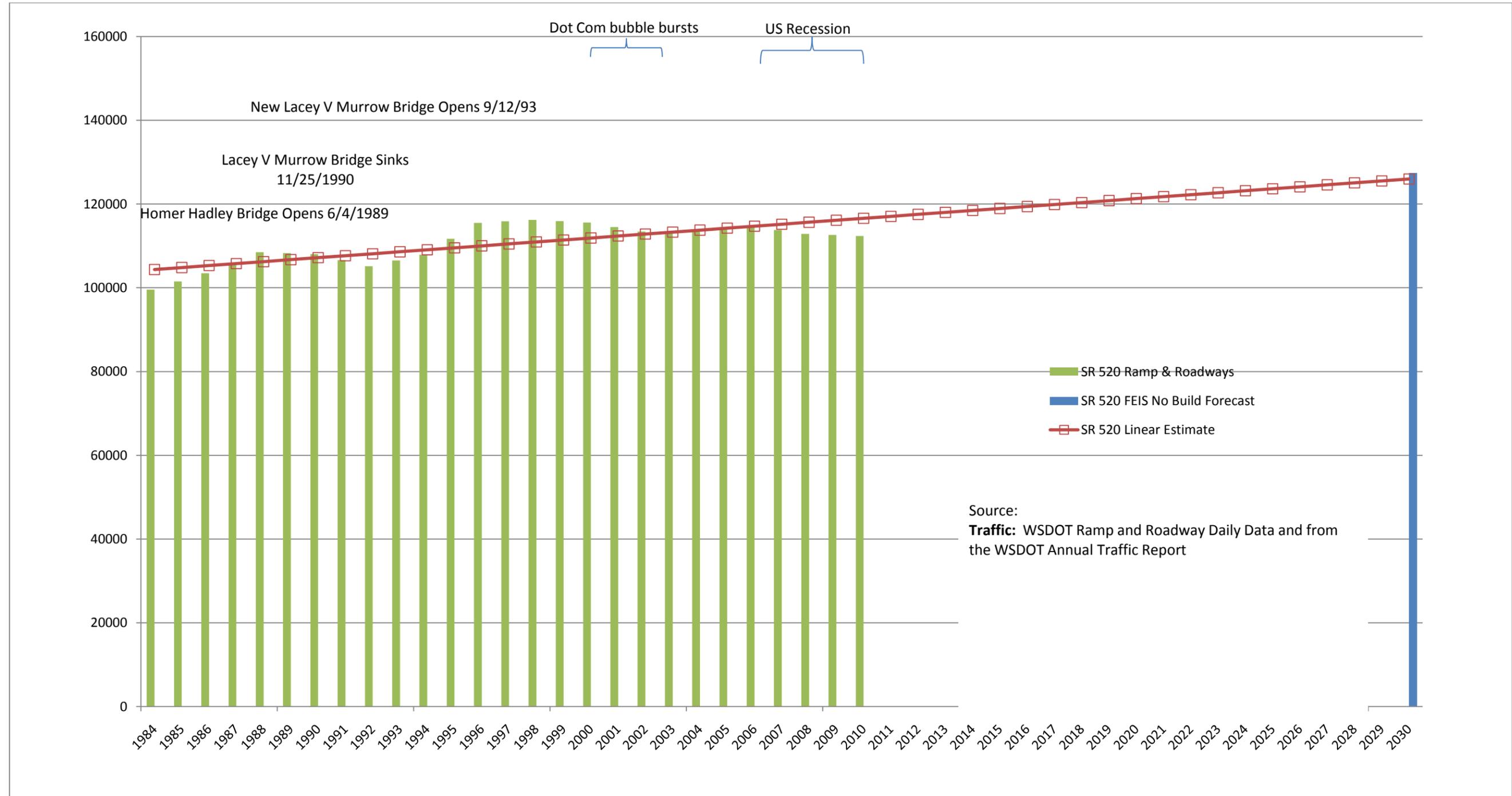


EXHIBIT 2. TRAFFIC VOLUME DATA

The second economic event affecting regional traffic was the nationwide recession that officially began in December 2007. Exhibit 3 (taken from PSRC’s “Employment in Regional Growth Centers, 2000 – 2008”, October 2009) shows that employment in the Puget Sound region began to improve after the dot-com crisis and reached a peak around 2006, just before the recession began and employment started to drop again.

