City of Tukwila's Non Motorized Plan

Walk and Roll

...For those who like to walk and bike

Guaranteed to be sustainable & minimize carbon emissions

Funds made available for this Plan through Washington State Department of Community, Trade and Economic Development

Acknowledgments

The Walk and Roll Plan is the result of a multi-year effort that involved residents of the City who bike to work, and who like to bike and walk for fun, fitness and travel.

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Tukwila Mayor
Jim Haggerton

Tukwila City Council
Joe Duffie
Verna Griffin
Joan Hernandez
Kathy Hougardy
Pam Linder
De'Sean Quinn
Dennis Robertson

Tukwila Planning Commission
Bill Arthur
Margaret Bratcher
Allan Ekberg
George Malina
Henry Marvin
Chuck Parrish
Lynn Peterson

Tukwila Parks Commission
Brooke Alford
Jeff Griffin
Scott Kruize
Joanne McManus
Alice Russell

Tukwila City Staff
Jack Pace
Moira Carr Bradshaw
Jaimie Reavis
Stacy MacGregor
Jim Morrow
Bob Giberson
Pat Brodin
Bruce Fletcher
Rick Still

Tukwila School District
Jan Lande
Chris Grimm

Cascade Bicycle Club
Bicycle Alliance of Washington
Feet First

Cities of Renton, SeaTac, Kent & Seattle

Foster High School Environmental Club

Additional copies of this document are available online at:
http://www.ci.tukwila.wa.us/dcd/walkandroll.html

For questions about the Walk and Roll Plan, please contact the following:
City of Tukwila - Department of Community Development
6300 Southcenter Boulevard, Suite 100
Tukwila, Washington 98188
Phone: 206-431-3670 Fax: 206-431-3665

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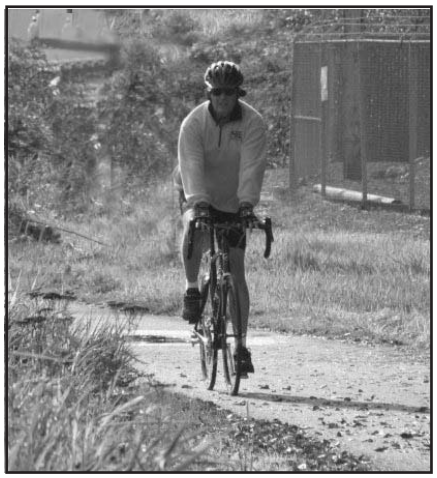

Walk and Roll

...For those who like to walk and bike

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Executive Summary

We are becoming increasingly aware of the benefits of leaving our cars behind both for our health and that of the planet. The Walk and Roll Plan is Tukwila's first pedestrian and bicycle planning document. It provides a way to ensure that all Tukwila residents can know the joy of wandering through our community using trails and sidewalks, and can experience the sense of accomplishment and freedom that comes from being able to walk or bike to school, to work, to the store and the library.

Tukwila's Comprehensive Plan is the city's overall "blueprint." The Comprehensive Plan calls for identifying "bicycle friendly" streets and creating improvements that will allow trips both in the community and outside the city to jobs or other destinations. The Walk and Roll Plan is created to carry out the goals of the Comprehensive Plan. It expands the idea of transportation from simply keeping cars and trucks moving to the idea that Tukwila's streets ought to be for everyone, whether young or old, motorist or bicyclist, walker or wheelchair user, bus rider or shopkeeper, shopper or employee**.** This "complete streets" perspective will ensure that Tukwila residents and visitors can get around as freely as possible with a range of both motorized and nonmotorized choices.

Existing Conditions

Tukwila is at the crossroads of major state and federal highways, as well as the Green River. These thoroughfares not only link Tukwila to other cities throughout the Puget Sound, but also separate it from itself, cutting off neighborhoods within the city from one another. There are few ways for cyclists to cross the barriers that I-5, I-405, SR-518, and the Green River pose. Tukwila's topography provides additional challenges due to steep valley walls and hills.

Despite these challenges, Tukwila has potential for a successful connected pedestrian and bicycle system. Many shopping and employment opportunities are concentrated in Tukwila, and there is a good recreation system. There is increased interest both locally and nationally in building socially and physically fit communities, as well as in reducing greenhouse gases.

Current infrastructure and programs can support future efforts to benefit cyclists and pedestrians. Tukwila's existing bicycle and pedestrian facilities include the following:

- Bike lanes on both sides S 144th Street (from Military Rd to Tukwila International Blvd) and on the west side of Macadam Rd S (south of S 150th Street).
- Wide curb lanes on Tukwila International Boulevard.
- Paved shoulders providing walkways on streets in areas that have been annexed to Tukwila.

- 10 miles of paved trails.
- 2 miles of unpaved trails.
- 57 miles of sidewalks throughout the city, with varying widths and locations in relation to activity centers.
- Bike racks on King County Metro buses, which provide space for two bicycles on each bus.
- Bike racks in cars on the Sounder Commuter Rail and LINK Light Rail System (provided by Sound Transit).
- Bike racks and bike lockers at transit centers, including the Tukwila Park & Ride, the Sounder Commuter Rail Station, and the LINK Light Rail Station.

The facilities listed above form the basis for a future connected system for both cyclists and pedestrians. Maintenance of these facilities is split between the Parks and Recreation Department, the Public Works Department, and private property owners.

Existing programs that support biking and walking in Tukwila include the following:

- A low-cost bike helmet program – The Tukwila Fire Department provides reduced cost bike helmets to Tukwila residents to encourage safe riding. The Fire Department must do a fitting for those receiving helmets through this program, to ensure they fit properly.
- Safe Rider Citations – The Tukwila Fire Department awards these citations to children who are caught wearing bicycle helmets while riding their bikes.
- Bicycle rodeos held each year at area schools. The Tukwila Police Department provides support by teaching safety rules for bicycles.

To encourage bicycling and walking in Tukwila, these programs should form the basis for continued support, and increased involvement by City staff and community members.

Recommended Actions:

The Plan contains seven broad recommendations that will make a difference for bicyclists and pedestrians.

1) **Adoption of Bicycle and Pedestrian Infrastructure Designs**
   Currently few City standards guide pedestrian improvements, and no guidance exists for developing bicycle infrastructure. Citywide standards should be developed and adopted to ensure that future bicycle and pedestrian improvements are consistent, and the entire system functions in a coordinated way when complete.

2) **Designation and adoption of "Bicycle Friendly Routes"**

A network that connects the majority of Tukwila's parks, schools, major employers, transportation centers, neighboring cities, and other activity centers is shown in the Plan. (Figure 5)

3) **Continue Construction of Neighborhood Links**
Increasing the number of safe "through connections" makes walking from place to place easier and encourages people to walk more. At present, Tukwila has many large blocks that cause longer than necessary trips for pedestrians and prevent connections to walkable destinations (see Figure 6). The Plan identifies additional walking trails or connections that could be developed on unimproved rights-of-way and utility easements to provide important connections in residential neighborhoods, as well as the Tukwila Urban Center and the Manufacturing Industrial Center. (Figures 7-13)

4) **More than the minimum for pedestrian safety**
In order to make a walking trip feel safe and comfortable, City standards should be changed to improve pedestrian facilities along arterial roadways. This includes requiring additional landscaping buffers on streets with speeds over 30 miles/hour, and changing the design of driveway aprons.

5) **Railbanking for the future**
Acquiring and using abandoned rail spurs for future trails in the Tukwila Urban Center and the Manufacturing Industrial Center will provide critical links for the system. Additional connections will increase the liveliness of the Urban Center and promote development. Redeveloping tracks along E. Marginal Way in the Manufacturing and Industrial Center could provide additional rights-of-way to build bike lanes, and to fill gaps in the sidewalk grid.

6) **Promotion of and Participation in Biking and Walking Programs**
Tukwila currently implements portions of a good program, such as requiring bicycle racks with new commercial development. Additional resources could be focused on expanding the offerings, such as promoting bike rodeos, Safe Routes to School programs, and Bike to Work Day.

7) **Identify and fund Walk and Roll projects in the Capital Improvement Program (CIP)**
Currently, bicycle and pedestrian improvement projects occur as components of larger improvement projects. For example, the Cascade View storm drainage project included construction of separated sidewalks and curb ramps along many of the streets in the neighborhood. Other ways that nonmotorized improvements are made are through street improvements required at the time of development, or through street

improvement projects funded through the CIP. Transferring this Plan's recommendations into the CIP highlights the outstanding needs for nonmotorized facilities and isolates project opportunities for potential grant funding.

Purpose and Contents of the Plan

The purpose of the Draft Walk and Roll Plan is to provide the opportunity for public review of the walking and bicycling environment in the City. The goal of public review is to reach a consensus about the types and locations of facilities that will be constructed in the future to complete the transportation network for bicycles and pedestrians. Once the public review process for the Walk and Roll Plan is completed, a final plan will be used as the basis for construction of new bicycle and pedestrian facilities, and for implementation of encouragement and education programs.

The Walk and Roll Plan is organized into the following sections:

- **Introduction** - The vision, purpose, and scope of the Walk and Roll Plan.
- **Existing Conditions** - A review of past facility expenditures, existing facilities, maintenance practices, and encouragement and education programs in Tukwila for bicycles and pedestrians is included in this section.
- **Recommended Actions** - A description of the seven recommended actions to make Tukwila more bicycle- and pedestrian- friendly.
- **Bicycle and Pedestrian Infrastructure Designs** - A set of bicycle and pedestrian infrastructure designs for use in construction of new bicycle and pedestrian facilities.
- **Projects** - A list of projects, including locations for new bike lanes, multi-use trails, and sidewalks are in this section and form the basis of the nonmotorized Capital Improvement Progarm (CIP).
- **Performance Goals and Measurements** - A description of performance goals and measurements, for use during implementation of the Walk and Roll Plan to gauge progress toward meeting the goals.
- **Appendices** - A set of appendices contains various background information that was used to develop the plan, including community survey results, references, and regional plans.

Introduction

What do we want?

Vision

To be able to wander throughout our City on trails and neighborhood sidewalks is a great joy. To be able to walk to school, work, store and library is a great accomplishment. This is what makes Tukwila a great city. Children and seniors as well as all adults are given the opportunity to move and do for themselves in a region and nation where it is not always possible.

Purpose and scope of plan

The purpose of this Plan is to show where and what should be done to make this type of community a reality. This vision of freedom, choice and opportunity is important for the following reasons.

1. Providing for pedestrians and cyclists is the equitable way to serve all members of the community. Implementation of the vision will provide alternative facilities for those who don't have access to a vehicle, for those who choose not to use an automobile, and for those who can't operate a vehicle.
2. Providing a complete nonmotorized system is an environmentally sustainable transportation system that allows individuals to choose a way to minimize their personal impact on air, surface water and land.
3. Providing opportunities to incorporate healthful choices into everyday activities is critical for individual and public health.
4. This vision will create an extraordinary recreational system. Personal freedom and choice are paramount but there is also the need to provide a system for the number one recreational activity in America – walking.

Tukwila has good beginnings. Good regional trails, the Green River and Interurban Trails run north and south through the City, and unpaved trails and sidewalks exist throughout the Tukwila Hill neighborhood. This Plan shows where this existing system is incomplete and how it can be expanded and enhanced.

Travel by bicycle is listed as "nonmotorized transportation" within the City's Comprehensive Plan. Little community attention has been paid to this transportation option and more needs to be accomplished in order to support this viable means of getting around. Specifically, the Comprehensive Plan says that Tukwila will identify bicycle friendly streets and create improvements for regional trips, such as to a job in another city, and neighborhood trips, such as to school or the library.

This Plan expands the concept of transportation from that of keeping cars and trucks moving to looking at transportation from a diversity of perspectives. This concept is often referred to as "complete streets." How can the City maximize mobility for all people who live here and transit through here? City streets are by far the largest public area within

the community. They are the public spaces that serve the most people. This Plan provides greater detail on where and what type of nonmotorized facilities should be a part of Tukwila's infrastructure. The City's Comprehensive Plan discusses bike friendly streets; this document shows where they should be located and how to ensure they are compatible for cyclists as well as the other uses of the right-of-way. This plan also identifies areas where there are gaps in the system of walkways along City streets, and recommends a method to prioritize which sidewalks should be built first.

Community goals have continually been in place to expand the existing system of trails and make a connected network of open and recreational space. The existing local system of trails along unimproved rights-of-way is one of the characteristics that make Tukwila unique among communities within the region. This Plan looks at how to expand the current system city-wide, fill in the missing pieces and connect them together so that people can walk further and get to popular destinations. Tukwila is a relatively small city of eight square miles. The Tukwila segments of the regional trails that extend north-south through the Duwamish/Green River Valley have been built. Expanding and supplementing this existing system within and through the city is considered and addressed here. The City's Comprehensive Plans have consistently stated that this system of paths or trails should be expanded with better east/west connections. This Plan zeros in on what corridors and/or where specifically these missing paths should be installed and optional construction/funding mechanisms.

Two potential annexation areas, identified within the City's Comprehensive Plan, are included in the scope of this Plan. Because their future is to be urban in accordance with the Growth Management Act, the infrastructure standards of Tukwila should be considered and applied to these areas.

Existing Conditions

What have we accomplished so far and what are the deficiencies?

Setting

Tukwila is a city that is literally "at the crossroads." Historically, the City was described this way because of its location at the confluence of the Duwamish and Black Rivers and at natural transportation crossroads at the south end of Lake Washington and the major north south route through the region. It was also, and continues to be, served by rail for both passenger and freight transportation.

State and federal highways were built through Tukwila and bisect the City into separate parts, both physically and functionally, in terms of land use. These major transportation routes also connect Tukwila with adjacent cities and the rest of the Puget Sound region. There are few areas where pedestrians and bicyclists are able to cross these manmade and natural barriers that are posed by the Green River, I-5, I-405, and SR-518.

Tukwila's topography poses an added challenge because of the steep valley walls and hills separating neighborhoods east-west and north-south. These topographic and man-made facilities have created areas of homogenous land use that are accommodated and reinforced by an auto-dominated transportation system. A layout of neighborhoods separated by major barriers presents challenges to the creation of a pedestrian-friendly environment, as well as the development of a connected transportation system for pedestrians and bicyclists. **Figure 1 Tukwila Neighborhoods and Topography** illustrates the neighborhoods and topography of Tukwila.

Despite these challenges, Tukwila is a city with potential for a connected pedestrian and bicycle system. The many activities concentrated within Tukwila, including major employers, a large retail district, and existing recreation opportunities, make the area a place where people want to be. Increased interest at the national level in the role that the built environment (including facilities such as sidewalks, trails, and bike lanes), can play in helping to reduce obesity, to reduce greenhouse gas emissions, and to increase the social capital (or "neighborliness") of an area also gives support to the projects and policies outlined in Tukwila's Walk & Roll Plan.

North-South Highways

Several highways traverse the breadth and length of the City, resulting in parts of the City having only a few major streets that weave the City together. Barriers in the form of highways connect Tukwila to different parts of the Puget Sound region by automobile, but they also isolate different areas within the City from each other, creating pockets that differ in terms of neighborhood character, land use, and transportation.

Interstate 5 (I-5) runs north-south and provides a physical barrier to east-west travel. State Route 599 (SR-599) also runs north-south, connecting I-5 to State Route 99 (SR-99; formerly known as Pacific Highway). South of SR-599, State Route 99 runs north-south and is named Tukwila International Blvd (TIB) in Tukwila and International Blvd in

the City of SeaTac. This corridor is characterized by high volumes of truck and other traffic traveling at high speeds. Street conditions, lack of continuous sidewalks (especially in the northern section), and lack of trail linkages make this corridor a challenge for pedestrian and bicycle activity.

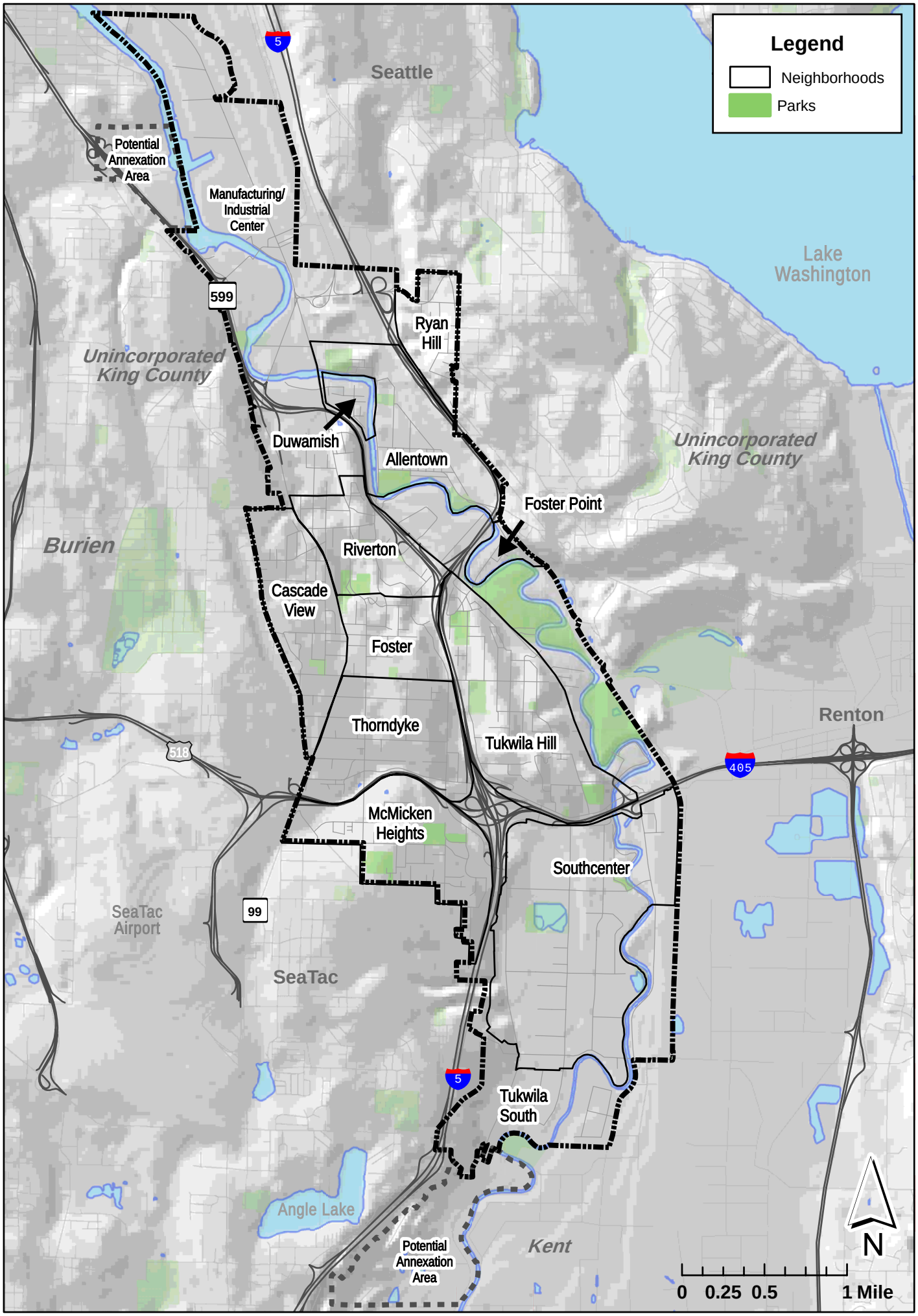
Tukwila has been successful in obtaining grants to upgrade TIB into a five lane street with 14-foot outside travel lanes and separated sidewalks, which will extend from the southern city boundary north to approximately S. 124 Street. TIB continues north of S. 124th Street, where it crosses the Green River and extends into the Manufacturing and Industrial Center. There are opportunities in this area to connect to the Green River Trail as well as the new Duwamish Riverbend Hill Park.

Other high-traffic, high-speed north-south corridors that provide challenges to bicyclists and pedestrians include East Marginal Way S and West Valley Highway/Interurban Ave S. While trail connections are available intermittently along these corridors, more signage is needed to guide trail users to access points. Bike lanes, or at least wide outside lanes, would help improve these areas for bicyclists. Sidewalks are located on both of these corridors. However, the alignment of sidewalks on East Marginal Way is inconsistent (jutting in and out along the west side of the street) due to the location of railroad tracks, and sidewalks are absent along Interurban Ave S on the west side (north of I-5), as well as both sides of the street south of 141st Place S.

East-West Highways

State Route 518 (SR-518) runs east-west from Tukwila's western boundary with the City of SeaTac to I-5, and becomes Interstate 405 (I-405) east of I-5. This route bisects the City of Tukwila, providing a physical barrier for north-south travel, and, combined with I-5, serves to isolate the Southcenter urban center from the rest of the city. Several streets, including Tukwila International Blvd, 42nd Ave S, 51st Ave S, 61st Ave S, and 68th Ave S provide north-south access through the length of the SR-518/I-405 barrier. Klickitat Blvd, S 178th Street, S 180th Street, Strander Blvd, the Green River Trail, and the two bridges over I-405 (61st Ave S and 68th Ave S) are access points into the Southcenter urban center. All of these access points have sidewalks on at least one side of the street for pedestrians. For bicyclists, the Green River Trail (via Baker Blvd) and Klickitat Blvd (which has a dedicated trail from 53rd Ave S to Southcenter Parkway) are the best access options to the Southcenter urban center.

Tukwila Neighborhoods and Topography



GIS Tukwila

01/2008

Existing Bicycle and Pedestrian Facilities

A fairly extensive system of sidewalks and trails exists within Tukwila, though there are many areas where there are gaps in this system that prevent the City from having a connected nonmotorized transportation system. Filling in these gaps could help encourage more people to walk rather than drive for short trips. Though there are currently few roadways in Tukwila that were originally constructed with the intent for use by bicyclists, the existing road network connects to many destinations to which people would like to be able to ride their bikes safely and comfortably, such as major employers, community centers, and regional trails. Retrofitting Tukwila's streets for use by bicyclists is one way to expand the bicycle route network in the city in an efficient manner, making use of existing infrastructure and increasing the range of users of the public right-of-way.

Figure 2 shows the location of existing and planned bicycle and pedestrian facilities, serving as a guide to show where there are existing gaps in the nonmotorized system. Tukwila's planned sidewalks from the City's Capital Improvement Program are shown on this map, although not all are funded. The **Projects** section of this plan contains details on existing conditions within each corridor where a bicycle improvement is proposed, and existing conditions in each of Tukwila's neighborhoods, including the location of sidewalks, trails, paved shoulders, and areas where there are unimproved rights-of-way (recommended for new trail locations).

Existing Bicycle Facilities

Bike Lanes

Although paved shoulders are found in many areas of Tukwila, bike lanes – signed and striped lanes dedicated for use by bicycles - have been constructed in the City only recently. Bike lanes in Tukwila are located along S 144th Street between Tukwila International Blvd and 34th Pl S, and along the west side of Macadam Rd S, south of S 150th Street. Future bike lanes are planned or currently under construction for Southcenter Blvd from Tukwila International Blvd to 53rd Pl S.

Wide Curb Lanes

Existing wide curb lanes – wide lanes that bicycles must share with automobile traffic - are typically 14 feet wide, and are located on Tukwila International Blvd. Wide curb lanes included in future street improvement designs are planned for Interurban Ave S and the northern section of Tukwila International Blvd. These streets are characterized by high automobile speeds and heavy truck traffic.

Existing Multi-Use Facilities

Paved Shoulders

Paved shoulders have been added to many local access streets and some arterials. However, where paved shoulders have been striped, they are usually only located on one side of the street, and therefore do not provide the safety that a continuous walkway on both sides of the street would provide. Locations where paved shoulders were constructed are usually areas that were annexed to the City of Tukwila, and provide walkway areas as an interim improvement where there were no sidewalks or other designated space for pedestrians.

Paved Multi-Use Trails

There are two paved multi-use trails in Tukwila, the Green River Trail and the Interurban Trail, which combined total approximately 10 miles. These two trails run north-south. There are missing links in these major regional trails, meaning that bicyclists must ride on the roadway to connect to Seattle to the north, or Kent to the south.

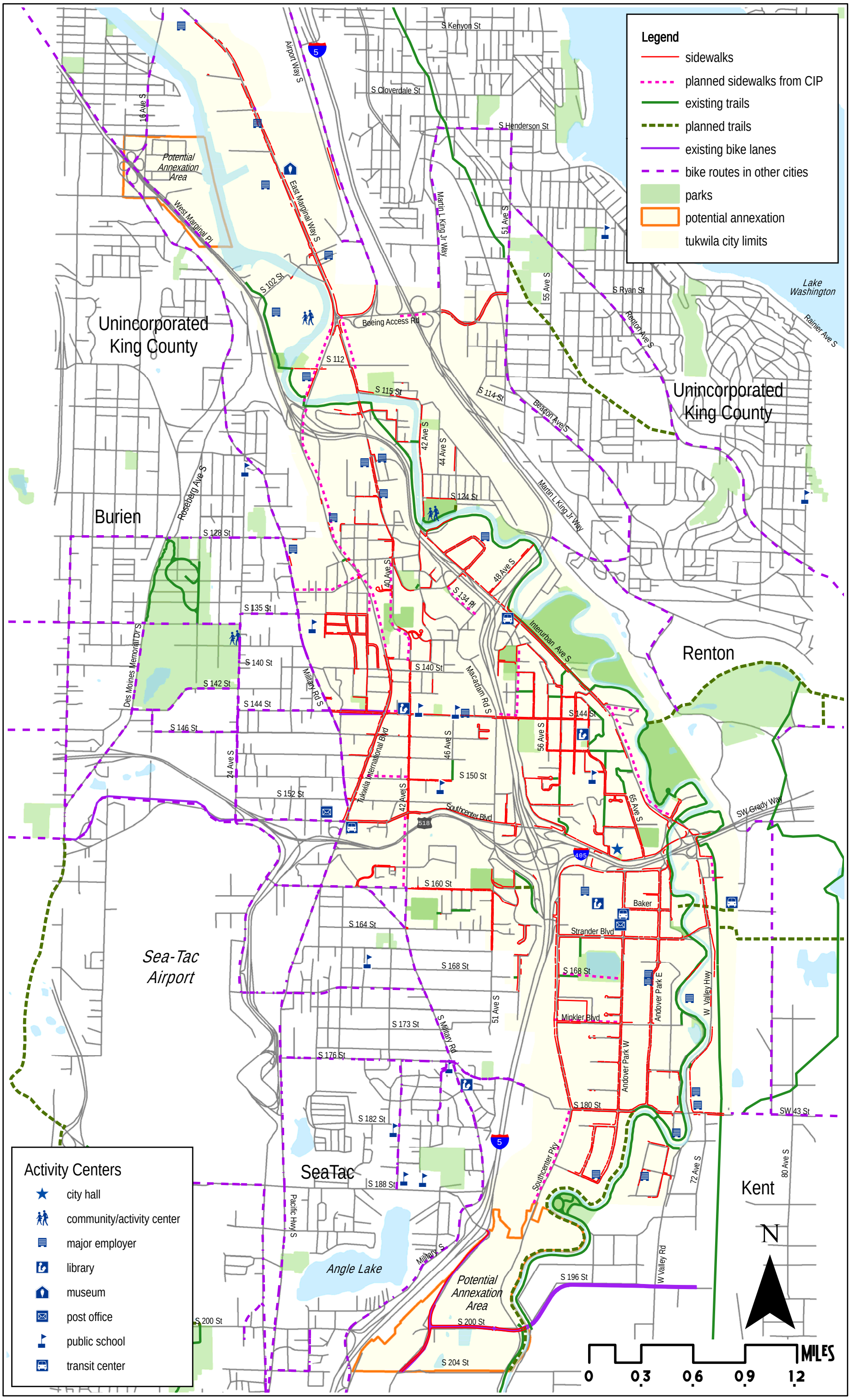
Unpaved Multi-Use Trails

Tukwila has nearly two miles of unpaved walking trails that are primarily on unimproved rights-of-way and are referenced by numbers. These trails provide short through connections where there are dead-end streets or sensitive areas such as steep slopes, streams, or wetlands. The majority of the city's existing numbered walking trails are located in the Tukwila Hill neighborhood, but there are also several in the McMicken neighborhood, and one in the Thorndyke neighborhood.

Table 1: Numbered Walking Trails

Number	***Location***	***Length (in feet)***
1	S 147th Street (between 59th Ave S and Interurban Ave S)	1066
2	62nd Ave S (between S 147th and S 149th)	557
3	65th Ave S (between S 151st and S 149th Streets)	1375
4	62nd Ave S (between S 151st and S 153rd Streets)	973
5	57th Ave S (between S 141st Street and Interurban Ave S)	541
6	S 142nd Street (between 53rd and 55th Ave S)	531
7	57th Ave S (between S 153rd and S 152nd Street)	578
8	57th Ave S (between S 153rd Ave S and Southcenter Blvd)	716
9	S 159th Street (between 53rd Ave S and Klickitat Dr)	560
10	S 162nd Street (between 46th and 48th Ave S)	580
11	46th Ave S (between S 148th and S 150th Streets)	617
12	45th Ave S to Crestview Park	147
13	S 142nd Street (between 56th and 57th Ave S)	384
14	S 168th Street (between 51st and 53rd Ave S)	145
15	S 150th St (between Macadam and 56th)	508
TOTAL		**9,278**

Existing and Planned Pedestrian and Bike Facilities



Existing Pedestrian Facilities

Existing Sidewalks
An inventory of Tukwila's sidewalks was conducted in the spring of 2006. The inventory includes the location, construction materials (concrete or asphalt), width of sidewalks, and the location of curb ramps. The location of the City's sidewalks is shown on **Figure 2** as well as on the Neighborhood Maps, **Figures 7-15**. .

Sidewalks are located on approximately 29% of the street edges along the City's public streets. In total, there are approximately 57 linear miles of existing sidewalk along City of Tukwila streets, out of a total of 197 linear miles of street edge on which sidewalks could be provided. Taking a closer look at existing sidewalks, approximately 6.15 miles of the 52 miles of sidewalk (or 11% of existing sidewalks) are substandard, with widths less than 4 feet wide.

Tukwila currently prioritizes new locations for sidewalks or paved walkways according to a system developed by former City of Tukwila City Engineer, Ron Cameron, outlined in a report titled "Pedestrian Improvements by Formula – A Process," available from the Tukwila Public Works Department.

This system of prioritization uses a complicated mathematical formula that includes factors related to existing roadway users (pedestrian volumes and types, and vehicle volumes and speeds), and physical characteristics of the roadway. Pedestrian routes that are used as school routes, or used by the handicapped or the elderly receive added consideration. Shoulder and roadway width, and the length of the missing link sidewalk segment, are physical characteristics of the roadway that are considered in this prioritization system.

Within the City of Tukwila Capital Improvement Program (CIP) is a Residential Streets Fund that is currently underfunded with no dedicated revenue source or funding allocation. Sidewalks or paved shoulder walkways prioritized through the above prioritization system are added to the Residential Improvements project, which is a project within the Residential Street Fund. The goal of this project is to revitalize neighborhoods through residential street improvements. The range of improvements provided through the Residential Improvements project includes water and sewer improvements, power undergrounding, street lighting and may or may not include sidewalks.

A recommendation of this plan is to adopt a more simplified prioritization system to determine where sidewalks should be built first. This system is based on a prioritization scheme developed and implemented by the Seattle Department of Transportation (SDOT). Sidewalks prioritized through this system would be included in the CIP fund dedicated for projects in the Walk & Roll Plan, and opportunities would also be sought for their construction with redevelopment projects and grant opportunities.

Arterial streets and school zones are areas that experience particularly high levels of pedestrian activity. Arterial streets tend to connect major destinations within Tukwila, including employers, community centers, schools, and shopping areas. Compared with local access streets, arterial streets have higher traffic volumes and speed limits. Arterial

streets should therefore be priority locations for sidewalks, to provide safety and comfort for the large volume of pedestrians expected in these areas. The Tukwila School District provides bus service for students who live beyond a ½ mile radius from the schools they attend. The areas within a ½ mile of schools can be expected, then to have a large number of children walking to school. Because children do no have the cognitive abilities that adults do, extra safety should be provided in these areas, with sidewalks provided at a minimum. Existing conditions on arterial streets and within school zones are described below:

Arterial coverage
The City of Tukwila has almost 26 miles of sidewalk along arterials within one quarter mile of major activity centers. The total length of street edge along arterial streets within a quarter mile radius of these major activity centers is approximately 36 miles. That leaves approximately 10 miles of street edge on which sidewalks should be constructed to provide walkability around these well-used community features.

An analysis was conducted on the classification of City streets, looking at speeds and other conditions related to walkability. The Speed Limits and Street Functional Classification Map, **Figure 3,** shows the street hierarchy and the speed limit (for streets over 25 miles per hour) for each arterial street. **Table 2** below lists arterial streets (or segments of arterial streets) within Tukwila that are missing sidewalks. Arterial streets are of special focus because these are often the most direct routes to get from one major destination to another. These streets also tend to have higher speeds and traffic volumes than local access streets, making provision of sidewalks especially important for pedestrian safety. The City's current sidewalk standard for sidewalk width is six feet on principal arterials unless the street speed limit is over 35. On the five principal arterials with a speed limit over 35, including Martin Luther King Way, Tukwila International Boulevard, West Valley Highway, East Marginal Way and Boeing Access Road, the standard for sidewalk width is eight feet. Although no adopted standard exists for residential neighborhoods, the City typically builds and requires five feet wide sidewalks.

Table 2: Arterials with No Sidewalks

SEGMENTS LESS THAN 30 MPH
▪ Minkler from Andover Park West to Andover Park East
• S 164th Street
• 51st Ave S (from Southcenter Blvd to S 151st Street)
• Macadam Rd S (from S 152nd Street to S 144th Street)
• Macadam Rd S (from S 144th Street to 43rd Ave S, *with the exception of a few small segments where sidewalks are provided on one side of the street*)
• Macadam Rd S (from S 135th Street north to Interurban Ave S, *with the exception of a few small segments where sidewalks are provided on one side of the street*)
• 53rd Ave S (from S 144th to 139th Street)
• 53rd Ave S (from S 137th to 52nd Ave S)
• S 133rd - S 132nd Street from Military Rd S to Tukwila International Blvd)
• S 130th Street (from Tukwila International Blvd to Macadam Rd S)
• 16th Ave S
SEGMENTS EQUAL TO 30 MPH
▪ 42nd Ave S (from southern City limit to Southcenter Blvd/S 154th Street)

▪ Klickitat Dr (from Southcenter Parkway to Southcenter Blvd--*there is a separated walkway from 53rd Ave S to Tukwila's Urban Center on the southwest side of the street)*
▪ 40th Ave S (from southern end of Southgate Park to S 130th Street)
▪ S 133rd Street south edge and then north edge (from Riverton Park to Interurban Ave S)
▪ S 129th Street (from eastern City limits to 42nd Ave S)
▪ 115th Street (area in front of future Duwamish/Riverbend Hill Park)
SEGMENTS BETWEEN 35 AND 40 MPH
▪ Southcenter Parkway (south of S 180th Street)
▪ S 178th Street (from Southcenter Parkway west to City limits)
▪ S 160th Street (west of Military Rd S)
▪ Southcenter Blvd (west of I-5)--*sidewalks currently under construction*
▪ Military Rd S (SeaTac ROW)
▪ Interurban Ave S (from Fort Dent Way to S 143rd Street)--*planned for construction*
▪ West side of Interurban Ave S (from I-5 to Macadam Rd S)
▪ East Marginal Way (from S 112th Street to Boeing Access Rd)
▪ Boeing Access Road (minimal, 2' sidewalks are on one side of this street)
▪ Segment of Tukwila International Blvd from SR-599 to north side of river)
▪ S 112th Street
▪ Tukwila International Blvd (from S 112th Street to East Marginal Way improvements just south of where TIB and East Marginal Way merge)
SEGMENTS EQUAL TO AND OVER 45 MPH
▪ Tukwila International Blvd (north of S 138th Street to SR-599): *there are sidewalks on one side of the road in this area connecting the area between S 132nd Street and S 130th Street (on west side of street); on the east side of the street between S 128th and S 120th Street (designed and funded)*
SEGMENTS EQUAL TO AND OVER 50 MPH
▪ MLK Way (Boeing Access Rd south to City limits)
▪ West Valley Highway (S 180th Street to southern City limits)

School coverage

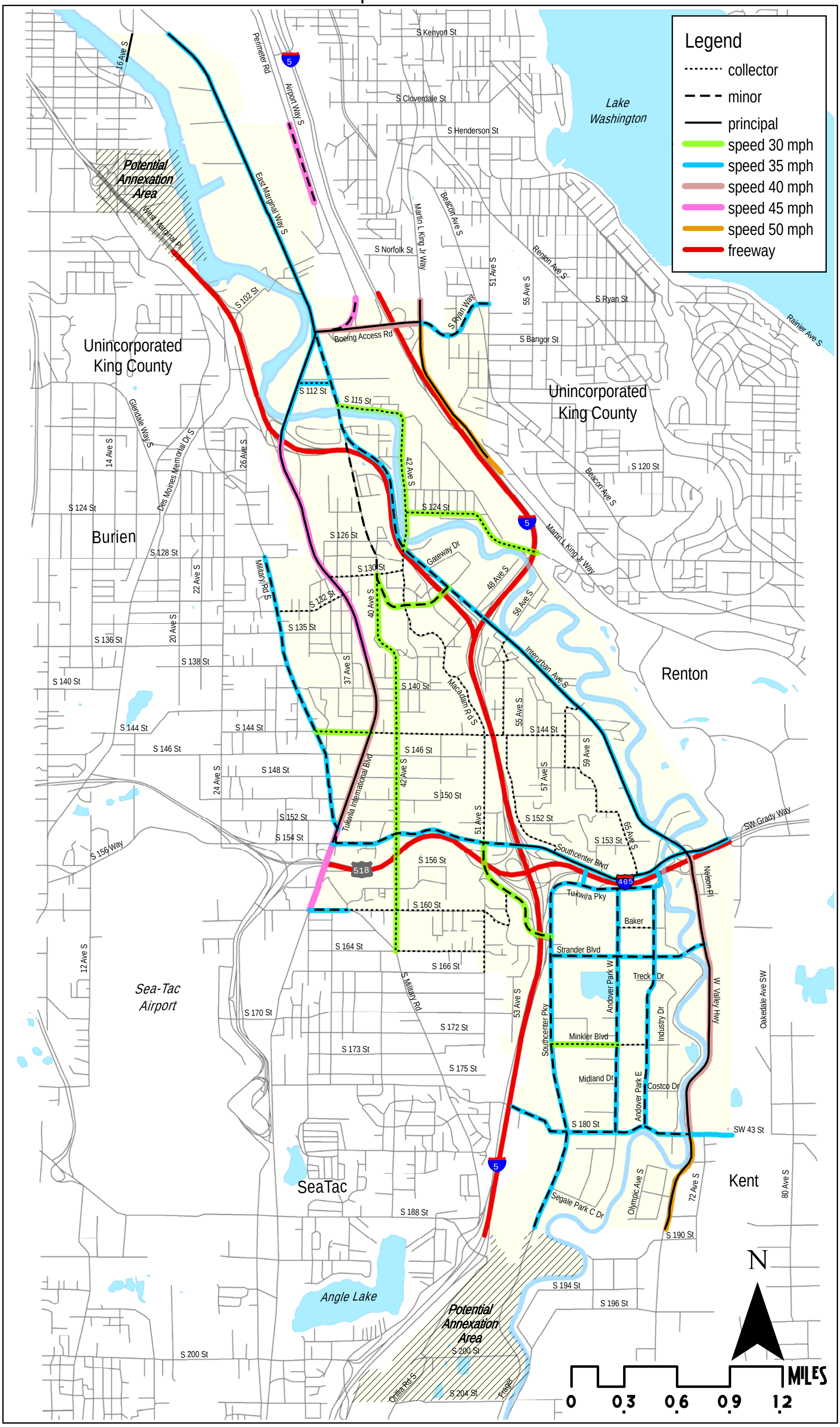
The Sidewalk, Trails and Streets Map Surrounding Schools, **Figure 4,** shows connectivity for pedestrians within ¼- and ½ -mile radii of Tukwila's schools. There are a total of 22 miles of street edge within the 1/4 mile radii of schools. The total number of miles of existing sidewalk is 7.15. That leaves 67.5%, or nearly 15 miles of street edge that are missing sidewalks.

The table below lists those streets within the ¼ mile radii of each school that are missing sidewalks. Two of those streets are arterials and are indicated by an asterisk. As discussed in the previous section, the presence of these streets within both categories or schemes for prioritizing for new sidewalks, suggests that these street edges serve a variety of different pedestrians, including schoolchildren and other neighborhood residents, as well as people who work in the area and/or those who walk to transit stops along these streets.

Table 3: Streets Missing Sidewalks within ¼ Mile of Schools

School	Street
Tukwila Elementary	Interurban Ave S (sections of the east side of the street)
	S 152nd Street (south side)
	59th Ave S (segments between S 142nd Street and S 149th Street)
Thorndyke Elementary	
	46th Ave S (north of S 150th Street)
	S 148th Street (between Tukwila Intl Blvd and 48th Ave S)
	S 150th Street (west of 42 and east of 46th Ave S)
	S 152nd Street (between Tukwila Intl Blvd and 42nd Ave S)
Cascade View Elementary	
	32nd Ave S (north of S 135th Street)
	34th Ave (north of 135 St.)
	S 132nd Street (between 32nd Ave S and Tukwila Intl Blvd)
	S 133rd Street – S 132nd Street (between Military Rd S and 32nd Ave S)*****
	S 135th Street (b/w Military Road S and 32 Av S)
McMicken Heights	S 164th Street (between 51st Ave S and Military Rd S)
	42nd Ave S (between S 160th Street and S 164th Street)
Foster High & Showalter Middle School	Macadam Road S (north of S 144th Street)*****
	43rd Ave S (north of S 142nd Street)
	44th Ave S (between S 140th and S 142nd Streets)
	46th Ave S (south of S 144 St)
	48 Pl S west edge (north of S 146th Street)
	51st Ave S (south of S 144th Street)
	52nd Ave S (south of S 142 St.) (Tukwila Hill)
	S 139th Street (east of 45th Ave S)
	S 140th Street (east of Tukwila Intl Blvd)
	S 141st Street (between Tukwila Intl Blvd and 42nd Ave S)
	S 142nd Street (b/w 42 & 44 Av S. and b/w I-5 & 53 Av S)
	S 144th St (south side b/w Tukwila Intl Blvd and 51st Ave S)
	S 146th Street (between Tukwila Intl Blvd and 51st Ave S)
***** Indicates an arterial street.	

Speed Limit and Street Functional Classifications



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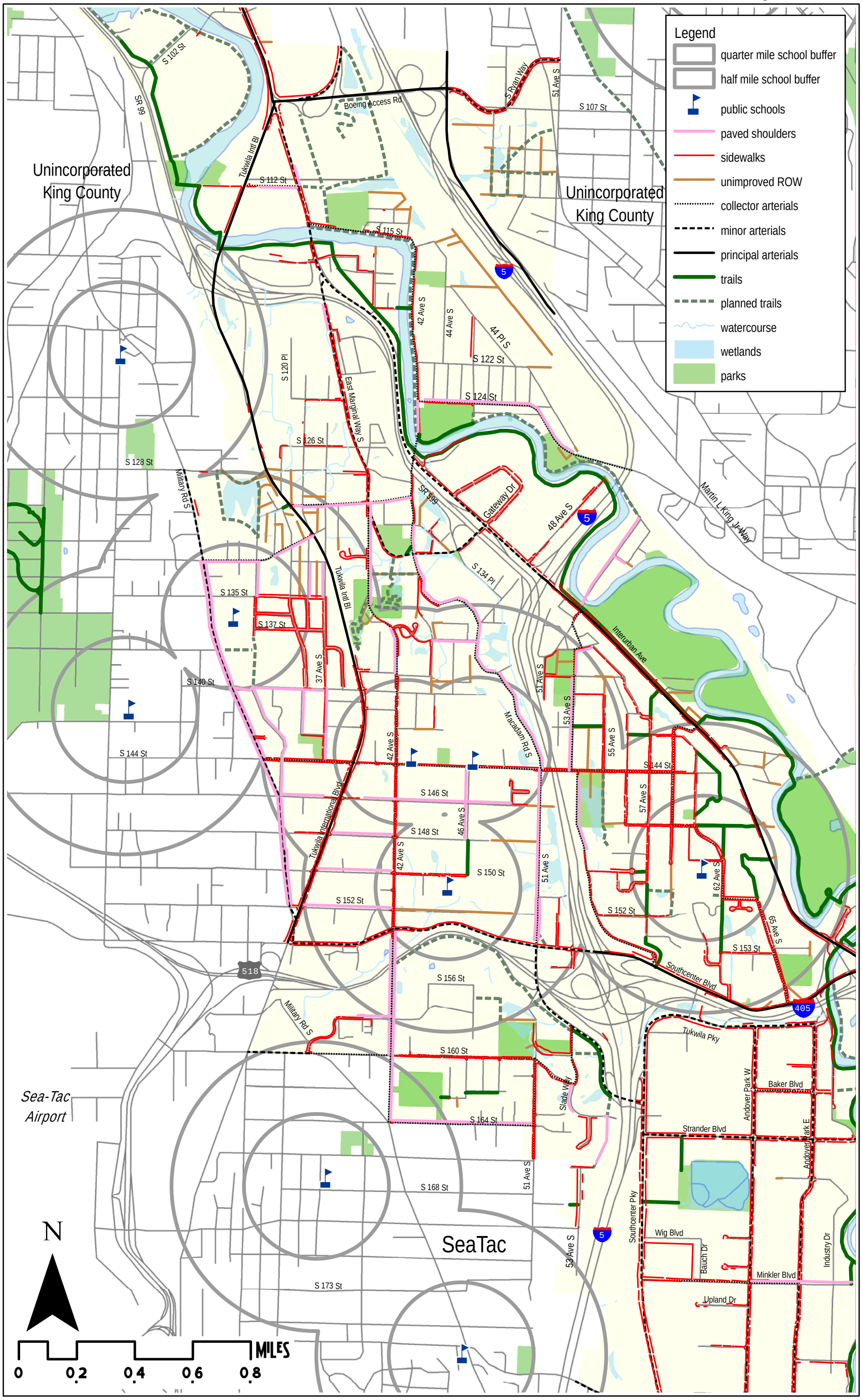
Sidewalks, Trails, & Streets Surrounding Schools



Maintenance

Organizationally, the City divides maintenance of City pedestrian and bicycle facilities among the Parks and Recreation Department, the Public Works Department, and property owners. The Parks Department is responsible for trails. Maintenance of paved and unpaved trails falls into two categories – scheduled and unscheduled. Scheduled maintenance of trails, primarily during the growing season, involves mowing of edges and cutting back any overhanging shrubbery adjacent to the trails. Unscheduled maintenance typically involves hard surface repair due to surface break-downs from tree roots and tree limb removal from storms. The Parks Superintendent has five full time and three ¾ time maintenance specialists and technicians as well as extra labor when needed, who maintain the multi-use paved and unpaved trails within the City and the entire parks system.

Within the Maintenance and Operations Division of the Public Works Department is a Transportation Superintendent with nine maintenance specialists and workers, including a street sweeper vehicle. Arterial streets are swept approximately eight times a year and after any sanding due to icy street conditions. City regulations require adjacent property owners to maintain their sidewalks.

