SR 518, SR 509 (BURIEN) TO I-5 (TUKWILA),
ARM 0.00 TO ARM 3.42, SR MP 0.00 TO SR MP 3.81

CHARACTERISTICS

Segment Description:
Burien to I-5 Tukwila 3.42 miles.

County/Counties: King
Cities/Towns Included: The SR 518 corridor begins in Burien, passes through Sea-Tac and ends in Tukwila.
Number of lanes in the corridor: 1 to 5
Lane width: 12 to 12 feet.
Speed limit: 35 to 60 mph.
Median width: 0 to 275 feet.
Shoulder width: 4 to 10 feet.

Highway Characteristics:
SR 518 is a 3.8-mile urban freeway stretching west from I-5 to SR 509, and serves as the primary access to the Seattle-Tacoma International Airport. It is classified as a UF 12 (Urban, Other Freeways and Expressways) FHWA and is part of the national highway system. It is also identified as a Highway of Statewide Significance (HSS) by WSDOT. The Freight and Goods Transportation System classification is T2 (4-10 million tons/year) on the western half of the facility and T1 (10+ million tons/year) on the eastern half. T1 and T2 classification signifies strategic freight corridors therefore qualify SR 518 for Freight Mobility Strategic Investment Board funding. The state functional class is U1 (Urban, Principal Arterial) throughout.

Special Use Lane Information (HOV, Bicycle, Climbing):
There are Weave/Speed Change lanes located on the left in the vicinity of ARM 0.83 to 1.32 and 1.32 to 1.39.

Access Control Type(s):
The access control is designated Full Access Control.

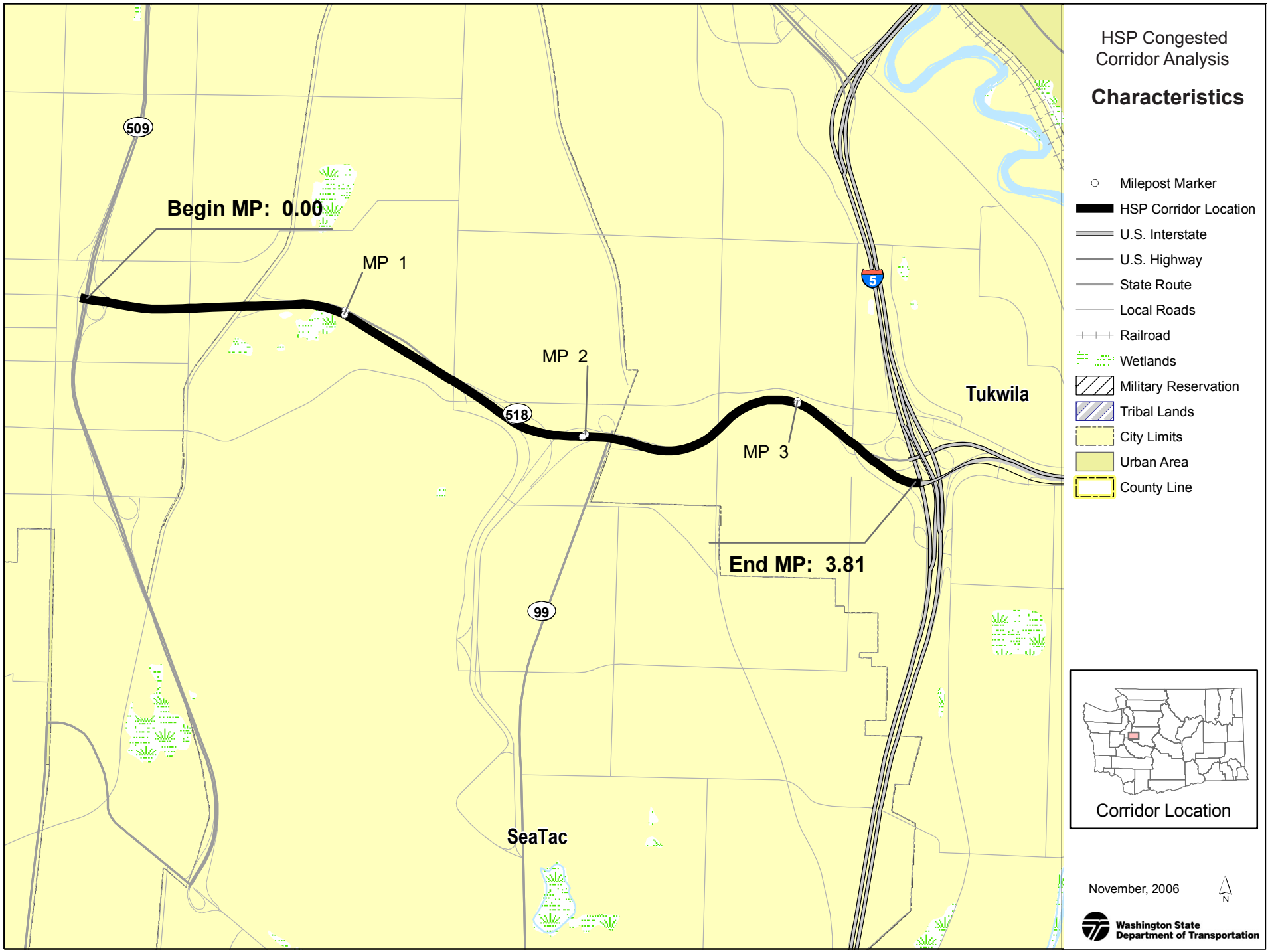
Terrain Characteristics:
The terrain is rolling for the entire corridor.