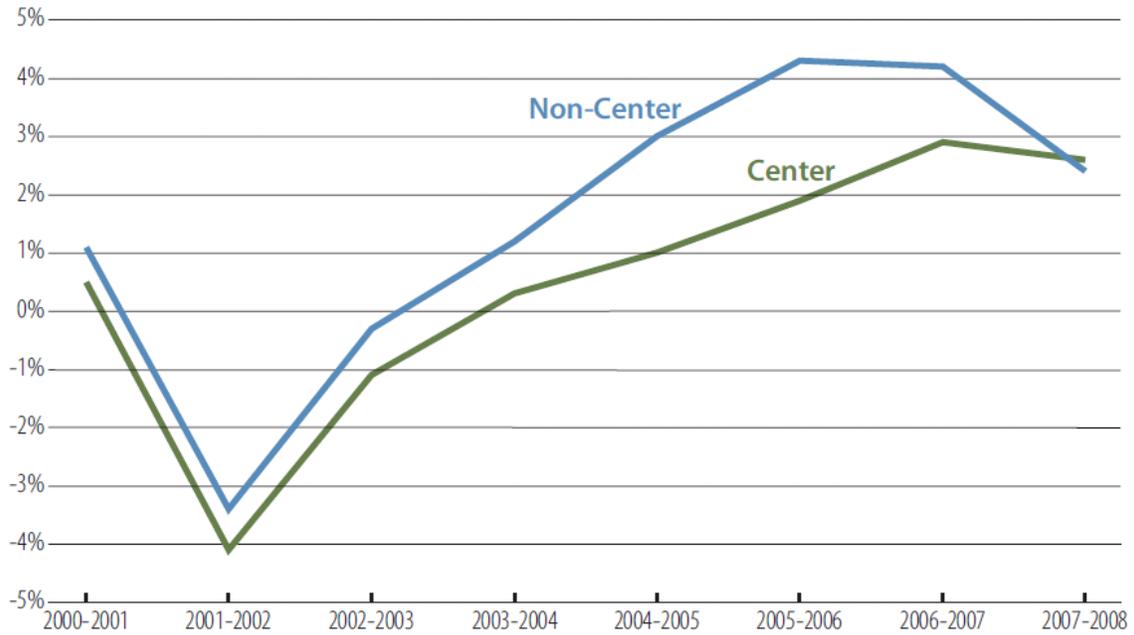


EXHIBIT 3. EMPLOYMENT DATA

Conclusion

Despite major economic events affecting the Puget Sound region, such as the “Boeing bust” in the 1970s and the dot-com crash in the early 2000s, long-term trends for both King County population and SR 520 traffic volumes have been consistently upward. Linear forecasts of traffic growth yield very similar estimates of 2030 SR 520 traffic volumes to predictions made by the PSRC traffic model. The historical data used to generate the linear traffic forecast accounts for fluctuations in traffic over a 25-year period based on external economic factors. Thus, the forecast can reasonably be expected to account for changing conditions over the forecast period between 2010 and 2030.

While the linear forecast is useful in correlating observed trends with model predictions, the PSRC’s travel demand model is the best available tool for estimating traffic levels in 2030. It includes methods for evaluating how drivers might react to tolls, how population and employment are planned to grow, and how the regional roadway networks are likely to change. The travel demand modeling process used by the SR 520 program complies with 23 CFR 450 and 23 USC 134 and 135, and it is consistent with standard professional practice for forecasting of traffic volumes. FHWA has concurred that the project team used sound transportation analysis methodology that is consistent with the industry state-of-the-practice, and that appropriate analysis software tools were selected and applied for forecasting future traffic volumes and estimating the operational performance of various alternatives on the transportation network.