Past Bicycle and Pedestrian Facility Expenditures

Central Business District (CBD) Sidewalk Plan

The City of Tukwila adopted a plan in 1989 through which a continuous sidewalk system was constructed within Tukwila's CBD, the area which today is known as the Southcenter urban center. Prior to the CBD sidewalk program, sidewalks within the urban center were constructed in a piecemeal fashion as improvements were made to private property. The result of the CBD Sidewalk Plan was a continuous system of sidewalks at least six feet wide within the urban center.

Residential Street Program

Prior to the growth by annexation that occurred during the early 1990s, the City was able to fund a Residential Street Program that undergrounded overhead utility lines and constructed curb, gutter and sidewalks on existing residential local access streets. The Tukwila Hill neighborhood was the original Tukwila town site and benefited from a well funded residential street improvement program. For the past several years, the Residential Street Program has been unfunded.

Encouragement and Education Programs

Bike Helmet Program

The Tukwila Fire Department, in conjunction with the members of Tukwila IAFF Local #2088 and the Tukwila Children's Foundation, make available affordable bicycle helmets to the community. The bicycle helmets are available at Station #54, located at 4237 S. 144th street, as well as various community events. All sizes are available from toddler to adult and the wearer must be present for a customized fit.

Since the program was started in 2002, over 550 helmets have been either sold or given away at City of Tukwila events including the annual Bicycle Rodeo and Tukwila Days.

As part of the Bike Helmet Program, to reward safe bicycle riding habits, fire department personnel issue safe rider citations. The citation entitles those who are wearing a bicycle helmet to a free subway sandwich. To date, few of these citations have been awarded. Better promotion of the program could help to increase participation in this program, at the same time encouraging safe bicycle riding habits in Tukwila.

Multi-Modal Connections

King County Metro provides bike racks that can carry two bicycles on all Metro buses. Additionally, Metro provides bike racks and bike lockers at Park & Ride locations and some transit stops in King County. In Tukwila, Metro provides six bike lockers at the Park & Ride at Interurban Ave S & 52nd Ave S in partnership with the Bicycle Alliance of Washington.

Sound Transit provides bike racks for two bicycles per train car on both the Sounder Commuter Rail and on the future LINK Light Rail System. Sound Transit also provides bike lockers at the Tukwila Sounder Station (located on Longacres Way), and will have bike lockers at the LINK Light Rail Station at Tukwila International Blvd and S 154th Street as well.

Recommended Actions

What are we going to do?

This Plan contains seven broad recommendations that will make a difference for bicyclists and pedestrians. These include (1) Adoption of Bicycle and Pedestrian Infrastructure Designs, (2) Designation & Adoption of "Bicycle Friendly Routes", (3) Continued Construction of Neighborhood Links, (4) Providing More than the Minimum for Pedestrian Safety, (5) Railbanking for the Future, (6) Promotion of and Participation in Biking and Walking Programs, and (7) Creating a dedicated CIP fund for projects in the Walk & Roll Plan. Within each of the seven recommendations are pieces that can be done discretely to improve the overall nonmotorized function of and use of the infrastructure system. A short description of each recommended action is below, followed in the next section of the plan by recommended designs, and by the list of specific projects recommended to make Tukwila's streets and neighborhoods more bicycle- and pedestrian- friendly. A set of goals and performance measures concludes the plan so that the City of Tukwila can measure how far it has come from today's existing conditions, and track progress toward meeting the stated goals of the Walk & Roll Plan.

Adoption of Bicycle and Pedestrian Infrastructure Designs

Adopted design standards will result in a city with improvements that are (1) acceptable in terms of overall quality, and (2) acceptable in terms of consistency, so that the City as well as individuals will have the ability to construct separate sections with some assurance that when gaps are filled in to complete the bicycle and pedestrian network, there will be continuity within the system. With the adoption of these standards, the City can be assured that when an entire route is completed, it will be functional over its length.

Currently, minimal City direction or standards are available to guide pedestrian improvements and no guidance currently exists for bicycle infrastructure. The City has a "Development Guidelines and Infrastructure and Construction Standards" manual that will be amended to include the designs that are recommended for bicycle and pedestrian infrastructure contained in the plan.

The Bicycle and Pedestrian Infrastructure Design section provides a range of bicycle and pedestrian designs, and a recommended hierarchy that helps with the decision of which design to choose. The choice of a design will vary depending on site conditions, surrounding land uses, and other factors such as cost. The hierarchy is recommended in the order of the most preferable improvement option to the least preferable, based on factors such as safety and the type and forecasted number of users.

Designation & Adoption of "Bicycle Friendly Routes"

The recommended network of bicycle friendly routes is shown on the Bicycle Friendly Routes Map, **Figure 5**. Recommended improvements to complete this network include construction of bike lanes or trails. The recommended network connects the majority of Tukwila's parks, schools, major employers, activity centers, and regional routes.

If a section of the bicycle network is indicated on a street proposed for capital improvement, then design and construction plans should include a bike lane. Separate capital project(s) will be needed to retrofit streets that have recently been improved or those not currently or likely to be listed as a capital improvement project. The first step in this process will be to hire an engineering firm to evaluate the design and construction options and costs on each of the routes.

Streets that are not identified as Bicycle Friendly Routes should be evaluated according to Complete Streets principles. Within school zones, all streets should be evaluated for pedestrian and bicycle facilities because of their use by a large number of children. This type of school zone evaluation can be supported through a Safe Routes to School program in which the school district partners with the city to identify design needs for the student population, and to obtain grant funding for design, construction, enforcement, and education.

Continue construction of Neighborhood Links

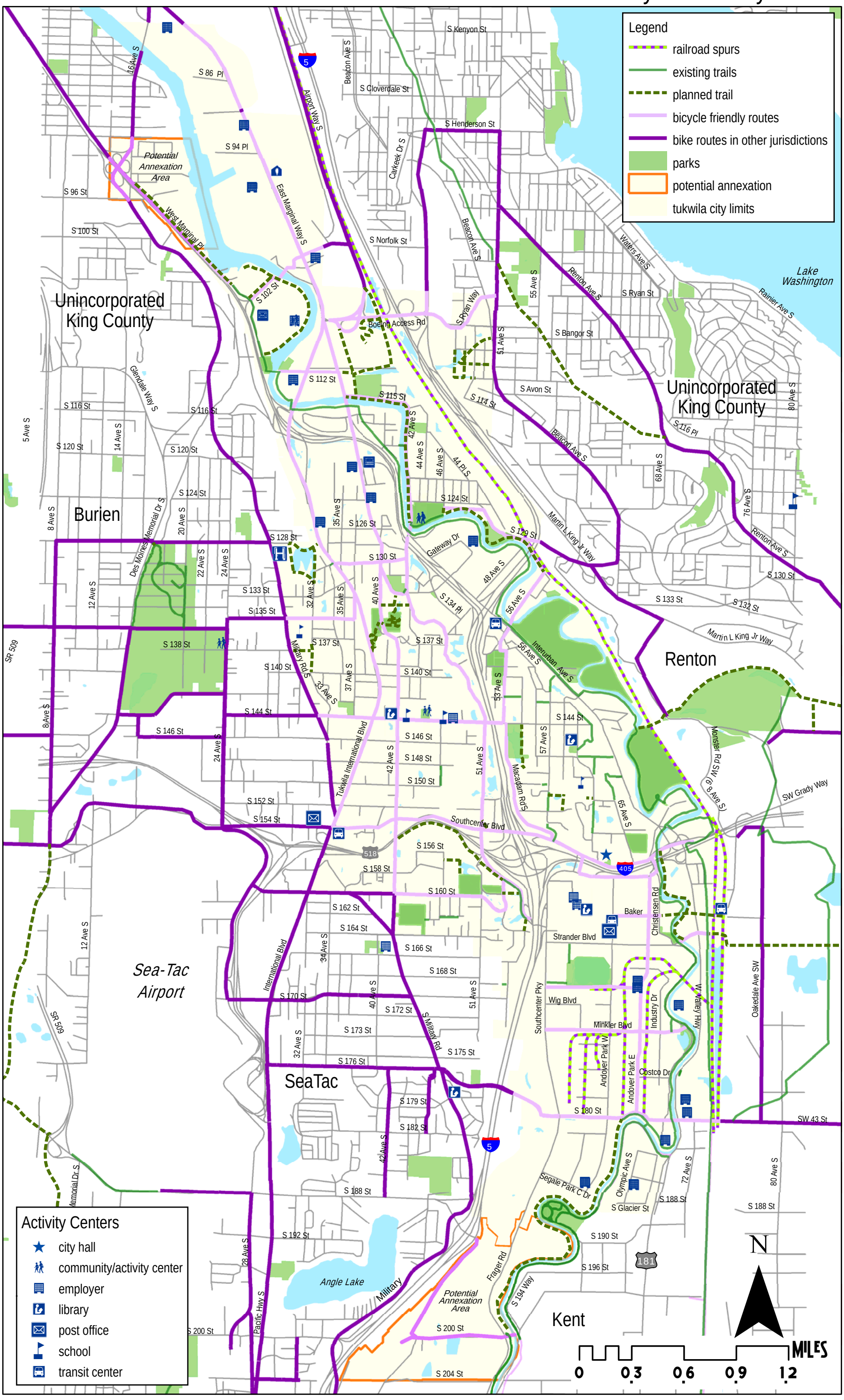
Connectivity of the street grid means that the greater the density of through-connections there is in an area, the easier it is to get from point A to point B. Increasing the number of safe through connections makes walking more convenient, thereby encouraging more people to walk.

The City of Tukwila currently requires construction of street frontage improvements (including curbs, gutters, and sidewalks) with new construction. Exemptions to this requirement exist in certain circumstances, including single-family residential development of less than five lots. In order to achieve development of a connected transportation system for pedestrians in all areas of Tukwila, the exemptions that are currently allowed should be re-examined.

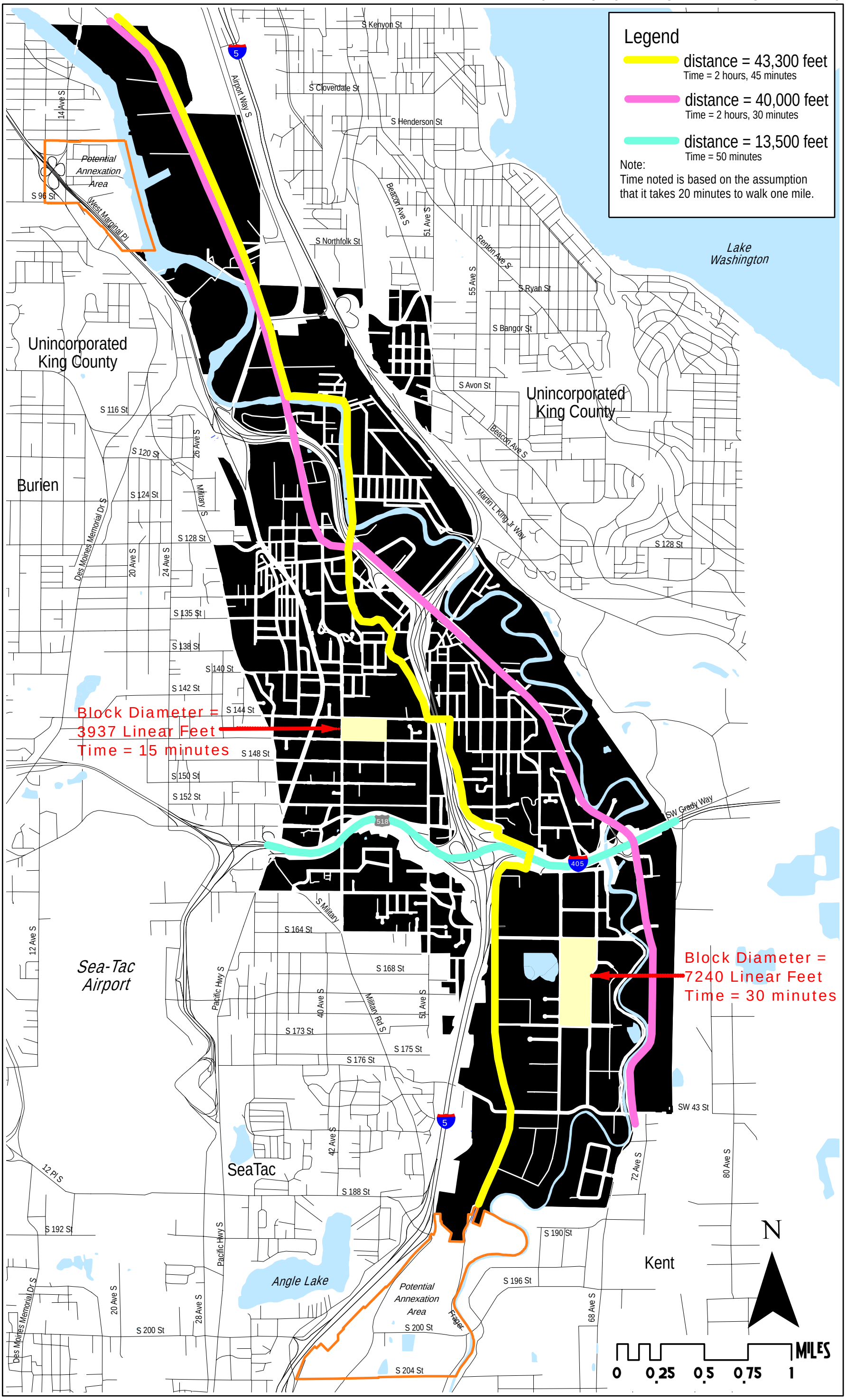
An important component of connectivity for pedestrians is the size of the block, or the length of a street segment between intersecting pedestrian pathways and/or intersecting streets. The more pedestrian pathways or intersecting streets that cut through the middle of blocks, the more options that pedestrians have to get to different destinations in an area, and the more walkable an area. Ideal block sizes to provide pedestrian connectivity range from 200 to 400 feet. Maximum block length should be limited to a maximum of 600 feet. Many blocks within Tukwila are longer in length than this maximum length. **Figure 6** illustrates the block and street pattern of the City and illustrates the lack of connectivity for pedestrians Currently, the Tukwila standard for block length in residential areas is up to 1,000 feet, and in commercial and industrial areas it is up to 2,000 feet (TMC 17.20.030 (E), accessed on Oct. 1, 2008). As new development occurs, the creation of new pedestrian pathways and/or streets should be considered for improved pedestrian connectivity.

Unimproved street rights-of-way, utility easements, and railroad rights-of-way are golden opportunities to provide connectivity for pedestrians. In most residential neighborhoods within Tukwila, there are unimproved street rights-of-way and utility easements which represent opportunities to construct walking trails and/or through streets. The Neighborhood Maps provide details about areas where additional walking trails could be constructed.

Bicycle Friendly Routes



Walkability Map (Using Existing Blocks)



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The scope of project improvements can range from the relatively simple need of clearing away overgrown brush, laying down a walking surface such as bark and placing bollards, to carrying out a geotechnical study in areas with steep slopes for the construction of stairs or installation of prefabricated stair systems. A potential incentive would be to designate a budget that would allow partnerships with developers during development, which could provide the extra boost needed to complete a missing link.

In Tukwila's urban center and the Manufacturing and Industrial Center, there are large utility corridors as well as railroad rights-of-way that represent opportunities for walking and/or multi-use trails. Railbanking, the process of preserving railroad rights-of-way for use as trails, is discussed under ***Railbanking for the future***, below.

More than the minimum for pedestrian safety

Safety and quality are the goals. Arterials connect people to major destinations within this city as well as to destinations in adjacent cities, and they tend to have higher speeds and traffic volumes than local access streets. Therefore, providing pedestrian and bicycle facilities along arterial streets helps make trips along arterial streets, which are often the most direct routes, convenient and safer. Figure **3**, a map of arterials in Tukwila and **Table 2**, list the remaining arterials without sidewalks in the City.

In order to make a walking trip feel safe as well as comfortable, City standards should be changed to require landscape buffers along arterial streets where posted speeds are 30 miles per hour or higher. Secondly, driveway aprons that allow the sidewalk through a driveway to remain at a constant grade (see Infrastructure Designs section) should be used at parking lot entrances. This requirement could be modified if the driveway will be the location of a future street or for some other reason that makes this option infeasible .

In addition to adopting a standard that creates a comfortable walking environment, the creation of a prioritized project list is recommended. Although funding is difficult, there are a number of grant programs such as Safe Routes to Schools that may be able to contribute to short lengths of missing sidewalks. The need and design should be highlighted and prioritized should funding sources such as grants become available.

Railbanking for the future

It is time to start Tukwila's second generation of multi-use paved trails. Planning for the Green River and Interurban Trails was started 30 years ago and they are close to complete. It is time to be adding arms, thereby connecting the trail system to City neighborhoods and creating new corridors. Because of the high volume of cars and trucks and the high number of turning movements in and out of driveways within the urban center and the industrial center, alternative routes for bicyclists and pedestrians are important goals for these areas.

The neighborhood maps for the Southcenter urban center and the Manufacturing and Industrial Center (MIC) show railroad spur locations, as well as the small number of parks and open space. The potential abandonment of railroad spurs as routes are no longer viable represents an opportunity to preserve railroad right-of-way for use as multi-use trails.

The goal for the urban center is for a livelier 24-hour neighborhood with housing and more employment. These people-intensive uses need to have public amenities like parks and open space. To make the area more walkable, a system of trails could enhance the street network to connect parks and open space with employers, retail, and new housing development in the urban center. Since existing railroad spur alignments within the urban center are located in between street right-of-way (with the exception of a few crossing areas), future conversion of existing railroad spurs to multi-use trails has the potential to increase the density of pedestrian and bicycle connections in the urban center.

In the MIC, railroad spurs run adjacent to the street right-of way of East Marginal Way. Providing a connection to Seattle and major employers, East Marginal Way is a major route for bicycles as well as automobiles. With high vehicle speeds and heavy truck traffic, East Marginal Way is an area of conflict between bicyclists and motorists. The tracks that run along East Marginal Way, if abandoned, could be used as additional right-of-way to build bike lanes, as well as to fill in some of the missing gaps in sidewalks along each side of the street.

Track locations within the Southcenter urban center have been identified previously as opportunity areas for the construction of multi-use pedestrian and bicycle trails. While it is generally known that some of these spurs have been abandoned, further research is needed to find out the ownership and disposition status of each specific spur. Relationships among the City of Tukwila, interest groups, and railroad companies need to be developed, and notice of interest in preserving these corridors as trails needs to be provided to the Union Pacific Railroad (who operate in the urban center), and to Burlington Northern Santa Fe (who own the corridor along East Marginal Way S).

After abandonment, the railroad company usually removes tracks and ties for salvage and regrades the corridor with the original ballast left behind from the railbed. Many trails are later surfaced with asphalt, crushed stone, wood chips or another material appropriate for the intended trail uses. Ideally, bridges and tunnels are left intact so the trail agency need only add wood decking, appropriate railings and other safety features. Street crossings must be properly striped and signed for both trail and street users.

Rail-trails are long-term projects and require the commitment of a staff person to pursue preservation of these track areas for future trail use. Funding for title research, persistence, and a written record to the railroads could have big results in the long term, save millions of public dollars, and is recommended as a strategy that Tukwila should pursue for future development of multi-use trials. This recommendation will result in the satisfaction of capitalizing on existing opportunities, and in creation of a trail system that would be incredibly difficult and costly to develop starting from scratch.

Promotion of and Participation in Biking and Walking Programs

The City currently implements portions of a good program. For example, City standards require that bicycle racks be included in new commercial development, and design guidelines suggest that developers construct sidewalks to building entrances from the streetfront. An array of small operational and programmatic actions occurs on a daily

basis by the City and private developers that create a system that supports the pedestrian and bicyclist.

During discussions with residents and employees of the City about this Plan, points of conflict were identified. For example, the ten foot wide Green River Trail narrows to six feet with no shoulders on a bridge over the Green River. This bridge accommodates walkers and bicyclists and is a point of conflict. There are a couple of potential solutions such as rerouting the bicycle traffic to the street or providing signage asking bicyclists to dismount to cross the narrower sidewalk/trail portion of the bridge. This situation illustrates the need for continual efforts to educate the different users on how to share facilities.

As noted in the survey of CTR employers, lack of shower facilities are a deterrent to riding a bike to work. The City could encourage developers to include showers within buildings with expected high employment numbers and include pedestrian weather protection such as awnings from the public sidewalk to building entrances. Required parking could be reduced if showers for employees are included in the development. A change in the City code would be necessary to implement this.

Participation in walking and biking programs could be increased. Additional staff dedicated to promoting participation in bicycle programs, such as the bicycle rodeo, Bike to Work events, Walk to School events, the Hazelnut and City web site, and other partnerships would highlight City-sponsored programs and increase participation.

Creation of a Dedicated CIP Fund for Projects in the Walk & Roll Plan

A dedicated budget in the CIP for projects in the Walk & Roll Plan would focus the City's efforts on a list of prioritized nonmotorized improvements, and would demonstrate Tukwila's commitment to building a connected nonmotorized transportation network. In the past, sidewalks and walkways were constructed through a Residential Improvements CIP budget item, the goal of which was to revitalize neighborhoods through residential street, sewer, and water improvements. Construction of sidewalks was just one component of the Residential Improvements CIP fund, and sidewalks or other nonmotorized facilities are not included in every project that receives funding through the Residential Improvements program. For several years, the Residential Improvements CIP item has been unfunded.

The goal of a Walk & Roll CIP component would be to focus on improving the City's nonmotorized transportation network through design and construction of sidewalks, bike lanes, and trails. The demonstrated level of commitment that a CIP fund for Walk & Roll projects represents the additional benefit of bolstering the City's efforts to obtain grant funding for nonmotorized transportation projects.

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Bicycle and Pedestrian Infrastructure Designs

What should the improvements look like?

Purpose

The following design standards for bicycle and pedestrian infrastructure encompass the range of bicycle and pedestrian needs that currently exist within Tukwila. The designs that follow have been compiled based on a review of federal, state, and local requirements, as well as other sources related to creating bicycle- and pedestrian-friendly environments. The recommended designs are consistent with guidance provided by the State of Washington Department of Transportation (WSDOT) and the U.S. Department of Transportation Federal Highway Administration (FHWA). Design manuals, or guides that were used in the development of the recommendations in this section include WSDOT's Design Manual, the Manual on Uniform Traffic Control Devices (MUTCD, 2003), A Policy on Geometric Design of Highways and Streets (AASHTO, 2004), and the Guide for Development of Bicycle Facilities (AASHTO, 1999).

On any street within Tukwila where transportation improvements are proposed as part of a private or public project, the recommendation is to incorporate Complete Streets principles into the process of design and construction - considering how the improvements will support the safety, convenience, and comfort of pedestrians, bicyclists, and motorized vehicles. This Complete Streets review should also include an analysis of what not to include, such as elimination of shoulders or inclusion of C-curbs that might provide hazards for bicyclists. Generally, the ideal street cross-section in Tukwila that will provide safe and comfortable facilities for pedestrians and bicycles includes bike lanes on all arterials and sidewalks on both sides of the street, with sidewalks separated from the street by a landscape strip. However, it may not be feasible to retrofit all of Tukwila's streets with separated sidewalks and bike lanes. Feasibility and engineering studies, incorporating Complete Streets principles, will help determine what can reasonably be included into a transportation improvement project.

In choosing a design for construction, the recommendation is to use a hierarchy (see section below) to determine which improvements are most suitable. A hierarchical approach means that the designer asks questions on available right-of-way width, traffic volumes and speeds, sight distance, grade, the land uses and conditions to which an improvement will connect, and the most likely users of a route. The designer works through questions in a process of elimination starting with the "best" design for cyclists and pedestrians. Construction of the most preferable infrastructure design in the hierarchy for bicycles and pedestrians should be the City's long-term goal, even if interim improvements are made in the short-term.

Projects with designs that provide improvements in transportation for bicyclists and pedestrians are recommended over those that will provide improvements for just recreation. Transportation oriented design can serve both types of users, can increase overall connectivity of the circulation system, and can be more competitive in grant applications. The "Improvement Options" of the Project sheets contain design guidelines that serve both the commuter and the recreational bicyclists. These design options are

practical recommendations based on existing conditions and the anticipated scope of improvement.

In Tukwila, trails are particularly important facilities for connecting the bicycle and pedestrian network given the city's steep topography and lack of connectivity in the existing street network. The decision for which type of a trail to construct (paved vs. unpaved) is more likely to be based on local site conditions such as topography, available right-of-way, sensitive areas, and surrounding land uses.

Hierarchy

Bicycle Infrastructure Designs

The hierarchy for bike designs is based on the characteristics and needs of different types of bicyclists. When considering which type of design to construct, the specific characteristics of a route, as well as the most likely users of the facility, will need to be assessed. For example, if a particular route is expected to be used heavily and almost exclusively by bicycle commuters, a bike lane may be considered as the appropriate design standard, since these types of users are comfortable riding within the roadway with automobiles. On the other hand, in an area where schoolchildren are expected to be the primary users of a route, a paved multi-use trail separated from automobile traffic may be the best option. For more background on different types and needs of bicyclists, refer to the Needs Analysis in Appendix B.

The hierarchy is shown in order below, with (1) being the highest recommendation in the hierarchy, and (4) being the facility least likely to be recommended. On-street bicycle facilities (bike lanes, paved shoulders, wide curb lanes) need to include signage that identifies them for bicycle use if they are designated bicycle routes.

(1) Bike Lanes
(2) Multi-Use Trails
(3) Paved Shoulders
(4) Wide Curb Lanes

Bike Lanes
Bike lanes are the first option recommended in the list of bicycle design standards in City of Tukwila because it is relatively easy to incorporate them into the existing transportation system and because they are the design standard on which the greatest range of bicyclists are comfortable riding. Bicyclists ranging from expert, commuter riders all the way to beginners, are comfortable riding in bike lanes on streets that have low speeds (at 30 miles per hour or below) and low traffic volumes. Paved shoulders and wide curb lanes are only recommended as temporary facilities within the roadway, until such time as bike lanes can be constructed.

Multi-Use Trails
Many riders feel comfortable riding on multi-use trails because they are separated from automobile traffic. However, these facilities are relatively expensive to construct, since separate right-of-way acquisition is often required and there is not always the room available to construct them in locations where they will link up with the rest of the transportation system. Another critical issue is locating the trail so that driveway

crossings are minimized. Driveway crossings on separated multi use trails are dangerous points of conflict, such as the Green River Trail along Interurban Avenue to the west of the Foster Golf Course. Additionally, the range of users (including pedestrians, dog walkers, rollerbladers, etc.) can pose potential conflicts with bicyclists, since these users all move at different speeds and do not always know/follow the rules of the trail. Multi-use trails are generally the best for recreational trips, allowing bicycle riders time to ride slow. For bicycle commuters, multi-use trails are usually not the preferred option since these trails are often not the most direct route, and are dangerous to ride on at fast speeds.

Paved Shoulders
Paved shoulders are areas of asphalt outside the striped lanes of travel, and are usually not wide enough to be designated (with a painted bike symbol on the pavement and bike lane signage) as bike lanes. While paved shoulders are better than nothing, they are only recommended in this plan as an interim facility until additional right-of-way can be acquired (if needed) to build bike lanes.

Wide Curb Lanes
Wide curb lanes are regular vehicle lanes built for automobile traffic, but made a little wider, with room for automobiles to share the street with bicycles. Wide curb lanes in Tukwila are provided on high-speed, high-traffic streets such as Tukwila International Blvd. and Interurban Ave S. These types of facilities are likely to only be used by the most skilled bicyclists who are comfortable riding in the same lane of traffic with automobiles, and are only recommended in this plan as an interim facility until additional right-of-way can be acquired (if needed) to build bike lanes.

Multi-Use Infrastructure Designs

Multi-use facilities are those infrastructure designs that can be used by both pedestrians and bicyclists. Paved multi-use trails offer the best accommodation for all types of users. However, in areas where there are conditions that include sensitive areas or steep slopes, unpaved trails may be the preferred improvement over paved multi-use trails. While paved shoulders exist in many areas of Tukwila, and can be used as walkways for pedestrians or as a separated space for bicycles within the roadway, paved shoulders are only recommended as temporary improvements. Where there is no other accommodation for pedestrians and/or bicycles, paved shoulders are interim improvements and should be added to the roadway until such time as sidewalks and bike lanes can be constructed. The recommended hierarchy for this type of improvement is:

(1) Paved Multi-Use Trail
(2) Unpaved Multi-Use Trail
(3) Paved Shoulders

Pedestrian Infrastructure Designs

Sidewalks are the recommended infrastructure designs on all streets within Tukwila. Wherever right-of-way width permits or project scope allows, separated sidewalks are

the recommended design, even in residential areas. On all streets with speeds over 30 miles per hour, separated sidewalks should be required in order to provide a buffer between automobile traffic and pedestrians, thereby making the sidewalk more comfortable and pedestrian friendly. The recommended hierarchy for this type of improvement is:

(1) Separated Sidewalk
(2) Attached Sidewalk

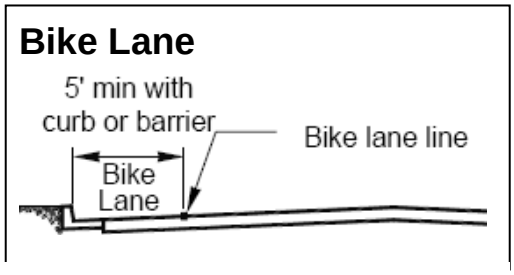
Ancillary Infrastructure Designs

When a path of travel intersects with automobiles, the design of the crossing will favor either the car or the pedestrian. Driveways, intersections, and crosswalks can be designed in different ways to positively or negatively affect the pedestrian experience and safety. Topography also plays an important role and can be dealt with in ways that assist pedestrian and cycling travel.

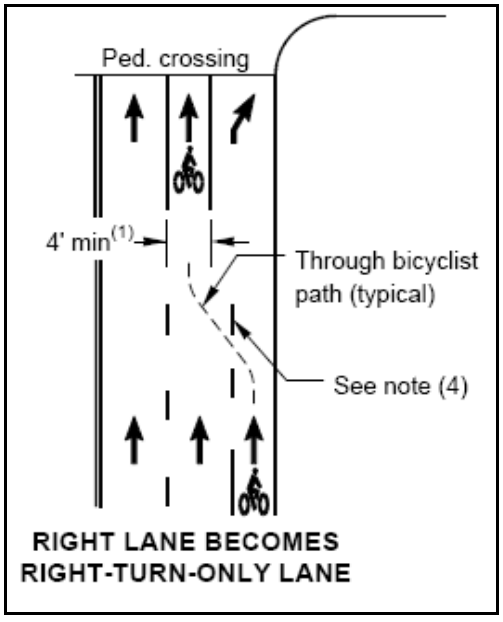
Bicycle Designs – Bike Lanes and Wide Curb Lanes

Bike Lanes

Source: http://www.pedbikeimages.org/



Source: WSDOT Design Manual, Chapter 1020



Source: WSDOT Design Manual, Chapter 1020

Bike lanes are striped lanes for the exclusive use of bicyclists, with pavement markings indicating they are for bicycle use only. A minimum bike lane width of 4' is recommended, excluding any portion of the lane occupied by a gutter or roadway seam. Bike lanes are always one-way facilities, with cyclists traveling in the same direction as motor vehicle traffic. In areas where a bike lane is adjacent to on-street parallel parking, a total of 15 feet measured from the face of the curb to the outer stripe of the bike lane is required to provide an area which is free of the "door zone", the area into which the door of the driver's side of the parked car is expected to swing open. In areas where a bike lane is adjacent to a high barrier, such as a jersey barrier, the bike lane width should be at least 6 feet.

Pros:

- Clearly delineates space within the street for bicyclists
- Encourages bicyclists to ride on the existing system of roads.
- Bike lanes can be integrated into the street network by narrowing and re-striping existing lanes.
- Bike lanes increase the sight distance for automobiles entering or leaving driveways.
- Provide the clearest guidance to all street users about where each user should be located in relation to each other (including automobiles and bicyclists).

Cons:

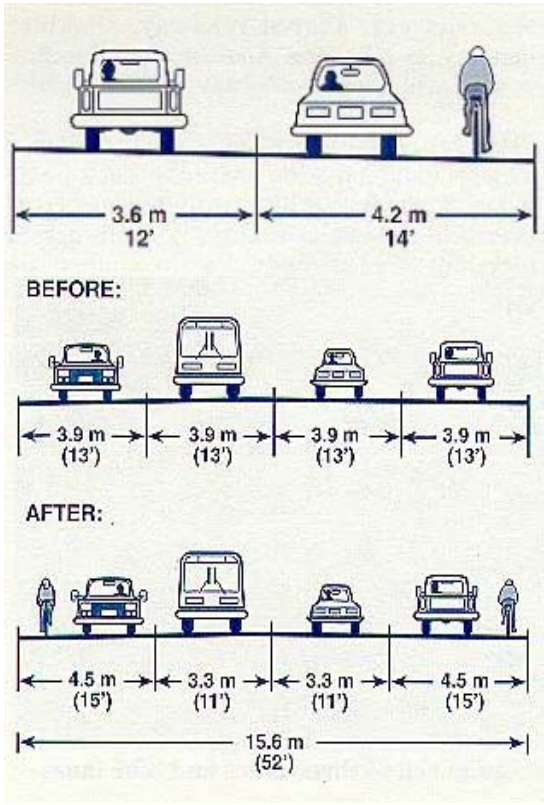
- Care must be taken to ensure pavement markings in intersection areas are not confusing to bicyclists or automobile operators (see figure at left).
- It can be difficult for automobile drivers to see children riding in bike lanes (or on any facility provided within the street).
- Maintenance must be provided on a regular schedule to ensure that debris is removed from the bike lane.
- Additional right-of-way may be required to add bike lanes.

Wide Curb Lanes

Source: http://www.pedbikeimages.org/

Wide curb lanes are outside travel lanes greater than 12 feet in width, and are meant to accommodate both automobiles and bicycles in the same travel lane. Wide curb lanes are usually constructed when a paved shoulder or bike lane is not provided. A width of 14 feet is recommended for a wide curb lane, with more width (15 feet or greater) recommended in areas where bicycles are expected to need extra room, such as steep hill climbs. Wide curb lanes greater than 14 feet are not recommended for continuous stretches of the roadway, since they may encourage the operation of more than one motor vehicle within the lane. Wide curb lanes are not marked for bicycling, except where they are signed as being part of a bike route.

Wide Curb Lane



Source: Oregon Bicycle and Pedestrian Plan

Pros

- Provide room for extra clearance between automobiles and bicyclists than standard 10-to-12 foot lane widths.
- Increase sight distance for automobiles leaving driveways.
- Can be easily integrated with the current street network through re-striping if there is available right-of-way b/w curbs.

Cons

- Can encourage higher automobile speed.
- Wide curb lanes are typically used only by the most experienced bicyclists. Less experienced bicyclists do not perceive them to be as safe as bicycle lanes. (Tracy-Williams Consulting, 1996).
- It can be difficult for automobile drivers to see children riding in wide curb lanes (or on any facility provided within the street).
- Right-of-way acquisition may be needed.

Multi-Use Designs –Trails and Paved Shoulders

Trails

Trails are paved or unpaved areas entirely separated from the street (except at infrequent intersections) dedicated for the exclusive use of nonmotorized travel. Trails can be for pedestrians only, or for use by both pedestrians and bicyclists. Most of the time, trails are constructed where right-of-way is easily acquired or dedicated for nonmotorized use; most often along the edges of waterways and areas where railroad and utility rights-of-way are available. Some types of trails may be constructed in areas where through-streets are not constructed, providing nonmotorized through-connections.

Sidepaths are multi-use trails constructed adjacent to the roadway, and are sometimes constructed as extra-wide sidewalks for use by both pedestrians and bicyclists. The Green River Trail, where it runs adjacent to Interurban Ave S in Tukwila, is an example of a sidepath. Sidepaths are **not recommended** in this plan, because the combination of trail users traveling in two directions, and poor sight distance for automobiles, which makes trail users difficult to see, makes these types of trails dangerous where trails cross driveways or streets. Bike lanes provide a safer facility for bikes than sidepaths, since they provide a one-way facility where bikes are going in the same direction as automobiles and are easier to for automobile drivers to see. Pedestrians on sidewalks travel in two directions, but go at much slower speeds than bicycles, and so their movements are easier for automobiles to predict. The decision to construct a sidepath should be based on a careful evaluation, and should only be considered in areas where there are no intersecting driveways or streets.

Design details are included for multi-use trails, including signage, pavement markings (for paved multi-use trails), and bollard spacing. According to the WSDOT Design Manual, lighting should be installed based on a number of factors. 1. Does the City want to encourage night time use of the facility? Some facilities may have services and uses that people will be using during nighttime hours, such as restaurants and hotels. 2. Is trail use during darkness anticipated? Much commuting occurs during the dark because of the City's northern latitude. 3. What are the costs? 4. Have security problems been reported or anticipated? (Chapter 840 and 1020.6)). Recommended lighting levels for Walkways and Bicycle Trails are located in Figure 840-25 of the WSDOT Design Manual.

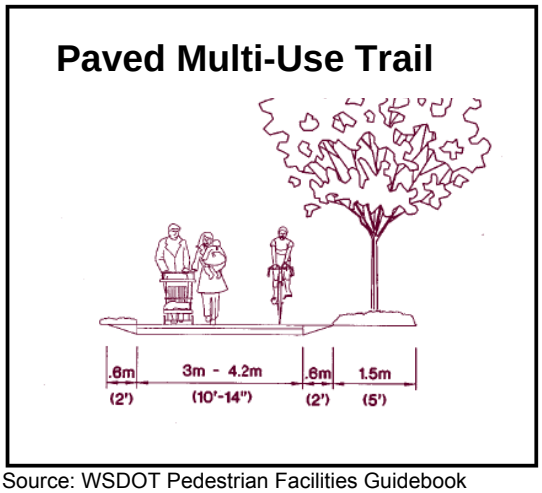
Paved Multi-Use Trails (i.e., Green River Trail, Interurban Trail)

City of Tukwila: Interurban Trail
Source: http://www.pedbikeimages.org/

Paved multi-use trails are for use by both pedestrians and bicyclists. These facilities are usually constructed along waterways such as rivers or lakes, and in utility and railroad corridors where right-of-way may be acquired or dedicated for trail use.

Minimum width: 18 feet (including a 2-foot shoulder on each side of pavement)*

*Higher volumes of bicycle and other fast-moving traffic require greater widths. Extra width should also be provided where sight distance is poor and where there are obstructions within the shoulder.



Source: WSDOT Pedestrian Facilities Guidebook

Pros

- Facilities are completely separated from automobiles, providing increased safety for bicyclists and pedestrians.
- Can be constructed to preserve view corridors, and to provide public access to environmental amenities and open space.
- Paved trails can provide recreation opportunities to a variety of trail users, including those of varying experience levels and/or disabilities.

Cons

- Multi-use trails do not always provide the most direct routes between destinations, and so are often used more for recreational purposes than for transportation corridors.
- The use of these trails by different user types, and the high speed of bicyclists compared with most pedestrians, requires signage, education, and enforcement to ensure that users practice proper trail etiquette.
- Maintenance must be provided on a regular schedule to ensure that vegetation and debris do not cause unsafe conditions for trail users.
- Right-of-way acquisition may be needed.

Unpaved Multi-Use Trails

http://www.pedbikeimages.org/

Unpaved multi-use trails are for use by both pedestrians and bicyclists. These facilities are usually constructed along waterways such as rivers or lakes, and in street, utility and railroad corridors where right-of-way may be acquired or dedicated for trail use. Unpaved areas can help to preserve the natural character of an area by providing a lower-impact trail design compared with a paved trail.

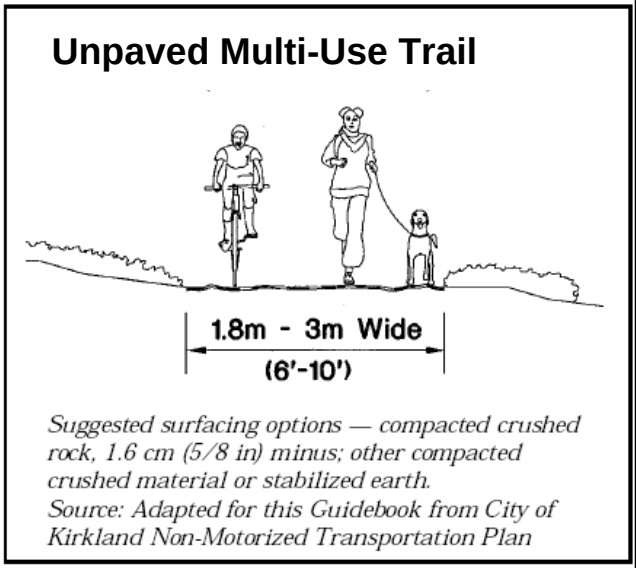
Minimum width: 6 feet
Optimum width: 8-10 feet

Pros

- Facilities are completely separated from automobiles.
- Can be constructed to preserve view corridors, and to provide public access to environmental amenities and open space.
- Provide natural surfaces for people to walk/run, reducing impact on joints.
- Have the potential to have a lower environmental impact.
- Can provide through-connections where there are dead-end streets or other barriers to nearby destinations.
- Provide recreational opportunities.

Cons

- Use of these trails by different user types, and the high speed of bicyclists compared with most pedestrians, requires signage, education, and enforcement to ensure that users practice proper trail etiquette.
- Maintenance must be provided on a regular schedule to ensure that vegetation and debris do not cause unsafe conditions for trail users, to reduce the threat of crime to both users and property owners, and to ensure that erosion does not wash out the trail.
- Right-of-way acquisition may be needed.



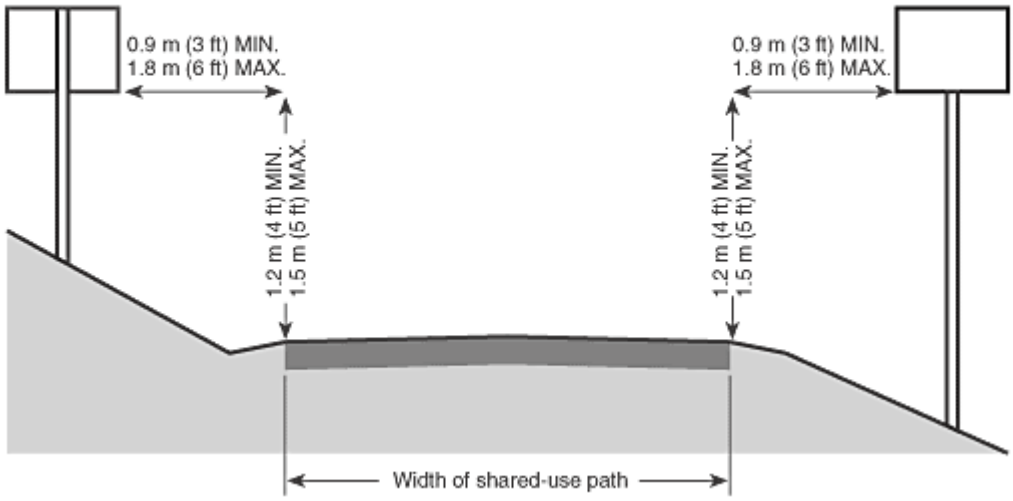
Source: WSDOT Pedestrian Facilities Guidebook

Multi-Use Trail Design Details

Signage, Pavement Markings, and Bollard Spacing

The MUTCD provides guidance on sign placement, determination of who has the right-of-way at trail crossing areas, and centerline striping on multi-use trails. The same types signs (regulatory, directional, and warning signs) are used on trails as those used on roadways. Signage is particularly important in areas where trails cross streets or driveways, to signal to trail users and roadway users alike the presence of a crossing area and the rules (i.e., who has the right-of-way). Also recommended in trail areas are signs that point out areas of interest along the trail, and/or provide information on trail loop routes for walkers. The graphic below from the MUTCD illustrates the distance signs should be placed from the trail, and height of the sign.

Figure 9B-1. Sign Placement on Shared-Use Paths



Source: MUTCD (2003)

According to the MUTCD, “it is sometimes appropriate to give priority to a high-volume shared-use path crossing a low-volume street, or to a regional shared-use path crossing a minor collector street” (MUTCD p. 9B-2). The decision on who is made to stop or yield when a multi-use trail crosses a road should be based on the following considerations:
(A) Relative speeds of shared-use path and roadway users;
(B) Relative volumes of shared-use path and roadway traffic; and
(C) Relative importance of shared use path and roadway.

The City of Seattle is in the process of developing a system to determine who has the right-of-way in areas where regional, multi-use trails cross roadways in Seattle. In some areas, such as where the Burke Gilman Trail crosses lower-traffic streets, the trail user has the right-of-way.

Trail Crossing Warning Signs for Motorists

The type of signs or signals used in trail crossing areas depends on the type of area that a trail will be crossing (arterial, residential, driveway, or alley). On high-traffic-volume streets, such as Henderson Street in Seattle shown below, signals and several warning signs are provided to ensure that trail users are visible to motorists along the roadway. Note the use of curb bulbs used at the Henderson crossing location to help minimize the crossing distance for trail users along this busy arterial street.

Chief Sealth Trail crossing of an arterials street
at S Henderson Street in Seattle

Regulatory and Warning Signs for Trail Users, and Striping and Bollard Placement

Trail crossing of roadway, striping and bollard placement along Chief Sealth Trail in Seattle

Trail crossing of roadway, striping and bollard placement along Interurban Trail in Tukwila

The pictures at left show the regulatory signs that are typically placed along trails at crossing areas, including yield and stop signs. Warning signs are also important on the approach to crossing areas, to warn trail users to slow down and be watchful for automobiles in street- or driveway- crossing areas.

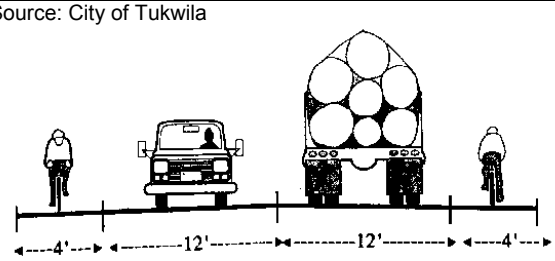
The MUTCD provides guidance on striping lanes on multi-use trails. Striping along multi-use trails is not required, but is recommended on high-traffic trails, or to separate pedestrian from bicycle traffic. Striping is particularly important along trail sections where there is poor sight distance, or where there are obstructions, such as bollards, in the trail. The proper striping around trail obstructions is shown in the picture at top left.

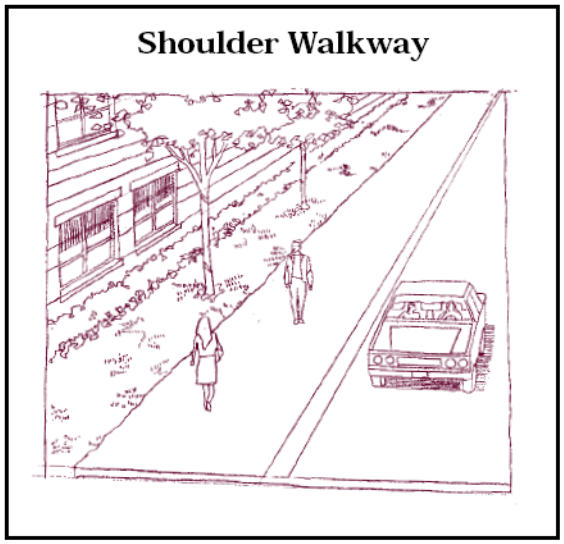
The picture above shows the appropriate use of 3 bollards rather than 4, shown in the picture at bottom. Use of 3 bollards, instead of 4, allows more room in between the bollards (6 feet is the recommended width between bollards), and separates the trail into two lanes rather than 3 lanes of nonmotorized traffic along the trail.

