Chapter 6. Recommended Improvements: Safe and Friendly Streets

Transportation remains a high priority for most Shoreline citizens, particularly as it relates to neighborhood quality of life. Citizens want streets to be attractive, welcoming and safe for pedestrians and bicyclists as well as drivers.

The City inherited a substantial street grid system from King County, however many of the streets lack sidewalks, curbs and gutters. Citizens consistently cite the lack of sidewalks as a pressing transportation issue. Safety remains the City's most important responsibility, and citizens support safety as their first priority. Citizens are also very concerned about preventing and managing neighborhood cut through traffic. The City does not control the county or regional transit systems, but planned regional investments in transit may increase ridership opportunities for Shoreline citizens, if properly designed.

This chapter of the TMP sets forth a series of recommendations to support the transportation policies of the City's Comprehensive Plan. (These policies are included as sidebars in this document.) These recommendations call for increased funding for safety programs and also set forth an overlay of street design standards for "Green Streets" as identified in the Community Design Element of the Comprehensive Plan. Lists of pedestrian, bicycle and roadway projects are included, drawn from the project lists in **Appendices 5-1, 5-2 and 5-3** and reflecting the evaluation criteria described in Chapter 5.

Appendix 6-1 shows the "financially constrained" project recommendation -- all the projects recommended for funding over the next 20 years. The projects have been prioritized by mode – but not across mode, i.e. roadway projects were not evaluated against pedestrian projects.

Goal T A: Provide safe and friendly streets for Shoreline citizens.

To: Make safety the first priority of citywide transportation planning and traffic management. Place a higher priority on pedestrian, bicycle, and automobile safety over vehicle capacity improvements at intersections.

Tp: Use engineering, enforcement, and educational tools to improve traffic safety on City roadways.

Tq: Monitor traffic accidents, citizen input/complaints, traffic violations, and traffic growth to identify and prioritize locations for safety improvements.

T9: Develop a detailed traffic and pedestrian safety plan for arterials, collector arterials and high potential hazard locations.

Tc: Consider reducing four-lane arterials to three where level of service standards can be maintained. Where four lane arterials are required to maintain levels of service, seek to improve safety by constructing a center turn lane with pedestrian refuges where feasible.

Tr: Consider installation of devices that increase safety of pedestrian crossings such as flags, in-pavement lights, pedestrian signals, and raised, colored and/or textured crosswalks.

T10: Designate "Green Streets" on select arterials and neighborhood collectors that connect schools, parks, neighborhood centers and other key destinations, for which the design guidelines in Table 6-2 shall apply. Compile design standards for each "Green Street" type.

Tu: Develop a comprehensive detailed street lighting and outdoor master lighting plan to guide ongoing public and private street lighting efforts. Adopt a hierarchy of street light levels based on land uses, crime rate and urban design policies.

T4: Minimize curb cuts (driveways) on arterial streets by combining driveways through the development review process and in implementing capital projects.

Appendix 6-2 cross-references the evaluated projects, i.e. it shows where potential pedestrian, bicycle and/or roadway projects overlap. The TMP project list is intended to serve as a guide when selecting projects for grant applications and for funding within the City's 6-year Capital Investment Plan.

Enhanced Safety Programs

Safety Management Program

Traffic safety is the City's top transportation priority. Unsafe driving practices put children and adults at risk while traveling in vehicles, bicycling or walking along the roadways. The vast majority of crashes are caused by driver error. Changing driver behavior, through education and enforcement, is an important element in addressing traffic safety issues. At the same time, the City's design and management of its roadway and sidewalk systems can reduce the number and severity of collisions.

Safety programs draw experts from multiple professions, including land use planning and development, civil and mechanical engineering, law and law enforcement, public policy, medicine and public health. The first director of the National Highway Traffic Safety Administration, William Haddon, M.D., created the matrix shown in **Table 6-1** illustrating how human factors, vehicle/equipment, road engineering and social/economic related behaviors could reduce risk to motorists, bicyclists and pedestrians. [1]