**Identification of Section 4(f) Properties in the
SR 520, I-5 to Medina Project Area**

Identification of Section 4(f) Properties in the SR 520, I-5 to Medina Project Area

Introduction

23 CFR 774 contains the regulations that define and govern the protection of a category of properties often referred to as Section 4(f) properties (for the section of the original 1966 act that established their special status). As set forth in 23 CFR 774.17, a Section 4(f) property is defined as a publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance. Section 4(f) has been the subject of extensive interpretation over the 45 years of its existence; for FHWA transportation projects, the agency's March 2005 *Section 4(f) Policy Paper* is the primary guidance document.

As described in the Final EIS for the SR 520, I-5 to Medina project, there are a number of public parks, recreation areas, and historic sites within the project area. Chapter 9 documents the areas that are protected as Section 4(f) properties. These properties were identified in keeping with the guidance of the *Section 4(f) Policy Paper*, which states:

Publicly owned land is considered to be a park, recreation area or wildlife and waterfowl refuge when the land has been officially designated as such by a Federal, State or local agency and the officials of these governmental entities, having jurisdiction over the land, determine that one of its major purposes and functions is for park, recreation or as a refuge. Incidental, secondary, occasional or dispersed park, recreational or refuge activities do not constitute a major purpose... For the most part the 'officials having jurisdiction' are the officials of the agency owning or administering the land.

Chapter 9 of the Final EIS documents WSDOT's extensive coordination with the Seattle Parks Department and the University of Washington, the primary agencies with jurisdiction over park lands in the project area. Neither agency identified additional Section 4(f) properties beyond those that have been evaluated in the Final EIS.

Various comments on the SDEIS and Final EIS contend that a handful of informal open spaces in the project area, such as plantings in rights-of-way, also should be classified as Section 4(f) properties. These areas do not qualify for protection under Section 4(f) because they are not designated for park purposes, and most are located on land that was acquired and designated for transportation use. Many are areas of roadside landscaping within the SR 520 right-of-way.

Section 4(f) and Non-Section 4(f) Properties

In letters to WSDOT and FHWA on this topic, the Coalition for a Sustainable SR 520 has included a map that designates project-area properties that the Coalition believes to be protected by Section 4(f). This memo reproduces that map and provides brief explanations as to which properties are subject to Section 4(f) and which are not. The numbers and names used below are keyed to those on the map. The use of quotation marks around a name indicates that the name was assigned to the property by the Coalition, but has no formal standing.

1. Interlaken Park is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property. The Preferred Alternative would not require any use of this park, including temporary occupancy.