Natural Features:
The roadside habitat is largely native/wild vegetation, with evidence of previous landscaping efforts around the Airport.

Adjacent Land Description:
The roadside character begins semi-urban, switches to rural, and then back to semi urban. The major portion of the corridor lies in the northerly flight path of Sea-Tac International Airport. The remainder is primarily commercial intermixed with some residential.

Environmental Issues:
Constraints identified include Federal Aviation Administration controlled activity and object-free areas, wetlands, geology/soils, recreational areas, and potential hazardous material sites.

Major Economic Issues:
This highway is the primary link to the region's largest airport.


HSP Congested
Corridor Analysis
Characteristics
Milepost Marker
HSP Corridor Location
U.S. Interstate
U.S. Highway
State Route
Local Roads
Railroad
Wetlands
Military Reservation
Tribal Lands
City Limits
Urban Area
County Line
Begin MP: 0.00
MP 1
MP 2
MP 3
End MP: 3.81
509
518
99
5
Tukwila
SeaTac
Corridor Location
November, 2006
N
Washington State
Department of Transportation

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ASSETS

Pavement:
There are approximately 12 lane miles of Hot Mix Asphalt on this segment of SR 518 and 3 lane miles of concrete.

Signal:
There are 4 traffic signals located along this corridor at SR 518 ramp terminals that intersect with SR 509 (southeast and NB), Des Moines Memorial Dr. (eastbound), and SR 99 (eastbound).

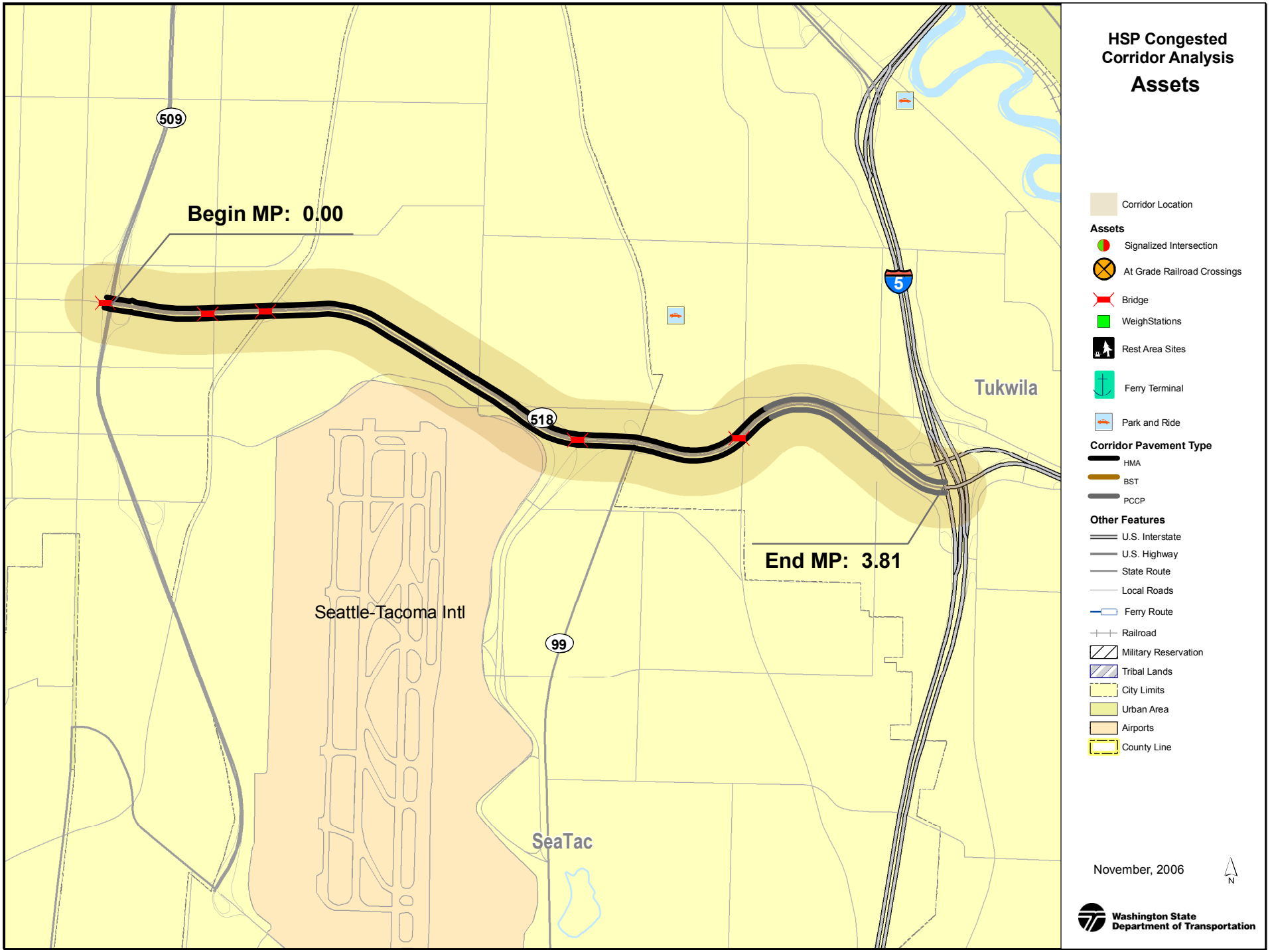
Structures:
There are six structures in this corridor that consist of six Pre-Tensioned Concrete Beam.
(Ramps, and locally owned structures (if any exist) are not identified in this section and may not be reflected on maps.)