Table 6-1. Risk Reduction Using the Haddon Matrix

	Human Factors	Vehicle/Equipment (objectives)	Road Engineering (objectives)	Social/Economic (objectives)
Pre-Crash (how to avoid collisions)	Driver Training	Laser Beam Headlights (improve night vision)	Traffic Signals and Signs (eliminate traffic conflicts)	Sidewalks (promote safe walking)
Crash (reduce injury during impact)	Mandatory Child Safety Seat Use	Safety Restraints (reduce injury)	Guardrails (avoid collisions with fixed, off road objects)	Speed Limits (reduce severity of crash)
Post-Crash (increase chance of survival)	EMS	High Impact Gas Tanks (reduce chance of fire)	Cell phones and 911 (quick trauma treatment)	Lawsuits (mitigate financial and personal loss)

This table shows that a range of actions can help prevent collisions:

- Driver training
- Improved headlight technology
- Traffic signals and signs
- Provision and design of sidewalks

The table also lists an additional array of actions can help reduce the severity of injury and increase chances of survival from collisions.

[1] Planning for Traffic Safety in 2004 and Beyond. Prepared by Paul J. Ossenbruggen, Ph.D., The Far View Distance Learning Program, College of Engineering and Physical Sciences, University of New Hampshire, March 2004.

Safety Recommendations: The City of Shoreline should continue to combine civil engineering, safety education and police enforcement tools to improve traffic safety on City roadways. The Transportation Master Plan recommends creating and funding a safety management program to provide additional resources to the transportation department. As one of the first steps for this program, the City should develop quantifiable performance-based goals and an evaluation process to prioritize emerging safety needs.

The City's public works department is in the process of creating a traffic accident database but has been hampered by the lack of data from the state of Washington and a lack of dedicated resources. Once the database is established, the department should work in cooperation with the police department to identify high accident locations, prioritize emerging needs and fund improvements from the safety management funds.

The City should also keep current on how socio-economic trends affect safety needs. For example, most existing schools were designed when the majority of children walked, bicycled, or rode school buses. Today, parents dropping off and picking up children in cars can overwhelm available facilities and overflow into adjacent streets, creating safety concerns.

The City should consider including the following elements when developing a safety management program:

- Continue to work with the Shoreline School District to review safe walk routes and reduce hazards at high volume child drop-off sites
- Partner with automobile dealerships and/or WSDOT to provide safety education, which may include
    - child car seat installation
    - seat belt effectiveness

- Encourage the use of alternative transportation for trips to community facilities
- Provide bicycle safety programs through youth organizations (e.g. Scouts, YMCA)

Street Lighting

Effective pedestrian lighting is one urban element that will help people feel safe and comfortable enough to get out of their cars and walk in their neighborhoods, to transit stops, to stores, etc. In addition, good lighting design can minimize light pollution, enhance the urban environment, deter undesirable activities, increase safety, and minimize glare, power consumption, cost, visual impacts (day and night), and unwanted light spill-over onto private property. Restricting lighting of some public spaces is also important in creating places for uses where light pollution would be intrusive.

Lighting that is well designed and properly maintained will improve the appearance of public spaces, encourage people to interact, and contribute to a positive sense of safety and security. However, lighting by itself does not make a public place safer, and poor lighting is not the main contributing factor in nighttime crime in public spaces. The lack of people socializing and using the public space contributes to an environment that may actually encourage crime, regardless of the level of lighting. In places where lighting may provide a false sense of confidence or safety, a "no lighting" policy may be appropriate to completely discourage the use of an area after dark. If there is no natural surveillance or interaction of people, there is no level of lighting that will prevent crime.

In addition to lighting pedestrian areas, street lighting should provide uniform lighting along the full width of the public travel way. In places where pedestrian activity is important and encouraged, street lighting should properly illuminate sidewalks and street-crossing areas, and provide uniform lighting on the City roads. Street lighting projects should combine with other urban design elements to create a welcoming pedestrian environment.

Street Lighting Recommendations: The City of Shoreline should adopt and fund a street lighting plan that includes the following considerations:

- streetlight pole height standards;
- criteria for lamp fixture choice;
- lamp technology;
- color rendering and light spectrum criteria;
- light level standards
- reduction of light pollution to enhance star gazing; and
- nighttime safety criteria.

Due to evolving lighting technologies and lamp fixtures, the City should review this streetlight lighting plan on a regular basis.