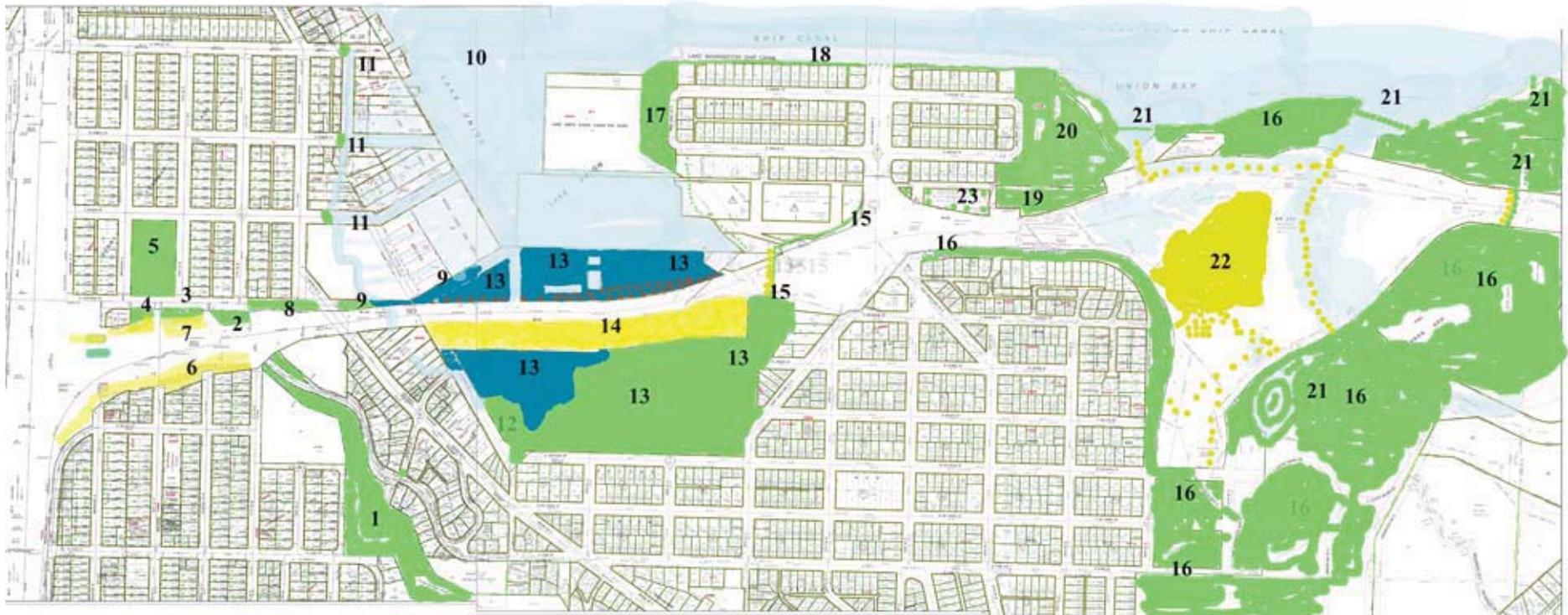
2. Bagley Viewpoint is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property. The Preferred Alternative would require a use of Bagley Viewpoint, which is evaluated in the Final Section 4(f) evaluation.
3. "Parklands East" is a landscaped area, located within transportation right-of-way, and is not designated for park use; therefore, it does not constitute a Section 4(f) resource.
4. "Parklands West" is a landscaped area, located within transportation right-of-way, and is not designated for park use; therefore, it does not constitute a Section 4(f) resource.
5. Roanoke Park is a publicly owned park considered significant by the City of Seattle, and is also an NRHP-listed and contributing resource to the Roanoke Park Historic District; therefore, it is considered a Section 4(f) property. The Preferred Alternative would not require any use of this park, including temporary occupancy.
6. "South Forest Area" is a landscaped area, located within transportation right-of-way, and is not designated for park use; therefore, it does not constitute a Section 4(f) resource.
7. "North Forest Area" is a landscaped area, located within transportation right-of-way, and is not designated for park use; therefore, it does not constitute a Section 4(f) resource.
8. "Bagley Stair Trail" is not considered a significant public park or recreation area by the City of Seattle, as determined through consultation; therefore, it does not constitute a Section 4(f) resource.
9. "Roanoke Street End Park" is not currently used for recreation, and is not designated for future park development; therefore, it does not constitute a Section 4(f) resource.
10. Portage Bay is host to multiple activities, including public recreation, privately owned yacht clubs and marinas, and residential units. There is only one public access point on the bay for water recreation, which is located at the Montlake Playfield. Based on guidance provided by the FHWA Section 4(f) Policy Paper (issued September 24, 1987, and revised March 1, 2005), Section 4(f) only applies to those portions of Portage Bay which function primarily for park or recreational purposes, and are publicly owned. The area of the bay that is designated for park and recreation purposes is the submerged portion of the Montlake Playfield (shown as areas 13 and 14). Because this area is included within the recognized boundaries for the Montlake Playfield, and the remainder of the bay functions primarily for other purposes (including a number of private uses), the bay itself is not a Section 4(f) resource.
11. "Street End Parks" are not considered a significant public park or recreation area by the City of Seattle; therefore, they are not considered Section 4(f) resources. The Preferred Alternative would not affect these areas.
12. "South Portage Bay Park", as shown on the attached graphic, is entirely encapsulated by the Montlake Playfield boundaries and has not been identified by the City of Seattle as a separate facility from Montlake Playfield. As discussed below, Montlake Playfield is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property.
13. Montlake Playfield is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property. The Preferred Alternative would require a use of Montlake Playfield, which is evaluated in the Final Section 4(f) evaluation.
14. "Portage Bay Park Area in 520 Right of Way", is located within transportation right-of-way, and is not designated for park use; therefore, it does not constitute a Section 4(f) resource.
15. Bill Dawson Trail is a documented recreation resource and is considered significant by the City of Seattle. However, the trail is located within transportation right-of-way and is not mandated to any specific place within the right-of-way; therefore, per 23 CFR 774.13(f)(3), the Bill Dawson Trail is excepted from Section 4(f).
16. Washington Park Arboretum is a publicly owned park considered significant by the City of Seattle, and is also an NRHP-eligible historic resource; therefore, it is considered a Section 4(f) property. The Preferred Alternative would require a use of the Arboretum, which is evaluated in the Final Section 4(f) evaluation.