Features Crossed:
The highway is located on the north end of Sea-Tac International Airport.

ITS Facilities:
SR 518 has an extensive ITS system in place, that includes variable message signs, Hubs, highway advisory radio and related conduit and fiber.

Railroad Crossings:
There are no at-grade rail crossings within this route segment.

Asset Other:
There are rail, transit, park and ride facilities in the general vicinity of this corridor. This highway is adjacent to Sea-Tac International Airport, the region's largest airport.


HSP Congested Corridor Analysis
Assets
Begin MP: 0.00
End MP: 3.81
509
518
5
99
Tukwila
SeaTac
Seattle-Tacoma Intl
Corridor Location
Assets
Signalized Intersection
At Grade Railroad Crossings
Bridge
WeighStations
Rest Area Sites
Ferry Terminal
Park and Ride
Corridor Pavement Type
HMA
BST
PCCP
Other Features
U.S. Interstate
U.S. Highway
State Route
Local Roads
Ferry Route
Railroad
Military Reservation
Tribal Lands
City Limits
Urban Area
Airports
County Line
November, 2006
N
Washington State Department of Transportation

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USAGE

General Origin and Destination Travel Characteristics:
SR 518 serves residential, commercial, and commute trips for the surrounding communities as well as airport travel. Users of this corridor include:

Local residents traveling to work and school.
Commuters traveling between Seattle and the outer suburbs.
Customers of businesses along the route.
People and freight traveling to and from Sea-Tac Airport facilities

Snow/ice Issues:
There are no sections within this corridor which present a problem for normal snow/ice control.

Annual Average Daily Traffic:
Ranges from 58,179 to 115,376.

Significant Seasonal Average Annual Daily Traffic Changes:
This corridor is one of many corridors in the Puget Sound region that experience consistent high use throughout the year.