Bollards should always incorporate reflectors or other similar design features to make them more visible during daytime and nighttime hours.

Paved Shoulders

Source: City of Tukwila





Source: WSDOT Pedestrian Facilities Guidebook

Paved shoulders are paved areas adjacent to the outside lane of travel, separated from automobile travel lanes by striping. Paved shoulders are usually meant to provide some extra room for bicyclists and/or pedestrians when the extra right-of-way or improvement funding for bike lanes or sidewalks is not available.

Paved shoulders are recommended as interim improvements when there are no other facilities present. AASHTO says that where no other facilities are provided, any shoulder is better than nothing; however, a paved shoulder width minimum of 4 feet is recommended (see figure at left).

Pros

- Provide room for clearance between motor vehicles and bicyclists and pedestrians.
- Can be easily integrated with the current street network through re-striping if there is available pavement &/or right-of-way.
- Increase sight distance for automobiles leaving driveways.

Cons

- Usually not as wide as bike lanes or sidewalks.
- Paved shoulder areas must be signed and it is difficult to enforce no parking regulations within these areas.
- No curb or other vertical separation is provided between the automobile traffic and pedestrians.
- It can be difficult for automobile drivers to see children riding in the shoulder (or on any facility provided within the street).
- Right-of-way acquisition may be needed.

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Pedestrian Designs – Separated and Attached Sidewalks

Sidewalks

A sidewalk is a walkway that is separated from the roadway with a curb, constructed of a durable, hard and smooth surface, designed for preferential or exclusive use by pedestrians. In areas where the sidewalk is adjacent to the curb, it is called an *attached sidewalk*. In areas where the sidewalk is separated by a landscaping strip or paved area containing street furniture, it is called a *separated sidewalk* (see pictures below).

The minimum recommended width for a sidewalk in any location is 5 feet, which allows two people to walk side by side. In commercial areas, in areas with high levels of pedestrian activity, and on streets where there are high volumes of traffic and high speeds, sidewalk widths should be greater than 5 feet and can range from 6 feet to 15 feet.

A buffer zone of 4 to 6 feet is desirable to separate the sidewalk from the street, and should be provided in all areas when feasible. The width of the buffer zone will vary according to surrounding land uses and anticipated levels of pedestrian activity. In downtown or commercial districts, street furniture, such as pedestrian light fixtures, newspaper boxes and fire hydrants should be provided within the buffer or utility zone. In residential areas, a landscape strip separating the sidewalk from the street is suitable. Additionally, storm drainage features such as drainage swales, can be incorporated within the buffer zone/landscaping strip (see section on Seastreets under Attached Sidewalk design guideline below). Street parking can also provide a buffer separating automobile traffic on the street from pedestrian traffic on sidewalks.

Separated and Attached Sidewalks

Southcenter - separated

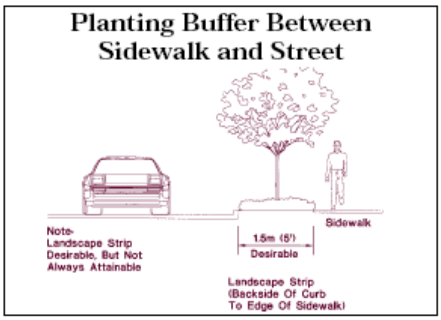
Cascade View - separated

Allentown - attached

Separated Sidewalks

Source: http://www.pedbikeimages.org/

Separated sidewalks are sidewalks separated from the street by a buffer zone. Buffer zones are a minimum of 4 feet in width that contain landscaping, street trees, street furniture, and utilities such as hydrants and street illumination.



Source: WSDOT Pedestrian Facilities Guidebook

Source: WSDOT Pedestrian Facilities Guidebook

Pros

- Reduces the impact of spray on pedestrians from the traffic.
- Provides greater separation between vehicles and pedestrians in case a car jumps the curb or a person falls.
- Allows sidewalk to be constructed at a constant level grade across driveways avoiding dipping at every driveway cut.
- Provides physical separation from traffic.
- Provides space for signs, utilities streets furniture, mailboxes and landscaping street trees.
- Enhances the aesthetic character of the area.
- Provides a space to pile snow.
- Provides pedestrian clearance from side mirrors and overhanging cargo on large vehicles
- Can provide drainage function, separating sidewalks from gutters and storm drains

Source: (WSDOT Pedestrian Facilities Guidebook, http://www.pedestrians.org/tips.htm)

Cons

- Sidewalk must be maintained to provide a smooth travel surface and ensure that debris and other obstructions do not block the sidewalk.
- Landscaping and street furniture must be designed and maintained properly, so as not to hinder visibility and cause security problems.
- Can cause problems for street maintenance vehicles.
- Landscaping must be chosen wisely to prevent the sidewalk from cracking and buckling due to root growth.
- Additional right-of-way acquisition may be needed.

Source: (WSDOT Pedestrian Facilities Guidebook)

Natural Drainage Systems & Separated Sidewalks (SEA Streets)

SEA Streets (SEA = Street Edge Alternatives) is the name of a pilot project completed in north Seattle by Seattle Public Utilities. The aim of the project is to experiment with different street edge improvements that help reduce the amount of impervious surface and introduce natural drainage systems within a residential neighborhood. By placing drainage systems between the roadway and the sidewalk area, SEA Streets represent one form of separated sidewalks. The pictures to the left show before and after conditions associated with the SEA Streets project in north Seattle. The project is located on 2nd Ave NW, between NW 117th and 120th Streets.

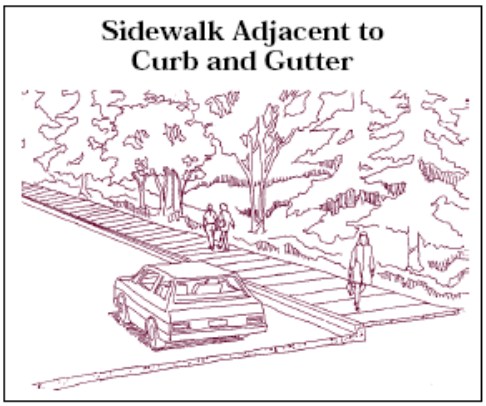
The recently completed High Point project in West Seattle also incorporated natural drainage systems in constructing its new streets, shown in the pictures below.

These features may not be appropriate in all areas of Tukwila – site characteristics such as drainage must be carefully considered for these projects.

High Point Neighborhood, West Seattle:
Natural Drainage Systems & Separated Sidewalks

Attached Sidewalks

City of Tukwila, Tukwila Parkway
Source: City of Tukwila



Source: WSDOT Pedestrian Facilities Guidebook

Attached sidewalks are sidewalks placed directly adjacent to the curb at the edge of the street.

Pros

- Provide a dedicated area for pedestrian travel.
- Can be installed where there is not enough right-of-way to provide buffer areas.
- Curb provides vertical separation from automobile traffic.

Cons

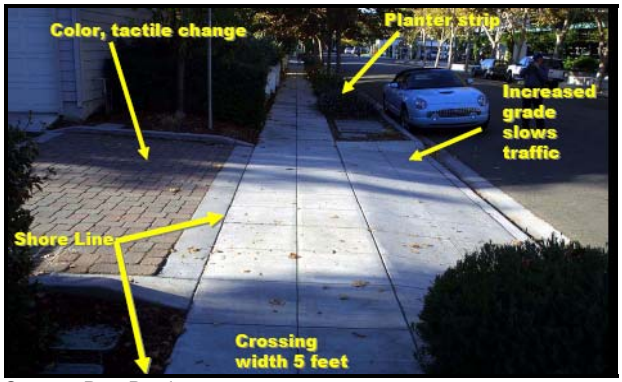
- Must be maintained to provide a smooth travel surface, and ensure that debris and other obstructions do not block the sidewalk.
- No space or physical barriers are provided as a barrier between automobile and pedestrian traffic.
- Care must be taken to ensure that mailboxes, utility poles, and other obstructions are not placed within the 5-foot minimum sidewalk width.
- If not designed correctly, the sidewalk grade will dip at every driveway, creating an inconsistent grade for pedestrians.
- Right-of-way acquisition may be needed.

Ancillary Infrastructure Designs

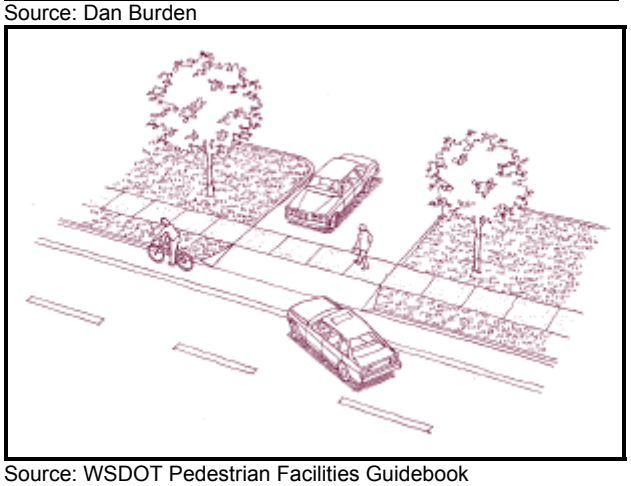
Design standards for bicyclists and pedestrians should include more than just the travel-ways (i.e., bike lanes, sidewalks), Included below are some additional design standards for facilities including driveways and stairs.

Driveways

Source: Dan Burden



Source: Dan Burden



Source: WSDOT Pedestrian Facilities Guidebook

Driveways and intersections are the most common locations for pedestrian-vehicle or bicycle-vehicle accidents. Depending on their design, these areas can also be particularly challenging areas for people with disabilities.

Minimizing the number of driveways along a street and making driveways as narrow as is feasible to reduce the pedestrian crossing distance can help make an area more pedestrian-friendly.

When a driveway must be constructed, the driveway design standard shown below can help make these types of potential conflict points more amenable.

DRIVEWAY DESIGN GUIDELINES

- Ramp up driveway to sidewalk height rather than lowering sidewalk to street grade
- Minimize crossing distance (12' maximum width for one-way traffic; 24' maximum width for two-way traffic)
- Use different pattern and/or material for pedestrian crossing area
- Wide, clearly marked bike lanes provide sight distance for automobiles entering/exiting the driveways
- Landscaping strip:
  - Allows room for driveway apron separate from sidewalk area
  - Provides a buffer between pedestrians on the sidewalk and automobile traffic in the roadway
  - Wide landscaping strip provides greater sight distance for vehicles

Signage

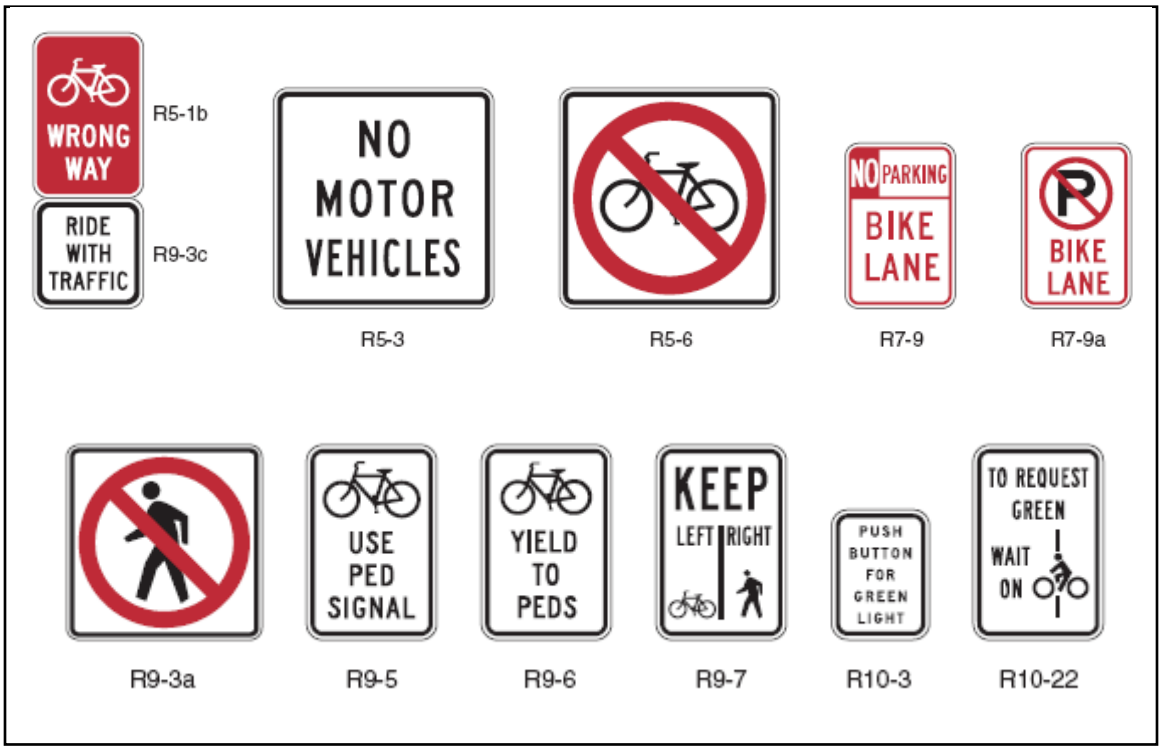
Bicycle facility signage includes pavement markings and posted street signs along streets and trails.

Signage used on bicycle routes, whether on roads or on trails, should convey a range of information, including regulatory information (the rules of the road), route information (distance and direction), and warning information about road/trail conditions.

All signs within the right-of-way must conform to the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). The most current edition of the MUTCD was adopted in 2003. Part 9 of the MUTCD contains traffic controls for bicycle facilities, including requirements for the size and spacing of signs and pavement markings. Warning signs in Part 2C of the MUTCD can also be used. A variety of samples from different sections of the MUTCD follow.

Many of the signs for bicycle facilities are the same as those for motor vehicles, with the exception of size. Table 9B-1 in the MUTCD is a list of the types of signs that can be installed along bicycle facilities, and their specified sizes. Chapter 2 of the MUTCD contains regulatory and warning signs that should be placed along the road for automobiles, including signs that direct automobiles to “Share the Road” and indicate trail crossing areas. The MUTCD also provides guidance on where these signs should be installed in relation to the trail and/or roadway.

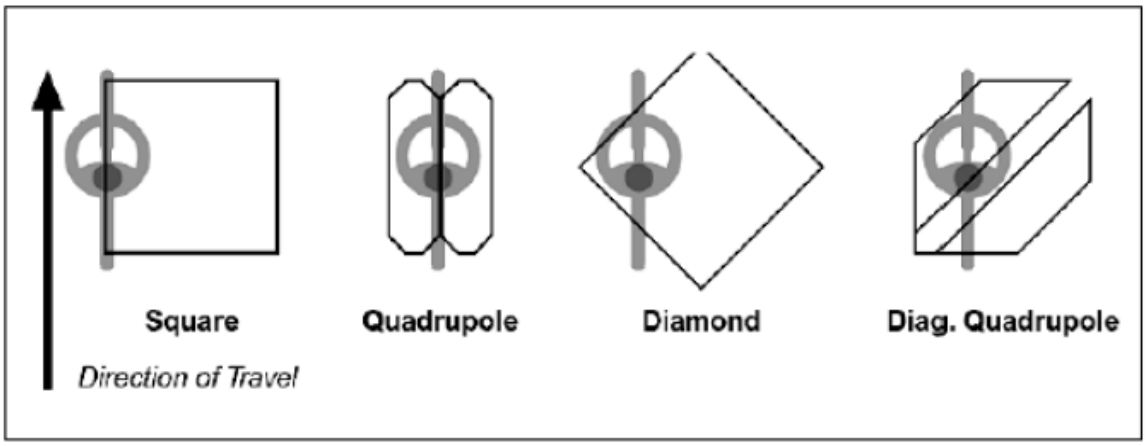
Regulatory Signs for Bicycle Facilities

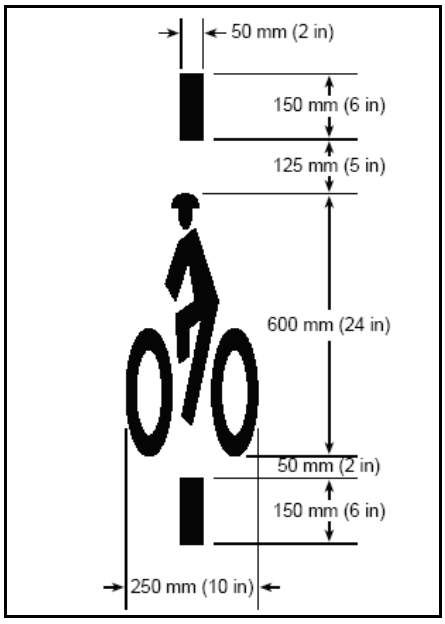


Bicycle Route Signage

Warning Signage

Loop Detectors





The ASSHTO Guide for the Development of Bicycle Facilities notes:

> *"Detection of bicycles at traffic-actuated signals is crucial for bicyclists' safety and for compliance with traffic laws"* (p. 65)

Some types of in-road detectors for automobile traffic can also detect bicycles, including the examples above.

The timing of traffic signals should ensure that bicycles can make it safely through the light in the time provided.

Pavement markings (shown at left) should be incorporated where there are loop detectors that can be activated by bicycles, to help guide bicyclists to where they should position themselves to activate the detector. Detectors should be located in areas at an intersection where bicycles can be expected, including the shoulder and left-turn lanes.

Push buttons for pedestrians and/or bicycles can be used for actuation of a traffic signal in some cases, as long as they are easy to reach and do not require the bicyclist to dismount.

Crossing Areas (Intersections & Mid-Block Crossings)

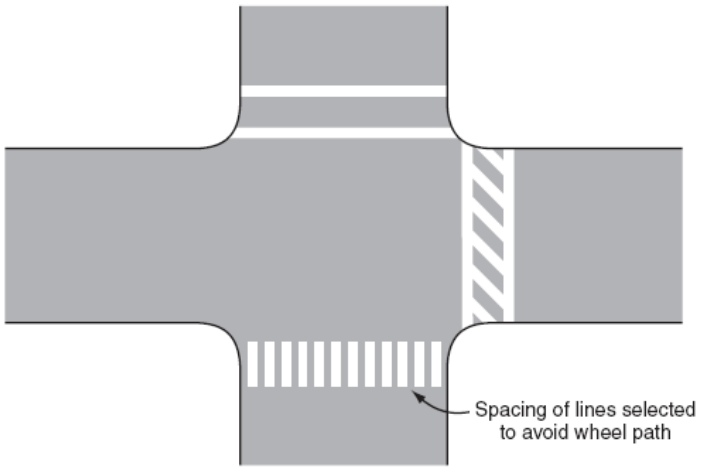
Intersections and other crossing areas are the most common locations for pedestrian-vehicle accidents.

In general, the following considerations should be made when locating and designing a crosswalk:

- The most effective way to prevent serious injuries in these areas, which tend to have high potential for pedestrian-vehicle conflict, is to reduce vehicle speeds.
- Crossing distance should be minimized.
- Crosswalk locations should be convenient for pedestrian access.
- All sides of an intersection should be designed with the idea that pedestrians will be using it as a crossing. However, there may be some sides of an intersection where it makes sense to discourage pedestrians from crossing. An example of this is the intersection of Southcenter Blvd and the 61st Ave S bridge.
- Crosswalks should be used in conjunction with other measures, such as advance warning signs, warning signs, stop bars, median crossing islands and curb extensions (only where there is on-street parking). It is particularly important that additional measures be employed on multi-lane roads with average daily traffic (ADT) above 10,000.
- Marked crosswalks are important for pedestrians who are visually impaired
- Crosswalk markings must be placed to include the ramp so that a wheelchair does not have to leave the marked crosswalk to access the ramp.

Source: (www.walkinginfo.org), WSDOT Pedestrian Facilities Guidebook

Crosswalk Markings



Source: MUTCD, 2003 Edition

Mid-Block Crossings

Mid-block crossing areas provide additional pedestrian connectivity, especially in areas such as Tukwila's Urban Center, where block sizes are large (greater than 400 feet). However, since these crossing areas are not as common as intersections, and do not typically include a signal; it is more difficult for automobiles to notice them. Mid- block crossings should not be placed indiscriminately. The travel speed of automobiles, the traffic volume, the distance of the proposed mid-block crossing from the nearest signalized intersection, and the location of destinations in relation to existing crossing facilities are important considerations in the decision to construct a new mid-block crossing facility.

Below are several design elements to consider when increasing the safety and visibility of pedestrians in mid-block crossing areas :

- Lighting
- Minimized crossing distance.
- Refuge area.
- Signals.
- Warning signs.
- Angled crossings within median islands.
- Ensure landscaping in median islands does not obscure the view of pedestrians.

The Washington State Bicycle Facilities and Pedestrian Walkways Plan (WSDOT 2008) notes that research is currently under way at state and national levels to identify at-grade pedestrian crossings that provide safety improvements to current guidance adopted at the state and national levels. Several design treatments that WSDOT may consider including into WSDOT Guidance and Traffic Operations are the following:

- Zig Zag Approach Restrictions
- Pavement Legends for Pedestrians
- Overhead Warning Signs and Lights
- Pedestrian Railings
- Curb Extensions and Medians
- Lane Reductions
- Setback Crosswalks
- Pedestrian Light Controlled or Pelican Crossing
- Pedestrian User Friendly Intelligent or Puffin Crossing
- Two Can Cross or Toucan Crossing
- Leading Pedestrian Interval
- Advance Stop Lines or Bars
- Scramble Pattern at Signals

Crossing Enhancements

Pedestrian-Actuated Countdown Signals

Pedestrian Push-Buttons

Since crossing areas (both intersections and mid-block crossing areas) are areas where there tend to be high potential for pedestrian-vehicle conflict, the crossing enhancements shown here, and on the pages that follow, are some of the additional features that should be considered during crossing area design.

In-pavement, pedestrian-actuated lighting

Source: City of Kirkland

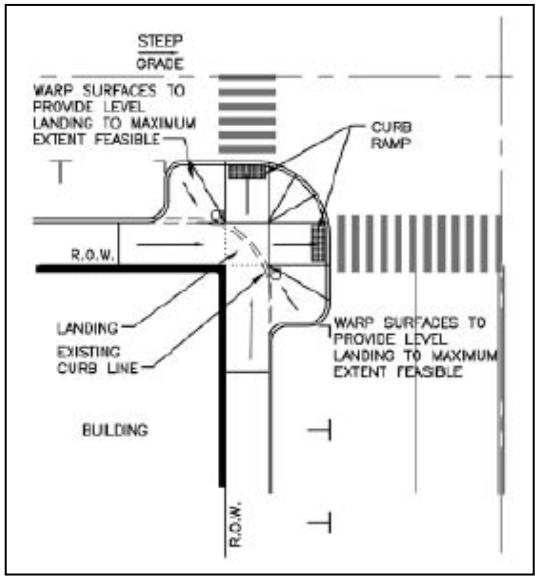
Source: City of Tukwila (Tukwila International Blvd

Crossing Enhancements (continued)

Curb Bulb-Outs

Cascade View, City of Tukwila

Mesa, AZ; Source: www.contextsensitivesolutions.org/

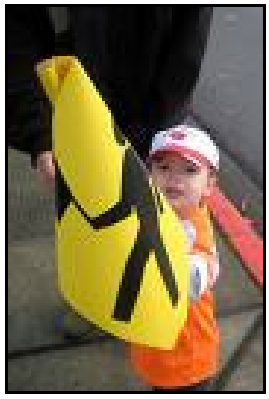


Curb Bulb-Outs serve to reduce the roadway width at intersections and/or mid-block crossing areas, thereby minimizing the crossing distance for pedestrians. They also help to calm traffic, acting to reduce vehicle speeds at pedestrian crossing points. For mid-block crossing areas, the bulbs prevent automobiles from blocking curb ramps, thereby preserving wheelchair access in these areas. Additionally, curb bulb-outs can help to channel pedestrians to pedestrian-activity areas, including pedestrian access points for large sites, potentially discouraging the frequency of jaywalking. Some areas of the bulb do not have to be hardscape, and can be planted with low growing plants (3' height maximum), providing additional green space in urban areas.

- Curb bulb-outs are appropriate where there is on-street parking.
- Curb bulb-outs can be used as a loading area for transit/bus pull-up as they are used in Portland, Oregon.
- On bicycle routes, there is a potential conflict between curb bulb-outs, on-street parking, and bike lanes. In areas with curb bulbs, the bulb-out should not encroach upon the bike lane or pinch down the travel pathway of a cyclist at the right edge. Additionally, as in other areas where there is on-street parking, bike lanes must either be set far enough back from on-street parking to separate bicyclists from the zone in which a car door would swing out.
- Curb bulb-outs should project out into the roadway a maximum distance of 8.5' to 9'.

Crossing Enhancements (continued)

Pedestrian Flags

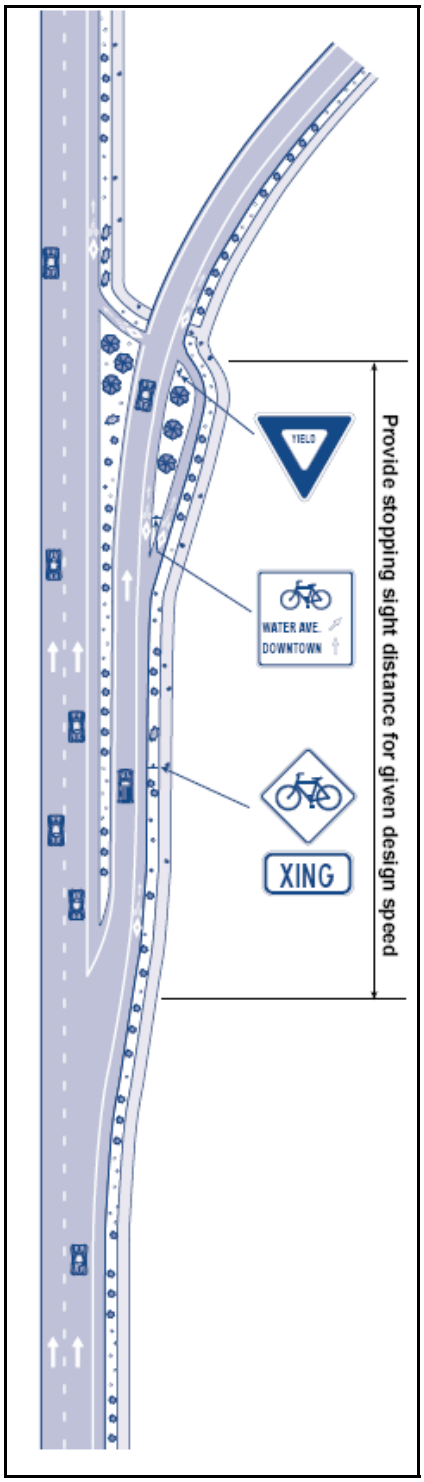


The City of Kirkland, as well as several other cities around the Puget Sound and the U.S. have installed pedestrian flags on either side of crosswalks to make pedestrians more visible. The City of Kirkland has found that when pedestrians use the flags in crossing areas, cars are more likely to stop.

When the program initially started in Kirkland, older people and young children were the pedestrians most likely to use the pedestrian flags. A change to the design of the flags to include the symbol of a pedestrian holding a flag, a change to the flag holders on either side of the crosswalks to make flags easier to grab, and development of a marketing program to increase awareness of the purpose of the pedestrian flags has increased usage of the flags by all user groups. Additionally, businesses and volunteers have partnered with Kirkland to offer incentives for those who make use of the flags and to advertise the program.

Installation of pedestrian flags in Tukwila could help pedestrian visibility at high volume pedestrian and vehicle crossing locations, including the intersection of Tukwila International Blvd and S 144th Street, intersections along Southcenter Parkway, and intersections in school zones.

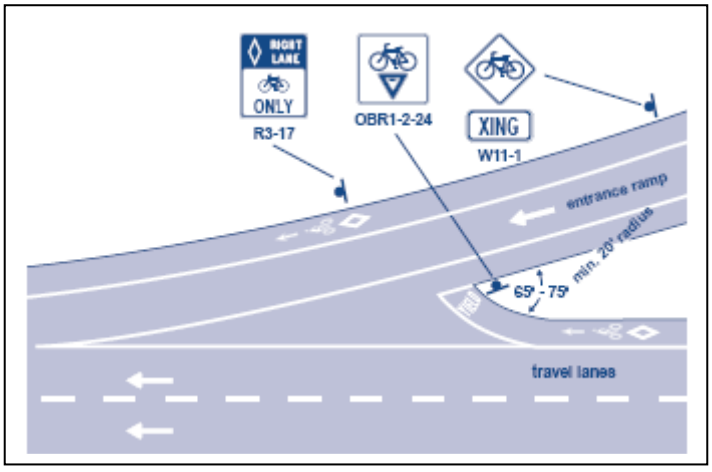
Crossing Areas (Freeway On-ramps and Off-ramps)



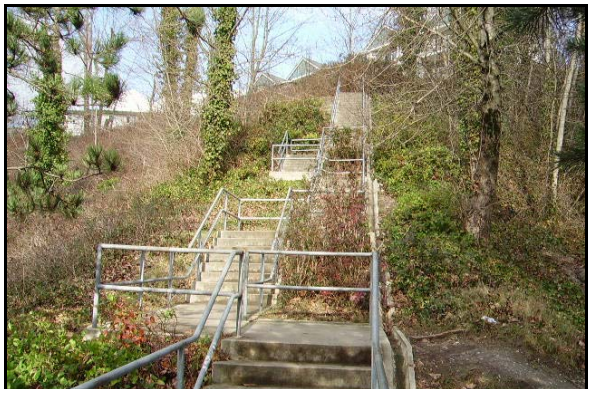
Freeway on and off-ramps are located along several of Tukwila's Bicycle-Friendly Routes, including Boeing Access Rd, Tukwila International Blvd, and Southcenter Blvd. These are dangerous areas for pedestrians and bicyclists, since cars entering or exiting freeways are typically travelling at high speeds, and merging onto the freeway or off the freeway onto arterial streets. Where nonmotorized facilities are located in these areas, it is important to slow automobile speed (through signalization if necessary), and increase visibility of all roadway users. Below are two approaches to the design of bicycle and pedestrian facilities in these areas:

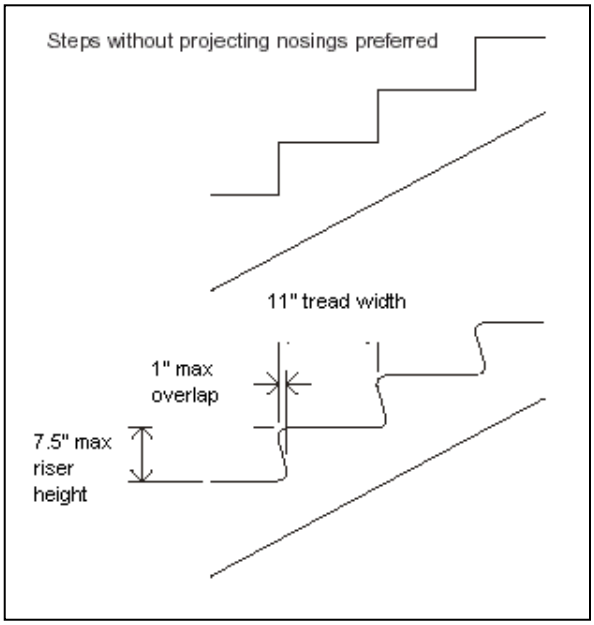
Separated Trail or Bridge:
Completely separate pedestrian and bicycle traffic from automobile traffic. This can be done by routing nonmotorized users completely away from freeway on- and off-ramp areas, or by constructing bridges over or under the freeway facilities. Although costly, these facilities eliminate the conflict.

Jug-Handle Design for At-Grade Crossing (shown at left for on-ramps and below for off-ramps):
Provide an at-grade crossing facility, placed at a right-angle to the off- or on-ramp, to improve the sight distance in these areas for both nonmotorized and motorized users of the roadway. Tukwila uses this model at the Southcenter BL on ramp to I-5 northbound.



Stairs





When slopes exceed 8% (1:12), stairs should be constructed rather than ramps.

- Stairs should be constructed of a firm material such as concrete, asphalt, or metal. However, in trail areas, crushed rock and bark mulch may be considered.
- Minimum stairway width: 5’
- All steps should have uniform riser heights, tread widths and depths.
- Risers and treads should not be designed to form areas that will easily catch the toe of a shoe. See preferred step design at left.
- A 6-foot concrete landing area should be provided for every 12 feet of rise. The maximum slope of the landing area should not exceed a 5% (1:20) grade.
- Handrails must be installed on both sides of the stair, and shall be extended at least 12 inches into any landing area.
- Hand rails should be placed 4” from an adjacent wall surface.
- Risers for outdoor stairways should between 4.5 to 7.5 inches in height.
- Treads should not be less than 11” wide.
- The tread surface should maintain a slip-resistant texture.
- Stairs should be designed with ramps to accommodate bicyclists (see picture at bottom left).

Source: San Francisco Bicycle Coalition

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Projects

Where should we build?

People ask how much will this plan cost? There will be programmatic costs, such as bike rodeos and other walking and biking event support, and there will be infrastructure costs. A list of capital projects is recommended within this plan for Bike Lanes, Multi-Use Trails, Unpaved trails and Sidewalks. Costs estimates from more detailed design work will be developed after the plan is adopted.

Bike Lanes

Bike lanes are the recommended design to make Tukwila's streets friendly for the average bicyclist, based on background research conducted for this plan, as well as from comments received during public review (PBIC 2008, Tracy-Williams Consulting 1996, USDOT 1999.). Therefore, most of the project sheets for Bicycle-Friendly Routes (see **Figure 5** for a map of these routes) are included as bike lane project sheets in the following pages. The next step in the planning process is to conduct an engineering study to determine the feasibility of changes to the right-of-way that would be necessary to accommodate bike lanes. A recommendation of this plan is to evaluate the feasibility, based on safety and availability of right-of-way, of constructing bike lanes on each bicycle-friendly route and to develop cost estimates

The list below includes those streets that are recommended to become Tukwila's designated bike routes, called Bicycle-Friendly Routes. However, when the opportunity arises for transportation improvements to any given street in Tukwila, the range of proposed improvements considered should be evaluated according to Complete Streets principles, so that different user groups including bicyclists are routinely accommodated.

Bicycle-friendly routes not listed below include those on which the posted speed limit is 25 miles per hour or less (where bicycle route signage may be the only improvement needed), or where new trails and trail extensions are recommended. Other Bicycle-Friendly Routes also not listed in the Projects pages are those outside Tukwila and its potential annexation areas, including Airport Way S, Military Rd S, and MLK Way. See **Figure 5** for a map of the entire system of bicycle-friendly routes, including those routes that connect Tukwila to destinations outside the city.

The list of streets, arranged generally from north to south, on which bike lanes are the recommended improvement are included in the table below. The project sheets, which follow, provide more detail about existing conditions and recommended improvements.

Table 4: Recommended Bike Lanes

Recommended Bike Lanes
Tukwila International Blvd
East Marginal Way
Norfolk Way
Boeing Access Rd – S Ryan Way
S 112th Street
S 115th Street – 42nd Ave S – Macadam Rd S – 51st Ave S – Klickitat Dr
S 130th Street

37th Ave S – S 135th Street
S 144th Street (from Military Rd to 53rd Ave S)
S 160th Street
52nd Ave S – 53rd Ave S – Macadam Rd S
Southcenter Blvd (from 51st Ave S east to city limits)
Andover Park East
Baker Blvd
Longacres Way
S 168th Street (future street on south side of Tukwila Pond)
Minkler Blvd
S 180th Street
Orillia Rd (improvements to existing bike lanes)
S 200th Street (improvements to existing bike lanes)

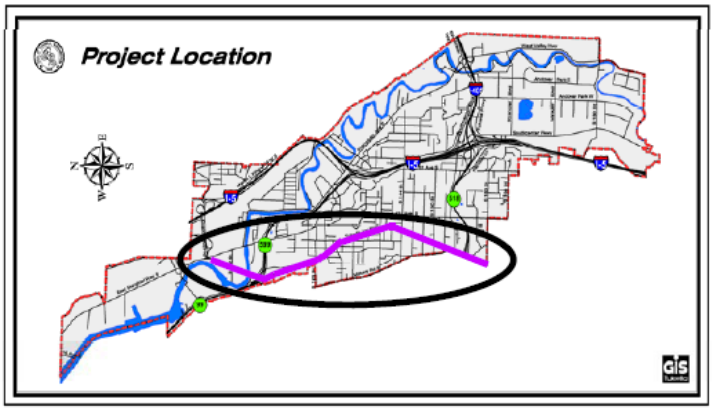
Tukwila International Blvd (at S 144th Street looking south)

at S 132nd Street looking south

Tukwila International Blvd

Tukwila International Blvd serves as one of Tukwila's major north-south routes, connecting Tukwila's Manufacturing and Industrial Center to Seattle, as well as connecting to cities to the south, including SeaTac, Des Moines, and Federal Way.

There are many activity centers that can be accessed along Tukwila International Blvd, including Foster High School, the Tukwila Pool, Foster Library, and Showalter Middle School. Sea-Tac International Airport can be accessed to the south along the route.



Improvements Summary

Current conditions/issues:

Current cross-section varies widely. Planned and recent improvements include sidewalks on both sides of the roadway, as well as 14' wide curb lanes.

- High speed corridor
- Truck route
- Debris often found at the edge of pavement (in area adjacent to curb, edge of shoulder where bicyclists use the roadway)
- Inconsistent right-of-way width
- On-ramps to state highways (SR-529, SR-599) in the northern section of this route require coordination with WSDOT for any street improvement projects for pedestrians or bicyclists

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

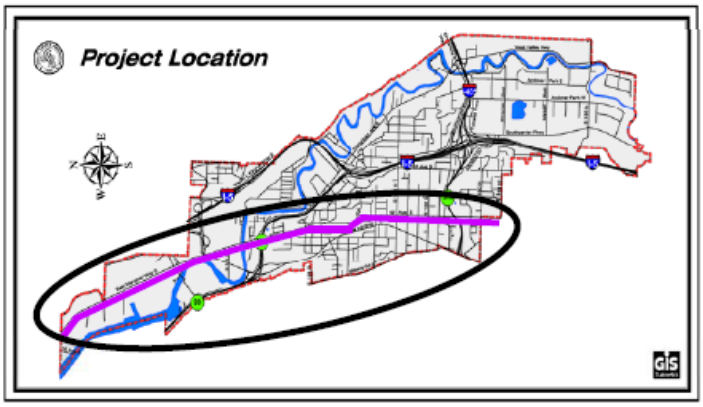
1. Construct bike lanes and signage.
2. Construct paved shoulder with signage.
3. Install bike route and directional signage, with conditions remaining the same.

North of Boeing Access Road

42nd Ave S (between S 154th St & S 1 60th Streets)

East Marginal Way

East Marginal Way serves as one of Tukwila's major north-south routes, connecting Tukwila's Manufacturing and Industrial Center to South Seattle and areas west of Tukwila such as South Park. This route also serves many of Tukwila's major employer sites, including several Boeing facilities, the USPS Seattle Processing Center, Group Health, and United Grocers. Heading south, East Marginal Way becomes 40th Ave S, connecting to Riverton Park and Southgate Park; and then becomes 42nd Ave S, connecting to Showalter Middle School, Foster High School, Foster Library, Thorndyke Elementary, and the City of SeaTac at the south end.



Improvements Summary

Current conditions/issues:

Current cross-section: varies widely

- High speed corridor along East Marginal Way, Truck route, Many driveways and curb cuts
- Inconsistent right-of-way width, including areas where the right-of-way is constrained, such as where the LINK Ling Rail guideway has created a chokepoint between Boeing Access Road and the Duwamish River
- Possibility of vacation of railroad tracks along west side of E Marginal Way north of S 115th Street
- Possibility for use of Seattle City Light right-of-way that may as a multi-use trail on the east side of East Marginal Way between Boeing Access Road and S 115th Street

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option):

1. Construct bike lanes and signage (including "Share the Road" signs). In some areas, such as the choke point between Boeing Access Rd and the Duwamish River, the street will need to be channelized to accommodate bicycles. In the long term, a bike trail along the east side of the street, in Seattle City Light right-of-way, may be the best improvement option for this stretch of the route.

2. Construct multi-use trail adjacent to and separated from roadway (on area currently occupied by railroad spurs and/or utility rights-of-way), including signage.

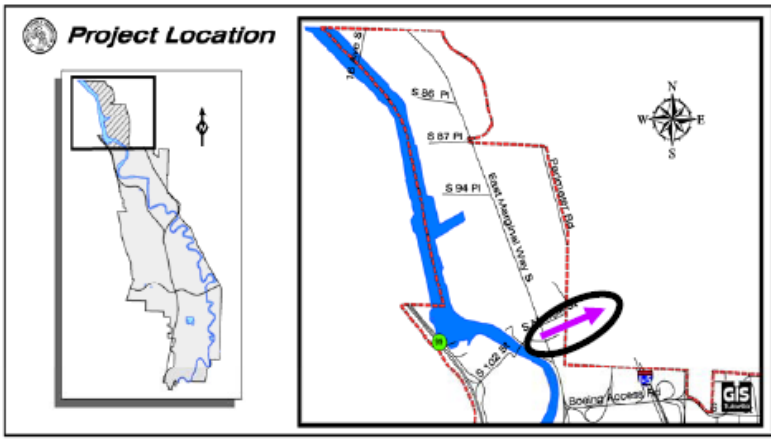
3. Install bike route and directional signage (including "Share the Road" signs), with conditions remaining the same. Regular maintenance is needed at intersection of East Marginal Way and Boeing Access Road to ensure that landscaping, and especially trees, do not interfere with sight distance.

South shoulder of S Norfolk Street looking east

S Norfolk Street (from East Marginal Way S to Airport Way S)

Norfolk Street is one of two east-west connections in Tukwila from East Marginal Way to Airport Way S, both of which are Recommended Bicycle-Friendly Routes in Tukwila's Walk & Roll Plan. Considering that the alternative to S Norfolk Street is the Boeing Access Road, S Norfolk Street is the best option to get between East Marginal Way and Airport Way S, since this street has less traffic, no freeway on-ramps or off-ramps, and relatively wide lanes and shoulders.

S Norfolk Street looking east



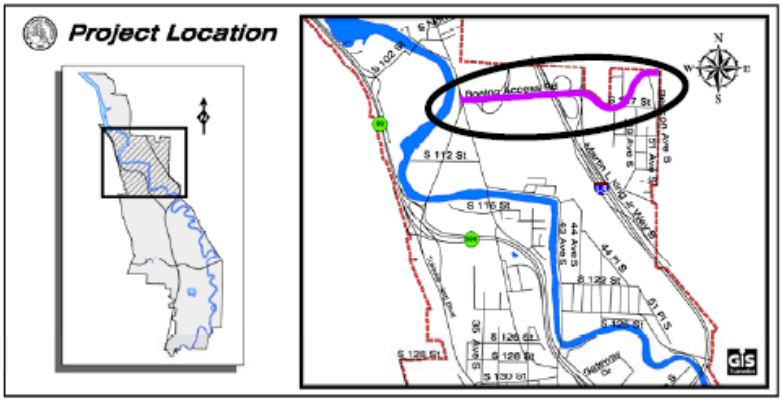
Improvements Summary
Current conditions/issues: • Short street segment with low traffic and relatively wide lanes and shoulders. • This street is adjacent to Associated Grocers and in between East Marginal Way S and Airport Way S, so it experiences a high volume of truck traffic. **Improvement Options** (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.): 1. Construct bike lanes and signage. 2. Install bike route and directional signage, with conditions remaining the same.

Ryan Way S looking southwest

Ryan Way S looking southeast

Boeing Access Road - S Ryan Way

The east-west route made up of Boeing Access Road and S Ryan Way is one of the few east-west routes in Tukwila, and provides connections to the newly completed Chief Sealth Trail just north of Tukwila's city limits at Gazelle Street and 51st Ave S. This route also connects Tukwila's Ryan Hill neighborhood to the rest of the City, and provides connections from Tukwila to South Seattle, Skyway, and Renton.



Improvements Summary

Current conditions/issues:

Current cross-section: Ryan Way: 11'|11'|11'|11'

Boeing Access Road: 11'|11'|11'|11'

- High speed corridor, vertical curves in road limit sight distance, multiple merge lanes and freeway on– and off-ramps provided for I-5 and Airport Way
- Boeing Access Road bridge over I-5 constrains available right-of-way width, limiting room for bike lane restriping
- May be feasible for bikes to ride in same lanes with automobiles on the downhill along Ryan Way S

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage (the multiple merge lanes from/to I-5 and Airport Way may make this difficult).

2. Construct bike lanes on uphill only on Ryan Way; downhill can ride in same lane with auto traffic. Construction of bike lanes on both sides of Boeing Access Road would still be necessary (if feasible, given the multiple merge lanes). Signage on both sides of the street is still necessary.

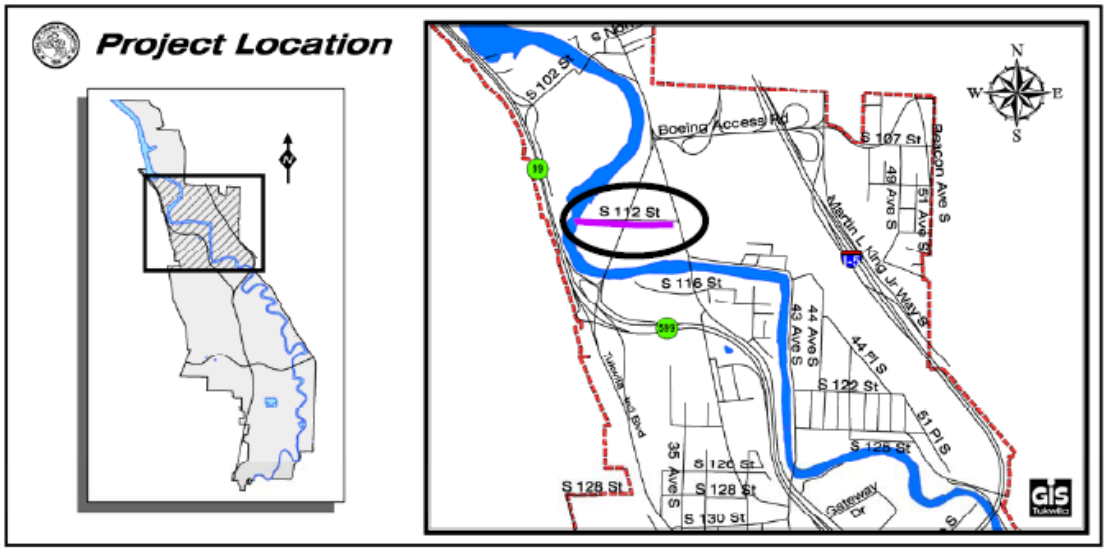
3. Construct an off-street multi-use alternative if no suitable improvement can be made along the Boeing Access Road to connect the Green/Duwamish River Trail with the Chief Sealth Trail

4. Install bike route and directional signage, with conditions remaining the same.

S 112th Street looking west

S 112th Street

S 112th Street is a short stretch of road connecting East Marginal Way S to Tukwila International Blvd, and continuing west connecting with the Green River Trail. Employment sites in the vicinity of the trail include the Seattle Processing Center for the United States Postal Service and Boeing. This route, while being short, provides one of the few east-west connections to the Green River Trail within the northern area of Tukwila.



Improvements Summary

Current conditions/issues:

Current cross-section: Current cross-section: 18'|11.5': north side of street has a wide, striped paved shoulder

- Low traffic volumes (however, a high percentage of traffic on this route is truck traffic)
- Provides connection to Duwamish/Green River Trail
- Good sight distance

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage.
2. Install bike route and directional signage, with conditions remaining the same.