Curb Ramps Program & Pedestrian Program

The City's curb ramp program includes the design and construction of curb ramps and bus pads. The ramps and bus pads are constructed to meet the standards of the Americans with Disabilities Act. The program can also fund wheelchair detection loops and audible pedestrian signals. Project locations are determined from an inventory compiled and maintained by the public works department, with a goal of installing 20 curb ramps per year. The City also has created a pedestrian improvement program to evaluate pedestrian safety needs and seek grant funding to implement improvements.

Curb Ramps & Pedestrian Program Recommendations: The City should continue funding these programs, with additional emphasis emerging needs for pedestrian safety and ADA compliance projects. The curb ramp program can be phased out over time as project objectives are met.

Neighborhood Traffic Safety Program

Over the past two decades, a significant number of programs, tools, and physical devices have been developed throughout the country to reduce the negative impacts of cut-through traffic. Many of these have been implemented in the Puget Sound area. Solutions to the impacts range from education and enforcement to capital construction projects. The capital solutions include: traffic circles, speed humps, narrowing, chicanes, textured pavement, closures, partial closures, traffic diverters, and more. Generally speaking, the more frequent a "traffic calming" device is used, the better the results in slowing or discouraging traffic. Also, different devices are successful in different situations.

Most of the traffic growth anticipated over the next twenty years will originate or be destined outside of the City of Shoreline. Shoreline will seek ways to ensure continued mobility through and within its boundaries, but will not do so at the expense of its neighborhoods. The City has instituted a successful Neighborhood Traffic Safety Program (NTSP) whereby citizens can work with their neighbors and the City to reduce traffic impacts on their neighborhood streets.

Goal T V: Protect neighborhoods from adverse automobile impacts.

T42:	*Work with neighborhood residents to reduce speeds and cut-through traffic on non-arterial streets with enforcement, traffic calming, signing, or other techniques. Design new residential streets to discourage cut-through traffic while maintaining the connectivity of the transportation system.*
Th:	*Streamline the Neighborhood Traffic Safety Program process and improve opportunities for public input.*
Ti:	*Monitor traffic growth on collector arterials and neighborhood collectors and take measures to keep volumes within reasonable limits.*

Neighborhood Traffic Safety Program Recommendations: The City should dedicate a staff person to the NTSP, while streamlining the program to make it more responsive. At the same time, the City should continue working to manage traffic impacts from the state highway system on city arterials.

"Green Streets"

The Community Design Element directs the City to develop a program to implement "Green Street" improvements that prioritizes connections to schools, parks, neighborhood centers and other key destinations. The public works department is charged with developing "Green Street" transportation standards to overlay existing street design standards. The "Green Street" standards will provide guidelines for an enhanced streetscape, including street trees, landscaping, lighting, pathways, crosswalks, bicycle facilities, decorative paving, signs, seasonal displays, and public art. The "Green Street" standards proposed in **Table 6-2** vary with the underlying street classification.

Recommendation: Adopt the recommended transportation "Green Street" standards in **Table 6-2** for arterials and neighborhood collectors. Conduct a planning study with the storm and surface water utility to identify an initial "Green Street" corridor.

Table 6-2. Design Guidelines for Transportation "Green Streets"

	Arterial "Green Street"	Neighborhood Collector "Green Street"
Vehicle Travel Lanes	2, 3 or 5	2
Vehicle Speed	Moderate	Slow
Turn/Median	Mix of medians and turn lanes that provide pedestrian refuge	None
On-Street Parking	Allowed	Usually
Landscaping	Street trees, landscaped medians and buffers between roadway and sidewalk	Street trees and buffers between roadway and sidewalk or mixed use path
Public Art	Included	Not included
Transit Amenities	High quality service supported with amenities at major stops and station areas	Buses/transit stops not generally allowed
Pedestrian Amenities	Sidewalk with buffering, special lighting and special crossing amenities tied to major transit stops	Sidewalk or mixed use path, with buffering, lighting and special crossing amenities
Bikeways	Striped or shared	Shared roadway or mixed use path
Drainage	Consider street edge alternatives that reduce storm water runoff from streets.	Consider street edge alternatives that reduce storm water runoff from streets.
Note: Application of "Green Street" design elements and guidelines shall depend upon the unique characteristics of the design project, available right of way, and the character and intensity of planned land use.		