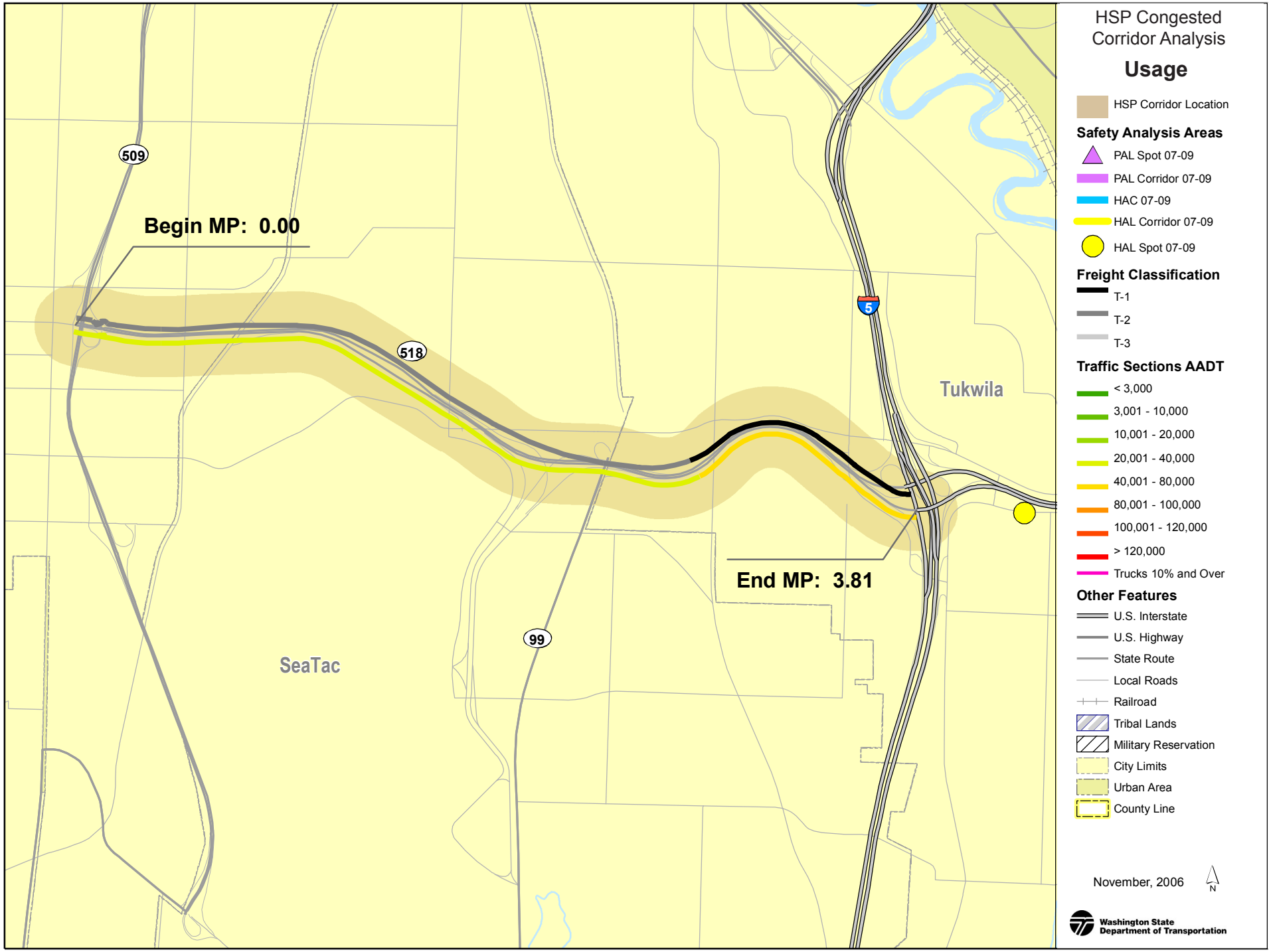
General Description of Major Average Annual Daily Traffic Locations:
The annual average daily traffic (AADT) remains high 100,000 to 115,000 between Tukwila and the airport and decreases to 58,000 in Burien.

Freight:
Freight Classification: T-1 and T-2
Yearly Tonnage: 13.3M
Truck Percentage of Annual Average Daily Traffic: 4%

Additional Usage Comments:
There are no additional comments.

Average Annual Societal Cost of All Collisions: Approximately $4M

Collisions:
Severe No of Collisions: 5
Less Severe No of Collisions: 312
List Data Years: 2002 to 2004


HSP Congested Corridor Analysis
Usage
HSP Corridor Location
Safety Analysis Areas
PAL Spot 07-09
PAL Corridor 07-09
HAC 07-09
HAL Corridor 07-09
HAL Spot 07-09
Freight Classification
T-1
T-2
T-3
Traffic Sections AADT
< 3,000
3,001 - 10,000
10,001 - 20,000
20,001 - 40,000
40,001 - 80,000
80,001 - 100,000
100,001 - 120,000
> 120,000
Trucks 10% and Over
Other Features
U.S. Interstate
U.S. Highway
State Route
Local Roads
Railroad
Tribal Lands
Military Reservation
City Limits
Urban Area
County Line
Begin MP: 0.00
End MP: 3.81
509
518
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99
Tukwila
SeaTac
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NEEDS AND STRATEGIES

Preservation

Pavement Condition and Needs:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. Pavements should be programmed targeting the lowest life cycle cost per the Washington State Pavement Management System "due" date. This is the point in a pavement's life cycle where optimum pavement life has been achieved and the least cost to resurface is obtained. Pavements that have past this point typically incur more costs to rehabilitate. Existing safety features shall be restored to provide basic design level standards.

Pavement Management Strategies:

The pavement in the corridor is 80% flexible and 20% rigid. Of the flexible pavement none is composite. It would seem that for future paving hot-mix asphalt (HMA) will be the pavement of choice. Pavements will be programmed targeting the lowest life cycle cost per the Washington State Pavement Management System "due" date.