17. West Montlake Park is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property. The Preferred Alternative would not affect West Montlake Park.
18. Ship Canal Waterside Trail is a document recreation resource and is considered significant by the City of Seattle; therefore it is considered a Section 4(f) property. The Preferred Alternative would require a use of the Ship Canal Waterside Trail, which is evaluated in the Final Section 4(f) evaluation.
19. McCurdy Park is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property. The Preferred Alternative would require a use of McCurdy Park, which is evaluated in the Final Section 4(f) evaluation.
20. East Montlake Park is a publicly owned park and is considered significant by the City of Seattle; therefore, it is considered a Section 4(f) property. The Preferred Alternative would require a use of East Montlake Park, which is evaluated in the Final Section 4(f) evaluation.
21. Arboretum Waterfront Trail is a document recreation resource and is considered significant by the City of Seattle; therefore it is considered a Section 4(f) property. The Preferred Alternative would require a use of the Arboretum Waterfront Trail, which is evaluated in the Final Section 4(f) evaluation.
22. “R.H. Thomson Ramp Area”, or WSDOT Peninsula, is within the historic boundaries of the NRHP-eligible Washington Park Arboretum, but occupies WSDOT-owned right-of-way that is not formally designated for park use. Use of this area under the Preferred Alternative is evaluated in the historic properties section of the Final Section 4(f) evaluation, but not in the park section.
23. “University Canal Lands”, or Canal Reserve Land, is entirely encapsulated by the NRHP-eligible Montlake Historic District. This area is not used primarily for recreation and thus is eligible for Section 4(f) as a historic property, but not as a park property. Use of the Montlake Historic District under the Preferred Alternative is evaluated in the Final Section 4(f) evaluation.

Please see the Final Section 4(f) Evaluation for a more detailed discussion of the project’s use of the identified Section 4(f) properties, and the measures taken to avoid and minimize impacts. As demonstrated by the evaluation, the Preferred Alternative would cause the least harm to Section 4(f) properties of the feasible and prudent alternatives evaluated. There is no feasible and prudent alternative that would avoid the use of all Section 4(f) properties.

Appendix B1 Map of linked parks

Linked parks near SR 520;
would be taken or harmed by proposed expansion



- (1) Interlaken Park
- (2) Bagley Viewpoint
- (3) Parklands East
- (4) Parklands West
- (5) Roanoke Park
- (6) South Forest Area
- (7) North forest area
- (8) Bagley Stair Trail

- (9) Roanoke Street End Park
- (10) Portage Bay
- (11) Street End Parks
- (12) South Portage Bay Park
- (13) Montlake Playfield Park
- (14) Portage Bay Park Area in 520 Right of Way
- (15) Bill Dawson Trail
- (16) Arboretum

- (18) Ship Canal Trail
- (19) McCurdy Park
- (20) East Montlake Park
- (21) Arboretum Waterfront Trail
- (22) RH Thompson area
- (23) University Canal Lands