S 115th Street looking east

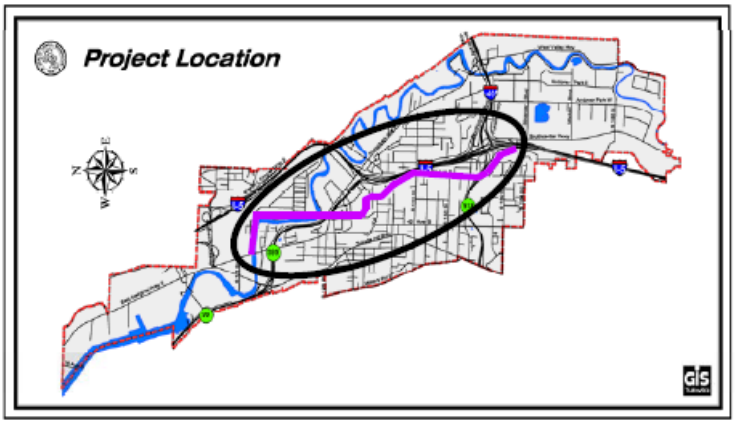
42nd Ave S (between S 115th St & Interurban Ave S)

Macadam Rd S looking south

S 115th Street - 42nd Ave S - Macadam Rd S - 51st Ave S - Klickitat Dr

S 115th Street is a low traffic, scenic route adjacent to the Green/ Duwamish River and the future Duwamish Riverbend Hill Park. S 115th Street provides connections to 42nd Ave S to the east, including the Tukwila Community Center and the Allentown neighborhood; and East Marginal Way to the west, including a connection to the Green River Trail.

This route offers a north-south alternative through Tukwila on streets that have slower speeds (25-30mph) than other nearby recommended bicycle-friendly routes within the City such as Tukwila International Blvd (35-45mph), East Marginal Way S (30-35mph), and Interurban Ave S (35mph). This route also tends to less truck traffic than alternatives.



Improvements Summary

Current conditions/issues:

Current cross-section: S 115th Street: 12.5'(north side)| 11' (south side);
42nd Ave S: 11'|14' (east, including gutter | west)
Macadam Rd S: 14'|14'
Klickitat: trail on south side of street for use by pedestrians and bicyclists (must dismount)

- Area between S 124th Street and Interurban Ave S has high truck volumes and a very narrow bridge

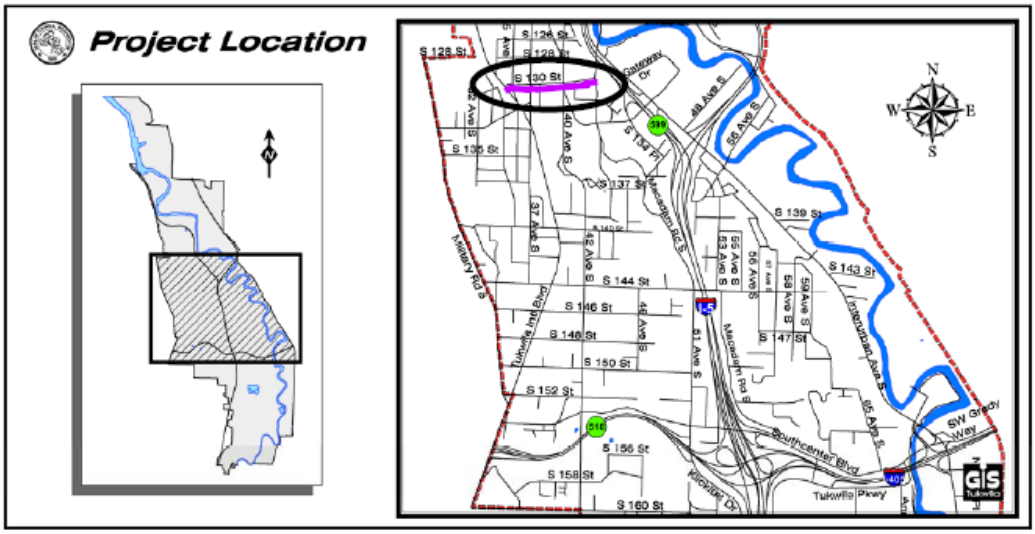
Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage from S 115th to Klickitat Rd S; coordination with WSDOT will be necessary to determine future improvements for bicycles and pedestrians along Klickitat Rd S.
2. Install bike route and directional signage, with conditions remaining the same.

S 130th Street looking east

S 130th Street

South 130th Street provides an east-west connection from Macadam Rd S to Tukwila International Blvd, providing one of the few east-west routes from Tukwila International Blvd to major activity centers including the Tukwila Community Center and the Green River Trail. This route has relatively low traffic and low automobile speeds. However, the grade along this route is gradual but steep, making it difficult for most bicyclists to make the ascent from east to west.



Improvements Summary

Current conditions/issues:

Current cross-section: Current cross-section: 10.5'|10.5', with a shoulder that ranges from 0' to 2.5'

- Relatively low-traffic route
- Steep grade
- Debris (mostly gravel) in roadway

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

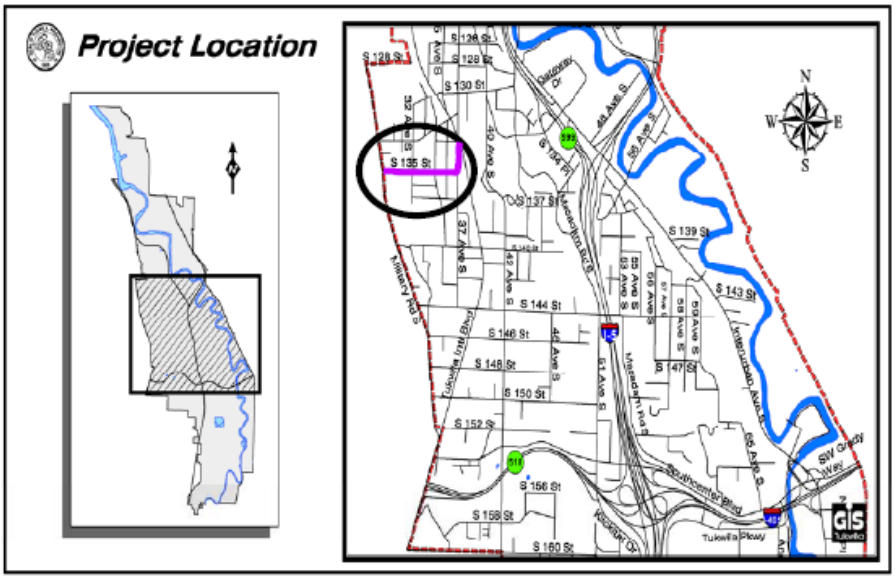
1. Construct bike lanes and signage.
2. Install bike route and directional signage, with conditions remaining the same.

S 135th Street looking west

37th Ave S - S 135th Street

South 135th Street provides an east-west connection from Tukwila International Blvd to Military Rd S and connections including Cascade View Elementary and North SeaTac Park. This route is less steep than nearby east-west alternative routes, including S 128th Street and S 144th Street.

To access S 135th Street from Tukwila International Blvd, bicyclists must use 37th Ave S, which is a short, steep stretch of roadway with a paved shoulder on the uphill (west) side of the street.



Improvements Summary

Current conditions/issues:

Current cross-section: 37th Ave S: 3'|14.5'|10.5 (west | east)

S 135th Street: 32' wide with no center lanes, roadway width narrows to 29' at curb bulb-outs

- Relatively low-traffic route.
- Low speed route.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage.
2. Install bike route and directional signage, with conditions remaining the same.

West of TIB to city limits

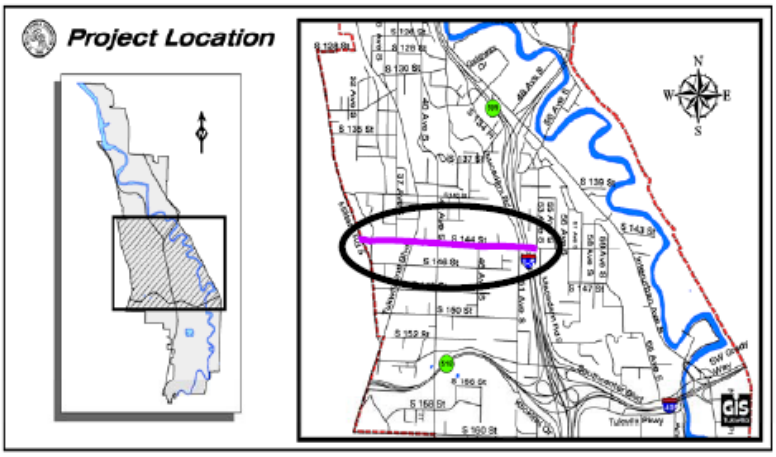
Between TIB & Macadam Rd S

East of Macadam Rd S, looking east

S 144th Street from Military Road S to 53rd Ave S

S 144th offers a connection to the City of SeaTac and nearby North SeaTac Park. After meeting with City of SeaTac parks and planning staff, S 144th was recommended as the best east-west route from SeaTac to Tukwila, providing connections along 42nd Ave S and Macadam Rd S to Tukwila parks and the Green River and Interurban trails.

Signed and striped bike lanes have recently been constructed between Military Rd S and Tukwila International Blvd, along with sidewalks and illumination. A continuation of bike lanes along S 144th east of Tukwila International Blvd would provide missing linkages to parks, trails, schools, libraries, and other recommended bicycle-friendly routes.



Improvements Summary

Current conditions/issues:

Current cross-section: Military Rd S to TIB: 5'-10.5'-10.5'-5'

TIB east to 62nd Ave S: 16'-16' (including gutter area on both sides)

- The steep hill—Bremmer's Hill— west of Macadam Rd S is extremely difficult for bicyclists—most bicyclists would have to walk their bikes on the uphill section, and the descent would be dangerous due to the steep grade, making it difficult for bicyclists to slow down.
- Special design consideration should be given to the bridge across I-5. Future reconstruction or retrofit of this bridge should include extra width for pedestrians and bicyclists.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage.
2. Construct bike lane on uphill sections, with no change except for signage on the downhill sections.
3. Install bike route and directional signage with conditions remaining the same.

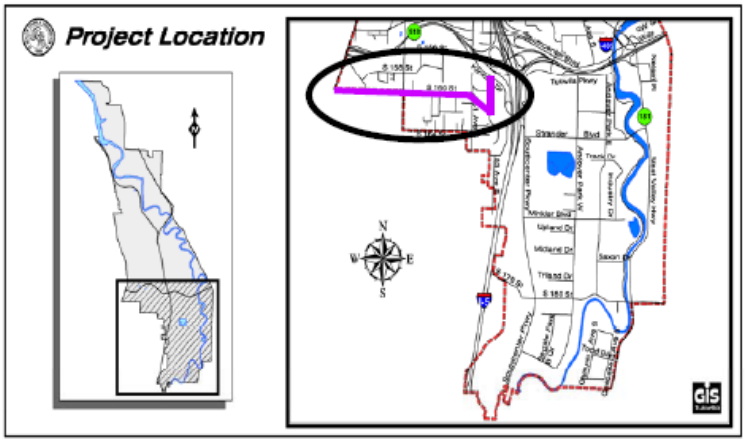
S 160th Street (looking west)

S 160th Street (looking east)

53rd Ave S

S 160th Street

S 160th Street is a local street, with low traffic volumes and a 25 mile-per-hour speed limit. This east-west route provides a connection from Tukwila to the City of SeaTac to the west, as well as to Crystal Springs Park and Southcenter via 53rd Ave S. This route provides one of the few east-west connections between Tukwila and SeaTac south of SR-518.



Improvements Summary

Current conditions/issues:

Current cross-section (east of I-5): West of 51st Ave S: 12'|20' (includes area for on-street parking); 12'|12' where there is no on-street parking pocket

East of 51st Ave S (adjacent to jersey barrier): 15'|13.5'

53rd Ave S: 12.5'|12.5'

- Low traffic volumes
- Significant grades on the east end of the route
- Poor sight distance around curves heading east to 53rd Ave S, as well as along 53rd Ave S

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage.
2. Construct bike lanes on uphill areas only. Signage would still be necessary on both sides of the street.
3. Install bike route and directional signage, with conditions remaining the same.

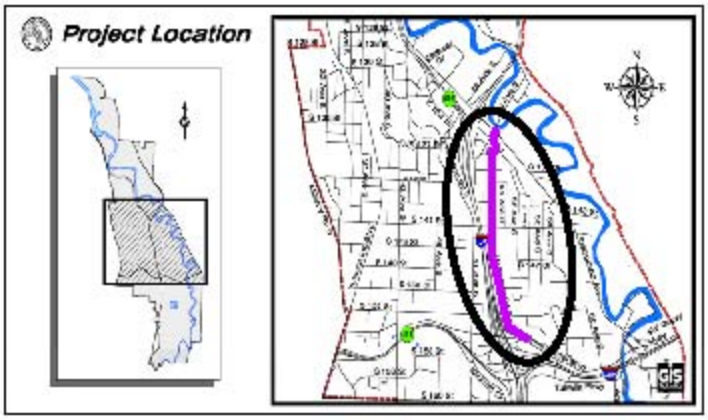
52nd Ave S – 53rd Ave S – Macadam Rd S

Macadam Rd S

Macadam Rd S

53rd Ave S looking south between 52nd Ave S & S 144th Street

The route along 52nd Ave S to 53rd Ave S and Macadam Rd S connects Interurban Ave S and the Green River Trail at 56th Ave S to major east-west streets including S 144th Street and Southcenter Blvd. This route is a north-south alternative to the Green River Trail and to Interurban Ave S. The streets on this route are signed as 25mph, and provide connections to activity centers including the Tukwila Park & Ride, Foster Golf Course, Joseph Foster Memorial Park, and Macadam Winter Garden.



Improvements Summary

Current conditions/issues:

Current cross-section: varies widely, with paved shoulder alternating between the east and west sides of the street along the entire length of the route. The southern portion along Macadam Rd S includes an area of on-street parking.

- Relatively low speeds and low traffic volumes.
- Parts of this route currently have paved shoulders, including 53rd Ave S and Macadam Rd S (south of S 144th St).
- This route includes areas where there are significant grades.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage.
2. Install bike route and directional signage, with conditions remaining the same.

East of I-5 (at 65th Ave S looking east)

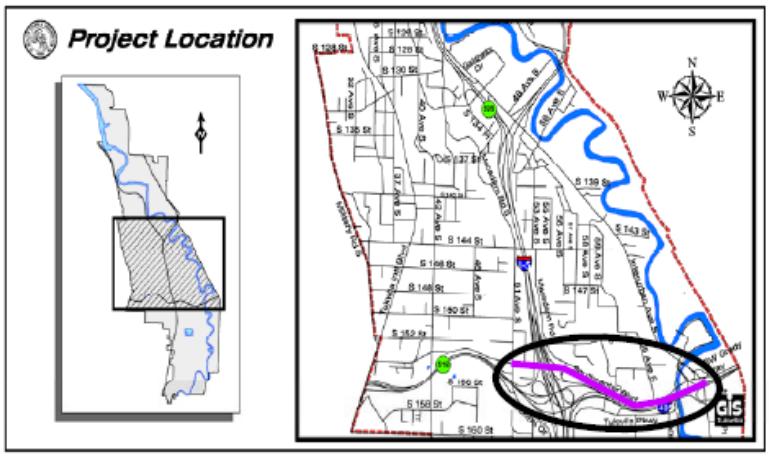
West of I-5 (looking east)

West of I-5 (looking east)

Southcenter Blvd

West of I-5 to Tukwila International Blvd:
Bike lanes (5' wide, on both sides of the street) are in the process of being constructed in connection with Sound Transit's LINK Light Rail Station in Tukwila. Installation of directional signage in the future would help guide bicyclists to the station and other nearby destinations and/or cities including the Green River Trail, Renton, and SeaTac.

East of I-5 to Grady Way
East of I-5, bike lanes should be extended along both sides of Southcenter Blvd to complete this important route and continue this connection to Renton, as well as the Green River and Interurban Trails. This connection has been identified as a top priority within Cascade Bicycle Club's Left by the Side of the Road report.



Improvements Summary

Current conditions/issues:

Current cross-section (east of I-5): 12'|12'|12'|12'|12'

- Bike lanes recently constructed on Southcenter Blvd west of 51st Ave S, connecting to the LINK Light Rail Station
- Multiple on– and off-ramps, merge lanes, as well as areas where there are multiple turn lanes in and out of the Southcenter area make navigating these areas difficult on a bicycle.
- High traffic volumes

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage, with special attention paid to crossing areas.
2. Construct a multi-use trail separated from the roadway.
3. Install bike route and directional signage, with conditions remaining the same.
4. Guide bicyclists to an alternative route.

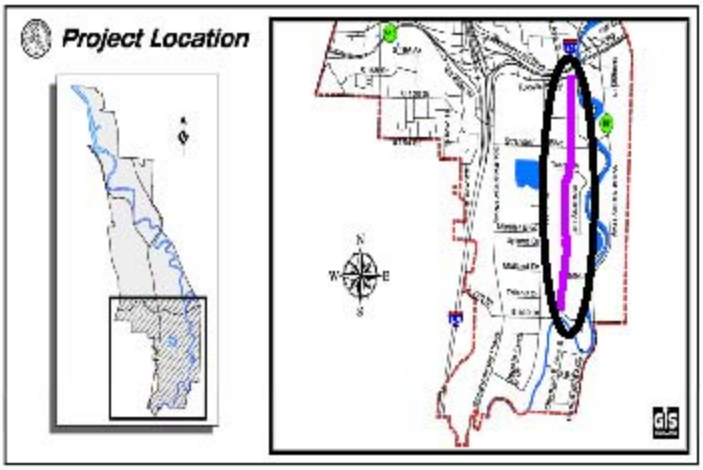
Baker Blvd looking south

Baker Blvd looking south

South of Strander Blvd looking south

Andover Park East

Andover Park East (APE) is one of the Southcenter urban center's major north-south routes, providing connections to Tukwila Parkway, Baker Blvd, Minkler Blvd, and S 180th Street. This street is characterized by heavy traffic, many curb cuts, and vehicles making turning movements.



Improvements Summary

Current conditions/issues:

Current cross-section: 12'|11'|11'|12'

- High traffic volumes
- Frequent turning movements by vehicles into parking lots along the length of the route

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes (to include signage) according to the configuration below, which represents the City's plans for on-street parking in the area north of Strander Blvd.

   Tukwila Parkway to Strander Blvd: this route segment will be re-channelized to include a 3-lane roadway section

   Strander Blvd to S 180th Street: 6'| 11.5'|12'|11.5'| 6' = 6' bike lanes, 11.5' travel lane in each direction, 12' center turn lane

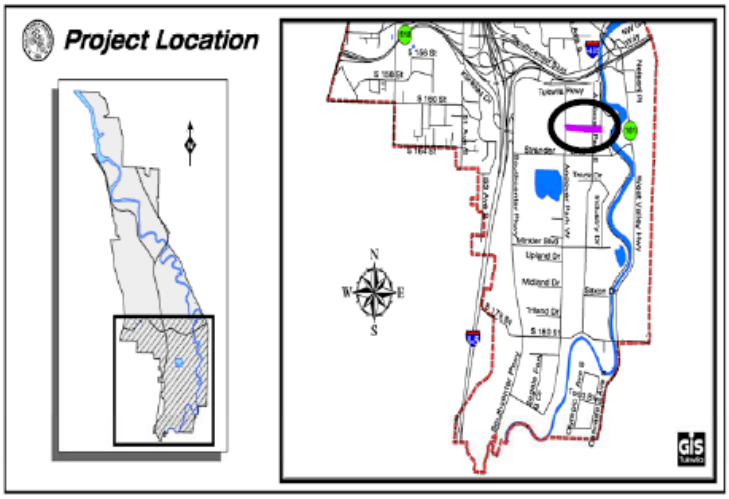
2. Decrease lane widths to make room for construction of bike lanes, including installation of bike route and directional signage.

Baker Blvd looking west

Baker Boulevard

Baker provides one of the few connections within the urban center from the Green River Trail to Southcenter Mall. This street currently has relatively low traffic. As the area develops, traffic is expected to move more slowly as on-street parking is added.

Plans for this corridor are for an active retail environment with wide sidewalks and on-street parking. Baker Blvd, combined with a pedestrian and bicycle bridge across the Green River, will provide a pedestrian connection to the trail and to the Sounder/Amtrak commuter rail station east of West Valley Highway. Signage is important both in the short- and long-term to guide pedestrians and bicyclists to the trail as well as other major destinations including Tukwila Pond Park and the mall.



Improvements Summary

Current conditions/issues:

Current cross-section: 12.5'|12.5'|13'|12'

- Low traffic route, especially for the number of lanes provided
- Provides good connection between Green River Trail and Southcenter Mall via Christensen Rd

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes, in combination with installation of signage (short-term recommendation).
2. Install bike route and directional signage, with conditions remaining the same.

Longacres Way looking west

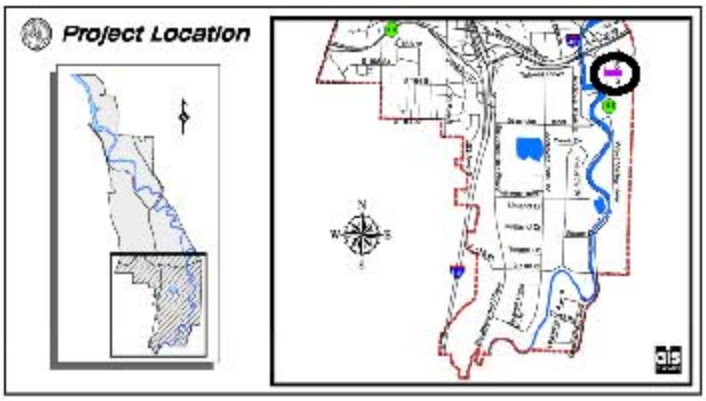
Longacres Way looking east

Interurban Trail looking north at intersection with Longacres Way

Longacres Way

Longacres Way is an important connection to the Sounder Commuter Rail Station, and is currently used by bicyclists making a connection from Boeing properties northeast of Longacres Way in Renton to the Interurban and Green River Trails.

Longacres is also one of the few streets in Tukwila that has a trail crossing, and where care must be taken to provide warning signs to trail users and drivers so that it is clear who has the right-of-way (drivers or trail users), so that drivers slow down, and so that other precautions are practiced within the area where the trail crosses the street



Improvements Summary

Current conditions/issues:

- Street connecting to Sounder Commuter Rail Station.
- Potential trail traffic/street traffic conflict point: Interurban Trail crosses this street at mid-block location. There is signage on the trail that tells trail users to stop, but there are no crossing enhancements, or "Trail Crossing" signs for automobiles along the street.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes and signage for both trail users and automobile drivers.

2. Install bike route and directional signage for both trail users and automobile drivers, with conditions remaining the same.

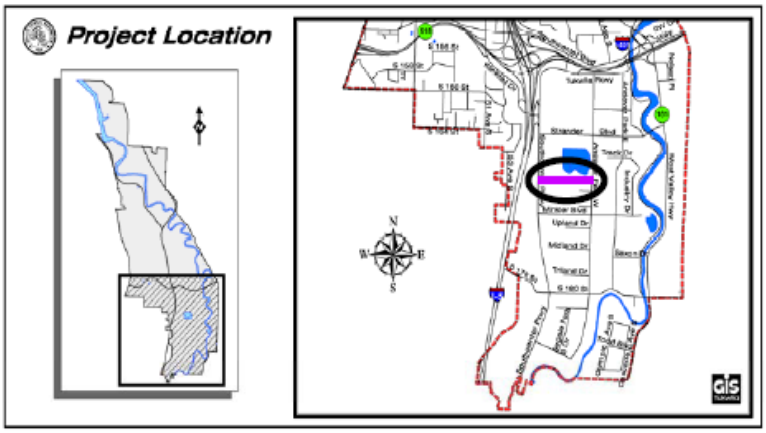
S 168th Street (looking west)

S 168th Street (looking east)

Railroad tracks and sidewalk remnants at southeast corner of Tukwila Pond

S 168th Street

S 168th Street is a new street that is planned for construction within the Southcenter urban center. This new street will run east-west and be partially located along the southern edge of Tukwila Pond. The route will connect Southcenter Parkway with Andover Park West, and provide direct and obvious access to Tukwila Pond Park. Street design has been partially completed. New objectives should be incorporated into the future design work that works to accommodate all users of the roadway, including bicyclists, pedestrians, and automobiles.



Improvements Summary

Current conditions/issues: N/A

- This would be a new street, so its construction presents the opportunity to budget room for bike lanes.
- This street would be the only direct east-west connection to Tukwila Pond.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct a multi-use trail, including signage, on the north side of street adjacent to the sidewalk and Tukwila Pond Park (as long as curb cuts are not allowed), with bike lanes on the north side of the street where there is no trail. Bike lanes would need to be provided along the entire length of the south side of the street to accommodate two-way bicycle travel.

Near Southcenter Square looking east

Between APE and APW

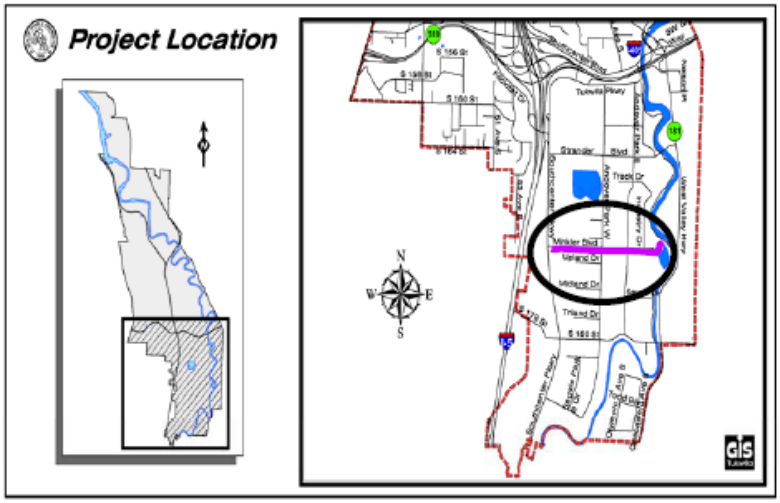
Trail access point at Minkler Shops

Minkler Boulevard

Minkler Blvd. is one of the few east-west streets that is a connection between the Green River Trail and destinations west, including Southcenter Square and retail along Southcenter Parkway.

Compared to alternatives including Strander Blvd, Tukwila Parkway, and S 180th Street, Minkler Blvd has lower traffic volumes and greater roadway width to accommodate improvements for bicyclists.

There is currently a connection to the Green River Trail on City property (Minkler Shops) at the east end of Minkler Blvd. Better signage has the potential to increase the use of this access point connecting the Green River Trail to the Southcenter urban center.



Improvements Summary

Current conditions/issues:

Current cross-section: West of Andover Park West: 12'|10'|12'

East of Andover Park West: 13'|12'|14'

- Inconsistent right-of-way width
- Railroad right-of way adjacent to roadway on south side (west of Andover Park West)
- 60' wide drainage ditch south of roadway (east of Andover Park West)

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

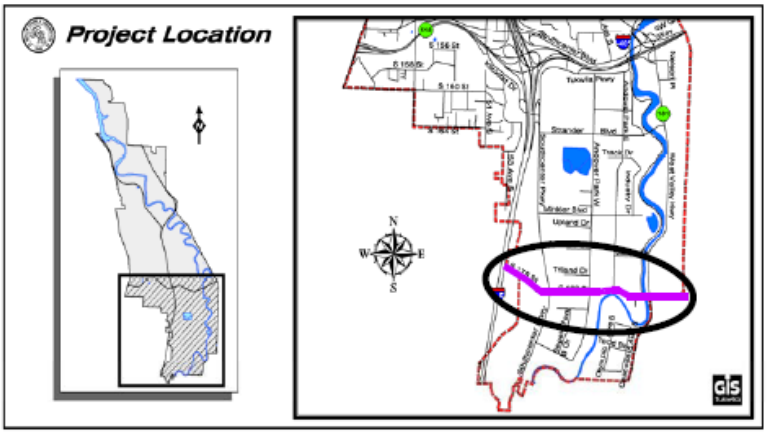
1. Construct bike lanes and signage.
2. Install bike route and directional signage, with conditions remaining the same.

S 180th Street (looking west)

S 180th Street

S 180th Street provides one of the few east-west through streets connecting Tukwila with both SeaTac and Renton. The City of Kent can be accessed along this route as well. This route also provides connections to activity centers including employers, retail, and both the Green River Trail and Interurban Trail.

S 180th Street (looking east)



S 178th Street (looking west)

Improvements Summary

Current conditions/issues:

Current cross-section: 11.5'|12'|11'|12'|11.5'

- Heavy traffic volumes
- Provides one of the few connections to Renton and the Interurban Trail
- Due to steep grades and grooves in the shoulder for better automobile and truck traction, the segment of this route west of Southcenter Parkway is currently very dangerous for bicycles and pedestrians. This segment of the route can only be recommended to be bicycle-friendly if it is completely reconstructed with a more gradual grade and climbing lanes for bicycles.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Construct bike lanes (including signage) along S 180th Street. Reconstruct S 178th Street with a more gradual grade up the hillside, including bike lanes and bicycle route signage.

Orillia Road southbound

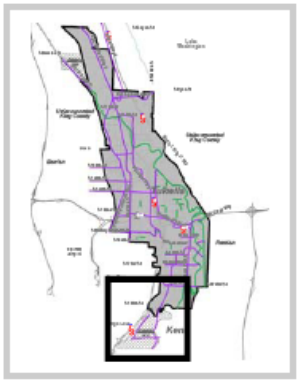
Orillia Road

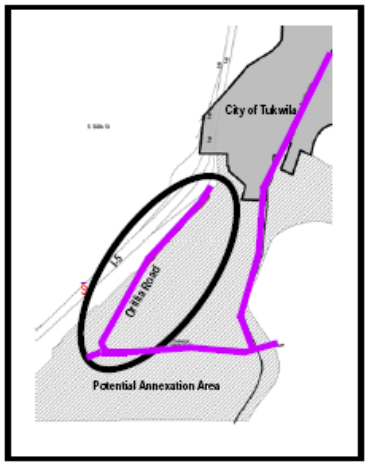
Orillia Road is a steep and heavily used north-south route from the Tukwila/ Kent valley to the west. Two lanes of traffic travel each direction on Orillia Road with left turn lanes at the top and bottom of the hill. This road is a linkage to and from the SeaTac Airport, the City of SeaTac municipal facilities, and provides access/passage under I-5.

Orillia Road is presently within unincorporated King County. It is identified as part of Tukwila's Potential Annexation Area. Therefore, any improvements made by the City of Tukwila will likely not occur until the annexation is completed. The northern half of the road is within the City of SeaTac's jurisdiction, making coordination with SeaTac necessary for improvements.

Orillia Road northbound

Project Location





Improvements Summary

Current conditions/issues:

Current cross-section: 3.5' bike lanes-4 auto lanes-3.5' bike lane OR 6-9' paved shoulder on north-east side of road

- Faded paint markings and narrow (3.5') bike lanes
- Only southern half of north-east roadside has bike lanes and signage; paved shoulder for remainder
- Bike lanes do not continue under I-5 to link with City of SeaTac
- Southern PAA is unincorporated King County and currently outside the City Of Tukwila's jurisdiction

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

1. Widen bike lanes and improve signage for the entire length of Orillia Road to the City of SeaTac.
2. Repaint bike lanes along both sides of Orillia Road.

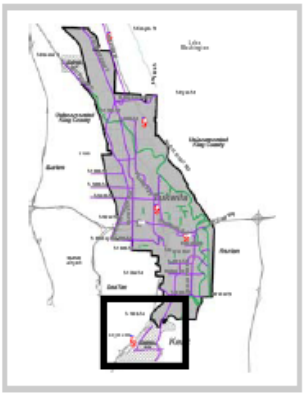
S 200th St looking east

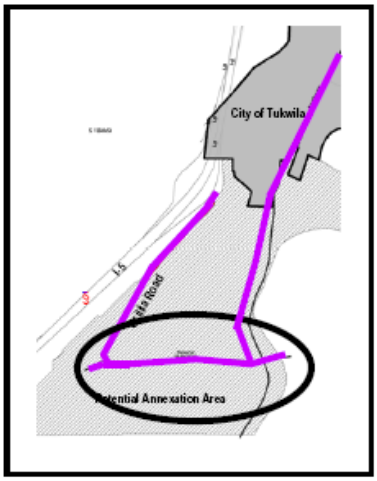
S 200th St looking east

S 200th Street

This street is a major arterial connecting Tukwila's south annexation area to SeaTac via Orillia Road. With curbs, gutters, sidewalks, bike lanes, and signage, this street has amenable facilities for both pedestrians and bicyclists. Added signage to signal the direction of nearby cities and destinations (i.e., Green River Trail, Southcenter Mall, etc.) would provide additional enhancements for bicyclists along this corridor.

Project Location





Improvements Summary
Current conditions/issues: Current cross-section: Orillia Rd to Southcenter Parkway: 5'|11'|11'|11.5'|11'|11'|5' • Southern Potential Annexation Area is unincorporated King County and currently outside the City Of Tukwila's jurisdiction **Improvement Options** (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option): 1. Install bike route and directional signage, with conditions remaining the same. Directional signage will be needed in the future, once the Green River trail is extended south of S 180th Street on the west side of the river, to guide bicyclists from S 200th Street to the new trail connection.

Paved Multi-Use Trails

The Multi-Use Trail Project Sheets show the location of areas where multi-use trails are recommended for construction within the City of Tukwila. Additional projects to extend the Green River Trail north to Seattle, to connect Tukwila to the Chief Sealth Trail in Seattle, and to connect North SeaTac Park with the Green River Trail will require partnerships with adjacent jurisdictions, and further study to determine the best trail alignments. These trail connections have been identified as important improvements in the Walk & Roll Surveys, in public meetings, and in meetings with adjacent jurisdictions in order to expand the breadth of and increase connectivity in the regional trail system.

Table 5: Recommended Paved Multi-Use Trails

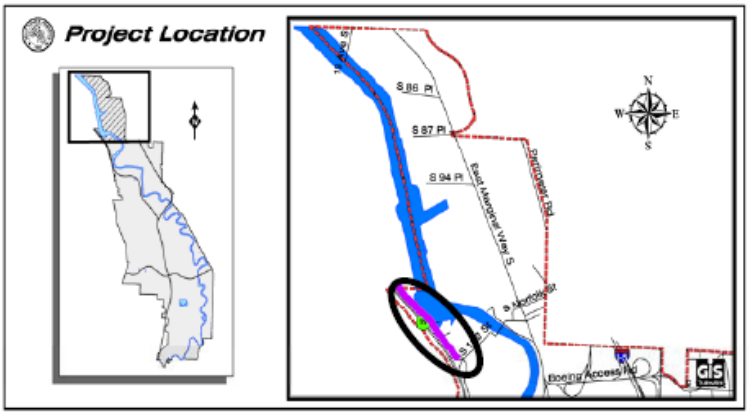
Recommended Multi-Use Trails
West Marginal Place (extend Green River Trail to northern City limits)
Duwamish Riverbend Hill to Airport Way
Two Rivers Trail
Nonmotorized Trail (from Southcenter Blvd up to 51st Ave S)
Trail Through WSDOT Right-of-Way
Railroad spur through Southcenter
Green River Trail (extend Green River Trail on west side of river south from S 180th Street to southern City limits)

West Marginal Place

North of Green River Trail-end

West Marginal Place runs parallel to Highway 99, and provides connections to South Park and West Seattle. The Duwamish/Green River Trail runs north along the eastern edge of West Marginal Place, up to the area just north of S 102nd Street. North of S 102nd Street, the road is sandwiched between the river and Highway 99, making a trail extension or addition of bike lanes difficult. Travel lanes are narrow, and bicycles as well as pedestrians have only a narrow shoulder in some sections of the route north of the trail terminus, forcing them to ride or walk within the roadway.

Green River Trail terminus



Improvements Summary

Current conditions/issues:

Current cross-section: 10.5'|10.5', with a shoulder that ranges from 0' to 2.5'

- Narrow roadway width
- Narrow shoulder width
- Relatively low traffic
- Poor surface condition.

Improvement Options (In order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option. The most bicycle-friendly options, to be determined for each corridor through a feasibility study, should be built in the long-term, even when secondary options are built in the interim.):

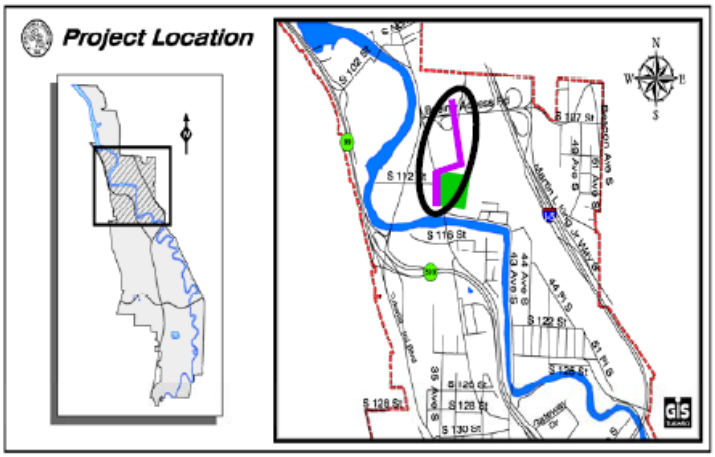
1. Extend Green River Trail to the northern city limits, and to the limits of the North Annexation Area pending annexation to the City of Tukwila.
2. Construct bike lanes and signage.
3. Widen paved shoulders to provide extra room for bicyclists and add signage.
4. Add directional signs pointing out connection from West Marginal Place to Green River Trail, with conditions remaining the same.

Park Site: Existing Conditions

Park Site: Planned Trails within the Park

Duwamish River Bend Hill to Airport Way

This route extends from S 115th Street along the western edge of the future Duwamish/Riverbend Hill Park up to Boeing Access Road and Airport Way. Construction of a trail here would provide a dedicated route for bicyclists and pedestrians that could tie in to plans for the future park, and would provide an alternative for bicyclists to riding with automobile traffic along East Marginal Way. Additionally, this route would provide an alternative to navigating the complicated intersection at East Marginal Way and Boeing Access Road to get to Airport Way. Airport Way is one of the primary north-south connections for bicyclists from Tukwila to the City of Seattle. Though Airport Way is completely within Seattle city limits, the Seattle Bike Master Plan has Airport Way on its list of streets that need improvements. Improvements identified for Airport Way within the Seattle Bike Master Plan are either (1) improvement of the shoulder and restriping for bike lanes; or (2) improvement of the shoulder for construction of a paved multi-use trail. The Duwamish River Bend Hill to Airport Way would thus provide an important connection to Seattle, and directional signage would guide bicyclists to connections such as the Duwamish/Green River Trail and employment sites in the vicinity.

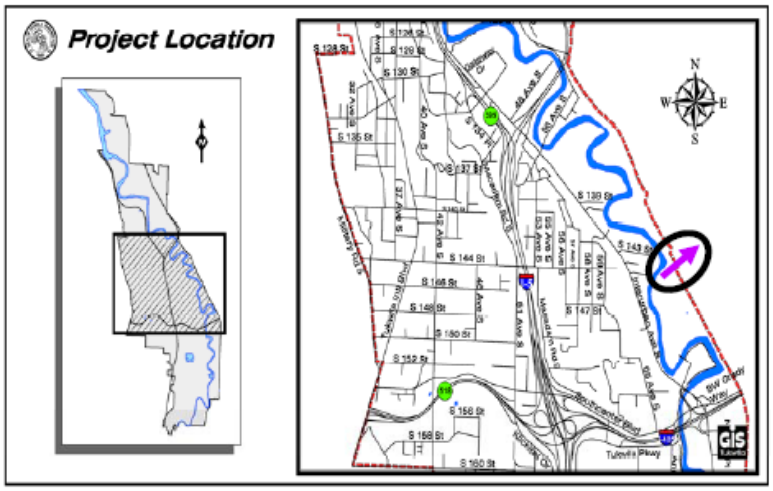


Improvements Summary
Current conditions/issues: • Properties to the north, which would need to either be acquired, or on which easements would need to be gained for a trail, are owned by Seattle City Light, the City of Seattle, the Seattle Police Athletic Association (for the Seattle Police shooting range), and the Northern Pacific Railroad. • This project may not be feasible as long as the shooting range is active in its current location. • Wetlands and steep slopes are in this area. **Improvement Options** (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option): 1. Develop a multi-use trail, including installation of directional signage. The value of this trail would depend on the ability of Airport Way to attract cyclists—construction of this trail should be coordinated with Seattle's plans for construction of bicycle facilities along Airport Way.

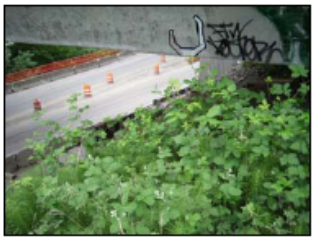
Connection underneath railroad bridges

Two Rivers Trail

This route is already used informally, and represents an opportunity to connect the City of Renton with the Green River Trail. The Cascade Bicycle Club identified this connection in its Left by the Side of the Road report as a critical link in the regional bicycle system. Cooperation between the City of Tukwila and the City of Renton, as well as with the railroad companies, will be necessary in order to make this informal connection a paved multi-use trail.



Improvements Summary
Current conditions/issues: • Dirt path connecting Fort Dent Park to City of Renton, overgrown with blackberries • Chain link fence (with "no trespassing" sign) currently blocks entrance to the route from Renton **Improvement Options** (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option): 1. Develop a multi-use trail, including installation of directional signage.

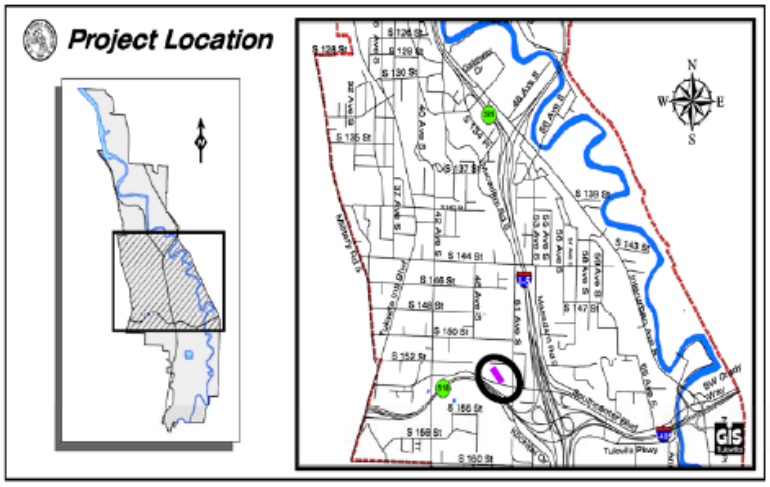


On hillside at east side of 51st Ave S bridge

On hillside at east side of 51st Ave S bridge

Non-Motorized Trail (Southcenter Blvd to 51st Ave S)

State Route (SR) 518 and Interstate (I)-5 bisect the City of Tukwila, separating neighborhoods from popular destinations with few crossings that are far apart for pedestrians and cyclists. A key connection that would help bridge the distances would be a short trail between South-center Blvd and 51 Ave. S.



Improvements Summary
Current conditions/issues: A retaining wall has recently been constructed underneath the 51st Ave S bridge. A study will need to be done to evaluate the best design and location for a ramp or staircase with bike gutter to make the connection between Southcenter Blvd and 51st Ave S. **Improvement Options** (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option): 1. Construct a non-motorized ramp from Southcenter Blvd to 51st Ave S. 2. Construct a staircase that includes a bike gutter for bicycle and pedestrian access from Southcen-ter Blvd to 51st Ave S.

Southcenter Blvd Trail Alignment

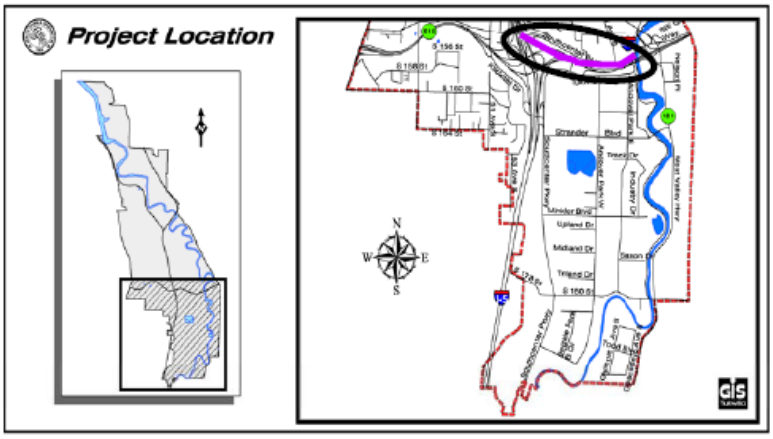
Source (for above graphic, and graphics below): Sean Fernandez

Trail through WSDOT Right-of-way

The land through which this proposed trail runs is within Washington State Department of Transportation (WSDOT right-of-way. A trail in this area would provide a dedicated route for bicyclists and pedestrians in an area of the City that is characterized by congestion and is difficult for bicyclists and pedestrians to navigate given the disconnected network of sidewalks and complicated intersection areas. This alignment would provide a connection underneath the I-5 freeway. However, as listed under the existing conditions, there are complicated right-of-way and critical areas issues that would need to be addressed with construction of a trail in this area.

West end trailhead location

East end trailhead location



Improvements Summary
Current conditions/issues: • This area includes Seattle Public Utilities (SPU) right-of-way, in which there is a 60" water main. • WSDOT is planning a widening of I-405 in this area, so any trail location would need to be coordinated with WSDOT plans. • A creek runs through this area, and is heavily planted with trees. A feasibility study would help determine whether there is room for a trail in this area. • Freeway on– and off– ramps, and bridges over I-405 may provide additional challenges in trying to locate a trail alignment in this area. **Improvement Options** (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option): 1. Development of a multi-use trail, including signage, linking the Southcenter urban center with the Green River Trail.

End of spur at Triland Drive

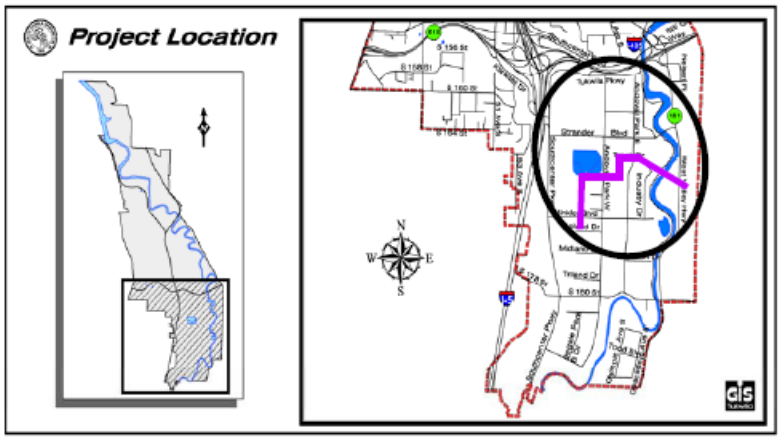
Spur between Upland and Midland Drives

Railroad trestle over the Green River

Railroad Spur through Southcenter

A number of working railroad spurs run through the Southcenter urban center. Trains make regular but infrequent use of these tracks. If the current land uses through the south portion of the urban center change from warehousing to other uses, the need for active railroad spurs could cease. In order to preserve the current railroad right-of-way for trail use, the City of Tukwila should be watchful of requests for abandonment. With an active and heavily used street grid though the urban center, only one other north-south route is identified as a recommended bicycle-friendly route in the Southcenter urban center (Andover Park East). Acquiring and converting railroad spurs into a multi-use trail would allow non-motorized access through much of the urban center, and would link to the Green River Trail and ultimately with the City of Renton.