Structures Condition and Needs:

This corridor has 10 bridge structures. One of the concrete box bridges need complete replacement. The rest of the bridges need seismic retrofit. This includes ramps and other locally owned structures. (This may include ramps and locally owned structures if any exist.)

Structures Management Strategies:

Preserve transportation infrastructure to achieve the lowest life cycle cost and prevent failure. Replacement of one bridge and seismic retrofit of six bridges are planned in next 20 years. Other three bridge are planned for preservation work beyond 20 years.

Additional Condition and Needs:

Preserve transportation infrastructure such as electronic/mechanical systems, major drainage, safety rest area refurbishment, traffic control systems, unstable slopes, weight facilities. There are no unstable slopes identified along this corridor. There were no weight facilities identified for this corridor. There are no weigh station improvements planned for this corridor. There is one area along SR 518 that have been identified as a major drainage issues. This area is located along SR 518 in the vicinity of MP 2.92 to MP 3.52.

Additional Management Strategies:

Replace or rehabilitate electrical, electronic, and mechanical systems when they reach the end of their service life. Replace or rehabilitate drainage features that have structurally failed or fails to protect the roadway prism event of 10 years or less. Refurbish deficient safety rest area buildings, utilities and sites. Upgrade existing traffic control and monitoring systems as technology changes to avoid obsolescence and capture the benefits of new technology.

Improvement

Mobility Condition and Needs:

SR 518 carries as much traffic as SR 520, however it is more evenly distributed throughout the day. When the third runway construction is completed there will be more flight capacity at Sea-Tac International Airport. This will result in a greater strain on the land side access. Forecasts call for strong air travel growth over the coming years, which will dramatically intensify traffic on SR 518. If nothing is done over the next few years, drivers leaving the airport will experience more than 30-minute delays with lines of cars backing up nearly to the airport garage. Improvements to the SR 518 corridor are necessary to correct existing operational inefficiencies and to accommodate future growth in travel demand. The SR 518 corridor currently experiences high levels of congestion during the peak hours of travel, particularly to the east of SR 99. Congestion is caused both by high levels of travel demand and by roadway geometric design elements that reduce the efficiency of the existing network. Foremost of the existing geometric inefficiencies is the eastbound weave section between SR 99 and northbound I-5 that results in traffic bottlenecking during peak travel demand periods. Another geometric limitation is the lack of fully integrated access at the SR 99 interchange. Trips traveling from SR 99 to SR 518 (a state facility-to-state facility movement) are currently accommodated through the Port of Seattle internal roadway system (a non-state roadway). A third inefficiency is the reduction of the eastbound mainline down to a single lane at the eastern terminus of the route. Traffic is forecast to increase significantly due to growth at the Seattle-Tacoma International Airport and in the adjacent communities. A planned extension of SR 509 south to I-5, coupled with the development of a South Airport Expressway, will also affect demand on the SR 518 corridor.

Mobility Management Strategies:

Determine the most cost-effective improvements for this corridor. Near term strategies include investments that address system chokepoints. A combination of added general purpose lanes, high occupancy vehicle lanes, managed lanes, added Bus service will be developed and refined over the next 20 to 50 years improvement management strategies. Two primary interchange proposals make up the SR 518 Corridor Improvement strategy. They are currently in the planning phase. SR 509/SR 518 Interchange strategy- Will evaluate an SR 509 southbound to eastbound freeway-to-freeway connection to address existing access and safety problems and provide for anticipated growth. SR 518 Sea-Tac Airport to I-5/I-405 Interchange strategy - Will improve existing mobility and safety as well as accommodate projected airport traffic by adding a third eastbound lane between the North Airport Expressway and the I-5/I-405 interchange.

Safety Condition and Needs:
Even though, SR 518 does not have High Accident Locations or High Accident Corridor segments identified, there are numerous accidents at the intersection of SR 509 and SR 518.