Street Classification Recommendations

The TMP recommends modifications to Shoreline's Functional Street Classification in the Transportation Element of the 1998 Comprehensive Plan. **Appendix 6-3** provides detailed information about the recommended street classifications. **Table 6-3** provides a general description of the classification system, and **Figure 6-1** shows the recommended new street classification map.

Table 6-3: General Description of Classified Streets

	Arterial			Local Street	
	Principal Arterial	**Minor Arterial**	**Collector Arterial**	**Neighborhood Collector**	**Local Street**
Function	- To connect cities and urban centers with minimum delay - To channel traffic to Interstate system - To accommodate long and through trips	- To connect activity centers within the City - To channel traffic to Principal Arterials/Interstate - Accommodate some long trips	- To serve community centers and businesses - To channel traffic from Neighborhood Access streets to Minor or Principal Arterials - Accommodate medium length trips	- To serve residential areas - To channel traffic from local streets to Collector Arterials - Accommodate short trips such as shopping trips	- To provide local accesses - To serve residential areas
Land Access	- Limited local access – refer to the "Access Management Plan"	- Limited local access to abutting properties	- Local access with some control	- Local access with minimum restrictions	- Local access with minimum restrictions
Speed Limits	- 30 – 45 mph	- 30 – 40 mph	- 30- 35 mph	- 25 –30 mph	- 25 mph
Daily Volumes (vpd)	- More than 15,000 vpd	- 8,000 – 25,000 vpd	- 3,000 – 9,000 vpd	- less than 4,000 vpd	- Less than 4,000 vpd
Number of Lanes	- Three or more lanes	- Three or more lanes	- Two or more lanes	- One or Two lanes	- One or Two lanes
Lane striping	- Travel lanes delineated with stripes	- Travel lanes delineated with stripes	- Travel lanes delineated with stripes	- No travel lane striping	- No travel lane striping
Median	- Landscaped medians or two-way center left turn lanes	- Landscaped medians or two-way center left turn lanes	- Landscaped medians allowed	- Medians are not needed unless provided as traffic calming devices	- Medians may be provided as traffic calming devices
Transit	- Buses/transit stops allowed	- Buses/transit stops allowed	- Buses/transit stops allowed	- Buses/transit stops not generally allowed except for short segments	- Buses/transit stops not allowed
Bicycle Facilities	- Bike lanes or shared lanes desired	- Bike lanes or shared lanes desired	- Bike lanes or shared lanes desired	- Shared lanes can be provided	- Bike facilities not specifically provided; may include signed bike routes
Pedestrian Facilities*	- Sidewalks on both sides - Landscaped/amenity strips	- Sidewalks on both sides - Landscaped/amenity strips	- Sidewalks on both sides - Landscaped/amenity strips	- Sidewalks on both sides - Landscaped/amenity strips	- Safe pedestrian access through the use of sidewalks, trails, or other means.

Figure 6-1: Recommended Street Classifications

(available in 11 x 17 format)

Roadway Improvement Projects

Construction of the City of Shoreline's Aurora Corridor Project will address a number of congestion and safety issues within the City. Most of the city's remaining roadways function relatively well and do not experience high accident rates. Several will require additional turn lanes and/or through lanes at key intersections to prevent excessive congestion. Additional recommended roadway improvements were identified while evaluating the City's existing conditions and future traffic volumes.

Table 6-4 lists the recommended roadway improvements, and **Figure 6-2** illustrates the locations on a map. Several of these improvements should be funded through the new Safety Management Program. In addition, a number of planning studies have been recommended to better define project needs, including development of a multi-modal level of service standard, and a major subarea study of the Meridian Avenue North and North 175th corridors. A revised level of service standard may result in a different set of project recommendations.

All of the evaluated roadway and intersection improvements are listed in **Appendix 5-3**.

Goal T I: Develop a safe, efficient and effective multimodal transportation system to address overall mobility and accessibility. Maximize the people carrying capacity of the surface transportation system.

T1: Implement the transportation master plan that integrates green streets, bicycle routes, curb ramps, major sidewalk routes, street classification, bus routes and transit access, street lighting and roadside storm drainage improvements.

T2: Coordinate transportation infrastructure design and placement to serve multiple public functions when possible, i.e. integrate storm water management, parks development and transportation facility design.