Presently, these railroad spurs snake between warehouses on Union Pacific tracks from a trestle crossing the Green River, west past Andover Park West, and south from Upland to Triland drives. The tracks end within 600 feet of S. 180th Street. An easement and a trail to link through to S. 180th are also desired.



Improvements Summary

Current conditions/issues:

- Active but infrequently used rail spur of various widths
- Located between warehouses and alongside roads
- Ownership of tracks varies between rail lines and property owners
- In some cases when the rail line is abandoned, the deed returns the right-of-way to the original owner of the land automatically.

Improvement Options (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option):

1. Develop a multi-use trail, including signage, linking the urban center with the Green River Trail.

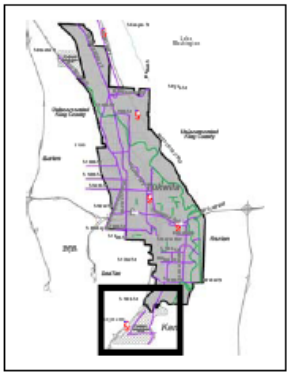
West bank of the Green River within the Southern PAA, looking south

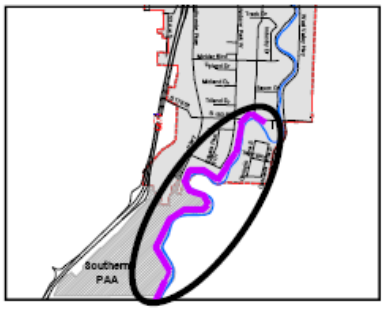
Green River Trail Extension (south of S 180th Street through Southern PAA)

The Green River Trail runs the entire length of the City of Tukwila on either the west or east bank of the river. The draft plan for public access as described in the Shoreline Program is to expand this popular trail system. One stretch of riverfront where no trail currently exists is south of S. 180 Street. This west bank of the Green River has a dike where a trail could be constructed. A trail extension along the west side all the way to the south end of the City's Southern Potential Annexation Area (PAA) would provide the opportunity for connections to large employers as well as to the cities of SeaTac and Kent.

West bank of the Green River within the Southern PAA, looking north

Project Location





Improvements Summary
Current conditions/issues: • Southern Potential Annexation Area is unincorporated King County and currently outside the City Of Tukwila's jurisdiction • The bank is covered with invasive vegetation for most of its length within in Southern PAA. • An informal dirt path is located along the river bank in some sections. **Improvement Options** (in order from most bicycle-friendly to least, with 1 being the most bicycle-friendly improvement option): 1. Construct multi-use trail on west side of the river, with directional signage to show nearby destinations that can be reached off the trail.

Unpaved Multi-Use Trails

The following pages contain Neighborhood Maps that act as project sheets for potential Unpaved Multi-Use Trails. Each map highlights pedestrian destinations such as schools, parks and high employment sites. Opportunities for new trails in each neighborhood include unimproved right-of-way (shown as brown lines) and potential trails (shown as green dashed lines). Each map shows existing sidewalks (red lines) and trails (solid green lines.) which illustrate how existing trails increase the connectivity within Tukwila's neighborhoods. Contours shown on the maps (thin, light brown lines) also provide the reader with an idea of the topography of neighborhoods and the grade of potential trails.

There are a number of different ways to implement this program. One example would be to establish a community building program that would require relatively little capital. The City could staff the program and provide seed money that would be matched by local homeowners or civic groups such as Scouting organizations or school site councils. Through neighborhood meeting, community members would prioritize the locations of future trails and provide labor while the City provides a material match.

Other connections could be acquired and built at the time of a new subdivision design and site development.

Table 6: Recommended Unpaved Multi-Use Trails

Neighborhood Maps*: Unimproved Right-of-Way areas and Potential Trails in Tukwila's Neighborhoods*	
Figure 7	Cascade View Neighborhood
Figure 8	McMicken Neighborhood
Figure 9	Riverton & Foster Neighborhoods
Figure 10	Ryan Hill, Allentown & Duwamish Neighborhoods
Figure 11	Thorndyke Neighborhood
Figure 12	Tukwila Hill & Foster Point Neighborhoods
Figure 13	Southcenter
Figure 14	Manufacturing Industrial Center & Potential North Annexation Area
Figure 15	Tukwila South & Potential South Annexation Area

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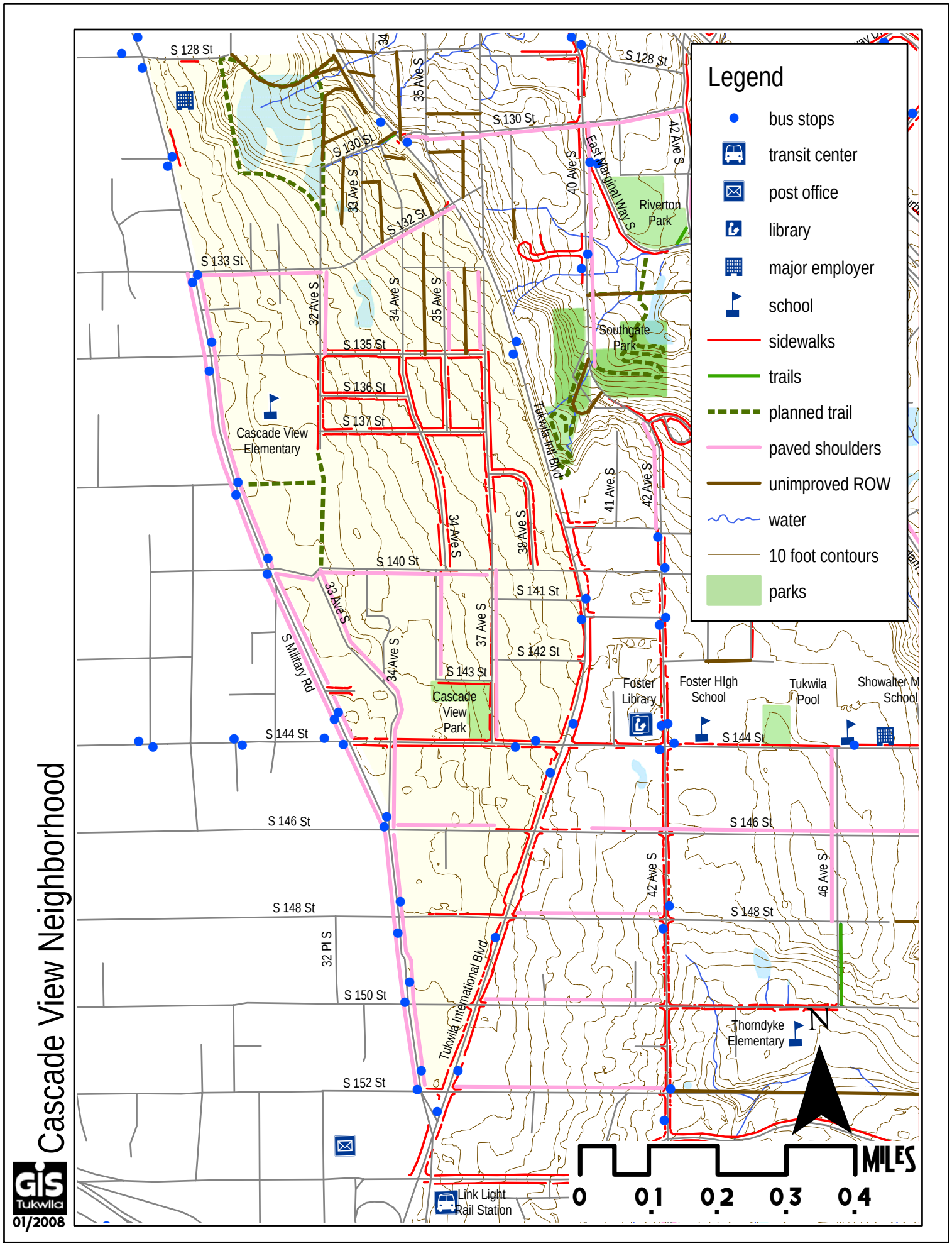
Cascade View Neighborhood
Legend
bus stops
transit center
post office
library
major employer
school
sidewalks
trails
planned trail
paved shoulders
unimproved ROW
water
10 foot contours
parks
S 128 St
S 130 St
S 132 St
S 133 St
S 135 St
S 136 St
S 137 St
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S 142 St
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S 152 St
35 Ave S
33 Ave S
32 Ave S
34 Ave S
35 Ave S
40 Ave S
42 Ave S
41 Ave S
38 Ave S
37 Ave S
32 Pl S
East Marginal Way S
Tukwila Hill Blvd
S Military Rd
Tukwila International Blvd
Riverton Park
Southgate Park
Cascade View Elementary
Cascade View Park
Foster Library
Foster HIgh School
Tukwila Pool
Showalter M School
Thorndyke Elementary
Link Light Rail Station
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GIS Tukwila
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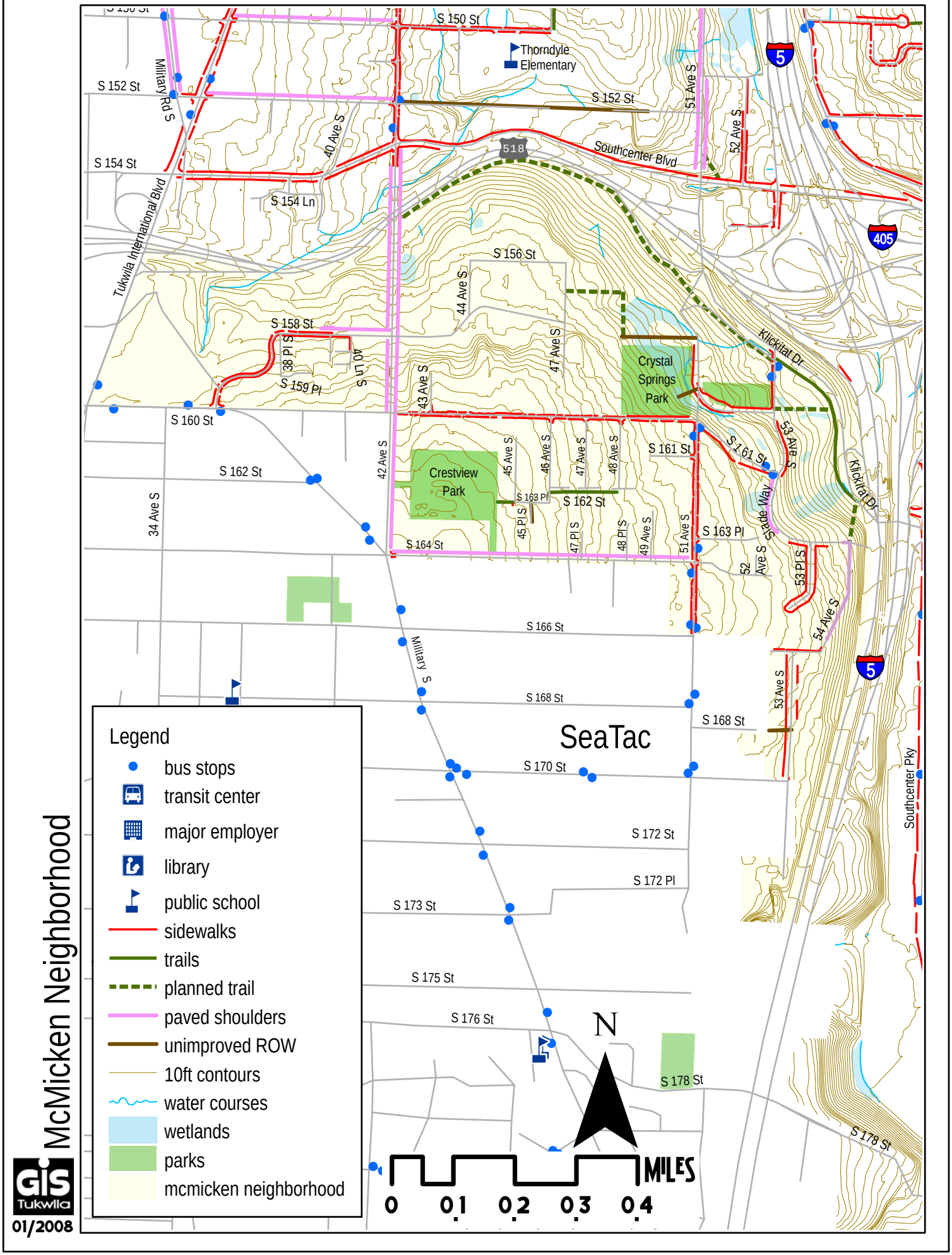
McMicken Neighborhood
GIS Tukwila
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Legend
bus stops
transit center
major employer
library
public school
sidewalks
trails
planned trail
paved shoulders
unimproved ROW
10ft contours
water courses
wetlands
parks
mcmicken neighborhood
SeaTac
Thorndyle Elementary
Crestview Park
Crystal Springs Park
Southcenter Blvd
Tukwila International Blvd
Military Rd S
Military S
Klickitat Dr
Southcenter Pky
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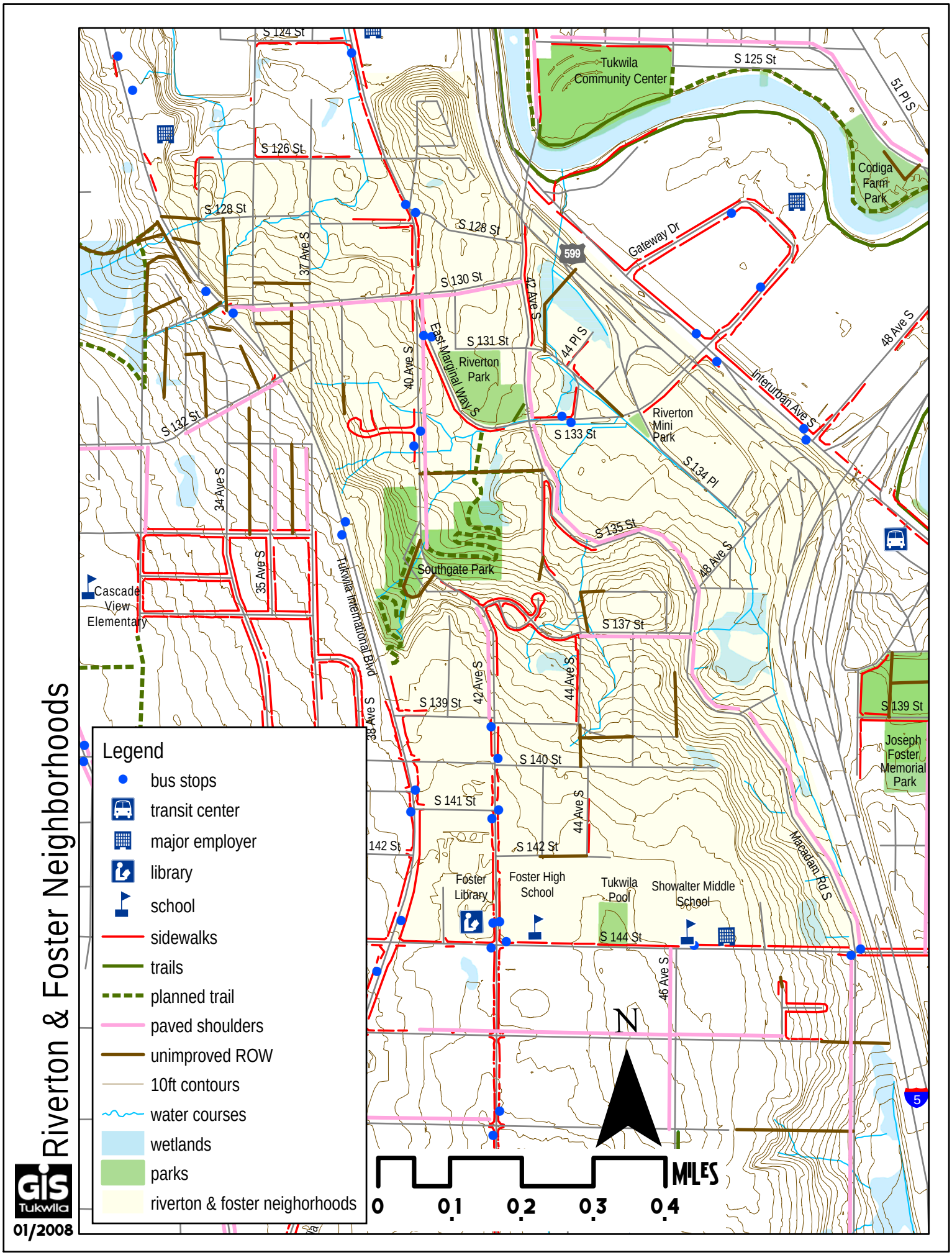
Riverton & Foster Neighborhoods
Legend
bus stops
transit center
major employer
library
school
sidewalks
trails
planned trail
paved shoulders
unimproved ROW
10ft contours
water courses
wetlands
parks
riverton & foster neighorhoods
Tukwila Community Center
Codiga Farm Park
Riverton Park
Riverton Mini Park
Southgate Park
Cascade View Elementary
Foster Library
Foster High School
Tukwila Pool
Showalter Middle School
Joseph Foster Memorial Park
S 124 St
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S 126 St
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S 130 St
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S 137 St
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S 142 St
S 144 St
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51 Pl S
37 Ave S
40 Ave S
42 Ave S
44 Pl S
48 Ave S
34 Ave S
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46 Ave S
Gateway Dr
East Marginal Way S
Interurban Ave S
Tukwila International Blvd
Macadam Rd S
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GIS Tukwila
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Ryan Hill, Allentown & Duwamish Neighborhoods
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major employer
library
public school
sidewalks
trails
planned trail
paved shoulders
unimproved ROW
10ft contours
water courses
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neighborhoods
41 Ave S
Martin L King
Beacon Ave S
S 104 Pl
47 Ave S
S Ryan Way
Boeing Access Rd
S 107 St
49 Ave S
51 Ave S
Riverbend Park
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Duwamish River
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Interurban Pl S
Duwamish Park
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E Marginal Way S
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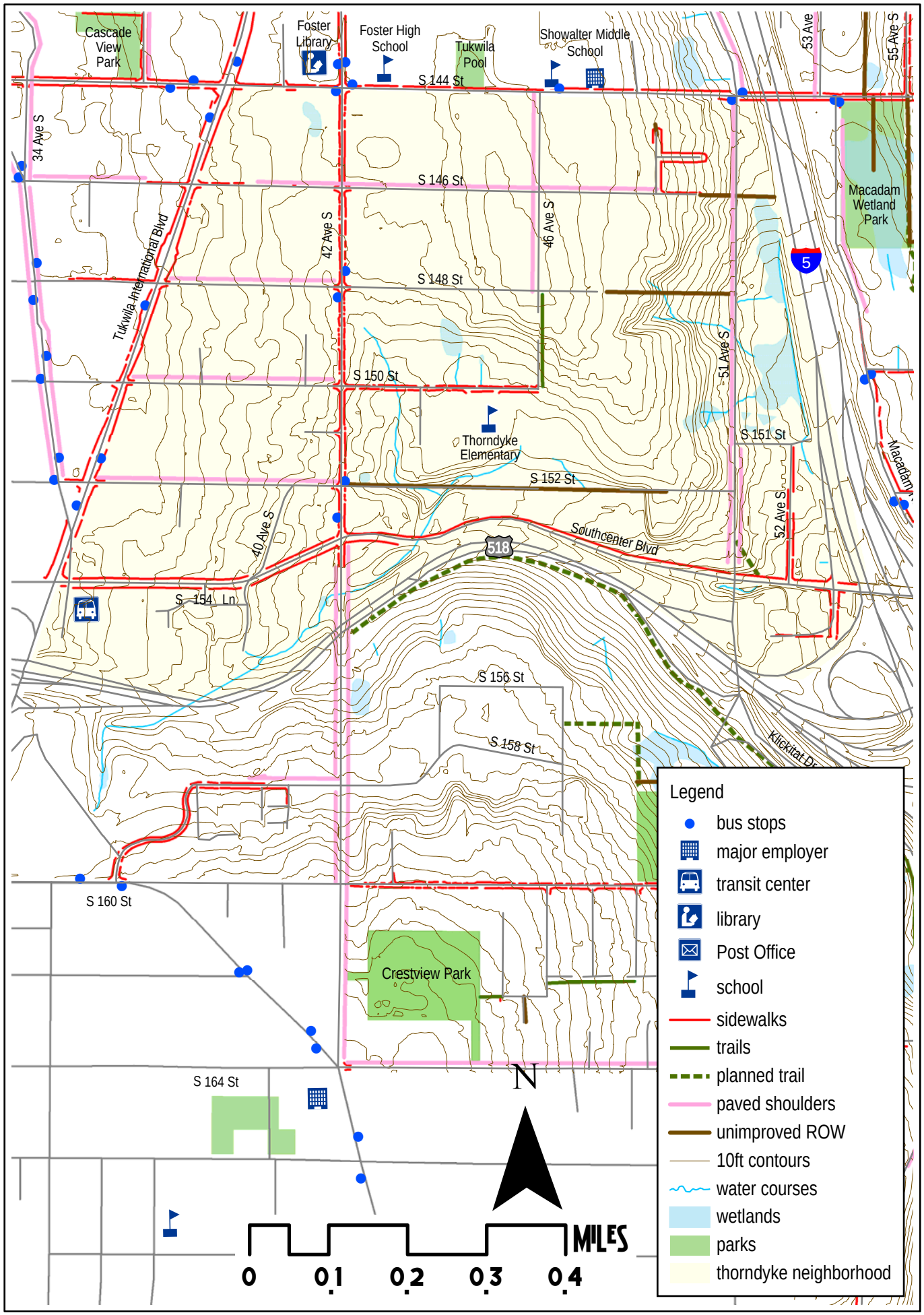
Thorndyke Neighborhood
Cascade View Park
Foster Library
Foster High School
Tukwila Pool
Showalter Middle School
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S 146 St
Tukwila International Blvd
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Macadam Wetland Park
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S 150 St
51 Ave S
Thorndyke Elementary
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Crestview Park
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transit center
library
Post Office
school
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thorndyke neighborhood
GIS Tukwila
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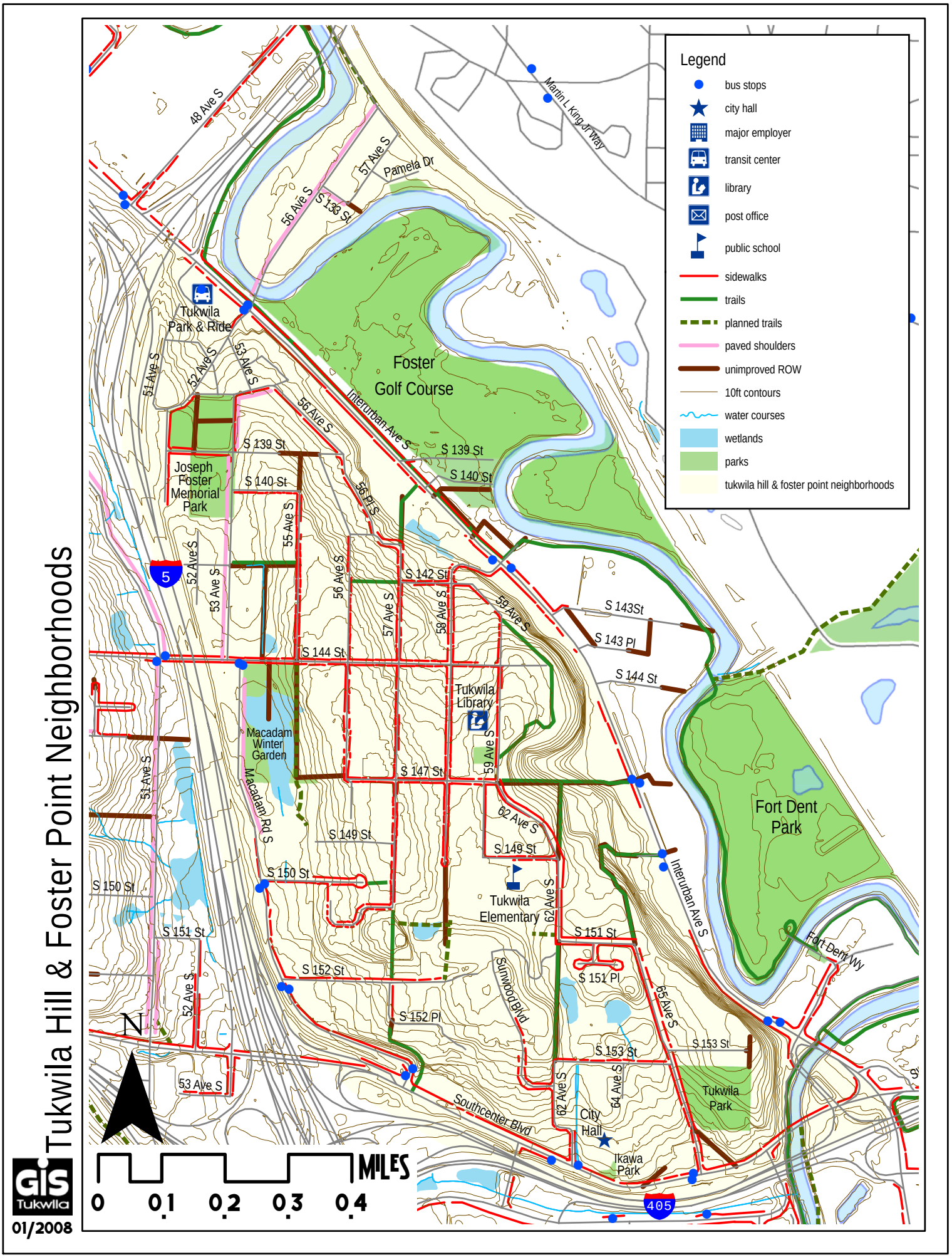
Tukwila Hill & Foster Point Neighborhoods
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post office
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trails
planned trails
paved shoulders
unimproved ROW
10ft contours
water courses
wetlands
parks
tukwila hill & foster point neighborhoods
Foster Golf Course
Tukwila Park & Ride
Joseph Foster Memorial Park
Macadam Winter Garden
Tukwila Library
Tukwila Elementary
Fort Dent Park
Tukwila Park
City Hall
Ikawa Park
Martin L King Jr Way
48 Ave S
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Pamela Dr
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Interurban Ave S
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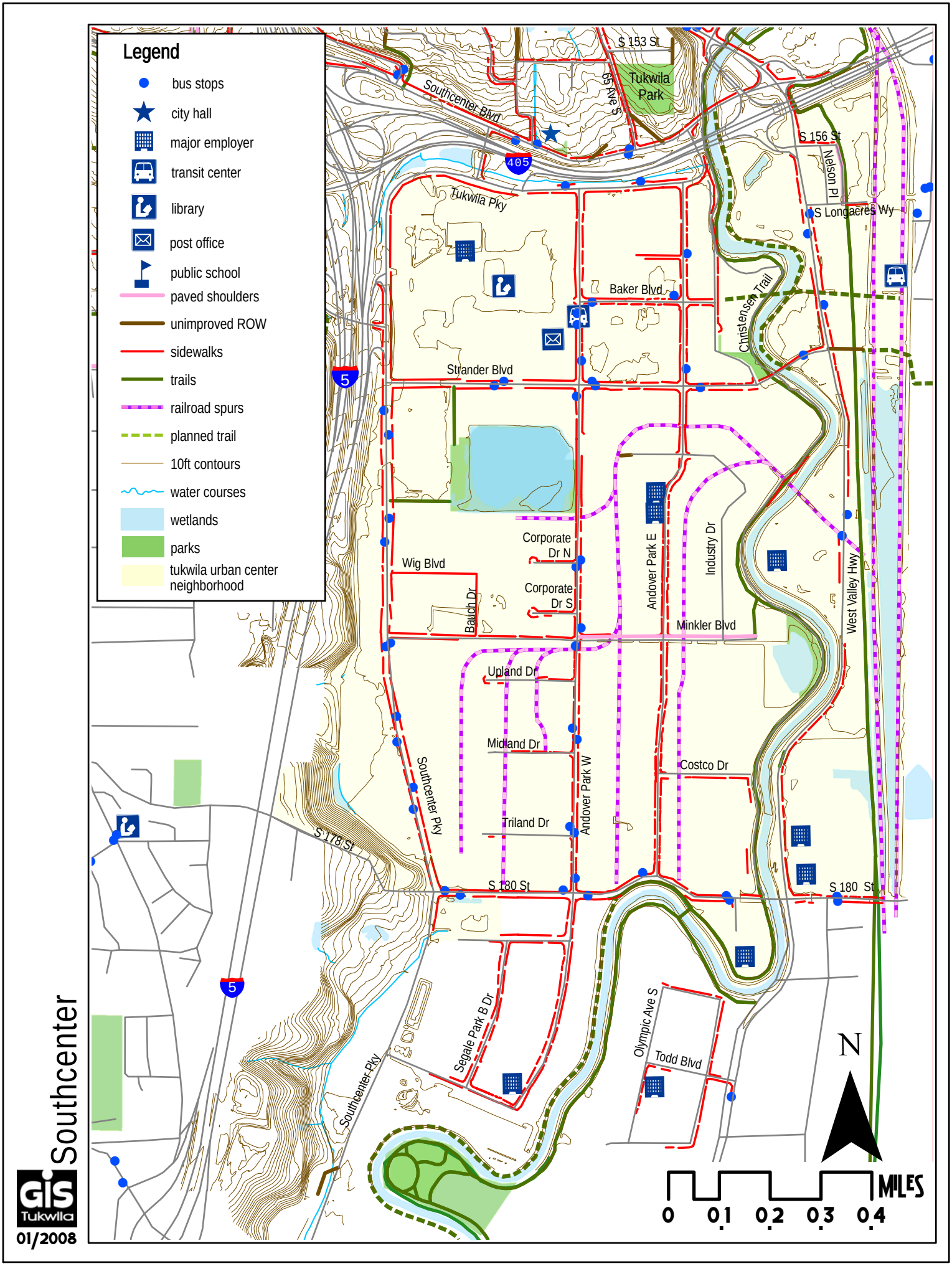
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water courses
wetlands
parks
tukwila urban center neighborhood
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Tukwila Park
Southcenter Blvd
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Nelson Pl
S Longacres Wy
Tukwila Pky
Baker Blvd
Christensen Trail
Strander Blvd
Corporate Dr N
Corporate Dr S
Wig Blvd
Bauch Dr
Andover Park E
Industry Dr
West Valley Hwy
Minkler Blvd
Upland Dr
Midland Dr
Costco Dr
Triland Dr
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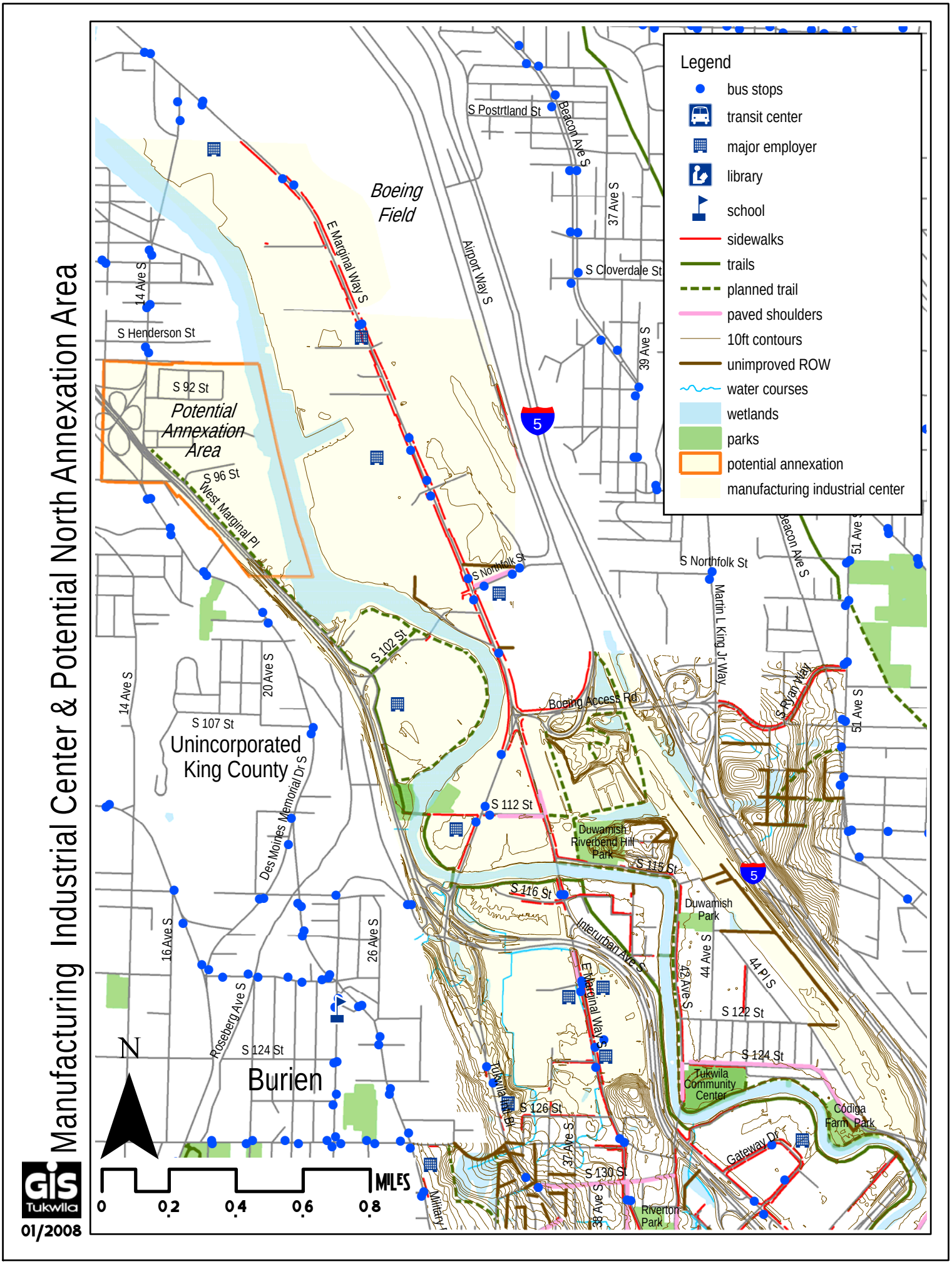
Manufacturing Industrial Center & Potential North Annexation Area
Legend
bus stops
transit center
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wetlands
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potential annexation
manufacturing industrial center
Boeing Field
Potential Annexation Area
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Beacon Ave S
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S Cloverdale St
39 Ave S
Airport Way S
E Marginal Way S
14 Ave S
S Henderson St
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West Marginal Pl
S Northfolk St
S 102 St
20 Ave S
S 107 St
Des Moines Memorial Dr S
Martin L King Jr Way
51 Ave S
S Ryan Way
Boeing Access Rd
S 112 St
Duwamish Riverbend Hill Park
S 115 St
S 116 St
Duwamish Park
Interurban Ave S
16 Ave S
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Roseberg Ave S
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Tukwila Community Center
Tukwila Pkwy
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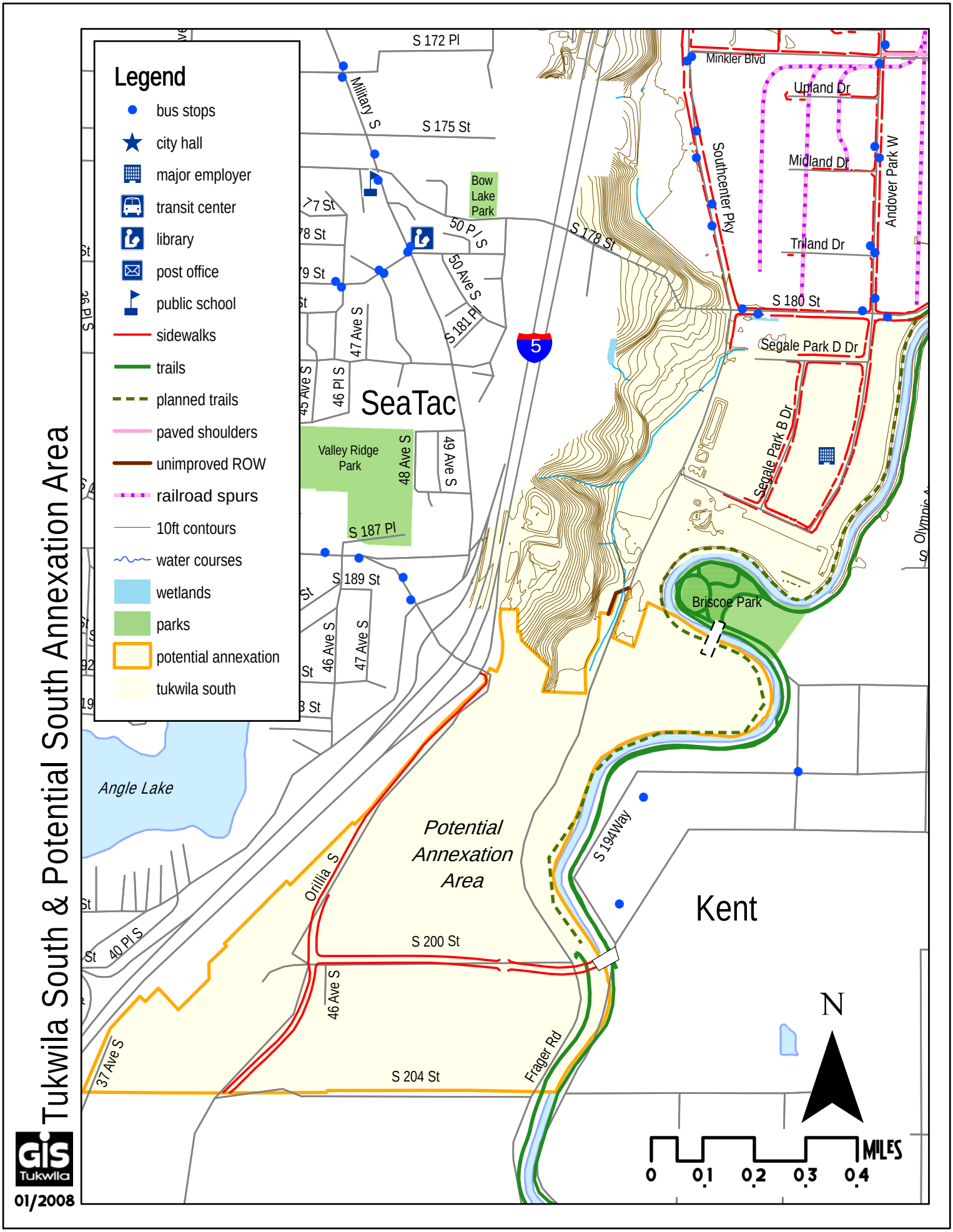
Tukwila South & Potential South Annexation Area
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bus stops
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post office
public school
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unimproved ROW
railroad spurs
10ft contours
water courses
wetlands
parks
potential annexation
tukwila south
SeaTac
Kent
Potential Annexation Area
Angle Lake
Valley Ridge Park
Bow Lake Park
Briscoe Park
Minkler Blvd
Upland Dr
Midland Dr
Triland Dr
Southcenter Pky
Andover Park W
Segale Park D Dr
Segale Park B Dr
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S 180 St
S 181 Pl
S 187 Pl
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S 200 St
S 204 St
Military S
50 Pl S
50 Ave S
47 Ave S
46 Pl S
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40 Pl S
37 Ave S
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GIS Tukwila
01/2008

Sidewalks

The **Pedestrian Conditions** map, labeled **Figure 16**, shows where existing sidewalks, paved shoulders, and trails are located within Tukwila, as well as areas outside the City where Tukwila residents walk and bike. Also shown on this map are areas where potential pedestrian improvements could be made, including such as unimproved rights-of-way (ROW), railroad spurs (for future construction of rail-trails.) Unimproved rights-of-way, railroad spurs, and potential trail areas would most likely be improved as either paved or unpaved multi-use trails. Areas with paved shoulders and streets with no type of pedestrian accommodations are areas where sidewalks are recommended.

A proposed prioritization method is recommended in this plan to assist the evaluation of which sidewalks should be built first. Three categories were considered in the point system – Street type and adjacent land use; Pedestrian generators and network extention.

The goal of the sidewalk construction program is to improve comfort and safety for pedestrians. Given the extent of streets without sidewalks in Tukwila, sidewalk construction should be prioritized first in areas that have the most potential for people walking, particularly people for whom walking is a primary means of transportation. Therefore, sidewalk projects will receive priority if:

- they are near a facility that generates higher-than-average pedestrian traffic (such as a school, transit stop or a library)
- they serve a population that uses walking as a primary form of transportation (such as school-age children)
- they fill in or expand the existing sidewalk network

The following point determination is the first step in project analysis. It is followed by application of balancing factors.

1. Street Type and Land Use– 45 possible points
1a. Land Use – urban center

> **25 points** Sidewalk segment is located within the Regional Center, Tukwila Pond or TOD districts in Southcenter;
>
> **5 Points** Sidewalk segment in the Commercial Corridor or Work Place districts in Southcenter.

1b. Street Types - classified according to vehicle volumes and adjacent land uses.

> **20 points** Local Connectors – a collector arterial with any adjacent land use and speeds over 25 mph
> **10 points** Regional Connectors – a principal arterial with any adjacent land use and speeds over 25 mph
> **10 points** Commercial Connectors – a minor arterial with any adjacent

land use and speeds over 25 mph

1c. Land Use - Housing Density

10 points Sidewalk segment is adjacent to a multi-family housing zone outside of Southcenter

2. Pedestrian Generators –57 possible points

Projects will receive the designated number of points for being located within 1,320 feet (one quarter of a mile) of a generator.

25 points School – accredited K-12
10 points High capacity transit station/stop (rail, light rail, BRT)
4 points Transit (bus)
4 points Major employment center (>100 employees)
4 points for any one of the following:

- Hospital
- Elder care facility
- Facility serving people with disabilities
- Child care center

10 points for any one of the following:

- Park
- Library
- Community Center
- Post Office

3. Missing Link/Extension of Network – 5 possible points

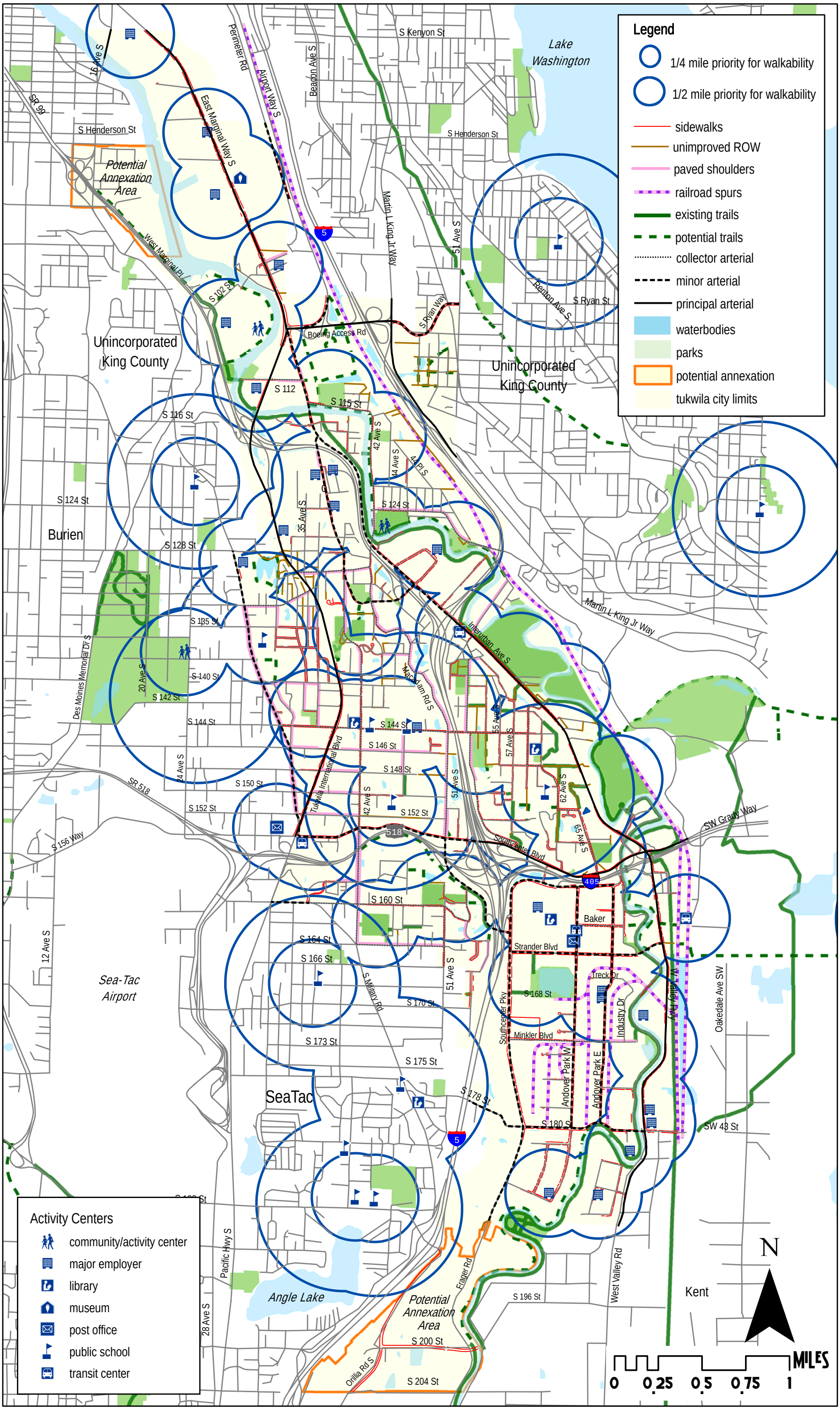
Projects will receive the designated number of points for building on the existing sidewalk network.

5 points Sidewalk segment fills a missing link and/or connects two pedestrian generators, **OR**
3 points Sidewalk segment serves as an extension (same side of the street) as an existing sidewalk

Balancing Factors

Once projects have been analyzed according to the categories above, they will be evaluated to determine ultimate priority. For instance, even though a project may rank high initially, other circumstances may determine that the project is not an immediate priority. The following factors help make this determination:

Pedestrian Conditions



- Geographic balance – Does the project improve the balance of sidewalk funding to be spent among geographic sectors of the City?
- Community interest – Is there significant community support for the project?
- Cost/opportunities – If the project is a high-priority project, are there grant opportunities available? Can the project be timed to coincide with other City projects and make implementation more efficient?
- Previous commitments – Has a commitment been made to complete a project?

A planning level cost estimate for sidewalk construction is $125.00 a linear foot. There are 140 linear miles of street edge that are without sidewalks. Roughly 92 million dollars would be needed to complete sidewalks in the City. The Existing Conditions section of this Plan lists arterial streets and streets within a quarter mile of schools that do not have sidewalks. These streets combined with the system above will be the starting point for a prioritization process for sidewalk construction.

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Performance Goals & Measures

How will we know if we are meeting our goals?