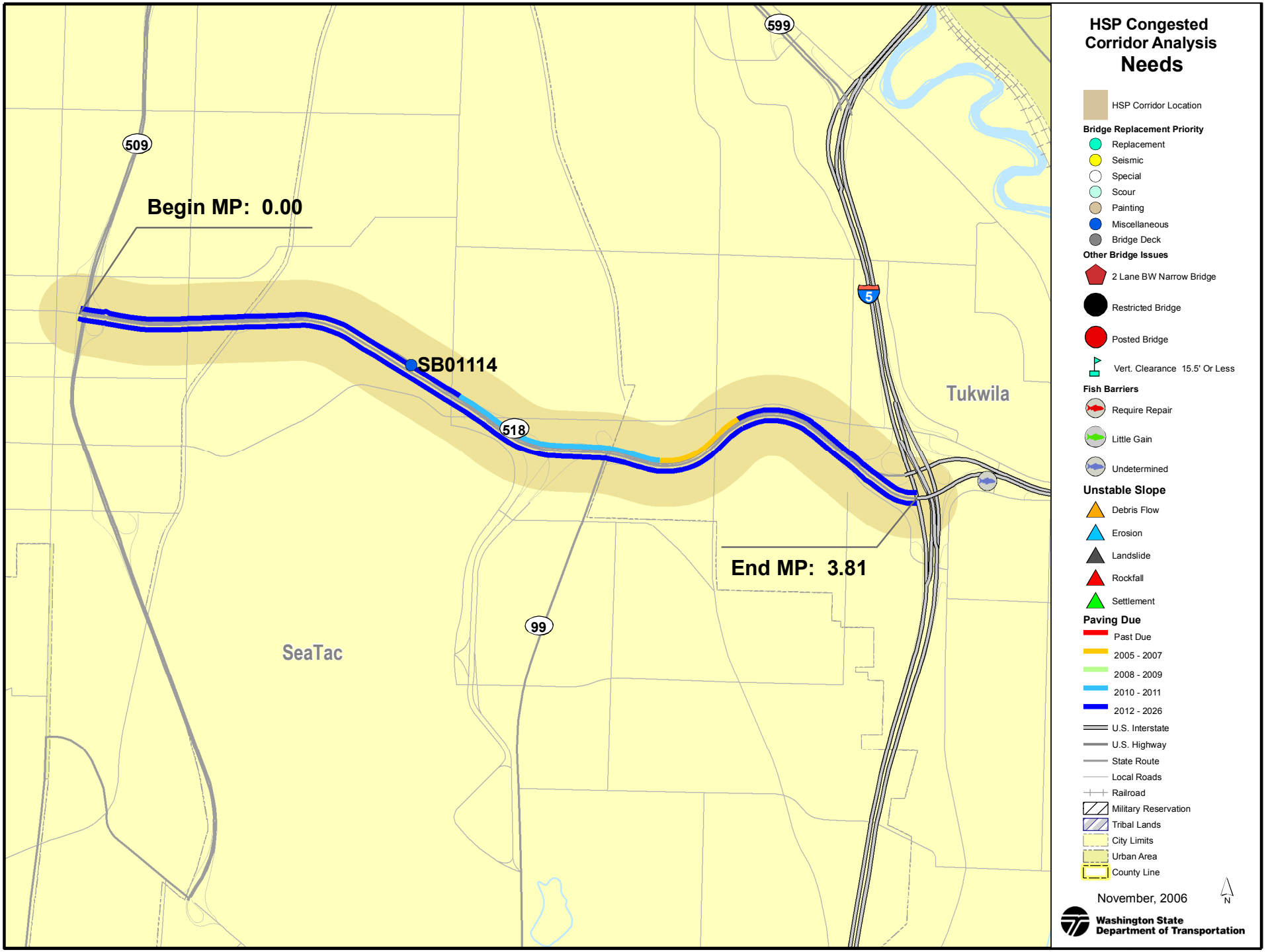
Safety Management Strategies:
Reduce and prevent deaths and the frequency and severity of disabling injuries, and reduce the societal costs of accidents (Focus on the rate of severity and frequency).
Safety improvements that will be strategically considered include:
Eliminate high accident locations on state highways through hazard mitigation.. Eliminate Pedestrian Accident Locations on state highway through hazard mitigation. Eliminate high accident corridors using standards based highway safety solutions. Construct and improve intersection channelization and/or signals in compliance with federal guidelines to improve safety. Improve the geometrics of the Interstate system per Federal Highways Administration (FHWA)/WSDOT stewardship agreement. Eliminate major at-grade intersections on multi-lane, divided highways with speeds of 45 MPH or greater. Improve roadways where geometrics, traffic volumes, and speed limits indicated a high accident potential by instituting standards based highway safety solutions. Proactively address Pedestrian safety along state highway segments that exhibit high pedestrian use and the potential for future accidents. Address highway safety through statewide low-cost, high benefit and short-term projects.

Environmental Condition and Needs:
Reduce impacts by addressing noise reduction, air quality, storm water, wetland mitigation, chronic environmental deficiencies, and fish barriers.

Environmental Management Strategies:
Environmental improvements that will be strategically considered include:
Strategically prioritize and retrofit existing state transportation facilities for noise reduction. Implement all transportation control measures as identified by the Washington State Implementation Plan for Air Quality. Strategically prioritize repair, replace, and retrofit existing state transportation facilities for storm water runoff quality and quantity to reduce environmental impacts. Strategically prioritize and re-mediate wetland mitigation sites during the later stages of the monitoring phase to ensure they function as conditioned by the issuance of permits. Develop criteria, strategically prioritize and repair existing chronic environmental deficiencies of transportation facilities. Strategically prioritize, repair, replace and retrofit existing barriers to fish passage on the state highway system within 20 years as appropriate to reduce existing barriers to fish passage statewide.