T6: Implement a coordinated signal system that is efficient and which is flexible depending on the demand or time of day, and responsive to all types of users.

T3: Adopt LOS E at the signalized intersections on the arterials within the City as the level of service standards for evaluating planning level concurrency and reviewing traffic impacts of developments, excluding the Highways of Statewide Significance (Aurora Avenue N and Ballinger Way NE). The level of service shall be calculated with the delay method described in the Transportation Research Board's Highway Capacity Manual 2000 or its updated versions.

Tw: The City of Shoreline shall pursue the development of a multi-modal measure for Level of Service that takes into account not only vehicular travel and delay, but transit service and other modes of travel.

T11i: Assure that vehicular and non-motorized transportation systems are appropriately sized and designed to serve the surrounding land uses and to minimize the negative impacts of growth.

Ta: Design transportation improvements to support the city's land use goals and fit the character of the areas through which they pass.

T5: Utilize the Arterial Classification Map as a guide in balancing street function with land uses. Minimize through traffic on local streets.

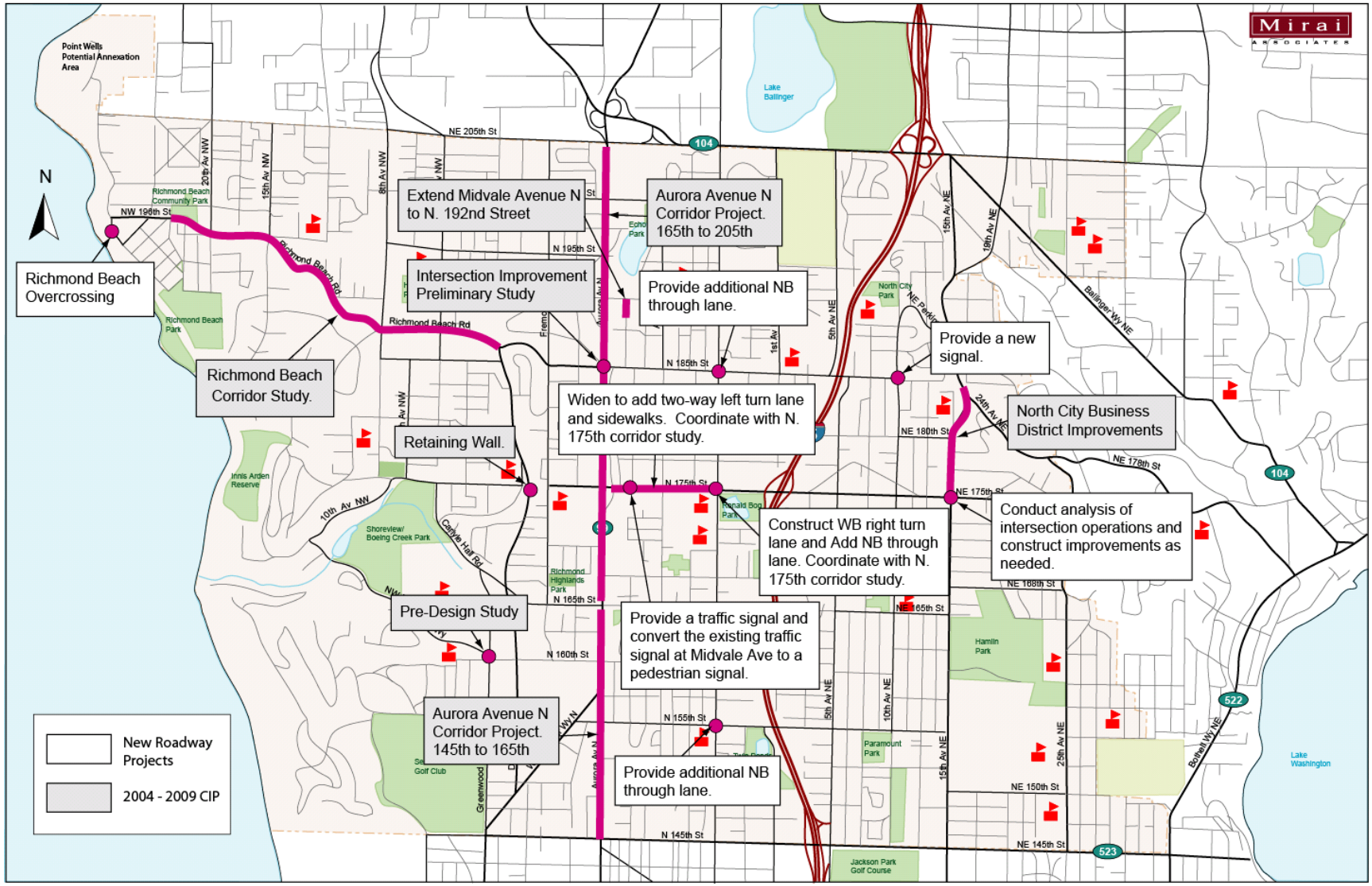
Table 6-4. Roadway Projects Recommended for Funding