When this Plan is updated in the future, it will be important to make an assessment of progress. Quantitative measures will assist in acknowledging the degree of success. This section contains quantitative measures to employ in assessing progress. It also serves as a checklist summarizing the recommendations outlined in the plan.

The relevant existing goals and policies of the City's Comprehensive Plan are listed in Appendix C, Planning and Policy Context. The following is a synthesis of the City's Comprehensive Plan, meant to distill and focus the efforts of the nonmotorized plan into an action plan that is quantifiable and measurable.

Goals

Connectivity

Goal: To have a nonmotorized transportation system that connects major amenity areas and destinations within Tukwila (including schools, parks, employers, and commercial areas), making cycling and walking a viable and enjoyable form of transportation and recreation within and from each neighborhood.

Table 7: Performance Goals and Measures

Performance Goals Measures	2009 condition	2014 goal
East west cross-streets and through-pedestrian connections on north-south routes at a minimum of 1,320 feet (1/4 mile)	42 needed connections	10% reduction (4 connections created)
A system of sidewalks on both sides of arterials, within 1/4 mile of major activity centers, including employers, transit stops, schools, public facilities, and retail	70.5% coverage 25.8 miles of sidewalk; 36.5 miles of street edge	75% coverage; Construct 1 mile of sidewalk
Increase the total linear miles of sidewalks on both sides of Tukwila's streets	26%; 57 miles of sidewalk; 196.7 miles of street edge	30%; Construct 7 miles of sidewalk
Increase the total linear feet of trails (not to include multi-use trails such as the Green River Trail or Interurban Trail)	9,278 linear feet	5% increase; Add 464 feet of trail

Table 7: Performance Goals and Measures (Continued)

Performance Goals Measures	2009 condition	2014 goal
Conduct further research on the ownership and disposition status of railroad spurs within the city to determine the feasibility of use of these areas for multi-use trails.	Specific railroad spurs within Tukwila are identified as Multi-Use Trail project sheets in this plan.	Relationships established with (1) Union Pacific Railroad (for spurs within the urban center) and (2) Burlington Northern Santa Fe (MIC) • Identification of and relationships established with property owners with railroad easements
Increase the miles of bike lanes on both sides of identified bicycle friendly routes (including potential annexation areas)	3.93 miles	50% increase; add 2 miles of bike lanes
Change Tukwila Municipal Code requirements (Chapters 11 and 17) to require the construction of sidewalks and trails for any type of new development on one or more lots, including short subdivisions and boundary line adjustments	Frontage improvements are required for new construction, with the exception of new single-family homes, subdivisions of 4 or fewer lots, and boundary line adjustments.	Code changes completed and implemented. Sidewalks are required for all new developments. Where sidewalks are not the appropriate improvement type, trails are provided.
Change zoning standards to require or provide incentives for inclusion of nonmotorized amenities in new development. Examples of these types of amenities include pedestrian weather protection, showers at employment sites, and secure bicycle parking (lockers, locked enclosures)	Bicycle parking standards in zoning, pedestrian weather protection encouraged as part of BAR process.	Adoption of zoning standards.

Goal: To have a network of pedestrian and bicycle facilities that connects the City of Tukwila with activity areas in adjacent jurisdictions,

Performance Goals Measures	2009 condition	2014 goal
Number of new connections between the City and adjacent jurisdictions	4 (trails and bike lanes connecting to Kent and SeaTac)	5 (construction of the Two Rivers Trail)
Establish a fund to allow the City to form partnerships with developers or other public agencies to complete missing links in the pedestrian and bicycle system as opportunities arise.	Missing Links identified.	Fund established and projects identified in the CIP.
Number of grants applied for that includes a partnership with an adjacent jurisdiction for construction of nonmotorized facilities.	1 (Strander extension & improvement with bike lanes; Renton)	2 (1 per biennium)

Goal: To consider and provide for all users of the roadway, including pedestrians and bicyclists, when new streets and/street improvements are made.

Performance Goals Measures	2009 condition	2014 goal
Using the Bicycle and Pedestrian Infrastructure Designs included in this document as a guide, amend the Development Guidelines and Infrastructure and Construction Standards to include the latest in pedestrian and bicycle infrastructure designs.	Standards for sidewalks are included in the City's standards.	Amend all existing standards to include full range of pedestrian and bicycle infrastructure.
Include construction of bike lanes and sidewalks in all street improvement projects.	The CIP lists some projects as including sidewalks or bike lanes.	Ensure that bike lanes are included in CIP sheets that include bicycle-friendly routes, and sidewalks are included on all CIP sheets.

Safety

Goal: For pedestrians, bicyclists and motorists to be and feel safe while sharing public space with each other.

Performance Goals Measures	2009 condition	2014 goal
Increase the number of bicycle helmets distributed per year by the fire department	105 annually (average for the past 5 years)	125 annually
Provide Hazelnut articles with information about the bicycle helmet program, articles to encourage bicycling and walking, and/or bicycle safety measures	1-2 articles annually	1 article per issue (4 articles per year)
Partner with school districts serving Tukwila and community in conducting one bicycle rodeo per year at a neighborhood location and include adults	One bicycle rodeo per year; additional involvement by adults needed.	Partnership with school districts (for projects and events related to): • Safe Routes to School • Walk to School Month
Increase the number of the 2006 6th grade cohort always wearing bicycle helmets when riding a bicycle. One possible strategy to implement this goal is to increase the number of Safe Rider Citations (see Appendix B)	8.1%	50%

Encouragement

***Goal*:** To see people throughout Tukwila walking and bicycling for transportation and recreation.

Performance Goals Measures	2009 condition	2014 goal
Provide staff support and partner with school districts in organizing a Walk to School Day event	Walk to School Day not widely promoted within Tukwila School District.	Initiate in 2008 (with participation increasing 10% annually)
Increase the number of participants in the Commuter Challenge from within the jurisdictional limits of the City of Tukwila	Participation not measured	Measure participation in 2008; increase by 5% annually

Table 7: Performance Goals and Measures (Continued)

Performance Goals Measures	2009 condition	2014 goal
Increase CTR Participation among City of Tukwila employees	77.9% SOV (2005 survey) 15.4 VMT (2005 survey)	10% reduction in SOV by 2011 13% reduction in VMT by 2011
Increase Bike to Work Week Participation from within the jurisdictional limits of the City of Tukwila	Participation not measured	Measure participation in 2008; increase by 5% annually

Quality of Life

***Goal*:** To have a region wide reputation as an attractive and viable place to walk and bike for fun and transportation. Improve upon Tukwila's status as a place people (including residents, employees, tourists, and other visitors) want to be by providing a safe and connected transportation system for multiple modes of transportation.

Performance Goals Measures	2009 condition	2014 goal
Increase in distribution of maps and signage for nonmotorized system	Trail maps developed by King County and 3,000 copies provided to Tukwila	Identify designated distribution points for trail maps, and advertise these locations annually through the Hazelnut.
Develop system of sidewalks on both sides of arterials within ½ mile of major activity centers, including employers, transit stops, schools, public facilities, and retail	17%: 13.65 miles of sidewalks; 78.36 miles of ROW	23%: 4.35 new miles of sidewalks; 78.36 miles of ROW
Increase the number of Tukwila 6th graders riding a bike or walking near their home or to school	24% neither walked nor biked	Decrease to 10%
Create partnerships with community groups to build and maintain our trails.	No formal relationships	Identify one trail project and organize community groups for its construction

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Appendix A: Implementation, Priorities, and Funding

Implementation Process

There are three ways for improvements to occur in the nonmotorized transportation and recreational system: (1) installation by a private individual or company, (2) installation by public entities, and (3) installation via a partnership of the two.

(1) Installation by a Private Individual or Company

Typically a paved or unpaved path or a sidewalk can be installed during the development/redevelopment of a site. If the City has identified a need for an improvement on a property that is proposed for development, then a discussion regarding the installation with the developer can occur and the chance of a missed opportunity is avoided. The development review staff is involved in the capital improvement needs and efforts of the City.

(2) Installation by Public Entities

The local improvement process through which public projects are chosen and completed involves functional plans such as the Parks, Golf and Open Space Six Year and the Capital Improvement Functional Plans. These plans financially lay out project descriptions, priority for project construction, funding source and cost. The annual budgeting process then allocates the necessary financial and staff resources to implement the capital improvement plans.

(3) Installation via Public/Private Partnerships

The two major recreational trails within the City are the result of multiple entities such as King County, surrounding jurisdictions and private individuals and organizations that donated or sold easements for the Green River and Interurban trails. This approach often requires phasing because the scope is typically large, complex, and requires coordination among a variety of entities. Often the most difficult or time consuming aspect of public infrastructure systems is the acquisition of the easements or right of way. The rails to trails recommendation is an example of a long term relationship and assembly project.

Private Construction

Having an adopted Plan provides opportunities to ask private development to help implement the Plan. Currently the City requires all developments of five residential units or more and all commercial development to construct frontage improvements, which typically consist of storm drainage, curbs, and a sidewalk. If a development site is on a bike friendly route then adequate right of way and safe driveway design will also be necessary.

A significant amount of development occurs through smaller scale development of one, two or three homes. In particular the “pass-through” trails to schools or parks will happen within the residential neighborhoods and will need to occur during residential platting. Much of the City’s policies and existing trail system are neighborhood-oriented systems that will not necessarily be competitive for funding on a state or national level. In order to avoid missed opportunities as well as the preclusion of the Plan and its goals, at a minimum, the easement and or right of way for trails should be required at the time of

short platting or permitting. The City should consider funding small trail building efforts. These types of efforts can be combined with community building events and scouting projects. The funding allocated by the City can act as seed money.

Project Prioritization

The amount of work to create a system and programs for bicyclists and to improve the pedestrian system is daunting due to its scope, the limited amount of City resources, and the competing needs and goals of the community. Following are descriptions of some recommended considerations in the decision of which projects to construct first.

Eliminating missing links
Connections to adjacent jurisdictions and regional routes have the potential to create the longest corridors and impact the greatest number of users. Examples include Southcenter Blvd, the Strander extension from Tukwila's urban center into Renton, the Two Rivers Trail, and extensions of the Green/Duwamish River trail to the north and south.

Proximity to major destinations
The total number of public facilities such as parks and libraries and major CTR affected employers that a route passed through provided a tally that was then converted to a rank.

Matches available funding
There are sources of funding that are known to exist as mentioned above; they are the Federal Enhancements Fund, the Safe Route to Schools Fund and certain street improvement projects that are under design.

Potential for public/private partnerships
Those streets that will likely be front on future commercial redevelopment sites were marked in this category.

Most Dangerous Accident Locations.
The numbers are relatively small and do not indicate any specific design issues so no routes were highlighted in this category.

Recommended from Public Input
There were clear patterns of concern by the public during the outreach efforts for this Plan. East Marginal Way is adjacent to a number of large employers whose employees like to bicycle commute and the street is a major route for those cyclists traveling north and south.

Street improvements that are planned or anticipated for improvement
Those projects that are within the design scope of future street/freeway projects such as I-405 are ranked high,

Cost Effective
Projects that are eligible for multiple sources of funding or that if matched will attract significant outside sources would rank high in this category.

Near Highest Population Densities
Similar to proximity to major destinations, this criterion focuses on housing and employment density

Designed to attract new users
This criterion would rank new systems that open up a new opportunity as opposed to expanding or improving an existing system.

Areas most likely to redevelop
This final criterion is listed in order to capture the concept of serving new populations and the notion that public improvement can act as an important catalyst. The funding and improvement therefore has function not only in and of itself as it serves nonmotorized users, the project may also implement other community development goals.

Funding

Private

Private funding sources are those administered by non-profit organizations or corporations. Private funding can either be on the national, state or local level. An example of private funding includes Power Bar's Direct Impact on Rivers and Trails (D.I.R.T.) Program run by Power food, Inc.

Public Funding

There are a limited number of dedicated sources of funding. Within the realm of the city budget are certain revenue sources. Often projects will have multiple funding sources and will include some grant funds (often multiple) and/or private funds as well. Funding trails takes a bit of ingenuity and a lot of research, between federal, state and local government funding mechanisms as well as grants, private partnerships and other creative funding methods.

Federal funding mechanisms include not only transportation and park programs, but also Brownfield, community development and arts programs. Funding through state governments can be found in the departments of health, parks and transportation. Some communities have also passed referenda to specifically fund trail projects.

Foundations and companies also provide grants for trail projects, open space preservation, community development and community health. It is important to explore creating partnerships to build and maintain our trails. These can be important for not only constructing and maintaining our projects, but also building community pride. In addition, there needs to be evidence of a community planning process and local action (such as plan adoption) in order for local nonmotorized transportation projects to be eligible for grant awards or to attract funding partners. This plan serves as such evidence.

Federal

All Federal funding is distributed to local agencies via state or regionally competitive grant programs unless money has been specifically earmarked for distribution to the City. Examples of federal funding include the Recreational Trails Program and the

Transportation Enhancements program of the Federal Highway Administration and the Community Development Block Grant Program of the U.S. Department of Housing and Urban Development. A new federal Safe Routes to School program was established, that provides federal funding to the state. For the 2007-2009 capital planning period, approximately $18 million is available for the two programs ($11 million of state funds and $7 million of Safe Routes to School federal funds) as a result of the Safe, Accountable, Efficient Transportation Equity Act (SAFETEA).

The Federal Transportation Acts provide a 10 percent set-aside from the Surface Transportation Program (STP) for the Transportation Enhancement program. The Transportation Enhancement program was created to invest in a more balanced, multi-modal approach to mobility and accessibility. The purpose of the Transportation Enhancement program is to fund projects that allow communities to strengthen the local economy, improve the quality of life, enhance the travel experience for people traveling by all modes, and protect the environment. Projects must relate to surface transportation, and include at least one of the twelve (12) qualifying activities listed below:

1. Provision of facilities for pedestrians and bicycles.
2. Provision of safety and educational activities for pedestrians and bicyclists.
3. Acquisition of scenic easements and scenic or historic sites (including historic battlefields).
4. Scenic or historic highway programs (including the provision of tourist and welcome center facilities).
5. Landscaping and other scenic beautification.
6. Historic preservation.
7. Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals).
8. Preservation of abandoned railway corridors (including the conversion and use of the corridors for pedestrian or bicycle trails).
9. Inventory control and removal of outdoor advertising.
10. Archaeological planning and research.
11. Environmental mitigation
    - to address water pollution due to highway runoff; or
    - reduce vehicle-caused wildlife mortality while maintaining habitat connectivity.
12. Establishment of transportation museums.

State

Safe Routes to School Grant Evaluation
The purpose of this program is to aid public agencies in funding cost-effective projects within two-miles of primary and middle schools (K-8) that will provide children a safe, healthy alternative to riding the bus or being driven to school. Project proposals describe how a project will increase the number of students walking and biking to school by making improvements in areas of health and safety education, enforcement and engineering. Eligibility criteria and an evaluation process were developed to ensure projects meet the intent of the legislation.

Additionally, The Center for Safe Routes to School is available to help local communities in their efforts to develop Safe Routes to School. The Center for Safe Routes to School is an organization funded by a Transportation Enhancement grant from the Washington State Department of Transportation, and it provides resources and support to schools, families, and professionals in areas of design, public health, and public safety.

Pedestrian and Bicycle Safety Grant
The purpose of this program is to aid public agencies in funding cost-effective projects that improve pedestrian and bicycle safety through engineering, education and enforcement. Project proposals were evaluated and prioritized by a committee composed of one member from the Washington Traffic Safety Commission and two members from the Washington State Department of Transportation. Projects providing a match were given preference.

Recreation and Conservation Funding Board
The Recreation and Conservation Funding Board, formerly the Interagency Committee for Outdoor Recreation (IAC) creates and maintains opportunities for recreation, protects the best of the state's wild lands, and contributes to the state's efforts to recover salmon from the brink of extinction.

Local

Capital Improvement Program (CIP)
The City has twenty Capital Improvement Program (CIP) policies stating how revenues should be spent. The highest capital spending priority of the City is residential streets with safety issues, high traffic volumes, high pedestrian activity and poor street conditions. Currently no residential streets have been identified for improvement although 42 Ave S from S. 160 Street to S 131 Place is listed in the CIP without any dedicated funding.

Real Estate Excise Tax
Revenue from the real estate excise tax has been uneven over the last six years. Whenever a property within the City is sold, a tax on the transfer of the property is levied on the sale. ½ cent is received by the City of Tukwila and ¼ cent is devoted, by Council policy, to parks and open space land acquisition and development. The second ¼ percent is devoted to arterial street improvement. The 2007 – 2009 CIP shows an annual revenue average of $850,000.

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Appendix B: Needs Analysis

Bicycling

Types of Bicyclists

It is important to understand that the needs and preferences of bicyclists vary depending on the skill level of the cyclist and the type of trip the cyclist is taking. For example, bicyclists who bicycle for recreational purposes may prefer scenic, winding, off-street trails, while bicyclists who bicycle to work or for errands may prefer more direct on-street bicycle facilities. A bicycle plan should take these differences into account when planning a system that serves all user types.

Children are especially vulnerable to safety hazards as bicyclists within the street because, even when they do know and follow the rules related to operating a bicycle, it is usually more difficult for automobile drivers to see them. According to the Cascade Bicycle Club's website, "the 10 to 14 age group suffers from the highest number of bicycle collisions - nearly twice that of any other age group" (http://www.cbcef.org/youth_pra.html). This statistic points to the need for facilities completely separated from the street, such as bike trails, in areas near schools, parks, and other destinations to which children are likely to ride their bikes.

The following sections describe the different types of bicyclists, the different reasons for bicycling, and the respective needs of these categories of bicyclists.

Needs of Casual and Experienced Bicyclists

Bicyclists can be separated generally into two skill levels: casual and experienced. Casual bicyclists include youth and adults who are intermittent riders. Some casual bicyclists, such as youth under driving age, may be unfamiliar with operating a vehicle on roads and related laws. Experienced bicyclists include commuters, long-distance road bicyclists, racers, and those who use their bicycle as a primary means of transportation. While there are some bicycle commuters who prefer a route without bicycle lanes, most casual bicyclists are not comfortable riding with automobile traffic unless there is designated space marked within the street for specific use by bicyclists. Bike lanes often provide the needed distinction within the street between space reserved for automobile use and space reserved for bicycles, and give bicyclists the confidence to ride on-street, sharing the street with automobiles.

> Facilities should safely accommodate the majority of users. Streets designed to accommodate cyclists with moderate skills will meet the needs of most riders; special consideration should be given close to school areas, where facilities designed specifically for children should be provided. Streets designed to accommodate young, elderly and disabled pedestrians serve all users well (1995 Oregon Bicycle and Pedestrian Plan, p. 48).

A summary of the needs of the different types of bicyclists is provided below in Table 8, Characteristics of Casual and Experienced Bicyclists**.**

Table 8: Characteristics of Casual and Experienced Bicyclists

Casual Riders	Experienced Riders
Prefer off-street bike paths or bike lanes along low-volume, low-speed streets	Prefer on street or bicycle-only facilities to multi-use paths
May have difficulty gauging traffic and may be unfamiliar with rules of the road. May walk bike across intersections	Comfortable riding with vehicles on streets. Negotiates streets like a motor vehicle, including "taking the lane" and using left-turn pockets
May use less direct route to avoid arterials with heavy traffic volumes	May prefer a more direct route
May ride on sidewalks and ride the wrong way on streets and sidewalks	Avoids riding on sidewalks or on multi-use paths. Rides with the flow of traffic on streets
May ride at speeds slightly faster than walking	Rides at speeds up to 20 mph on flat ground, up to 40 mph on steep descents
Cycles shorter distances: up to 2 miles	May cycle longer distances, sometimes more than 100 miles

The casual bicyclist will benefit from route markers, multi-use paths, bike lanes on lower-volume streets, traffic calming, and educational programs. Casual bicyclists may also benefit from marked routes that lead to parks, schools, shopping areas, and other destinations. To encourage youth to ride, routes must be safe enough for their parents to allow them to ride.

The experienced bicyclist will benefit from bike lanes on high-volume arterials, wider curb lanes and loop detectors at signals. A loop detector is a sensor installed within the pavement that is able to detect the presence of a vehicle. These detectors are usually installed to detect automobiles, but some loop detectors are designed to detect vehicles such as bicycles and motorcycles as well.

Characteristics of Recreational and Utilitarian Trips

In addition to the differing skill levels of bicyclists, there are also different types of trips that should be accommodated: recreational (trips made for fun) and utilitarian (trips made for transportation). Recreational trips can range from a 50-mile weekend group ride to a family outing along the Green River Trail, and all levels in between. Utilitarian trips include commuter bicyclists, which are a primary focus of state and federal bicycle funding, as well as bicyclists going to school, shopping or running other errands. The following table, Table 9, Characteristics of Recreational and Utilitarian Trips, helps distinguish between the two types of trips.

Table 9: Characteristics of Recreational and Utilitarian Trips

Recreational Trips	**Utilitarian Trips**
Directness of route not as important as visual interest, shade, protection from wind	Directness of route more important than visual interest, etc.
Loop trips may be preferred to backtracking	Trips generally travel from residential to shopping or work areas and back

Recreational Trips	Utilitarian Trips
Trips may range from under a mile to over 50 miles	Trips generally are 1-5 miles in length
Short-term bicycle parking should be provided at recreational sites, parks, trailheads and other recreational activity centers	Short-term and long term bicycle parking should be provided at stores, transit stations, schools, workplace
Varied topography may be desired, depending on the skill level of the cyclist	Flat topography is desired
May be riding in a group	Often ride alone
May drive with their bicycles to the starting point of a ride	Use bicycle as primary transportation mode for the trip; may transfer to public transportation; may or may not have access to a car for the trip
Trips typically occur on the weekend or on weekdays before morning commute hours or after evening commute hours	Trips typically occur during morning and evening commute hours (commute to school and work). Shopping trips also occur on the weekends
Type of facility varies, depending on the skill level of cyclist	Generally use on-street facilities, may use pathways if they provide easier access to destinations than on-street facilities

Recreational bicyclist's needs vary depending on their skill level. Street bicyclists out for a 100-mile weekend ride may prefer well-maintained streets with wide shoulders, few intersections, and few stop signs or stop lights. Casual bicyclists out for a family trip may prefer a quiet bike path with adjacent parks, benches, and water fountains.

As mentioned in the previous section, Tukwila's trail system provides good opportunities for the casual recreational rider. However, not all neighborhoods have easy bicycle access to the trail system. For the casual recreational riders, this may not be a serious deterrent, since they may be willing and able to drive their bicycle to the trailhead. However, this may not be an option for the experienced recreational riders or the commuters, as they generally like to use their bicycles for the whole trip. Bicycle-friendly connections between residential areas and trails will likely increase the prevalence of bicycle commuting, as well as recreational riding.

Bicyclists who make utilitarian trips have needs that are more straightforward. Their needs can be summarized as key commuter needs:

1) Safety.
2) Direct connections.
3) Bicycle facilities should be provided on arterials.
4) Protected intersection crossing locations are needed for safe and efficient bicycle commuting.
5) Bicycle commutes must have secure places to store their bicycles at their destinations.

Accommodations for Bicyclists

The needs of cyclists can be accommodated by retrofitting bike lanes onto many existing urban streets using the following methods:

- Marking and signing existing shoulders as bike lanes.
- Physically widening the street to add bike lanes.
- Restriping the existing street to add bike lanes.

Where existing width doesn't allow full standards to be used, it may be possible to modify portions of the street to accommodate bike lanes. The following standards are typically used when sufficient right of way exists: 14 foot (4.2-meter) center turn lanes, 12-foot (3.6-meter) travel lanes, 6-foot (1.8-meter) bike lanes, and 8 foot (2.4-meter) parking lanes. These guidelines should be used to determine how the street can be modified to accommodate bike lanes without significantly affecting the safety or vehicular operation in the street.

Reduced travel-lane widths are within the American Association of State Highway and Transportation Officials (AASHTO) minimums. The need for full-width travel lanes decreases with speed:

- Up to 25mph: Travel lanes may be reduced to 10 or 10.5 feet
- 30 to 40mph: 11-foot travel lanes and 12-foot center turn lanes may be acceptable
- 45 mph or greater: try to maintain a 12-foot outside travel lane and 14-foot center turn lane if there are high truck volumes
- Lanes that accommodate both motor vehicles and bicycles (wide curb lanes) should be 14-16 feet wide

Adding bike lanes to existing streets creates benefit for motorists and pedestrians as well as cyclists.

- Safety is enhanced as vehicular travel lanes are offset from curbs, lanes are better defined through the use of an additional painted line, and parking is sometimes removed or reduced. Adding bike lanes can often improve sight distance and increase turning radii at intersections and driveways.
- Restriping travel lanes moves motor vehicle traffic over, which can help extend the pavement life, as traffic is no longer driving in the same well-worn ruts.
- Vehicular traffic is that much farther from the sidewalk and pedestrian.

Standard bike lane width is 6 feet; however, there are some circumstances where street right of way can not accommodate 6 feet, so designs can be reduced to the widths following widths:

- 5 feet against a curb or adjacent to a parking lane
- 4 feet on un-curbed shoulders. A 4-foot curbed bike lane may be allowable where there are very severe physical constraints

Walking

Needs of Pedestrians

People walk for many reasons: traveling to work, transit or other multi-modal facilities, school, recreation and entertainment, health and exercise, shopping, social events,

personal errands, appointments, social visits. There are those who make the decision to walk by choice and there are also those whose options are limited, for whom walking is a necessity.

> For some of Washington's population, pedestrian travel is the primary mode of transportation. Citizens in this segment of the population include those who do not use a motor vehicle including some older adults, children and young adults, people who walk to the bus or other forms of transit, people with certain disabilities, and people who can't afford to own cars. There are also many who choose pedestrian travel as their primary mode (*Pedestrian Facilities Guidebook*, p. 11-12).

Additionally, most people are pedestrians at some point of every trip they make, regardless of their primary mode of transportation. Whether a person is walking from a car to the entrance to a shopping mall, or walking from home to a bus stop, a person becomes a pedestrian on almost any trip he or she makes.

All pedestrians have several needs in common, including safety, connectivity, and accessibility. Pedestrian mobility networks should also consider persons with disabilities. The Americans with Disabilities Act (ADA) mandates that reasonable accommodation for access should be provided for those who may need such assistance.

Pedestrian needs for different trip types vary. For example, a commuter may desire a well-connected direct route with efficient signal timing, while a recreational pedestrian may be concerned about the aesthetics of the surroundings. Similarly, a commuter would typically prefer to walk a shorter distance to get to a transit stop, while someone walking for recreation would be willing to walk a farther distance. The *Pedestrian Facilities Guidebook* (p. 12) provides some guidance on acceptable walking distances: Guidelines for acceptable walking distances are listed below:

- Traditionally, planners strive to locate community facilities, neighborhood parks, and other popular pedestrian origins and destinations no more than 400 meters (1/4 mile, 1,320 feet or approximately 5 blocks) from the origin of most pedestrian travel. Tukwila uses a ½ mile standard for neighborhood parks.

- Site designers typically use 90 meters (300 feet) as the maximum distance from parking areas to building entrances. Street crossings are typically most effective when located approximately 120 to 180 meters (400 to 600 feet) apart in areas heavily used by pedestrians.

- A Guide to Land Use and Public Transportation, Volume I, published by SNO-TRAN (Snohomish County Department of Transportation), states that pedestrians can be expected to travel about 300 meters (1000 feet) to a transit stop or park-and-ride space—about 230 meters (750 feet) for mobility impaired—and about 535 meters (1758 feet or one-third mile) to a commuter rail station.

One common obstacle in design of pedestrian facilities is assuming that one standard can be applied to fit an 'average' population. For example, the speed that pedestrians travel can vary greatly, yet pedestrian signals are often timed for average walking

speeds of 4.8 to 6.4 kph (3 to 4 mph). Children, older adults, and people with certain disabilities typically travel at much lower walking speeds 3.2 kph (2 mph).

Accommodations for Pedestrians

Based on field observations and input provided in the public input process, the most critical needs of pedestrians in Tukwila include:

- Crossing visibility. Crossing facilities, including crosswalks and signage, should alert both motorists and pedestrians to the presence of the facility. Crosswalk design can aid in increasing visibility through the use of specific striping patterns and lights.

- Continuous facilities. Sidewalk gaps, missing sidewalks and worn crosswalks are all barriers to safe pedestrian travel. Continuous facilities allow pedestrians to choose the safest and most efficient path to and from their destination, encouraging them to choose walking as their mode of transportation.

- Common design guidelines. Narrow sidewalks, sidewalks that are directly adjacent to heavy-volume roadways without vegetation or parking buffer, and sidewalks with utility boxes or lighting poles in the walkway detract from the walking environment and can make it difficult or impossible for the mobility-impaired to use the sidewalk. A retrofitting program to bring existing sidewalks up to code can improve the walking environment.

- Slow traffic. The larger the street and/or turning radii at intersections, the faster vehicles will travel through the area. Where appropriate, constraining street width with bulbouts and tightening right turns at intersections can slow vehicles as they approach areas with high pedestrian volumes.

- Mixed land uses. Segregated land uses generally increase the distance between different destinations, and make it difficult for residents to walk to employment, shopping, schools and recreational facilities from their homes. Mixed land uses make it easier to build housing, employment, shopping, schools, and recreational amenities within walking distance of each other.

- Direct connections. Pedestrians must sometimes walk long distances to access adjacent destinations when the street network is developed in a non-grid street pattern with cul-de-sacs and limited collector streets that connect to the arterial network. Pedestrian cut-throughs between cul-de-sacs can mitigate lack of connections for pedestrians.

Accident Summary

In 2002, the City of Tukwila began keeping an electronic record of its pedestrian and bicycle collisions. At the time an analysis of bicycle and pedestrian collisions was done for the Walk & Roll Plan, data through the year 2005 had been recorded. **Figure 17** shows the locations of pedestrian and bicycle collisions reported to Tukwila Police from 2002 through 2006.

A general description of pedestrian and bicycle collisions is provided below, followed by a more detailed analysis for 2005. The following provides a summary of bicycle and pedestrian collision characteristics within Tukwila from 2002 through 2005.

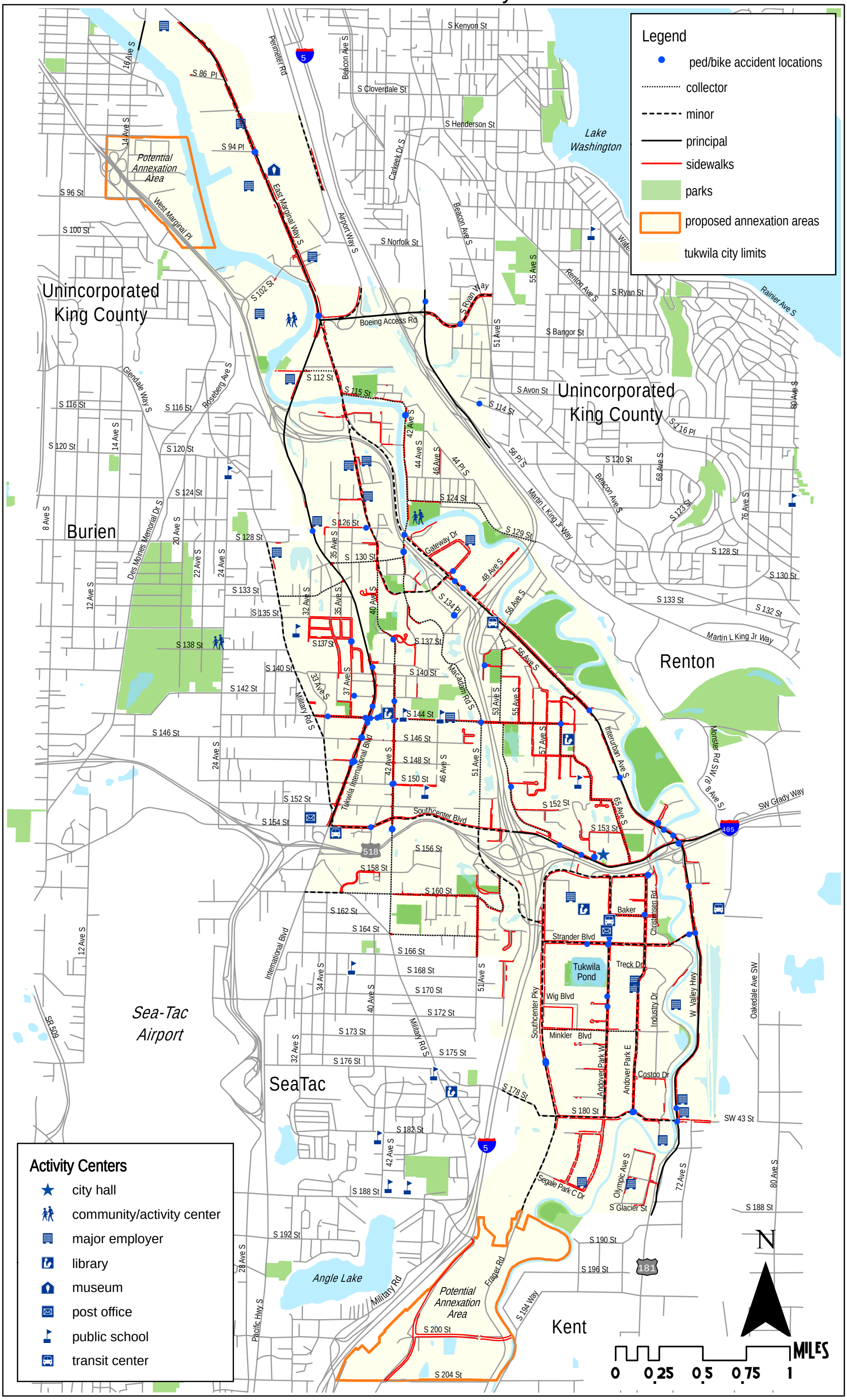
From 2002 to 2005, there were a total of 50 pedestrian and bicycle accidents in Tukwila. All of the pedestrian and bicycle accidents reported to Tukwila Police during this time involved an automobile. One of the accidents resulted in the death of an adult pedestrian.

Of the 51 pedestrian and bicycle accidents reported, 8 (15%) involved children under the age of 18. Of the children involved in these accidents, three were teenagers, one was 12 years old, and the other two were very young, at the ages of 4 and 2 years old. Three of the accidents (5.8%) involved adults over the age of 65.

The most common locations for pedestrian and bicycle collisions with automobiles included Tukwila International Boulevard (7 accidents total, or 13.7%), Interurban Ave S (7 accidents total, or 13.7%), S 144th Street (7 accidents total, or 13.7%), Andover Park West (5 accidents total, or 9.8%), and 42nd Ave S (5 accidents total, or 9.8%). Other locations where more than two accidents were reported include Strander Blvd (4 accidents), Macadam Road S (3 accidents total, including 2 near S 150th, and 1 near S 144th), Southcenter Blvd (3 accidents total), and West Valley Highway (3 accidents total).

Most of the pedestrian accidents occurred at intersections as vehicles were making turns. Driveways are also areas where accidents commonly occur, as pedestrians and cyclists passing across the sidewalk/driveway and are not seen by drivers who then hit them. Besides driveways and intersections where drivers disregard or do not see pedestrians, several collisions occurred when pedestrians were jaywalking, or crossing where there is not a marked crosswalk. The two wheelchair-vehicle collisions that occurred in 2005 were a result of the pedestrian not using the marked crosswalk. In one of these incidents, the victim cited construction blocking the wheelchair ramp as a cause for crossing in an unmarked crossing area.

Pedestrian and Bicycle Accident Locations 2002-2006



Healthy Youth Survey

An important survey is conducted for school districts within King County on a biennial basis. Sixth, Eighth, Tenth and Twelfth graders are surveyed[1] regarding health issues and there are two pertinent questions that are asked. The 2006 responses by grade are as follows:

(1) "Not counting very short trips such as walking from the car to your house or walking to get the mail, in an average week, on how many days do you bicycle or walk near your home or to school?"

Table 10: Tukwila 6th Graders days spent walking or bicycling

Responses	Tukwila Sixth	WA State	Tukwila Eighth	WA State	Tukwila Tenth	WA State	Tukwila Twelfth	WA State
I do not walk or bike near my home or to school	24%	23%	12%	27%	48%	33%	30%	52%
1-2 days	21%	26%	27%	27%	24%	26.5%	20%	22%
3 or more days	55%	51%	61%	46%	29%	40.5%	50%	26%

Results:
It appears that sixth graders in Tukwila are walking at similar rates to other sixth graders around the state and that eighth and twelfth graders are walking more. However, the results for twelfth graders, as well as those for 10th graders, are unreliable due to the relatively small sample collected for this age group.

[1] A 70% sampling of the tenth and twelfth grades was not returned indicating that a representative sampling was not collected.

(2) "When you rode a bicycle during the past 12 months, how often did you wear a helmet?"

Table 11: Tukwila 6th Graders Helmet Wearing Patterns

Responses	Tukwila Sixth	WA State	Tukwila Eighth	WA State	Tukwila Tenth	WA State	Tukwila Twelfth	WA State
I did not ride a bicycle in the past 12 months	19%	10%	26%	14%	46%	28%	50%	44%
Never wore a helmet	27%	18%	49%	35%	30%	44%	45.5%	35%
Rarely wore a helmet	20%	13%	6%	13%	11%	8%		4%
Sometimes wore a helmet	15%	14%	8%	9%	2%	5%		4%
Most of the time wore a helmet	9%	17%	1%	13%	6%	6%		4%
Always wore a helmet	10%	28%	10%	17%	4%	9%	4.5%	8%

Results:
Tukwila students do not ride bicycles in the same amount that other students do around the state, and when they do ride a bike they do not wear helmets.

If the 2006 sixth grade group is treated as a cohort and the City attempts to get a representative sampling of them in 2012 as twelfth graders, the change could be measured to these two questions to judge effect upon individual behavior. Also, the responses by the various grades could be measured for change in the population in general.

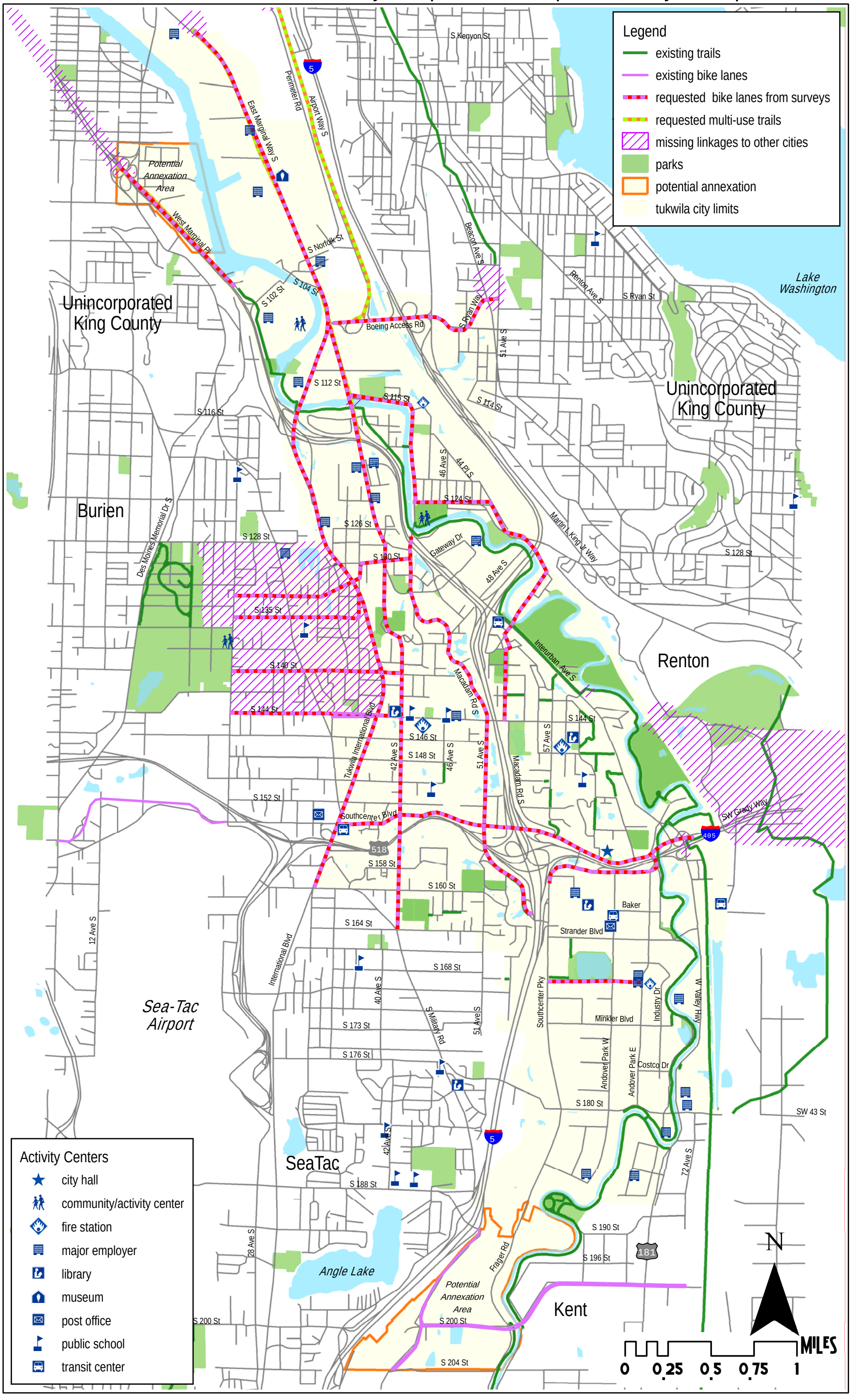
Public Input

Three main efforts were made to involve citizens in the development of this Plan – contact through a survey, a specially organized fair to highlight walking and biking, and targeted contact with interest groups such as the School District, CTR affected employers, and bicycle clubs. The ideas generated through the public involvement are summarized on Survey Responses: Requested Bicycle Improvements, **Figure 18,** and Survey Responses: Requested Pedestrian Improvements, **Figure 19**. In addition, a charette was held to solicit broad input from the diverse disciplines within the City organization.

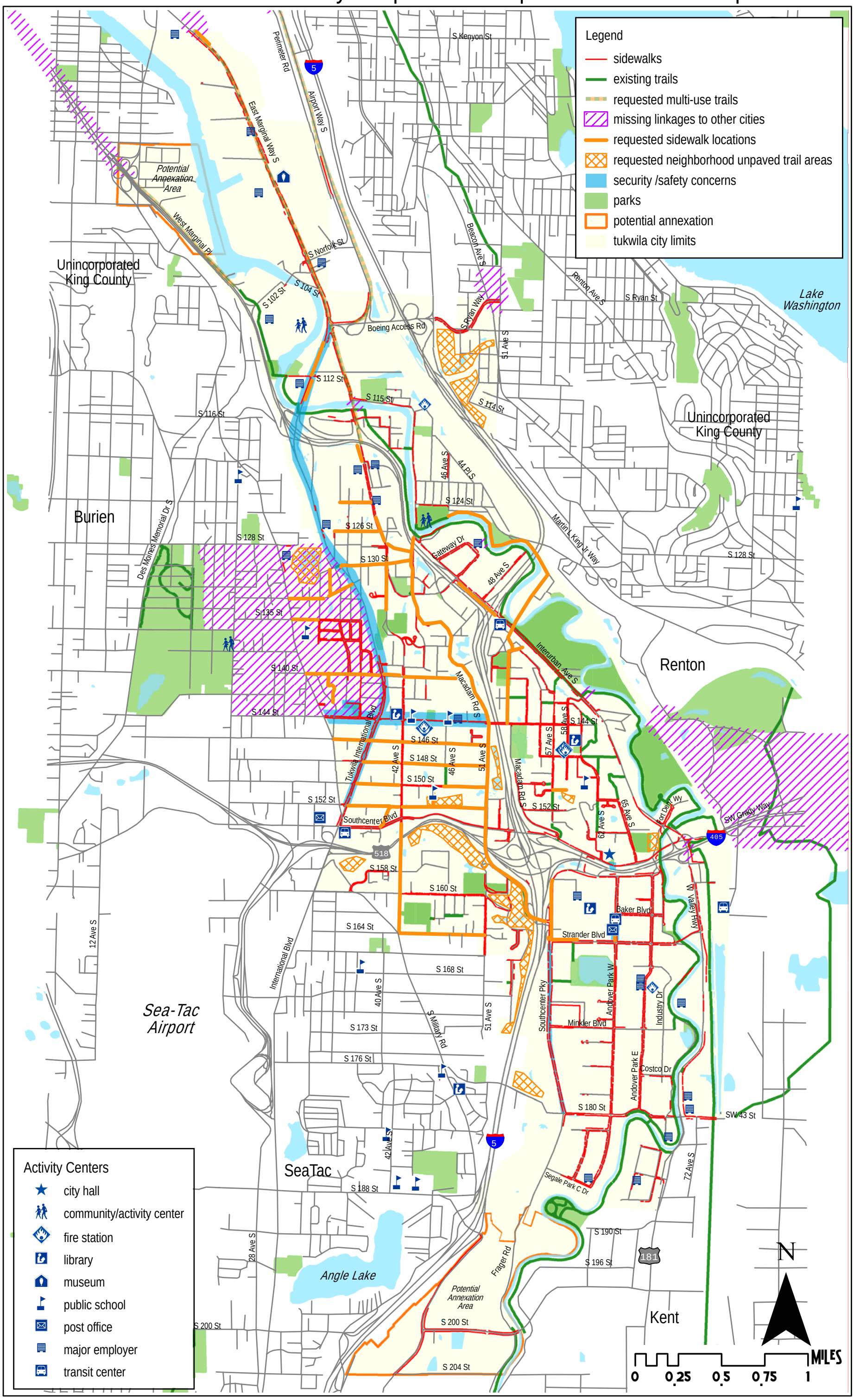
Walk & Roll Fair and Backyard Wildlife Fair

A Walk & Roll Fair was held on December 6, 2006. Staff also attended the popular Backyard Wildlife Fair on May 12, 2007 to receive public input about potential improvement locations Tukwila residents would like to see included in the Walk & Roll Plan, and to share information about existing community organizations and programs to encourage bicycling and walking.

Survey Responses: Requested Bicycle Improvements



Survey Responses: Requested Pedestrian Improvements



Walk & Roll Survey

Survey Distribution

Two Walk & Roll surveys, including a long version and a short version, were made available from November 2006 until March 2007. Both copies of the survey were made available on the City's website, and were advertised in the Hazelnut (the City's newsletter), at public outreach events (including the Walk & Roll Fair), meetings with employers, and meetings with community and advocacy groups. Copies of the longer version of the survey were distributed at locations around the city including the Foster Library, Tukwila Library, the Tukwila Community Center, and Tukwila City Hall. The short version of the survey was only available on the city's website.

A brief review of the survey results is provided below. A copy of each survey, containing a summary of the survey results, is available in **Appendix E**. In survey responses related to walking, what was found is that:

Survey Responses Related to Walking

- Most people who are walking and biking in Tukwila do so for fitness/health or for social/recreational activity. Several people said that they also walk to go shopping.
- Most people walk 1-2 miles, or even farther (up to 6 miles)
- Most popular places to walk are -Green River Trail, Interurban Trail, parks and the Tukwila Community Center, and inside the mall.
- Most Difficult Places to Walk are anywhere without sidewalks and street lights, Interurban Ave, mall area, Tukwila International Blvd, 144th & Tukwila International Blvd, street crossings along Tukwila International Blvd, Military Road, 42nd Ave S, east-west directions in general.

Reasons for difficulty in the area listed above include no space to walk, lack of curb ramps, gaps in pathways along routes, and difficult street crossings. A couple of people said that they do not feel safe because of crime and disregard for the rules of the road (including disregard for signals at crossings by both pedestrians and drivers and jaywalking).