Restrictions:
There are none identified.

50-Year Configuration:
Develop a long-range vision that is compatible, to the extent possible, with the relevant plans and proposed projects established by neighboring agencies, including: Compatibility with, and accommodation of projected travel demand resulting from, the Port's proposed expansion program at Sea-Tac International Airport. Compatibility with the proposed Sound Transit Link Light Rail along the SR 99 corridor and/or the SR 518 corridor. Compatibility with the City of SeaTac's Phase III improvements on International Boulevard, and incorporate, to the extent possible, the City's freeway access needs. Compatibility with the City of Burien's vision for a "gateway" at the west end of the SR 518 corridor. Compatibility with the City of Tukwila, King County Metro Transit, and other affected agencies, so that future improvements do not preclude the respective development plans and needs of those agencies. Compatibility with other ongoing WSDOT projects, such as the SR 509 Extension Environmental Impact Statement (EIS), STIA South Access, and the I-405 Programmatic EIS.


HSP Congested Corridor Analysis
Needs
HSP Corridor Location
Bridge Replacement Priority
Replacement
Seismic
Special
Scour
Painting
Miscellaneous
Bridge Deck
Other Bridge Issues
2 Lane BW Narrow Bridge
Restricted Bridge
Posted Bridge
Vert. Clearance 15.5' Or Less
Fish Barriers
Require Repair
Little Gain
Undetermined
Unstable Slope
Debris Flow
Erosion
Landslide
Rockfall
Settlement
Paving Due
Past Due
2005 - 2007
2008 - 2009
2010 - 2011
2012 - 2026
U.S. Interstate
U.S. Highway
State Route
Local Roads
Railroad
Military Reservation
Tribal Lands
City Limits
Urban Area
County Line
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End MP: 3.81
509
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TIERED PROPOSED SOLUTIONS

Minimum Fix

Description:

(SR 518 BARM 3.42): Add a second eastbound lane from the I-5 southeast drop lane to the I-5 northeast add lane at the Tukwila I/C. ($6M - $7M, solution cost)(50-80 % Collision Reduction + 20-40% Reduction in Daily Vehicle hours of Delay = $11M Benefit)

(SR 518 BARM 0.00 to EARM 3.42) CCTV, DATA Stations, Highway Advisory Radio System (HARS), Ramp Meter, VMS, Fiber ($4M - $6M Solution Cost)

Delay Reduction: 20 to 40%
Collision Reduction: 50 to 80%
Deficient Concrete Lane Miles: None identified.
Total Estimate Cost: $10 M to $13 M

Cost Estimate Explanation:
The estimated Cost is the total of the costs for the solutions described for minimum fix.

Minimum Fix Benefits:
The preliminary analysis results indicate the proposed solutions will provide reductions in collisions and travel delay.

Moderate Fix

Description:

(SR 518 BARM 3.42): Relocate the I-5 NB ramp to the right side and combine I-5 NB, I-5 southeast and the 51st Ave. S ramps at the Tukwila I/C. ($43M - $57M, solution cost)

(SR 518 BARM 2.49): Construct a new interchange at SR 99 and a new half diamond interchange at 24th Ave. S. ($88M - $118M, solution cost)(70-80 % Collision Reduction + 95 Reduction in Daily Vehicle hours of Delay = $7M Benefit)

Delay Reduction: 50 to 80%
Collisions Reduction: 70 to 80%
Deficient Concrete Lane Miles: None identified.
Total Estimate Cost: $131 M to $175 M

Cost Estimate Explanation:
The estimated Cost is the total of the costs for the solutions described for moderate fix.

Moderate Fix Benefits:
There are a number of accidents at the intersection of SR 509 and SR 518. The new ramp will reduce the number of accidents and improve traffic movement.

Maximum Fix

Description:

(SR 518 BARM 0.03): Construct a southeast to eastbound Flyover/Tunnel Ramp at the SR 509 I/C. ($23M - $31M, solution cost)

(SR 518 BARM 0.04): Construct a new interchange at SR 509. ($29M - $39M, solution cost)(70-80 % Collision Reduction + 315 Reduction in Daily Vehicle hours of Delay = $24M Benefit)

Delays Reduction: 50 to 65%
Collisions Reduction: 45 to 65%
Deficient Concrete Lane Miles: None identified.
Total Estimate Cost: $52 M to $70 M

Cost Estimate Explanation:
The estimated Cost is the total of the costs for the solutions described for maximum fix.