Roadway Projects Recommended for Funding				
Location	**Improvement**	**Function/Benefit**	**Comment**	**Cost ($000)**
IN 2004 – 2009 CIP				
All	Advanced transportation right of way acquisition			$360
Richmond Beach Drive and NW 196th Street	Richmond Beach Overcrossing	Improve Neighborhood Access and Safety		$2,153
N/A	Transportation Improvements CIP project formulation	Planning		$800
N 185th and Aurora	Intersection improvements – Preliminary Study	Safety		$40
All	Neighborhood Traffic Safety Program	Improve Neighborhood Access and Safety		$3,320
Aurora Ave N: 145th to 165th	Aurora Corridor Project	Safety and Operations		$20,283
Aurora Ave N: 165th to 205th	Aurora Corridor Project	Safety and Operations		$59,790
North City/15th Avenue NE	North City Business District/15th Avenue NE Improvements	Safety and Operations		$3,465
North 160th St/Greenwood Avenue N	Pre-Design Study	Safety and Operations		$50
Dayton Ave N/175th	Retaining Wall	Safety		$310
5th Ave NE	Street Drainage Improvements	Operations		$166
N/A	Transportation Master Plan	Planning		$109
NEW PROJECTS				
All	Level of Service Study	Develop multi-modal level of service measure		$50
NE 175th Street and 15th Avenue NE	Intersection analysis and improvements	Meet LOS standard	Grant candidate (50%)	$1,290
Subarea Study: N 175th Street & Meridian Avenue N Corridors	Subarea study of N 175th Street corridor (I-5 to Aurora Avenue N) and Meridian Ave N corridor (N 155th to N 185th Streets)	Define needs at specific locations	Study to determine specific improvements	$185
N 175th Street & Meridian Avenue N Corridor Improvements	To be determined by planning study	Improve neighborhood access and safety	Grant candidate (50%)	$2,779 (N 175th Street) $2,060 (Meridian Ave N)
Midvale Ave N: N 190th to N 192nd	New Road Connection	Local Circulation		Paid by development

Table 6-4. Roadway Projects Recommended for Funding (continued)

Roadway Projects Recommended for Funding (continued)				
Location	**Improvement**	**Function/Benefit**	**Comment**	**Cost ($000)**
NEW PROJECTS (continued)				
N 175th Street and Stone Avenue N	To be determined by planning study	Reduce Delay and Improve Safety	Fund through Safety Management Program. Project is to incorporate potential solutions for Midvale signal	$225
NE 185th Street and 10th Avenue NE	New Signal	Reduce Delay	Fund through Safety Management Program	$220
Road Surface Maintenance Program	Preserve and maintain city roadways	Maintenance	Fully fund program	$9,800
Advanced Transportation Right of Way Acquisition	Preserve right of way for planned projects	Provide compensation to landowners for preserving transportation rights of way		$280
Transportation Improvements CIP Project Formulation		Schedule and fund projects according to adopted plans	Continue program	$560
Neighborhood Traffic Safety Program		Provide local safety improvements requested by neighborhoods	Continue program	$2,254
Safety Management Program	Document, prioritize and fund emerging safety needs. Developing street lighting standards and financing plan.	Improve Safety	New program	$655 (plus $445 noted above for identified signal projects)
Planning Studies	Recommended studies include Richmond Beach Road, Ballinger Way/I-5 Undercrossing, Transit Plan and Green Street Corridor Selection	Define project needs at specific locations.	New program	$300

Figure 6-2. Roadway Improvements Recommended for Funding



(available in 11 x 17 format)

Transit Improvements

The City-wide Citizen Survey conducted by the City in 2004 indicates that a majority (64%) of its citizens are either very satisfied or somewhat satisfied with the availability of public transportation. In response to a question of what aspect of transportation that should receive the most emphasis over the next two years, the availability of public transportation was ranked fourth with 28% of the respondents who selected it as one of their top two choices.