Survey respondents recommended the following solutions to problems in the areas where they have the most difficulty walking: construction of sidewalks, curb ramps, safe street crossings, and more lighting. A couple people said they would like to see walking trails. Safer crossings and increased enforcement at signalized crossings were also identified as possible solutions to areas where walking is a challenge.

People said they would be encouraged to walk more often if they had more free time, and if sidewalks or trails were constructed in their neighborhoods.

There are a variety of different kinds of bicyclists in Tukwila, including beginning, recreational, intermediate, and advanced riders. Of note in the survey results, is that several people either did not answer this portion of the survey or responded that they do not own a bicycle.

Survey Responses Related to Bicycling

- Most people ride a bicycle in Tukwila for health/fitness and social/recreational activity. A large number of bicyclists also ride to work and to go shopping.
- Most people ride more than 6 miles.
- Most popular places for people to ride their bikes in Tukwila include -Green River and Interurban Trails, places in nearby cities including SeaTac, Kent, Renton, and Seattle (including West Seattle)
- Top reasons why people don't ride more often - bad weather; (2) lack of bike lanes and/or paths; (3) the time it takes
- Survey respondents said better infrastructure (including bike lanes and trails) would encourage them to bicycle more often
- Most Difficult Places to Ride a Bicycle - Southcenter Blvd; the mall area; Interurban Ave/West Valley Highway; Tukwila International Blvd; Boeing Access Road; West Marginal Way; East Marginal Way; Connections to Renton (via Fort Dent/Monster Road), West Seattle; downtown Seattle; the Burke Gilman Trail; and east-west connections.

No space to ride, difficult street crossings, and gaps along the route were top reasons survey respondents cited for the difficulty they have riding in these areas

When asked what their preference is for (1) wide street lanes/shoulders; (2) striped/marked on-street bike lanes, or (3) off-street bike paths/trails, trails were most preferred, followed by bike lanes and wide shoulders.

To improve these areas, survey respondents most commonly cited bike lanes as improvements that would make these areas better for bicycling, along with the construction of missing link trail connections, new trails, and curbs and sidewalks, and lighting.

Meetings with Tukwila Employers

Interviews with Tukwila's major employers, defined as employers who have at least 100 full-time employees who arrive at the worksite between the hours of 6am-9am, were conducted from February through May of 2007. Interviews were conducted in coordination with work being conducted for the City's Commute Trip Reduction (CTR) Plan, the aim of which is to reduce employees' rates of driving to work alone (drive-alone rates) and to reduce the vehicle miles traveled (VMT) of each employee arriving at CTR-affected worksites in Tukwila. The purpose of the interviews was to assess worksite conditions, to find out what walking and bicycling is like for employees, to identify challenges and opportunities in meeting the CTR policies, and to develop a list of potential improvement projects for pedestrians and bicyclists. Interviews with the employee transportation coordinators revealed that each work site had its unique challenges in reducing drive-alone rates and VMT. However, there were several general comments that were common to all worksites.

Common barriers to bicycling and walking for employees within the City of Tukwila include lack of bike lanes, lack of secured bike parking and/or showers, the large distances between where employees live and where they work, lack of places for employees to walk to during breaks, lunch, etc. (especially within the MIC), weather

conditions, and feelings of insecurity due to high traffic speeds, heavy truck traffic, and drivers disobeying the rules of the road with regard to bicyclists and pedestrians.

The CTR Plan will continue ahead with recommendations that will assist employers in making changes in employee commuting habits. As the comments above indicate, the Walk and Roll Plan can also play a part by making changes that will assist in those efforts. Making infrastructure improvements that encourage and support employees who use transit and bicycle as well as providing a recreational system that is usable during the work day will support goals from both Plans.

Walk & Roll Charette

A Walk & Roll Charette was held on April 28th, 2007. The purpose of the charette was to have broad cross section of City staff from different disciplines review and recommend any modifications to existing conditions for bicyclists and pedestrians, including street, trail, and sidewalk conditions, and existing policies, standards, and practices, and to come to agreement about potential project improvement locations and designs. Staff included department heads of Community Development and Parks and Recreation, Police Patrol officers, the City Engineer, Transportation engineers and maintenance and operations personnel for streets and parks.

In terms of bicycle improvements, it was decided that priority should be for construction of trails and bike lanes when possible. The charette discussion identified Bicycle Friendly Routes, shown on **Figure 5**. Review and agreement was also reached for design guidelines for bicycle lanes, paved and unpaved trails, and sidewalks, which are shown in the **Bicycle and Pedestrian Infrastructure Designs** section of this plan.

Appendix C: Planning and Policy Context

What support exists for bicycle and pedestrian planning?

Tukwila is relatively small geographically especially when compared to its larger urban setting. Coordination with the regional system is crucial for the transportation system to be functional. An important effort within this Plan is to show existing and planned linkages to adjacent facilities in neighboring cities and to recommend new opportunities where collaboration will result in an expanded and improved system.

In addition, evidence of a community planning process and local action such as plan adoption is required by outside funding agencies and potential private funding partners.

Summary of Existing Plans

Coordination and involvement with the state and region is critical for identifying opportunities, resources and funding, but is also needed to make the local system more effective and connected to the regional system.

State

WA State Bicycle Facilities and Pedestrian Walkways Plan 2008-2027 2008)
Washington's Statewide Goal is to increase bicycling and walking while reducing injuries and deaths. The Plan sets a goal of decreasing collisions by five percent per year for the next 20 years, while doubling the amount of biking and walking. The strategies for achieving these goals are: maximizing funding through partnerships; raising awareness of bicycle and pedestrian safety needs; and sharing information on bicycle and pedestrian issues between Washington's agencies, jurisdictions, and organizations. The Plan contains a statewide list of 1.9 billion dollars of cycling and pedestrian projects. The incomplete list includes nine multi-use trails and sidewalks in Tukwila, which does not include all of the missing links or bike lanes needed to implement the City's Plan.

Commute Trip Reduction
The Washington State Commute Trip Reduction (CTR) law (1991) has had significant success in encouraging employees to bus, vanpool, carpool, walk, or bike to work from home, or to compress their workweek. A 2006 update to the CTR law, called the CTR Efficiency Act, made changes to the law that require CTR-affected employers (that is, employers with at least 100 employees who commute to work between the hours of 6:00am and 9:00am) to reduce trips made to work by single occupancy vehicles by 10 percent, and to reduce vehicle miles traveled to their worksite by 13 percent by 2011.

Under the new legislation, local jurisdictions in areas that experience the highest levels of highway congestion, such as Tukwila, must write their own local CTR Plans. These plans set targets for reduction of the percentage of single-occupancy vehicles arriving to CTR employment sites, as well as for reductions in vehicle miles traveled, for employers located within the jurisdiction. Local CTR Plans also outline strategies to achieve the targets outlined in the plan, with implementation dependent on availability of state funding.

Within Tukwila, an aggressive incentive program that provides employees with cash when they use alternate commute modes, as well as increased marketing and promotion of transit, carpool, vanpool, and vanshare options have been identified within the CTR Plan as strategies to encourage people to carpool, vanpool, to use transit, or to bike or walk to work. State funding through the CTR Plan may also be used for construction of bicycle and pedestrian projects in proximity to CTR-affected employers, transit centers, and areas of high residential density.

Regional

Regional Investing in Nonmotorized Transportation

To provide for nonmotorized mobility, the goal of the region is to respond to Federal Highway Administration direction that identifies bicycle and pedestrian facilities as crucial components of all future transportation improvements. (See USDOT FWHA *Design Guidance — Accommodating Bicycle and Pedestrian Travel: A Recommended Approach*, 2000). The U.S. Department of Transportation has set a national goal that by 2010 bike and walk trips will comprise 15 percent of all trips. A regionally integrated network of nonmotorized facilities linking bicycle and pedestrian infrastructure within urban places, and connecting these facilities to regional transit services, will help to achieve this goal in the central Puget Sound region. Priority investments are those that complete the nonmotorized system by filling gaps in the existing network, creating connections to, and within, urban centers, and developing intermodal connections. Ultimately for Tukwila's Plan Destination 2030 supports local networks and associated programs, and effectively mainstreams bicycle and pedestrian travel into the overall regional transportation system.

Ten-Year Investment Program (2010 Action Strategy)

The 10-year investment program consists of filling gaps that have been identified in the existing nonmotorized network, creating safe bicycle and pedestrian connections within, to and between the most developed designated urban centers, creating safe access to Sound Transit's existing and planned high capacity transit station areas, and building projects with the highest level of local commitment. The most developed urban centers are Bellevue, Bremerton, Capitol Hill/First Hill, Everett, Kent, Northgate, Redmond, Renton, Seattle Center, Seattle Downtown, Tacoma Downtown and University District.

Project sponsors, including Tukwila, have identified over 1,200 miles of regionally significant nonmotorized project investments to be completed by 2030. Sponsors plan additional nonmotorized investments on many local facilities. The regionally significant investments are summarized below.

Shared Use Bicycle/Pedestrian Paths and Bicycle Lanes

In total the early action strategy is comprised of over 700 miles of new regionally significant paths and bikeways, including:

- Over 180 miles of off-road, shared use bicycle/pedestrian paths
- Over 550 miles of on-road bicycle lanes

Commuter Bicycle Stations

The early action strategy includes six commuter bicycle stations at the following locations: Overlake Transit Center in Redmond, the Montlake flyer stop on SR 520, the Everett Multimodal Station, the downtown Bellevue Transit Center, and the Tacoma

Dome. The region developed a methodology for estimating bike demand at transit stations, investigated the feasibility of bikestations at four locations in the region, and created a regional design template for future stations. A Commuter Bike Station opened in 2003 in Pioneer Square near King Street Station and includes bike-sharing and car-sharing services, bicycle rentals, sales and repairs as well as secure indoor bicycle parking available 24 hours a day, seven days a week. It is the first automated mobility center concept in the U.S.

Puget Sound Regional Council
Through the Puget Sound Regional Council (PSRC), the region's cities and counties work together to preserve and enhance quality of life in the central Puget Sound region. The PSRC created a framework plan for the region called VISION 2020. A major theme underlying the principles and policies of both VISION 2020 and Destination 2030 is that the region must develop a transportation system that creates and encourages the use of more travel choices, such as transit, biking, walking and ridesharing, and begins to reduce the degree of reliance on the single-occupant automobile for vehicle travel. Bicycle and pedestrian transportation plays an integral role in achieving these goals.

Destination 2030
In 2002, the region unanimously adopted a transportation action plan called Destination 2030. The plan is about making traffic better, keeping pace with growth, and supporting the region's economic and environmental health. It addresses long-range transportation needs of a growing population, with a focus on important early actions to keep the region moving in the right direction. The plan includes a detailed and balanced set of projects and programs that focus on agreed-upon investment and finance principles and recognizes the link between transportation and growth planning. It identifies more than 2,000 specific projects that will improve roads, transit and ferry service, bicycle and pedestrian systems, freight mobility, and traffic management and operations. Destination 2030 calls for the development of new state and regional funding mechanisms to provide sustained and flexible revenues that support plan strategies. And it outlines a monitoring and review process for ensuring that plans are current and that implementation stays on course.

The transportation project list within Destination 2030 is the result of locally adopted plans and projects under discussion for key regional funding. Limited additions to the project list are made periodically (most recently in 2006.)

There are five nonmotorized projects for Tukwila listed in Destination 2030. They are:

- Boeing Access Road Bike Lanes
- Green River Trail spur to the Springbrook Trail near Valley Road
- Pacific Highway Bike Lanes from S. 112 Street to the Boeing Access Road
- Strander Boulevard Bike Lanes from Green River Trail to Andover Park West
- S. 180 Street Bike Lanes from the Green River Trail to the Interurban Avenue Trail

Pedestrian Improvement Zones
Destination 2030 identifies "Pedestrian Improvement Zones" as geographic areas where priority should be given to completing the network of pedestrian facilities. These "zones" are defined as areas within designated Urban Centers and within a mile radius of major regional transit stations. Pedestrian improvement zones included in the 2000-2010 action strategy are:

- Within the boundaries and a mile radius (a 10-minute walk) of the urban centers of Bellevue, Bremerton, Capitol Hill/First Hill, Everett, Kent, Northgate, Redmond, Renton, Seattle Center, Seattle Downtown, Tacoma Downtown and University District.
- Within a mile radius of existing transit centers, including Southcenter Mall, and Sound Transit stations.

Pedestrian Improvement Zone investment for the Southcenter urban center is slated for the second phase of Destination 2030, which is 2011-2030.

Accomplishments
Destination 2030 calls for a regionally integrated network of nonmotorized transportation facilities linking bicycle and pedestrian infrastructure within urban places and connecting these facilities to regional transit services. Priority investments are those that complete the nonmotorized transportation system.

Infrastructure investments are filling gaps in the existing network, creating connections to and improving circulation within urban centers and high capacity station areas, and developing intermodal connections. Providing facilities that support nonmotorized travel is important, but education and encouragement are essential to the success of bicycle and pedestrian systems. The region has moved forward in both infrastructure and education/encouragement programs.

Education and Encouragement
A key objective in the Implementation Strategy is educating the general public and public officials through expanded and improved marketing, promotional, and educational programs about the benefits of using biking and walking as travel modes.

- The Regional Council launched a "Walkable Communities" workshop series. The workshops were developed in conjunction with twelve cities to assist localities in building more pedestrian and bicycle-friendly communities. Selected nationally through a competitive grant process, the Regional Council was one of six metropolitan planning organizations to receive this series of workshops.

- Several host communities have taken steps to turn the recommendations and ideas from the Walkable Communities workshops into actions. Tacoma created an ad hoc citizen task force to develop a program of improvements and design standards for presentation to the City Council. Ideas generated at the Everett workshop are fueling an effort to create better pedestrian connections between a new multimodal transit station near Interstate 5 and the central downtown core a half-mile away. Redmond is incorporating feedback from their workshop into their Master Downtown Plan.

- Through an approach known as context sensitive solutions, WSDOT has started taking steps to deliver transportation projects that fit physical surroundings and preserve scenic, aesthetic, historic, and environmental resources while maintaining safety and mobility by using interdisciplinary techniques involving all partners. In 2002, WSDOT sponsored two forums for context sensitive solutions: a workshop focused on balancing community values with moving regional traffic and an international symposium where several Europeans shared best practices with their American counterparts.

- In 2003, WSDOT introduced Web pages dedicated to walking and bicycling.

- Kicked off on 2003 National Bike to Work Day, the region's first ever bicycle commute challenge attracted 1,700 riders from almost 250 teams. Over one month, participants logged 29,201 trips totaling 262,552 miles. Over 11 percent of those trips were ridden by people new to bike commuting. On Bike to Work Day recorders positioned at commuter stations in Snohomish, King, and Kitsap counties counted 9,200 riders, a 35 percent increase over 2001 totals. The 2004 bicycle commute challenge drew 3,200 riders from almost 400 teams.

- The League of American Bicyclists named Redmond a Bicycle-Friendly Community, following a detailed audit of the community's efforts to provide safe accommodation and facilities for bicyclists and to encourage residents to bike for transportation and recreation. Redmond's Capital Improvement Plan commits $100,000 per year for bicycle facilities improvements.

- The Regional Council co-sponsored two Footprints and Bike Tracks conferences with staff providing planning support and co-presenting at a breakout session on nonmotorized transportation advisory committees.

County

King County Department of Natural Resources' *2004 Regional Trail Inventory and Implementation Guidelines* provides King County's vision of a connected system of trails, with regional multi-use trails serving as the backbone of a trail system:

> It is the County's intent that regional trails should be connected by other trails of an informal and formal nature forming a system not unlike the road system with major arterials (regional trails) being connected by secondary arterials and neighborhood streets (community trails).

The Green River Trail and the Interurban Trail make up the regional trails that currently serve the City of Tukwila, providing multi-use facilities separated from the roadway for exclusive use by pedestrians and bicyclists. Tukwila's system of numbered walking trails provides the basis for a system of informal connections, as described above, through Tukwila's neighborhoods.

Future improvements identified in the *2004 Regional Trail Inventory and Implementation Guidelines* to extend the regional trails network that will improve the system connecting to Tukwila include a connection from the Green River Trail at Fort Dent Park to the

Cedar River Trail, as well as the extension of the Interurban Trail farther south through cities in Pierce County including Milton and Pacific.

Local

City of Tukwila Comprehensive Land Use Plan 1995
The number one objective of the City is to improve and sustain residential neighborhood quality. The hope is to encourage community pride, ownership and stability in households who come to and live in Tukwila.

The City's basic values of supporting residents, families and children, appreciating the City's surroundings, and creating quality opportunities direct our decisions. A first class nonmotorized transportation system and programs that support safety and use of the system are the backbone of these values as they relate to access and mobility for all members of the City.

A Comprehensive Plan summary shows that the land use, public infrastructure design and capital investment policies encourage walking and transit trips through:

- Denser mixed use neighborhoods and a regional center
- A physical framework that advocates connectivity of the street system
- A public recreational amenity adjacent to natural beauty and/or within walking distance of all residential areas

In addition to policies that support and encourage walking and biking, there are policies that specifically address how the nonmotorized transportation and recreational system should be implemented. The Comprehensive Plan details that trails and sidewalks should:

- Be evenly distributed throughout the City
- Link within neighborhoods and then between neighborhoods
- Link significant focal points and areas of high natural amenities
- Link the upland and lowlands at strategic points
- Link commercial areas to residential areas within ¼ mile
- Link parks to households within ¼ mile
- Be coordinated with adjacent cities and regional plans
- Be linked in a network with each other
- Improve employee access to the east side of the river and public access to the west while protecting property rights
- Utilize railroad right of way as trails

The Plan suggests that easements for trails should be negotiated during development of property when appropriate, while preserving privacy and security. In addition, single family development of four or fewer lots should be excluded. Rights-of-way should be required, whenever possible, to provide trail connections between cul-de-sacs and adjacent streets to improve access for bicycles and pedestrians.

Several sections of Tukwila's Comprehensive Plan, including Shoreline, Residential Neighborhoods, Southcenter urban center, Manufacturing/Industrial Center, and Transportation, have policies related to trails and nonmotorized transportation more generally:

Shoreline
(Policy 5.6.6) "*Require subdivisions, multi-family residential uses, and commercial and industrial uses along the shoreline* [including shoreline property within the MIC zone] *to provide a trail for public access in areas identified for trail connections, consistent with the King County Green River Trail Master Plan."* Additionally, any properties along the shoreline that are not identified for trail construction in the King County Green River Trail Master Plan are required *"to provide public access or a private natural area in lieu of physical public access".*

Residential Neighborhoods
(Policy 7.4.1) "*Provide pedestrian and other nonmotorized travel facilities, giving priority to sidewalk improvements that connect public places, such as parks, the river, open space and neighborhood gathering spots*."

(Policy 7.4.2) "*Emphasize a network of residential local access through streets, minimizing cul-de-sacs*."

(Policy 7.4.6) "*Incorporate proportionately greater neighborhood-enhancing elements in collector, minor, and principle arterial design. These elements include collector lanes, wider sidewalks, separated sidewalks, and curb line street trees*".

(Policy 7.5.2) "*Link neighborhood gathering spots with an enhanced nonmotorized trail and sidewalk system before providing linkages with the neighborhoods*."

(Policy 7.5.4) "*Within one-quarter-mile of residential areas, provide a recreational facility or enhanced trail linkage to a neighborhood park*."

(Policy 7.6.11) *"Link commercial areas to residential areas within approximately one quarter mile with high quality nonmotorized access facilities*."

Tukwila Urban Center
(Policy 10.2.2) "*Create a street network that reflects the demand and need for vehicles, transit, pedestrians and bicyclists; provides a safe, convenient, attractive, and comfortable pedestrian and bicycling environment that eliminates potential conflicts and promotes safety for all modes of travel; and reinforces the different functions of streets by creating distinct identities for major rights-of-way.*"

Manufacturing/Industrial Center
(Policy 11.1.9) *"Reduce reliance on the single occupancy vehicle for transportation of employees in and out of the MIC."*

Transportation
(Goal 13.3) *"Traffic levels of service that provides safe and efficient movement of people, bikes, cars and buses and incorporate evolving land use and traffic patterns."*

City of Tukwila Parks, Golf and Open Space Plan
The City maintains a six year functional plan for Parks and Open Space that supports the provision of linkages, discusses improving east-west connections, and references

the Tukwila Trail System. East-west trails are on the project list. However, specific locations are not identified.

Implementing the 1995 Comprehensive Plan
Transportation policies and practices in Tukwila create a transportation system that efficiently moves automobiles and trucks, without much thought for bicycles as a mode of transportation. Pedestrians fare better, in large part due to a Tukwila residential street program which was employed in the past to install curbs, gutters, and sidewalks. Additionally, a trails program installed paths on unimproved rights of way in the Tukwila Hill neighborhood. Streets in the Southcenter commercial area, which originally excluded pedestrians, now accommodate them on six foot wide sidewalks

The City's regulations implement policy by requiring most new construction or substantial redevelopment to build frontage improvements that include sidewalks. Exemptions from this requirement are currently allowed if street improvements in the vicinity of the development are not in the foreseeable future.

Additionally, the City may require nonmotorized easements and other dedications where necessary to facilitate pedestrian circulation between neighborhoods, schools, shopping centers and other activity centers, even if the facility is not specifically shown on the City's nonmotorized circulation plan, according to section 11.12.050 of the Tukwila Municipal Code.

The City may accept dedications of sensitive areas that have been identified and are required to be protected as a condition of development. Dedication of such areas to the City are considered when among other things the dedicated area would contribute to the City's overall open space and greenway system and would provide passive recreation opportunities and nonmotorized linkages.

Special provisions are allowed for the developers of four or fewer single family homes. For the most part, developers of four or fewer lots do not install any access improvements other than driveways. Of the short platting that occurred within the last seven years, from 2000 – 2006, over 70% of the new lots were created without the benefit of any pedestrian improvements to City streets, that is 180 new home lots were created without benefit of any nonmotorized infrastructure.

Internal pedestrian circulation systems are required within and between existing, new and redeveloping commercial, multifamily and single-family developments; activity centers; and existing frontage pedestrian systems.

Concrete sidewalks are required on both sides of all arterial streets, on both sides of all non-arterial streets longer than 200 feet, on one side of all non-arterial streets less than 200 feet in length; and on both sides of all public streets that provide access to existing or planned future sidewalks, activity centers, parks, schools, neighborhoods, or public transit facilities.

Exceptions to the requirement for concrete sidewalks occur when the subdivision design provides an acceptably surfaced and maintained public walkway system. A paved path shall be provided in lieu of concrete sidewalk when:
1. The paved path is to be temporary in nature; or

2. The soil or topographic conditions dictate a flexible pavement; or
3. Other similar reasons, such as maintenance of neighborhood character (at the discretion of the Director).

Finally, when street system frontage improvements are required per the City regulations, additional right-of-way and pavement may be required if indicated on a designated bicycle route as identified with this Plan for pedestrian and bicycle transportation.

Southcenter urban center Plan
The Southcenter urban center Plan envisions the southeastern area of Tukwila as a mixed-use employment, retail, and residential center; a high-activity area where people can live, work, and play. The Southcenter Urban Center Plan calls for areas of mixed-use retail, residential, and office that are linked to natural and recreational amenities including Tukwila Pond and the Green River. As the urban center develops, the existing large blocks are envisioned to be broken into smaller sizes, offering a grid street system that is denser and offers increased transportation options for automobiles, pedestrians, and bicyclists. In areas where it is not feasible to break up block sizes with new streets, pedestrian through-ways are recommended to provide connectivity within the urban center for pedestrians and bicyclists.

Shoreline Master Program Update
The Shoreline Master Program Update provides policies, standards, and guidelines for land use that occurs within 200 feet of the Green/Duwamish River. A major component of the Master Program Update is to allow public access to the river. The Green River Trail currently serves to provide continuous public access within the shoreline area from Tukwila's southern boundary to just north of S 102nd Street in northern Tukwila. In most places (including the City's potential annexation areas), the trail only runs along one side of the river. The absence of trail extensions north of S 102nd Street and along both sides of the Green/Duwamish River provide opportunities for future extensions the trail system.

Tukwila Transit Plan
A Transit Plan, conducted by the City, was finalized in April 2005. Of critical importance to transit riders and the success of transit facilities is the ability to walk between destinations and the transit facilities. The draw area for commuter stations is at least 1/2 mile.

Left by the Side of the Road (Cascade Bicycle Club)

From 2001 to 2004, the Cascade Bicycle Club undertook an extensive study of bicycling conditions within the Puget Sound Region, including King, Pierce, Snohomish, and Kitsap Counties. The findings of the study were summarized in a report titled *Left by the Side of the Road*. The purpose of the study was to identify a regional bicycle network. The following is the vision of the regional bicycle network that formed the basis for the study:

> A regional bicycle network is a network of principle bicycle routes supported by and integrated with local bicycle routes. Such a network incorporates multi-modal transfer and interchanges facilities (e.g., transit stops and transit centers) and provides bicycle parking and storage facilities at origins and destinations, such as schools and employment

> centers. Ideally it favors on-street routes and route segments (over multiple-use trails that exclude motor vehicles) because such on-street routes already exist and serve these destinations (Cascade Bicycle Club, p. 13).

The Cascade Bicycle Club analyzed over 4,000 miles of potential routes throughout the region, and the result was a proposed network of 1,521 miles of "largely existing bicycle routes to serve the needs of all bicyclists—commuters, destination travelers, and recreational bicyclists" (Cascade Bicycle Club, p. 23). Conditions on these routes were evaluated and given either a pass or fail rating based on a set of criteria consisting primarily of road width guidelines.

The area within Tukwila that was rated as one of the highest priority improvements in the Left by the Side of the Road report was the connection from South Seattle to Tukwila. The recommendation for improving this connection is construction of paved shoulders or bike lanes on Martin Luther King Way, Boeing Access Road, and Pacific Highway S, connecting South Seattle at S Henderson Street to the Duwamish River Trail in Tukwila.

Specific segments of the proposed regional bicycle route system within Tukwila given a "failed" rating by the Left by the Side of the Road report include the following:

- Boeing Access Road
- Tukwila International Blvd from Boeing Access Rd south to the Duwamish River
- Tukwila International Blvd from S 132nd Street to S 139th Street
- Southcenter Blvd from I-5 to SW Grady Way

Additionally, the *Left by the Side of the Road* report identified the Two Rivers Trail, connecting the Lake Washington Loop in Renton with the Interurban and Green River Trails in Fort Dent Park, as a missing link badly needed in the regional trail network.

City of Tukwila staff has coordinated its recommendations for bicycle-friendly routes with the recommendations contained in the *Left by the Side of the Road* report, as well as with additional consultation with members and staff of the Cascade Bicycle Club. A map of Tukwila's Bicycle-Friendly Routes can be found on page 27. A complete listing of consultation during the Walk & Roll Plan is contained in **Appendix D.**

Appendix D: Request Project Improvement Details

The following Table 12 is a list of locations and existing conditions that are problems that need to be improved. These recommendations are from Tukwila residents and others who have an interest in walking and biking in Tukwila and who completed the Walk & Roll Surveys, which were distributed between November 2006 and arch 2007. Maps of these recommended improvement locations can be found in Appendix B.

Table 12: Requested Bike Lane Locations (See Figure 18)

#	Location	Existing Condition / Description
1	East Marginal Way S	No space to ride with heavy traffic and truck traffic.
2	West Marginal Place S	No space to ride.
3	Tukwila International Boulevard	No space to ride. Debris is often in the roadway on the outside edge of the roadway where bicyclists travel.
4	Boeing Access Road	No space to ride.
5	S Ryan Way	No space to ride.
6	S 115th Street	One respondent uses this route as an alternative to East Marginal Way/Interurban Ave S.
7	42nd Ave S (north of S 125th Street)	No space to ride.
8	S 125th Street/50th Pl S/S 129th Street/S 130th Pl	There are varying roadway widths in this area, with low traffic volumes. The route could be signed as a bike route connecting to parks (Tukwila Community Center and Codiga Farms).
9	56th Ave S	No bicycle lanes, but could be signed as a bike route connecting to parks (Tukwila Community Center and Codiga Farms).
10	S 130th Street	Survey respondents would like to be able to ride bicycles safely along this street to connect with Macadam Road S and the Tukwila Community Center.
11	S 133rd Street/S 132nd Street	Narrow roadway with steep grades. This is one possible through-connection from Tukwila International Blvd to Military Rd S.

Table 12: Requested Bike Lane Locations (Continued)

#	Location	Existing Condition / Description
12	S 135th Street	This is one possible through-connection from Tukwila International Blvd to Military Rd S. Recent road improvements include sidewalks on both sides form 37th Ave S to 32nd Ave S. The grade on this street is less steep than S 130th.
13	S 140th Street	This is one possible through-connection from Tukwila International Blvd to Military Rd S. The grade on this street is less steep than S 130th.
14	S 144th Street (Military Rd S to 40th Ave S)	There are new bike lanes along S 144th from Tukwila International Blvd to 32nd Ave S. Extension of these bike lanes would provide the best connection from SeaTac to the west to the parks along 42nd Ave S.
15	40th Ave S	No space to ride due to narrow roadway. Bicycle lanes would provide an alternative route to busier streets, as well as bicycle connections to parks and East Marginal Way.
16	51st Ave S / Macadam Rd S	Varying shoulder widths along route from Southcenter Blvd to Tukwila Community Center. Bike lanes would provide an alternative north-south route to busier streets, as well as connections to parks, the Tukwila Community Center, and the Green River Trail.
17	53rd Ave S	There are currently paved shoulders that alternate between the east and west sides of the street. This street has the potential to provide a bicycle connection to the Park & Ride and the Green River Trail.
18	Southcenter Blvd (west of 53rd Ave S)	No bike lanes currently along this stretch of Southcenter Blvd. However, 5 foot bike lanes will be added on both the north and south sides of the street as part of the Sound Transit improvements.
19	Klickitat Drive	There is currently an elevated, metal walkway along this route. Bicyclists must walk their bikes along this stretch.
20	Southcenter Blvd (east of 53rd Ave S)	No bike lanes connecting to Tukwila Urban Center and Renton. This stretch is identified as a "failed" rating segment for bicyclists, and a high priority bicycle improvement area in Cascade Bicycle Club's *Left by the Side of the Road* regional routes study.
21	68th Ave S	No bike facilities on bridge along 68th Ave S to Tukwila Urban Center.
22	Tukwila Parkway	No bike facilities existing or planned in northern part of the Tukwila Urban Center.

Table 12: Requested Bike Lane Locations (Continued)

#	Location	Existing Condition / Description
23	S 168th Street	No bike lanes planned along S 168th Street. This segment would provide an additional east-west connection in the Tukwila Urban Center, and would provide bicycle access to Tukwila Pond Park.
24	S 200th Street	No bike lanes in South Annexation Area. Bicycle lanes in Kent continue along Russel Road east in Kent.

Table 13. Missing Linkages
See Figure 18 or 19

#	Location	Existing Condition / Description
i	Airport Way	Several survey respondents would like to see Airport Way made into a bike route, with bike lanes provided.
ii	Connection to the north from East Marginal Way.	Several respondents would like to see a safe bike route to Seattle along East Marginal Way.
iii	Trail extension along West Marginal Place	The trail is not continuous in this area, and several respondents would like to see the missing links constructed.
iv	Tukwila to Chief Sealth Trail (51st Ave S & Gazelle Street)	The Chief Sealth Trail is a new multi-use path completely separated from the streets that terminates just a couple blocks north of Tukwila's northern City limits in the Ryan Hill neighborhood.
v	Connections east to Kent from South Annexation Area	There is no bike or pedestrian facility that links Tukwila's South Annexation Area to the City of Kent.

Table 13: Missing Linkages (Continued)

#	Location	Existing Condition / Description
vi	West side of Tukwila connection to North SeaTac Park	Several survey respondents walk or bike to North SeaTac Park and Community Center. None of the streets (with the exception of the new bike lanes along S 144th Street, provide a bike facility connection to the edge of Tukwila's City limits with SeaTac. Additionally, SeaTac plans to construct a multi-use path originating at the northwest corner of North SeaTac Park and ending at the Puget Sound waterfront in Des Moines. The City of SeaTac would like to work with Tukwila to determine the best alignment connecting their new trail to the Green River Trail.
vii	BECU	One survey respondent would like an entrance/exit to BECU from the trail.
viii	Interurban Trail	In this spot, the trail moves back behind the buildings to the river. Signage is needed to indicate this to trail users. Several survey respondents thought that the trail ends here.
ix	Monster Rd/Black River and other connections east to Renton	Several people suggested this location for a connection with Renton, and it is also identified in Cascade Bicycle Club's *Left by the Side of the Road* regional routes report. Though there is no infrastructure constructed between Fort Dent and the Black River Riparian Forest, the route is currently being used informally by bicyclists and pedestrians to get between Renton and Tukwila.
x	Grady Way/Southcenter Blvd intersection with West Valley Highway	It is difficult to cross or make east-west/north-south connections at this intersection and the surrounding area.

Table 1413: Requested Multi-Use Trails
(See Figure 18)

#	Location	Existing Condition / Description
A	Airport Way S to Seattle	Shoulder is wider in Tukwila; you can tell when you have entered Seattle because shoulder narrows.
B	East Marginal Way S	Traffic is heavy, and includes a lot of trucks. A separated trail (like the section of the Green River Trail in Tukwila that is adjacent to the sidewalk along Interurban Ave) would provide a good alternative to riding in the street.
C	West Marginal Place S to West Seattle	There needs to be a link in the trail connecting the Green River Trail to Alki.

D	Minkler extension for pedestrians/bicyclists to the Green River Trail.	There are few east-west connections from the Green River Trail to the Southcenter area. Minkler is a relatively low-traffic street that could provide a link with the Green River Trail.

Table 15: Requested Sidewalk Locations
(See Figure 19)

#	Location	Existing Condition / Description
1	East Marginal Way S	Ensure that sidewalks are provided the entire length of East Marginal Way S, from the northernmost area (near Boeing sites) to Interurban Ave.
2	Tukwila International Boulevard	Provide sidewalks in the northern portion of Tukwila International Blvd (north of S 116th Street) that are not currently planned for in Phases II and III improvement designs.
3	S 124th Street	No sidewalks.
4	S 126th Street	No sidewalks on residential street in proximity to Tukwila Community Center.
5	S 128th Street	No sidewalks on residential street in proximity to Tukwila Community Center.
6	S 125th/S 129th/S 130th/56th Ave S	This could be a relatively low-traffic pedestrian route to the Codiga Farm, the Tukwila Community Center, and Allentown.

Table 15: Requested Sidewalk Locations (Continued)

#	Location	Existing Condition / Description
7	S 133rd Street/S 132nd Street	This east-west through connection from Military Rd S to Tukwila International Blvd has no sidewalks. Sidewalk construction would serve the residents as well as employees of Highline Community Hospital.
8	33rd Ave S	North of S 132nd Street, 33rd Ave S has no sidewalks.
9	S 130th Street	No sidewalks on residential street in proximity to Tukwila Community Center and other parks.
10	40th Ave S	Sidewalks are not provided along the entire length of 40th Ave S. Sidewalks on this route would provide a connection between two of Tukwila's Parks, as well as a walking route to/from the Community Center.
11	Macadam Road S/51st Ave S	This area lacks sidewalks. Several people said they would like to be able to walk safely in this area to get to the Community Center.
12	Interurban Ave (from Tukwila Park & Ride north to Gateway Drive)	There are no sidewalks to get you to the nearest signalized crossing if you're heading north from the Park & Ride on Interurban.
13	56th Ave S	Sidewalks stop at eastern end of bridge--would like sidewalks on entire length of street.
14	S 135th Street (between Military Rd & 32nd Ave S)	No sidewalks between Military Road S and 32nd Ave S. This is a school route.

Table 15: Requested Sidewalk Locations (Continued)

#	Location	Existing Condition / Description
15	S 140th Street	No sidewalks on residential street near several schools.
16	33rd Ave S	No sidewalks on residential street. Also, provide a walkway from S 140th Street to Cascade View Elementary.
16	S 148th Street	No sidewalks on residential street near several schools.
17	53rd Ave S	This street currently has a paved shoulder that alternates its location on one side of the street. Sidewalks would provide safer access to the park.
18	S 146th Street	No sidewalks on residential street near several schools.
19	S148th Street	No sidewalks on residential street near several schools.
20	S 150th Street (between 42nd Ave S and Tukwila International Blvd)	No sidewalks on this stretch of the street. This is a school route, with kids walking to school along S 150th from apartments in the Tukwila International Boulevard area.
21	S 150th Street (between Thorndyke Elementary and 51st Ave S)	A through connection should be provided for pedestrians; there are not many through connections from S 150th to other areas.
22	S 150th--missing link to Tukwila Elementary	There is no through connection here to get from S 150th Place to Tukwila Elementary.
23	S 152nd Street	A walkway should be provided in this area between apartment to the south and the school.
24	Connection to Thorndyke Elementary	Through connection from apartments along S 152nd Street north to Thorndyke Elementary--kids already walk through the area to get to school.
25	40th Ave S (between S 154th Street & S 152nd Street)	No sidewalks on this stretch of the street. This is a school route.
26	42nd Ave S (from Southcenter Blvd to S 164th Street)	This stretch of the street is very steep and there are many pedestrians walking along the shoulder. Some kids use this as a school route Several people requested that sidewalks be provided on both sides.

Table 15: Requested Sidewalk Locations (Continued)

#	Location	Existing Condition / Description
27	S 154th Street/Southcenter Blvd (between Tukwila International Blvd & I-5)	No sidewalks on this busy street. Kids use this as a school route. One resident who lives on S 150th Street walks to the Mall, and has to take 42nd Ave North to S 144th, then down Macadam to 150th Pl to connect up with the walking trails in order to safely get to the Mall. She thinks sidewalks on Southcenter would provide the most direct and safest route.
28	Klickitat/51st Ave S	Gaps in sidewalks. This route has the potential to provide a bicycle/pedestrian connection to the Mall.
29	S 164th Street	No sidewalks on S 164th Street--residents in the area would like to be able to walk along sidewalks to the Safeway at Military Rd & S 164th Street
30	Southcenter Mall perimeter and internal walkways	Sidewalk improvements on perimeter and interior of Southcenter Mall property--one person commented that it is difficult to walk on the west side of the mall because of the narrow widths of the sidewalks. There are no sidewalks provided on the southern side of the mall between Tukwila Parkway to the southern mall entrance driveway off Strander Blvd. Also, once you are inside the Mall parking lot, there are not many internal walkways provided and it can be hazardous for pedestrians to try to navigate their way to the Mall storefronts through the parking lot areas.
31	Andover Park West bus stop	The sidewalk is discontinued along Andover Park East north of the bus stop at Baker Blvd.

Table 16: Security Concerns
(See Figure 19)

#	Location	Existing Condition / Description
A	Tukwila International Boulevard	Automobile drivers disregard pedestrians and pedestrians disregard automobiles. Signalization should be changed to allow a separate pedestrian interval.
B	S 144th Street	Rude kids intimidate pedestrians and do not share room on sidewalk.

C	Bus stop/crosswalk on Southcenter Blvd in front of City Hall	Crossing Southcenter Blvd at crosswalk takes a long time in order to get traffic to stop for you. Crossing is wide and hazardous for those using it. Pedestrians have to wait a long time at the signal that is nearby to the west, discouraging use of the signalized crossing.
D	Transit Center	Transit users frequently run across street where there are no crossings. Traffic in this area is heavy, and lack of crossing facilities creates a hazardous pedestrian environment.
E	Southcenter Parkway	The high number of curb cuts makes it difficult to walk in this area. Also, some of the corners lack curb ramps.

Table 17: Planned Improvements from CIP
(See Figure 19)

#	Location	Existing Condition / Description	CIP Number	Expected Construction
1	37th Ave S	No sidewalks on 37th Ave S north of S 135th Street to Tukwila International Blvd.	Residential Improvements-varies	beyond 2012
2	53rd Ave S	No sidewalks on 53rd Ave S between S 137th Street and S 144th Street (includes area adjacent to park).	Residential Improvements-varies	beyond 2012
3	S 132nd Street	No sidewalks connecting Military Road to Tukwila International Boulevard. This location is the nearest east-west connection linking Highline Community Hospital to Tukwila International Boulevard.	Residential Improvements-varies	beyond 2012
4	S 150th Street	No sidewalks along S 150th between 42nd Ave S and Tukwila International Boulevard. This is a school route for Thorndyke Elementary.	Residential Improvements-varies	beyond 2012
5	40-42nd Ave S (S 160th Street - S 131st Place)	No sidewalks, only paved shoulder along 42nd Ave S between S 154th Street and S 160th Street. This is Phase III of project number 94-RS01	94-RS01 (Phase III)	beyond 2012

Table 17: Planned Improvements from CIP (Continued)

#	Location	Existing Condition / Description	CIP Number	Expected Construction
6	40-42nd Ave S (S 160th Street - S 131st Place)	No sidewalks, only paved shoulder along 42nd Ave S between S 160th Street and S 164th Street. This is Phase IV of project number 94-RS01	94-RS01 (Phase IV)	beyond 2012
7	Macadam Winter Garden	Phase II will include development of park trails.	03-PK08	2005-2007
8	Tukwila Pond	Phase III will include construction of trails.	03-PK10	beyond 2012
9	Greenbelt Trails	"Several foot trails could be developed using WSDOT lands, City rights-of-way, and easements to provide public trails. Additional trails along the Green River could be developed" (City of Tukwila 2007-2012 CIP, p. 14)	99-PK04	beyond 2012
10	Southgate Park Improvements	Develop a trail from Tukwila International Boulevard through Southgate Park to 42nd Ave S.	90-PK03	beyond 2012
11	Codiga Farm Park	Trail access to sandbar.	98-DR06	2005-2007
12	Boeing Access Road	Bridge replacement on Boeing Access Road over BNRR Bridge Replacement. Improvements will include sidewalks on both sides.	94-RW08	beyond 2012
13	Southcenter Parkway to southern City limits.	Extension of curbs, gutters, and sidewalks to southern City limits.	84-RW37	2005-2009
14	Tukwila International Blvd-S 116th to S 132nd (Phase II)	Upgrade of roadway with curbs, gutters, sidewalks, and landscaping.	95-RW03	2005-2008
15	Tukwila International Blvd-S 132nd to S 138th (Phase III)	Upgrade of roadway with curbs, gutters, sidewalks, and landscaping.	95-RW04	2005-2008

Table 17: Planned Improvements from CIP (Continued)

#	Location	Existing Condition / Description	CIP Number	Expected Construction
16	Tukwila International Blvd- Boeing Access Rd to S 116th Street	Design and construct curb, gutter, sidewalk, drainage, and street lighting improvements	90-RW05	2011-2012
17	Interurban Ave S (S 143rd - Fort Dent Way)	Design and construct sidewalks, pavement restoration, drainage, and lighting.	03-RW02	2005-2007
18	Southcenter Blvd (I-5 to Tukwila International Blvd)	Improve roadway with medians, turn lanes, gutters, sidewalks, street lighting, and drainage.	02-RW04	2007-2008
19	East Marginal Way (Boeing Access Road to S 112th Street)	Design and construct curb, gutter, drainage, lighting, turn lanes, and traffic control. Sidewalks are assumed to be included in the project.	89-RW05	2009 and beyond
20	Minkler Blvd	Improve south side of roadway with curb, gutter, and sidewalks	84-RW07	2011
21	Ped/bike bridge over Green River in the Southcenter urban center (north of Strander).	Improve east-west ped/bike connectivity by constructing a ped/bike bridge over the Green River.	05-RW03	beyond 2012
22	S 168th Street	Construction of a new street from Southcenter Parkway to Andover Park West to include sidewalks.	84-RW08	beyond 2012

Table 17: Planned Improvements from CIP (Continued)

#	Location	Existing Condition / Description	CIP Number	Expected Construction
23	Nelsen Pl (S 158th-S 156th)	Design and construction of sidewalks, trail access, lighting, and pavement restoration	84-RW13	beyond 2012
24	S 143rd Street (Interurban-Duwamish)	Construction of curb, gutter, sidewalk, drainage, paving, lighting, and traffic control improvements.	84-RW25	beyond 2012
25	S 134th Street (S 133rd - 48th Ave S)	Construction of curb, gutter, sidewalk, drainage, paving, lighting, and traffic control improvements.	84-RW27	beyond 2012
26	S 144th bridge over I-5	Widen sidewalks across bridge.	03-RW04	beyond 2012

Appendix E: Surveys and Summaries

Short Survey

SHORT SURVEY RESPONSES (5 ONLINE SURVEYS COMPLETED AS OF 3/21/2007)

Walk & Roll

(Tukwila's Bicycle and Pedestrian Plan)

Short Survey

Part I. Walking

1. What keeps you from walking more often (i.e., no direct route, unsafe walking conditions) **OR** what would encourage you to walk more often (i.e., more free time, construction of sidewalks in your neighborhood, walking with a friend/group)? (**DESCRIBE**)

- *Would like connection to the Burke Gilman Trail. All parks should be connected by walking routes.*
- *A habit of driving. Walking somewhere for lunch needs to be a pleasant, easy walk and under 10 minutes.*
- *Construction of sidewalks in my neighborhood…from Military Way traveling east on 164th, from 164th traveling north on 42nd, from 144th traveling north on 99*
- *The safety of the neighborhood and the lack of sidewalks*
- *Unsafe walking conditions*

2. Where would you like to get to by foot, if you could? (**IDENTIFY WHERE YOU LIVE/WORK, AND WHERE YOU WANT TO GO**)

- *S 126th to Tukwila Community Center and the Burke Gilman Trail.*
- *Walking from work (City Hall) to the Southcenter Mall is possible in 15 minutes, but it's not a pleasant walk. Loud traffic, long waits at the lights.*
- *To safely walk to work at Boeing's Duwamish site*
- *33rd Ave S (home) to 134th Place (work); (2) 33rd Ave S (home) to grocery store, drugstore*
- *I live in Tukwila and would like to walk safely to the mall. No sidewalks along 154th.*

3. Identify the top three locations or routes where it is difficult for you to walk. (**IDENTIFY CROSS-STREETS OR LANDMARKS**)

- *To any parks other than Riverton. There are two parks nearby but no safe route.*
- *No response*
- *north from 144th on TIB*
- *TIB, 33rd Ave S, Military Road*
- *TIB north from 144th north to Boeing Field*

4. What can be done to make these locations/routes better for walking?
   - *Safe routes for walking from traffic.*
   - *No response*
   - *Sidewalks*
   - *Sidewalks, crime/safety*
   - *Better/completed sidewalks and better lighting*

Park II. Rolling

1. What keeps you from bicycling more often (missing connections, no bike lanes, etc.) **OR** what would encourage you to ride your bicycle more often (i.e., more free time, more bike lanes, more bicycle trails, access to a bicycle, etc.)? (**DESCRIBE**)
   - *Missing links in a nice bike trail system.*
   - *I would like to bike to work at least occasionally if we had showers and a nice changing room (City Hall). For recreational biking, we need a much better connection from the Green River trail to Seattle. East Marginal is not a fun place to ride.*
   - *no bike lanes, sidewalks north of 144th on TIB*
   - *no bike lanes*
   - *more bike lanes; (2) more bicycle trails*

2. Where would you like to get to by bike, if you could? (**IDENTIFY WHERE YOU LIVE/WORK, AND WHERE YOU WANT TO GO**)
   - *S 126th to the local parks. Connection to the Burke Gilman Trail. Bike lane along Macadam.*
   - *I would occasionally bike to work (at City Hall). Also, I would occasionally recreational ride between Tukwila and Seattle.*
   - *same as above*
   - *same as walk*
   - *I live in Tukwila, I would like to bike safely to the Mall and to the Duwamish area*

3. Identify the top three locations or routes where it is difficult for you to ride your bike. (**IDENTIFY CROSS-STREETS OR LANDMARKS**)
   - *Along East Marginal Way towards Boeing--very busy and dangerous, no bike lane.*
   - *no response*
   - *same as above*
   - *same as walk*
   - *TIB north to North Boeing Field*

4. What can be done to make these areas better for biking?
   - *Dedicated safe lane along East Marginal Way towards Boeing.*
   - *We need a good bike connection from the future Tukwila Light Rail station to the Southcenter area and also north along TIB and to the Green River Trail.*
   - *bike lanes*
   - *bike lanes/paths*
   - *Better bike lanes, cleaner street (too much debris), better lighting*

Long Survey

**WALK & ROLL SURVEY RESPONSES:
COMPILED FROM A TOTAL OF 50 SURVEYS
COMPLETED (AS OF 3/21/2007).**

WALK & ROLL: CITY OF TUKWILA PEDESTRIAN & BICYCLE SURVEY

**PLEASE DROP OFF YOUR COMPLETED SURVEY AT THE TUKWILA COMMUNITY CENTER OR CITY HALL. OR, SEND IT BACK BY MAIL AT THE FOLLOWING ADDRESS:
6300 SOUTHCENTER BLVD, SUITE 100, TUKWILA, WA 98188.**

PURPOSE
The City of Tukwila is conducting this survey as part of its Walk and Roll Plan – a plan that will identify and prioritize improvements that would make walking and bicycling better. Your feedback will help the City to understand where you walk and bike within Tukwila, and what improvements would encourage you to Walk and Roll to more places more often. Funds for this survey were made available through the Washington State Department of Community, Trade and Economic Development.