Maximum Fix Benefits:
The project will reduce airport congestion and delays. The new flyover ramp will make it easier to get to the airport and provide more direct access to the city of Burien.

Off-System Solutions:

None identified.

Special Studies/Reports:

SR 518 Route Development Plan.

Required Studies

Corridor studies will be identified in the future.

Start/Completion Date of Study:

None identified.

ExpectedResults

None identified.

Funded Projects within Corridor Limits

Project No	Title

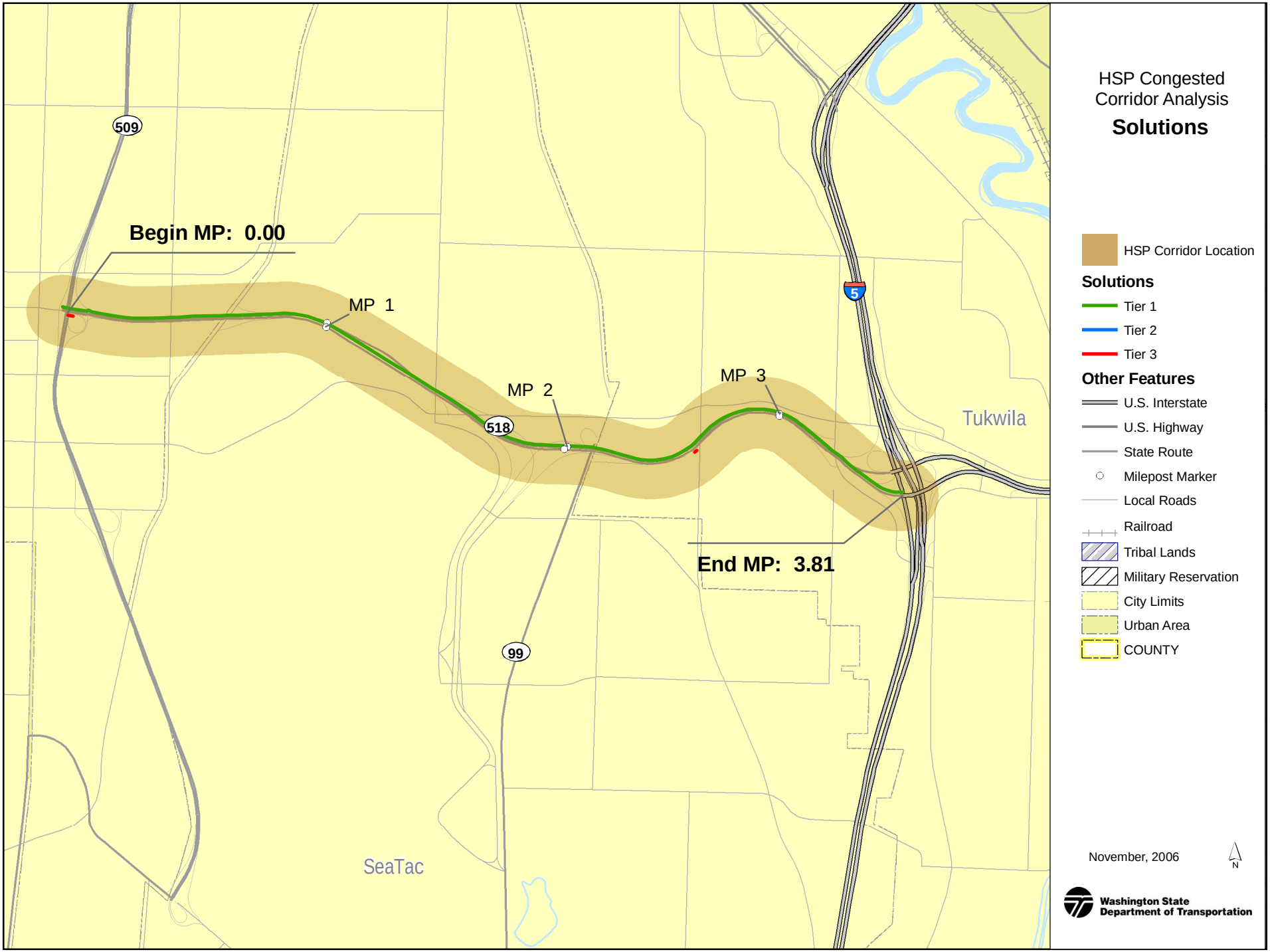
None identified.

Additional Comments:

None identified.

Data Sources and Contacts used:

Washington State Highway System Plan: 2003-2022, dated February 2002
GIS Environmental and Transportation Workbench
Capital Improvement and Preservation Program
Studies from WSDOT NW Region Planning Library (internal)
Bridge Structures and Preservation Data - WSDOT Bridge
Transportation Data Office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