PART I: WALKING

5. When you walk, why or where do you go?
(21) Social/ Recreational **(24)** Health/Fitness **(4)** Work **(4)** School
(6) Transit/Bus **(-)** Church **(-)** Civic **(10)** Shopping
☐ Other (**PLEASE DESCRIBE**): ***dinner/restaurants; dog exercise (2 responses); early at the mall; Oxbow; to Park & Ride for carpool; park***

2. Which of these phrases best describe you? (CHECK **ALL** THAT APPLY)
(14) An advanced walker/runner who is confident traveling alone in most places.
(13) A beginner/intermediate walker/runner who is only confident in heavily traveled areas (i.e. commercial malls or well-traveled sidewalks).
(4) A walker/runner who only walks with others or with a pet due to safety/security concerns.
(3) A person who walks by necessity (does not own a car/is not near a transit route).
(4) A person who frequently walks to work/school by choice.
(17) A recreational walker/runner who typically participates with family and/or friends.

3. How far to you walk to work, school or other places when you walk? (CHECK **ONE**)
(7) 0-1 Mile **(16)** 1-2 Miles **(14)** 2-6 Miles **(-)** 6 + Miles **(2)** Not Applicable

4. Name the three places you walk to most frequently (identify **CROSS-STREETS OR LANDMARKS**), and estimate the time it takes you to walk to these places (**IN MINUTES**):

- *(1) Military Road between 124th and TIB; (2) Des Moines Rd near 135th (SeaTac Park)-->30-45 minutes*
- *(1) Capitol Hill (downtown Seattle, not walking to but around the area); (2) Admiral District (West Seattle); (3) Lincoln Park (West Seattle)-->(1)N/A; (2) 5 minutes; (3) N/A*
- *Soccer field-Burien (240-300 minutes)*
- *(1) Coulon Park in Renton (40-45 minutes); (2) by Renton Library/Cedar River (30-40 minutes); (3) Skyway neighborhood with my dog (40 minutes)*
- *store (20 minutes)*
- *(1) Not in Tukwila!; (2) I do run on the Green River Trail (I run about 3 miles in 27 minutes or 4 miles in 36 minutes)*
- *(1) Green River (30 minutes); (2) North SeaTac Park/community center (5 minutes); (3) 144th and TIB (5 minutes)*
- *(1) Fort Dent Park (30 minutes); (2) City Hall bus stop (5 minutes)*
- *neighborhood (15 minutes)--Mel Roberts (Kent)*
- *(1) Tukwila Community Center (2 minutes); (2) Foster High School (20 minutes); (3) Starbucks on Interurban (10 minutes)*
- *(1) Jack In the Box/Starbucks on Interurban (25 minutes); (2) Tukwila Community Center (30 minutes); (3) Foster High School (15 minutes)*
- *(1) 144th Street to Tukwila Trading Post (30 minutes); (2) Interurban from the Park & Ride to Tukwila Community Center (30 minutes); (3) 144th & 55th Ave S to Southcenter Mall (45 minutes)*
- *(1) Federal Way (20 minutes(; (2) Tukwila (30 minutes); (3) Des Moines (40 minutes)*
- *(1) Mall; (2) River path (116th to 180th); (3) Golf Course*
- *(1) Tukwila Community Center (less than 30 minutes); (2) trails (Duwamish/Green) (less than 30 minutes); (3) Fort Dent (less than 30 minutes)*
- *(1) work-136th & 32nd Ave S (10 minutes); (2) parks (varies, since I go to parks all around the City)*
- *Interurban Trail*
- *(1) coffee shop (15 minutes); (2) Thriftway (25 minutes); kids school (weather dependent, 30 minutes)*
- *(1) Safeway Store (164th & Military Rd, 15 minutes); (2) Valley View Library (Military & 178th, 35 minutes); (3) Foster High School (144th and 42nd, 20 minutes)*
- *(1) In the neighborhood of 150th and 42nd to the Foster High School area (20 minutes round trip)*
- *(1) around the Southcenter area (45-60 minutes); along the river (60-90 minutes); up those huge hills to get to the grocery store (100-120 minutes)*
- *(1) Lander Street (Seattle) to Pike Place Market for work (45 minutes); (2) Southcenter Mall from S 51st Street (15 minutes); (3) Safeway from S 51st Street and corner of 161st Street (15 minutes)*
- *(1) up hill on 65th Ave S past Tukwila Park up to Fire Station/Library (30 minutes); (2) River trail from Fort Dent to Costco (50 minutes); City Hall to Mall (10 minutes)*
- *(1) Duwamish/Green River Trail terminus at W Marginal Way Pl S of S 102nd Street (20 minutes); (2) Tukwila Community Center (10 minutes); (3) S 128th Street and 37th Ave S (2 minutes)*
- *(1) Oxbow parking lot (40 minutes)*

- *(1) school (20 minutes); (2) church (20 minutes)*
- *(1) Redondo (40 minutes); (2) Albertson's (Federal Way, 25 minutes)*
- *(1) Green River (10 minutes); (2) Seattle Waterfront (30 minutes); Seward Park (30 minutes)*
- *(1) Lake Washington Ridge neighborhood (2-3 hours)*
- *(1) 65th Street Park & Ride (20 minutes); U-Village (10 minutes); Boeing Duwamish Office Park (11-14 Bldg) (20 minutes)*
- *Interurban Trail*
- *Interurban Trail (45 minutes)*
- *(1) Highway 99 & 112th (20 minutes); (2) Interurban Trail (20 minutes); (3) Mill Creek (2miles)*
- *(1) Tukwila Community Center (30 minutes)*
- *(1) to the bus stop (20 minutes); (2) Green River Trail (40 minutes)*
- *(1) Interurban Trail near Boeing Duwamish site; (2) Renton Highlands Olympic/10th; (3) Liberty Park Walk Renton*
- *(1) Green River/Duwamish Trail (30 miles)*

5. What keeps you from walking more often? (CHECK **ALL** THAT APPLY)

(13) The time it takes to walk	**(12)** Destinations are too far	**(10)** Concerns about personal safety	**(10)** Darkness
(4) Poor condition of sidewalks or trails	**(15)** Lack of sidewalks or trails	**(2)** Difficult street crossings/ no crossing guards	**(17)** Bad weather
(1) Insufficient sight distances/visibility	**(2)** Scary dogs	**(3)** Unattractive scenery	**(3)** Afraid of vehicles
(10) Driving is more Convenient			

Other: time to be able to enjoy it; many destinations are more than 5 minutes away; lack of lighting at night; information on good locations to walk; I use my bicycle

6. What would encourage you to walk more often? (CHECK **ALL** THAT APPLY)

(22) More free time **(21)** Construction of trails or sidewalks in my neighborhood

(5) Walking with a partner/group

Other: biking trails to popular destinations like restaurants and shops; bus stop benches for rests; change in priorities

7. Identify the top three locations, segments, or routes where it is difficult to walk:

- *(1) Military Rd; (2) Des Moines Hwy; (3) 135th Street*
- *Anywhere without sidewalks and street lights*
- *no response*
- *by Thorndyke Elementary--not many places to go*
- *Southcenter Blvd*
- *(1) 144th & TIB; (2) S 146th Street; (3) Cascade View Park*

- *Interurban Ave (gaps in pathways along route; lack of sidewalks)*
- *Anywhere without sidewalks and street lights*
- *Around areas of light rail construction (2 responses)*
- *(1) Interurban Ave; (2) Highway 99*
- *Southcenter Parkway (lack of curb ramps)*
- *up and down hills (east and west)*
- *(1) Interurban (section that is on street); (2) Mall area; (3) non-sidewalk roadway (ALL=no space to walk, lack of curb ramps; difficult street crossings; gaps in pathways along route)*
- *(1) Military Rd; (2) Crossing TIB (difficult street crossings-need overpasses)*
- *N/A I live in Lake Forest Park*
- *(1) 42nd street hill--entire hill from 164th to Southcenter Blvd; (2) Military Road; (3) Southcenter Blvd from 42nd to International Blvd; ALL=no space to walk, lack of curb ramps, inadequate lighting-->NEED SIDEWALKS*
- *(1) Foster High School area--knocked off the sidewalk by rude kids, personal safety*
- *(1) West side of Southcenter Mall--> narrow sidewalk on busy street (lack of curb ramps)--> since they're building on Southcenter Mall, make them improve the sidewalks or make access easier for that side*
- *(1) S 130th from TIB to Macadam Road on the way to the Community Center; (2) S 164th Street from 51st Ave S to Military Road to get to Safeway--no sidewalks--BOTH AREAS NEED SIDEWALKS*
- *(1) International Blvd (144th to 116th); (2) E Marginal Way (Duwamish River to 120th)-->PUT A SIDEWALK ON EVERY STREET, ROAD, AND BYWAY*
- *(1) sidewalks that I walk on are hard on my joints; I would like more natural trails*
- *(1) S 144th Street (improve street crossings, provide more lighting)*
- *(1) Dash Point Road; (2) Pac Highway--> No space to walk, gaps in pathways along route*
- *(1) S 124th between TIB & East marginal Way (add sidewalks and curbs); (2) 30th Ave NE between Blakely & 50th (add sidewalk)*
- *(1) 225 building (Boeing) on 99 (no routes)*
- *(1) TIB (many people disregard pedestrians using the crosswalk on TIB); (2) South Jackson*

9a. What makes these areas difficult to walk? (CHECK **ALL** THAT APPLY)

(13) No space to walk	**(10)** Lack of curb or ramps	**(-)** Lack of transit access	**(-)** No school access
(4) Inadequate lighting	**(-)** Inadequate signage	**(8)** Difficult street crossings	**(9)** Gaps in pathways along route

b. What improvements would you like to see made to these areas?

- *(1) more bike lanes; (2) keep adding sidewalks*
- *no response*
- *We have sidewalks, but they don't continue (up the hill) past our street. I would like to see more walking trails so I can walk during my lunch.*
- *sidewalk*
- *Decrease in violence*

- *connected sidewalks all along Interurban*
- *sidewalks, more crosswalks (2 responses)*
- *lighting, railings (for Interurban & TIB)*
- *escalators*
- *more east-west connections; more ped-friendly areas around the mall*
- *overpasses on Military Rd & TIB*
- *better signage and lighting*
- *SIDEWALKS!!!*
- *west side of Southcenter Mall--since they're building on Southcenter Mall, make them improve the sidewalks or make access easier for that side*
- *sidewalks*
- *S 144th Street-improved street crossings, more lighting*
- *more sidewalks and curbs everywhere*
- *more nature trails & preservation of the environment*

PART II: BIKING

5. If you ride a bicycle, why or where do you go? (CHECK **ALL** THAT APPLY)

(17) Social/ Recreational **(18)** Heath/Fitness **(12)** Work **(-)** School

(2) Transit/Bus **(-)** Church **(1)** Civic **(8)** Shopping

Other (**PLEASE DESCRIBE**):

- *I don't bike (7); transportation; errands; Wenatchee & Interurban Trail*

6. Which of these phrases best describe you? (CHECK **ALL** THAT APPLY)

(8) An advanced rider who is confident riding in most situations.
(9) An intermediate rider who is not really comfortable riding in most traffic situations.
(6) A beginning rider who prefers to stick to the bike path or trail.
(2) A commuter who rides frequently to work/school by choice.
(-) A commuter who rides frequently by necessity (does not own a car/is not near a transit route.
(8) A recreational rider who rides with family and/or friends.

7. Please rank you preferences for where you like riding, using numbers 1-3. (With **1 REPRESENTING YOUR IDEAL CHOICE**)

	1	**2**	**3**
1. Wide street lanes/shoulders	1	7	11
2. Striped/marked on-street bike lanes	7	10	5
3. Off-street paths/trails	17	2	3

8. How far do you ride your bicycle? (CHECK **ONE**)

(3) 0-1 Mile **(3)** 1-2 Miles **(6)** 2-6 Miles **(15)** 6 + Miles **(-)** Not Applicable

9. Name the three places you ride your bike the most frequently, and estimate the time it takes (**MINUTES**):

- (*1)Bike path starting at Tukwila Community Center; (2) Military Road*
- *N/A*
- *In my neighborhood (Skyway)*
- *(1)Green River, (2) North SeaTac*
- *(1)Kent (60 minutes); (2) Duwamish River Trail (40 minutes)*
- *(1)work (40 minutes each way); (2) downtown Seattle (80 minutes each way; (3) Auburn (80 minutes each way)*
- *(1)downtown Bellevue (10 minutes); (2) downtown Kirkland (20 minutes); (3) Lake Washington Loop (around the Lake loop route)*
- *(1)Interurban & Green River Trails; (2) 72nd & 80th Ave*
- *(1)Park (local); (2) work*
- *(1)Tukwila Trail; (2) Federal Way trail*
- *(1)Valley View Library (Military & 178th, 20 minutes); (2) Foster High School (144th & 42nd Ave S, 10 minutes); (3) Safeway Store (164th & Military Rd, 10 minutes)*
- *(1)Along the river, 60-120 minutes; (2) to work, 15 minutes; (3) to that Asian market that isn't on top of a steep hill*
- *(1)Christensen Trail/Interurban Trail (1.5 hours roundtrip riding); (2) Tukwila to Alki (2.5 hours one way (I get a car ride back); (3) Tukwila to SeaHawk/Mariners Stadium (1.2 hours one way (get car ride back)*
- *(1)Around Riverton and Duwamish (40 minutes); (2) South Park (45 minutes round trip)*
- *(1)Dash Point Road to Kent Des Moines Road (35 minutes each way); (2) Pac Highway south-less of a shoulder, perpetual construction; 16th Ave S--long-term construction*
- *(1)Foothills Trail - Orting*
- *(1)Wenatchee (10miles-->4 hours, very scenic); (2) Auburn Interurban Trail (2 hours)*
- *(1)Interurban Trail; (2) Burke Gilman Trail; (3) Sammamish River Trail*
- *(1)trails*
- *(1)Burke Gilman Trail (70 minutes)*
- *(1)to gym (10 minutes)*
- *(1)Enumclaw (300 minutes); (2) Ballard (360 minutes); (3) work (100 minutes)*
- *(1)to work - West Seattle to Tukwila (45 minutes)*

10. What keeps you from bicycling more often? (CHECK **ALL** THAT APPLY)

(10) Time it takes to ride	**(7)** Destinations are too far	**(6)** Concerns about personal safety	**(14)** Lack of bike lanes and/or paths
(3) Unattractive scenery	**(6)** Difficult intersections	**(5)** Rough pavement surface	**(7)** Insufficient width
(4) Lack of bike parking	**(-)** Lack of shower facilities	**(15)** Bad weather	**(9)** Darkness
(-) Scary dogs	**(6)** Afraid of vehicles	**(7)** Driving is more Convenient	**(1)** Lack of sidewalks/ Trails

Other: No bike (5 responses); lack of motivation; physical compatibility: I am not able to ride a bicycle; limited carrying capacity of bike; lack of secure bike parking; no time

11. What would encourage you to ride your bicycle more often? (CHECK **ALL** THAT APPLY)

(5) Access to a bicycle **(22)** Better infrastructure (bike lanes & trails) **(9)** More time

(-) Other: _____

12. Identify the top three locations, segments, or routes where it is difficult to ride a bicycle:

- *(1) Military Rd; (2) Des Moines Highway*
- *Most neighborhoods in Tukwila and where I live in Skyway*
- *Interurban Ave*
- *(1) West Valley Highway; (2) Highway 99*
- *(1) Southcenter Blvd-S 154th Street-Three Tree Point Rd; (2) Getting from SW 7th & Grady Way in Renton to Fort Dent Park (Interurban Trail north); (3) Getting from SW 7th & Grady Way in Renton to Interurban Trail South; (4) Boeing Access Road (Pac Hwy to MLK Connection)*
- *(1) west side of the Green River near Southcenter; (2) Fort Dent (NE Corner) to Monster Rd*
- *(1) Hwy 99; (2) 509--route to South Seattle*
- *(1) Interurban (section that is on street); (2) Mall area; (3) non-sidewalk roadway (ALL=no space to walk, lack of curb ramps; difficult street crossings; gaps in pathways along route)*
- *(1) 42nd street hill--entire hill from 164th to Southcenter Blvd; (2) Military Road; (3) Southcenter Blvd from 42nd to International Blvd; ALL=no space to walk, lack of curb ramps, inadequate lighting-->NEED SIDEWALKS with curbs for safety*
- *(1) Southcenter, bad traffic (no space to ride--need either a bike lane or wider sidewalks)*
- *(1) Georgetown area on ride from Tukwila to Alki-no direct bicycle path; (2) West Marginal Way before Harbor Island Bridge-dangerous on-street riding-->no path=BOTH OF THESE AREAS NEED A DEDICATED BIKE PATH*
- *(1) W Marginal Place from 102nd Street to 14th Ave S; (2) E Marginal Way from the Duwamish River South-->EXTEND THE DUWAMISH TRAIL ALL THE WAY TO SOUTH PARK; ADD BIKE LANES*
- *(1) Military Road-narrow road, badly potholed or non-existent shoulder; (2) Pac Highway South-less of shoulder, perpetual construction; (3) 16th Ave S-long-term construction*
- *(1) Shelton to Tukwila (need more trails from the south counties*
- *(1) Tukwila to Lynnwood*
- *(1) in King County other than the Burke Gilman Trail*
- *(1) Renton Highlands down to Boeing Duwamish (if there were a separate path along the freeways without interruption like the I-90 bridge then this area would be easy to ride in)*
- *West Valley & 405 Intersection*
- *(1) West Seattle to Tukwila via West Marginal Way (2) 14th Ave S (Southpark Area); (3) Boeing Access Road (these areas could be made better with bike lanes & trails)*

13. What are the issues that make these areas difficult for riders to navigate? (CHECK **ALL** THAT APPLY)

(19) No space to ride
(1) Lack of ramps
(-) Lack of transit access
(-) No school access
(4) Inadequate lighting
(2) Inadequate signage
(12) Difficult street crossings
(11) Gaps in sidewalks or along pathways

Other: "margin" on side of road varies (need bike lanes!!!)

14. What improvements would you like to see made to these areas?

- *Bike lanes*
- *Areas with bike lanes*
- *Bike lanes*
- *Bike lanes*
- *Add missing link trail connections; improved guide signing; info/map kiosk at major route junctions; shoulder bike lane additions*
- *bike lanes (for west side of Green River--Southcenter area), and a trail (for Fort Dent to Monster Rd connection)*
- *lighting and bike lanes*
- *sidewalks with curbs for safety*
- *dedicated bike path*
- *extend the Duwamish Trail all the way to South Park; bike lanes*
- *Pac Highway South in vicinity of Boeing DC Plant very difficult to ride and hard to avoid. I'd like to see bike lanes on Pac Highway S*
- *more trails from the south counties*
- *bike lanes*
- *bike lanes*
- *bike lanes & trails*

PART III: SCHOOL ROUTES (*Skip to Part IV if you don't have children in school*)

1. How do your children get to/from school?

(8) Driven
(3) Walk
(1) Bike
(-) Scooter
(8) School Bus
(-) Public Transit
☐ Other: _____

2. What school(s)? (CHECK **ALL** THAT APPLY)

(1) Tukwila Elementary
(1) Thorndyke Elementary
(-) Cascade View Elementary
(-) Foster High School
(2) Showalter Middle School

Other: Renton School District (Bryn Mawr); other (not specified: 2 responses); Shoreline; Tyee & Sylvester; KaPowsin; Griften (Thurston County)

3. If your children are not presently walking or biking to school, what changes would encourage them to do so? (CHECK **ALL** THAT APPLY)

(5) Clearly designated bikeways/ sidewalks/ trails	**(2)** Walking/ bicycling safety training	**(-)** Bicycle route maps
(-) Walking route maps	**(2)** Secure bike storage facilities at school	**(2)** An organized walking group supervised by an adult (i.e., Walking School Bus)
(3) None	☐ Other:_____	

PART IV. TELL US ABOUT YOURSELF

(20) Male **(17)** Female

2 Do you own a motor vehicle? **(33)** Yes **(3)** No

3. What type of transportation do you use most often?
(31) Car **(2)** Bus **(3)** Bike
(-) Train **(3)** Walk ☐ Other: _____

4. What type of transportation do you use second-most often?
(3) Car **(6)** Bus **(7)** Bike
(-) Train **(18)** Walk
Other: **(-)** Run **(1)** motorcycle **(1)** motor scooter **(1)** vanpool

5. Do you ride public transit? **(19)** Yes **(17)** No

6. If you answered yes, which type of transit do you use (bus or train) and which routes?
- bus, no route specified (5 responses)
- bus route 150 (2 responses)
- bus (101, 174, 106), Amtrak
- I-90 and SR-520 routes: Bellevue to downtown Seattle
- bus 150, 126 to/from mall
- Sounder
- 174 bus to downtown
- bus 174
- bus from Southcenter to downtown Seattle
- bus 150; or if I drive to Lander Street, then any bus on the bus way
- Bus 174, 14, 7, and other downtown Seattle routes
- bus 949 while route existed; no take route from Federal Way to downtown Seattle
- bus 74
- bus 545
- bus to airport
- 174, 266

7. What do you do to make your travel experience safer? (CHECK **ALL** THAT APPLY)

(24) Wear a helmet (and other safety guards as appropriate to activity)
(32) Obey traffic signals/signs
(20) Ride with traffic (bikes)/ against traffic (pedestrians)
(21) Use lights/ reflective gear (if traveling at night)
(23) Courtesy to other travelers/ user types sharing roadways.

8. Please leave any additional comments, questions, or suggestions:

- Great effort to educate the public-perhaps a lunchtime event at schools and/or major employers would bring more folks.
- Tukwila School District extends up 42nd to 160th. Why are there no sidewalks so the kids could walk instead of riding the bus? There are people walking up and down that hill everyday with cars zooming past. It's frightening! My kids like to walk to the park on 42nd and to Safeway, but even at 13 and 15 yrs I am afraid for them. Please put in sidewalks with curbs!!!
- I have been knocked off the sidewalk in the Foster High School area. I've encountered a lot of very rude kids which makes me think twice about my personal safety. With it getting darker earlier I walk when school is letting out. My husband's getting to the point where he won't let me walk along. I prefer not to cross very busy streets (i.e., 99)--Rose Hedin
- I really like the trail along the river
- Connect river trail to Black River Riparian Forest and Springbrook trail in Renton--these areas are just minutes away!!
- A lot of cars are not stopping for pedestrians trying to cross the street using the crosswalk. Perhaps the crosswalks should be on a different sequence than the cars. Also, quite a few people run the RED light when I am trying to cross TIB. Perhaps there should be cameras on the streetlights.

Additional survey copies are available online or at the following locations: Tukwila Community Center, City Hall, Department of Community Development, Tukwila Library, and Foster Library. Contact Jaimie Reavis at (206) 431-3659 or jreavis@ci.tukwila.wa.us.

Thank you for taking the time to fill out this survey!

Survey Summary

PART I: WALKING

Reasons for Walking and Level of Experience

The main reasons why people walk in Tukwila are for improved health and fitness (17 responses), and for social and recreational activities (15 responses). A smaller number of people Walk & Roll to go shopping (9 responses), to go to school (4 responses), to get to transit (4 responses) and a few walk to work (3 responses). There is a range of different types of pedestrians in Tukwila, with the largest groups being those who are recreational walkers/runners who most often walk/run with family or friends (11 responses), advanced walkers/runners who feel confident traveling alone in most places, and beginner/intermediate pedestrians who are only confident walking/running in heavily traveled areas. Typically, people who completed the survey walk 1-2 miles or even farther when they are able to find the time. Most of those who ride a bicycle say they ride more than 6 miles for any given bicycle trip

Popular Areas for Walking (1 response unless otherwise marked)

- Military Road
- Des Moines Road near 135th
- Soccer fields in Burien
- Coulon Park in Renton
- Renton Library
- Cedar River Trail
- Skyway neighborhood
- Green River Trail – 6
- North SeaTac Park
- 144th & TIB
- Fort Dent Park - 2
- City golf course
- City Hall bus stop
- TCC - 4
- Foster High School - 5
- Starbucks (Interurban) - 2
- Jack-In-the Box (Interurban)
- Tukwila Trading Post
- Interurban from the Park & Ride to the TCC
- From 144th & 55th Ave to the Southcenter Mall
- Southcenter Mall - 2
- 136th & 32nd Ave (to work at Cascade View Elementary School)
- S 128th Street & 37th Ave S
- Parks
- Interurban Trail - 2
- Safeway (164th & Military)
- Valley View Library (Military & 178th)
- Southcenter Mall from S 51st Street

- Safeway from S 51st Street and corner of 161st
- Up hill on 65th Ave S past Tukwila Park up to Fire Station/Library
- Neighborhood around 150th and 42nd Ave S
- 42nd Ave S to get to Safeway
- City Hall to Mall
- Boeing sites (Oxbow, Duwamish sites specifically mentioned)

Most Difficult Places to Walk

(1 response unless otherwise marked)

- Military Road – 3
- S 135th Street
- Anywhere without sidewalks and street lights – 4
- Near Thorndyke Elementary (not many through connections and continuous sidewalks)
- S 144th Street (rude kids, improve street crossings, provide more lighting) – 3
- Southcenter Blvd – 3 (including1 response specific to area between 42nd and TIB, and 1 for the Southcenter area in general)
- S 146th Street
- Cascade View Park
- Interurban Ave (gaps in pathways along route and lack of sidewalks) – 2
- Interurban Ave (section that is on street)
- Around areas of light rail construction – 2
- TIB (no space to walk, gaps in pathways along route) – 6
- Southcenter Parkway (lack of curb ramps) – 2
- Up and down hills (east and west)
- 42nd Street hill (entire hill from S 164th Street to Southcenter Blvd) - 3
- S 164th Street from 51st Ave S to Military Road
- S 130th from TIB to MacAdam Road on the way to the Community Center
- East Marginal Way (Duwamish River to S 120th)
- Walking routes connecting parks
- S 126th to the Tukwila Community Center
- from City Hall to the Southcenter area
- to Boeing's Duwamish site; TIB north to Boeing Field
- from 33rd Ave S to 134th Place S
- from 33rd Ave S to the grocery store, drugstore
- Sidewalks along 154th

Major barriers that keep survey respondents from walking more often include (in order from most responses to least) (1) lack of sidewalks or trails, (2) bad weather, (3) the time it takes to walk, (4) the long distance to destinations, (5) darkness, (6) concerns about personal safety, and (7) the convenience of driving. Having more free time and construction of trails or sidewalks within respondents' neighborhoods are the major improvements cited by respondents that would encourage them to walk more often. No space to walk, lack of curb ramps, difficult street crossings, gaps in pathways along route, and inadequate lighting all contributed to the difficulty respondents had walking in difficult areas cited above. Adding sidewalks, more crosswalks, trails, bike lanes, lighting, east-west connections, overpasses on Military Road and Tukwila International

Boulevard, and better signage were all recommended improvements to Tukwila's pedestrian and bicycle network. Additionally, many respondents referred to concerns for personal safety, and one respondent said that a decrease in violence is a needed improvement.

PART II: BIKING

Reason for Biking

As far as biking goes, slightly more respondents ride their bicycles for health and fitness than for social and recreational activities, and slightly more people ride their bikes to work (total of 8 people) than those who answered that they do not own a bicycle (7 respondents). Almost as many people ride their bikes to go shopping (7 respondents) as those who bike to work.

Level of Experience

There were an equal number of respondents who were advanced riders and recreational riders who only ride with family and/or friends. Most other bicycle riders were intermediate riders who aren't comfortable riding in most traffic situations.

Preferred Improvement Types

For bicycle improvements, the most preferable improvements are listed from 1 to 3, with 1 being the most preferable, and 3 being the least:

(1) off-street bike paths are the most-preferred bicycle facility improvement
(2) striped/marked on-street bike lanes
(3) wide street lanes/shoulders

Only one person cited wide street lanes/shoulders as their most-preferred alternative, and 9 respondents cited wide street lanes/shoulders as their least-preferred improvement alternative. Off-street bike paths/trails were cited as the most-preferred alternative by 11 respondents, and striped/marked on-street bike lanes were most preferred by 8 respondents.

Typical Biking Distance

Eight respondents ride their bicycles more than 6 miles, while only 4 ride 2-6 miles, and 3 respondents each for 0-1 mile and 1-2 miles.

Most Popular Places to Ride a Bicycle in and around Tukwila

(One response unless otherwise marked)

- Tukwila Community Center
- Military Road
- Skyway
- Green River Trail – 5
- North SeaTac Park
- Kent
- 72nd & 80th Ave
- Local parks
- Work (3 responses)
- Downtown Seattle
- Auburn
- Downtown Bellevue
- Downtown Kirkland
- Lake Washington Loop
- Interurban Trail – 2
- Federal Way Trail
- Valley View Library
- Foster High School
- Safeway Store
- Asian market (?)
- Tukwila to Alki
- Tukwila to SeaHawks/Mariners stadium
- South Park – 1 response
- Riverton and Duwamish neighborhoods
- Dash Point Road to Kent Des Moines Road

Barriers to Increased Bicycle Use

The top reason why respondents do not ride their bicycles more often (when they do in fact own one) is because of bad weather. Other major obstacles that prevent respondents from riding their bikes more often include lack of time, lack of bike lanes and/or paths, insufficient width, the greater convenience of driving, the far distance to many destinations, darkness, and fear of vehicles.

Most Difficult Places to Ride a Bicycle

Areas where it is difficult to ride a bike include the following:

- Military Road- 3
- Des Moines Highway
- Most neighborhoods in Tukwila
- Skyway
- West Valley Highway
- Highway 99- 3 responses
- Southcenter Blvd—S 154th Street to Three Tree Point Road, 42nd Street to International Blvd
- Getting from SW 7th & Grady Way in Renton to Fort Dent Park (Interurban Trail North)
- Getting from SW 7th & Grady Way in Renton to Interurban Trail South
- Boeing Access Road (Pac Hwy to MLK Connection)
- Southcenter area- 3
- Fort Dent (NE Corner) to Monster Rd
- 509-route to S Seattle
- Interurban (section that is on street)
- Non-sidewalk roadways
- 42nd Street hill-entire hill from S 164th to Southcenter Blvd – 2
- Georgetown area on ride from Tukwila to Alki-no direct bicycle path
- West Marginal Way before Harbor Island Bridge (dangerous on-street riding) →both areas need a dedicated bike path
- West Marginal Place form 102nd Street to 14th Ave S
- East Marginal Way from the Duwamish River south (extend the Duwamish trail all the way to Southpark; add bike lanes)
- 16th Ave S (long-term construction)

The main reason these areas are difficult to ride in is because there is no space to ride (14 responses). Other problems include gaps in sidewalks or along pathways (7 responses), difficult street crossings (6 responses), inadequate lighting (4 responses), and inadequate signage (2 responses).

Improvement Suggestions for Difficult/Problem Areas

The most common suggestion to improve these areas is to add bike lanes (8 responses). Other commonly suggested improvements include adding missing link trail connections, the improvement or addition of lighting and signage (including information/map kiosks at major route junctions), adding sidewalks with curbs, and construction of new bike paths.

PART III: SCHOOL ROUTES

Walk & Roll for Schoolchildren

Only 15 respondents indicated that they have children who are in school. Of those, 7 say their children are driven to school every day, and 6 say that their children take the school bus. Only 2 respondents indicated that their children walk to school. Schools that respondents' children attend include Showalter Middle School, Thorndyke Elementary, and Tukwila Elementary.

Improvements that would encourage parents to let their children walk or ride their bicycles to school include clearly designated bikeways, sidewalks, or trails (3 responses), an organized walking group supervised by an adult (2 responses), walking/bicycling safety training (1 response), and secure bike storage facilities at school (1 response).

PART IV: TELL US ABOUT YOURSELF

- Gender

  Of those respondents who chose to fill out Part 4 of the survey, 15 were female and 13 were male. Almost all respondents own a car (24 yes responses, 3 no responses). 24 people use their cars as their primary mode of transportation, followed by 3 people who walk, 2 people who bike, and 1 person who rides the bus.

- Mode of Transportation

  Most people cited walking as their second most-common form of transportation (15 people), with 6 people riding the bus, 4 people biking, and 1 person each using their car, a motorcycle, a motor scooter, and a vanpool.

  14 people said they use transit, while 13 said that they do not. The bus is the most common form of transit used by survey respondents. The most popular routes include bus 150 (5 responses) and bus 174 (4 responses). Two respondents use the Sounder Train.

- Safety Precautions

  The biggest safety precaution respondents take is to obey traffic laws (24 responses). 18 people wear helmets, 16 are courteous to other travelers/user types sharing roadways, 15 ride with traffic (bikes)/against traffic (pedestrians), and 14 use lights/reflective gear (if traveling at night).

Appendix F. Glossary

Access Management—The management of the interference with through traffic caused by traffic entering, leaving and crossing thoroughfares. It is also the control and regulation of the spacing and design of driveways, medians, median openings, traffic signals and intersections on arterial streets improve safe and efficient traffic flow on the road system.

Accessible Routes of Travel- "A continuous unobstructed path connecting all accessible elements and spaces in an accessible building or facility that can be negotiated by a person using a wheelchair and that is usable by persons with other disabilities (includes access routes across sites between building entrances and other public facilities such as parking, sidewalks, restrooms, etc.) (WSDOT Pedestrian Facilities Guidebook, p. 35; Original source: Accessibility Design for All-An Illustrated Handbook, 1995 Washington State Regulations)

"The ADA requires every site to have at least on accessible route of travel that provides a connection between exterior accessible site elements (parking, waiting and drop-off zones, sidewalks and walkways, bus stops, etc.) and an accessible building entrance. In a park or similar setting, the accessible route should connect the major features of the site, including parking, drinking fountains, restrooms, interpretive signs and other constructed facilities and points of interest..

- Recreational Facilities
  Recreational facilities, such as trails, should provide accessible experiences as well. If terrain or other unusual conditions do not allow for the trail to serve as an accessible route of travel, other accessible connections or facilities that provide a similar recreation experience can be created" (WSDOT Pedestrian Facilities Guidebook, p. 35)

- Width
  "When an accessible route of travel is less than 5 feet wide, passing areas measuring 5 feet by 5 feet every 200 feet are necessary. Passing areas may already be available at building entrances, plazas, and sidewalk intersections" (WSDOT Pedestrian Facilities Guidebook, p. 37).

- Grade
  "A measure of the steepness of a roadway, bikeway or walkway, expressed as a ratio of vertical rise per horizontal distance, usually in percent; e.g. a 5 percent grade equals 5 m of rise over a 100 m horizontal distance" (WSDOT Pedestrian Facilities Guidebook, p. 219)

Accessibility—The ability to physically reach desired destinations, services and activities.

Amenity Zone- A hardscaped extension of the sidewalk to the back-of-curb, typically used instead of, or alternating with, a planting strip. Provides space for street furnishings (benches, trashcans, etc.) and street trees outside of the unobstructed walking space for pedestrians.

Americans with Disabilities Act (ADA)- The Americans with Disabilities Act is a Civil Rights Act that guarantees access to all public places and places to which the public is invited.

Bicycle– A vehicle having two tandem wheels, propelled solely by human power, upon which any person or persons may ride (FHWA Federal Aid Policy Guide, Sec. 652.3).

Bicycle Friendly Routes/Streets—Any roadway design that supports comfortable and safe bicycling experiences. Features often include low or moderate speed roadways, or on higher speed roads, sufficient roadway or dedicated lane width or other features to create separation between higher moving traffic and bicycles (i.e. bike lanes or paved shoulders). Even narrow roads are considered bicycle friendly when speeds are 20 mph or lower.

Bicycle Lane (Bike Lane)– A portion of a roadway which has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists (FHWA Federal Aid Policy Guide, Sec. 652.3).

Bicycle Trails—Also known as multi-use trails. Any bicycle facility fully separated from the roadway in an independent alignment. Paths and trails can follow a roadway, and even be proximate to the roadway when there are few or no intersecting streets or driveways. Paths or trails are generally 8-14 feet wide, and made of a compacted surface, paving or concrete.

Bicycle Route (Bike Route) – Bike routes are travel ways shared by bicyclists and motor vehicles that are signed as a navigational aid for bicyclists. Generally bike routes should have a secondary sign such as, “To downtown.”

Bicycle Shoulder, Paved Shoulder – On highways in many suburban and rural areas paved shoulders of 4 or more feet are added to each side. These are either left unmarked, or may be marked as bike lanes or bike routes.

Bikeways—Any road path, or way which in some manner is specifically designated as being open to bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes (AASHTO, WSDOT, Sec 652.3).

Boulevard—An urban area travelway with four or more lanes and a central raised median island. Boulevards often limit cross access and turns. This approach provides fewer conflicts, efficient movement, greater safety and higher carrying capacity. Bike lanes and separate sidewalks are a preferred treatment with boulevards.

Complete Streets—A complete street is defined as a street that works for motorists, for bus riders, for bicyclists, and for pedestrians, including people with disabilities. A complete streets policy is aimed at producing streets that are safe and comfortable for everyone.

Context Sensitive Solutions: CSS is the result of developing transportation projects that serve all users and are compatible with the surroundings through which they pass—the community and environment. Successful CSS results from a collaborative,

multidisciplinary and holistic approach to transportation planning and project development.

Contrast materials—Materials used in roadway, pathway or walkway construction can be made of contrasting materials or one material that is two or more separate colors (i.e. asphalt and concrete). Use of contrast helps pedestrians see subtle change in grade, which, in turn, reduces the chance of a fall and can be expecially helpful for those with visual impairment such as the elderly.

Crosswalks—The crosswalk generally refers to the most direct pedestrian pathway across a given leg of an intersection, whether marked or unmarked. For the purposes of these Guidelines, however, "crosswalk" refers to the marked portion of the street that is specifically designated for pedestrian crossing, whether at an intersection or a mid-block crossing. Crosswalks clearly define the pedestrian space, enhancing safety and comfort for all users. Crosswalks are an important part of the pedestrian network - they form a continuation of the pedestrian's travel path and enhance pedestrian connectivity. Crosswalks support the overall transportation system because other users, such as motorists, bicyclists and transit users will be pedestrians at some point during their trip and may need to cross the street.

Curb Extension—A feature that extends from the sidewalk into the pavement at an intersection or at a mid-block crossing (also sometimes called a "curb bulb", "neckdown" or "bulbout"). A curb extension can be hardscape, landscaped, or a mix of both. Reduces street width both physically and visually, thereby shortening pedestrian. Reduced crossing distance at crosswalks and potentially helping to reduce traffic speeds. Provides increased visibility for pedestrians and motorists. Moves parked vehicles away from street corners, improving visibility and access for large vehicles.

Curb Radius—The curved section of the curb connecting the curb lines of two intersecting streets. The curb radius measurement is taken from the back of the curb. The curb radius defines the space for (and helps direct) vehicle turning movements at intersections. The curb radius dimension can affect ease and speeds of vehicular turning movements.

Handicapped Pedestrian– A pedestrian, or person in a wheelchair, who has limited mobility, stamina, agility, reaction time, impaired vision or hearing, or who may have difficulty walking with or without assistive devices (WAC 236-60-010)

Highway: Total right-of-way of a public way; some or all of which may be paved. Total right-of-way area included in the definition of a highway can include sidewalks and trails.

Leading Pedestrian Interval (LPI) - Used at signalized intersections, the Leading Pedestrian Interval (LPI) is a signal phase that provides a pedestrian crossing signal a few seconds before the green signal for vehicles. Allows pedestrians to enter the crosswalk ahead of turning vehicles, thereby establishing their right-of-way. Improves visibility of pedestrians by providing them with a "head start" before vehicles are allowed to move. Reduces potential conflicts with turning vehicles.

Livable Community—A neighborhood, community or region with compact, multi-dimensional land use patterns that ensure a mix of uses, minimize the impact of cars, and promote walking, bicycling and transit access to employment, education, recreation,

entertainment, shopping and services.

Median—A raised barrier that separates traffic flows. Generally used to control access and reduce vehicular turning movements. Separates opposing traffic flows, reducing or eliminating vehicular conflicts. Can be used for access management, by restricting turning movements into driveways or side streets. If properly designed, can provide a pedestrian and bicycle refuge on wider streets. If properly designed, can provide a landscaped element to the streetscape.

Mobility—The degree to which the demand for the movement of people and goods can be satisfied. Mobility is measured by the quantity, quality, accessibility and utilization of transportation facilities and services.

Mode—Any one of the following means of moving people or goods: aviation, bicycle, highway, paratransit, pedestrian, pipeline, rail (commuter, intercity passenger and freight), transit, space and water.

Paved Shoulders The AASHTO Guide for the Development of Bicycle Facilities notes that "adding or improving paved shoulders often can be the best way to accommodate bicyclists" and they have the additional attraction of providing a variety of benefits to pedestrians and as well

Quiet roadways—Those roadways where traffic is of low volume and noise, where walking and bicycling are comfortable in an environment shared with motorized vehicles. Really quiet roadways have both low volumes and speeds. These places do not require walkways, bike lanes or trails.

Rail-Trail– A shared use path, either paved or unpaved, built within the right-of-way of an existing or former railroad (AASHTO Bicycle Facilities Guide, p. 3)

Right-of-Way-A general term denoting land, property or interest therein, usually in a strip, acquired for or devoted to transportation purposes (AASHTO Bicycle Facilities Guide, p. 3)

Road diet—A physical conversion of the street, wherein one or more travel lanes is converted to another use, often to support the use of other modes. A “narrowing” of the motor vehicle travelway. Converts excess vehicle capacity on a street into useable space for other modes. For example, a four-lane street might be narrowed to two lanes, with bike lanes and a median. When a street is dieted to two lanes, this helps to calm traffic, in part by eliminating the opportunity for passing, thus allowing the prudent driver to set the speed. Can enhance aesthetics and livability of adjacent land uses.

Roadway- The portion of the highway, including shoulders, intended for vehicular use (AASHTO Bicycle Facilities Guide, p. 3).

Rumble Strips– A textured or grooved pavement sometimes used on or along shoulders of highways to alert motorists who stray onto the shoulder (AASHTO Bicycle Facilities Guide, p. 3)

Shared Roadway– A roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved

shoulders (AASHTO Bicycle Facilities Guide, p. 3) Any roadway upon which a bicycle lane is not designated and which may be legally used by bicycles regardless of whether such facility is specifically designed as a bikeway (FHWA Federal Aid Policy Guide, Sec. 652.3).

Shared Use Path– Also known as a multi-use trail or multi-use path. A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the street right-of-way or within an independent right-of-way. Shared use paths may also be used by pedestrians, skaters, wheelchair users, joggers and other nonmotorized users (AASHTO Bicycle Facilities Guide, p. 3)

Shoreline—Through use of color or contrast the edge of a sidewalk, driveway, crossing or other traveled way is marked to guide people with low visual acuity (blind) along their route of travel. Tactile features are sometimes added to help with guidance. The edge of a building or a set of landscape materials might also act as shore lines.

Shoulder– The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use and for lateral support of sub-base, base and surface courses (AASHTO Bicycle Facilities Guide, p. 3)

Shy Distance Pedestrians, cyclists and motorists will keep a certain distance away from objects and conditions they view as hazards, such as fixed objects (walls, rails, bollards, curbs), abrupt drop-offs, and unrideable surfaces (gravel shoulders and pavement joints running parallel to their direction of travel). This distance is known as a "shy distance" and decreases the width of a pathway that is available for them to use. The shy distance from fixed objects is approximately 2 feet, while the shy distance from unrideable surfaces is a bit less at approximately one foot. The effect of the shy distance is a reduction in the “usable” width.

Sidewalk-The portion of a street right-of-way designed for preferential or exclusive use by pedestrians (AASHTO Bicycle Facilities Guide, p. 3). “The minimum desirable width for sidewalks is 5 feet on local neighborhood streets, and 6 feet elsewhere, which meets the ADA minimum clear width of 3 feet.” (WSDOT Pedestrian Facilities Guidebook, p. 37).

Sidewalk or walkway connectivity—A series of facilities along corridors and through districts that are well connected to support continuous pedestrian travel. A well designed and laid out community where people are not forced to walk in streets is said to have “high connectivity.”

Signed Shared Roadway– A shared roadway which has been designated by signing as a preferred route for bicycle use (AASHTO Bicycle Facilities Guide, p. 3)These routes serve to (a) Provide continuity to other bicycle facilities (usually Bike Lanes); or (b) Designate preferred routes through high-demand corridors (AASHTO Bicycle Facilities Guide, p. 7)

Surveillance— The quality of a space that allows it to be observed by others, creating a sense of security. A sidewalk, trail, road, plaza, park or other area that is well watched over with buildings built to the street, where retail level stores have at least 60% window and door coverage is said to have good surveillance. The terms transparency and “glazing” also refer to buildings that provide quality surveillance features.

Traffic Calming - A set of strategies used by urban planners and traffic engineers that aim to slow down or reduce traffic, thereby improving safety for pedestrians and bicyclists as well as improving the environment for residents. The 3 "E"'s referred to when discussing traffic calming are engineering, (community) education, and (police) enforcement.

Universal Design- Design of physical environments to meet the needs of all people.

Unpaved Trail- Paths not surfaced with asphalt or Portland cement concrete.

Wide Curb Lane – Wide curb lanes are outside lanes of traffic, greater than 12 feet in width, that are meant to accommodate both automobile and bicycles in the same traffic lane. These are usually constructed when a paved shoulder is not provided. A width of 14 feet is recommended for a wide curb lane, with 15 foot widths recommended in areas where bicycles are expected to need the extra room, such as steep hillclimbs. However, wide curb lanes greater than 14 feet are not recommended for continuous stretches of the roadway, since they may encourage the operation of more than one vehicle within the lane. When wide lanes are used to support bicycling they are referred to as a wide curb lane. The typical wide curb lane is 14-15 feet. These are not marked for bicycling.

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