According to the 2000 census data, 10.2% of Shoreline residents used transit as their primary mode to work while 12.8% carpooled and 2.1% either walked or biked to work. By 2020, it has been estimated that over 2,300 new housing units will be constructed and over 2,200 jobs will be created. Accommodating this anticipated growth while minimizing the impact of additional traffic is a high priority for the city of Shoreline. The transit strategy in this plan aims to:

- Increase existing transit use by providing full-service, accessible transit, with high-frequency peak period service and extended off-peak service on weekdays and weekends, and improved facilities.
- Tailor service levels and route structures to reflect the different needs of areas within the City by providing a mix of flexible and fixed routes, community bus routes, inter-community and commuter transit service.

Goal T II: Improve mobility options for all Shoreline citizens by supporting increased transit coverage and service that connects local and regional destinations.

T13: *Develop a detailed transit plan in coordination with transit providers to identify level of service targets, facilities and implementation measures to increase Shoreline residents' transit ridership. Review potential public transit service to schools.*

T18: *Work with transit service providers to provide safe, lighted, and weather protected passenger waiting areas at stops with high ridership, transfer points, park and ride, and park and pool lots.*

T19: *Work with all transit providers to support "seamless" service into Shoreline across the county lines and through to major destinations.*

T20: *Work with Sound Transit to study the development of a low impact commuter rail stop in the Richmond Beach/Point Wells area. The Richmond Beach residents shall be involved in the decision making process as far as location, design, and access to the service.*

Currently, transit service in the city of Shoreline is fair to very good. However, the coverage of the service does not meet the needs of all residents. The recent addition of Metro Route 348 has improved east-west connections making connections with Richmond Beach to major destination points of Shoreline Center, the library and Hamlin Park. Metro Transit's most recent review of their bus routes indicates that most bus routes are generally well utilized. However, Routes 330 and 346 had lower than average ridership.

Changes in demand and recent changes in service as well as citywide goals necessitate a reevaluation of the current transit service. Any improvements needed in service coverage will need coordination with the various transit authorities that serve Shoreline. Each agency has its own service standards that will influence which changes can be made to Shoreline's transit services.

The City should work with WSDOT, transit agencies and counties to reconstruct the Aurora Avenue North Bridge over SR 104 to add business access and transit (BAT) lanes to connect Shoreline's BAT lanes with those in Edmonds.

Transit Recommendations:

- Increase bus service efficiency along underserved, non-serviced corridors or overextended bus routes.
    - Improve the quality of all day cross-town service in the southern portion of the city, e.g. the NE 155th Street corridor
    - Reconfigure, increase, and/or add dedicated bus service to serve the Briarcrest and eastern portions of North City.
- Improve inter-county service between King and Snohomish County
    - Provide "one-seat" rides along Aurora Avenue N. without the need for a transfer at the Aurora Village Transit Center.
    - Improve access to Sound Transit routes running on I-5.
- Improve accessibility to bus stops and transit facilities that enhance surrounding neighborhoods.
    - Add sidewalks and bicycle lanes
    - Provide safe pedestrian crossings on the major and collector arterials with approximately a quarter mile spacing to support transit and business access.
    - Add shelters at locations that meet the criterion of a minimum of 25 boardings in King County.
        - West side of Aurora Avenue N at the far side of N 200th Street;
        - North side of the Shoreline Community College entrance at the main campus entrance;
        - East side of the Shoreline Park & Ride roadway at the near side of N 192nd Street;
        - West side of Aurora Avenue N at the far mid block at N 175th Street;
        - West side of Aurora Avenue N at the far midblock at N 155th Street;
        - West side of Aurora Avenue N at the far side of N 152nd Street;
        - East side of Aurora Avenue N at the near side of N 185th Street;
        - West side of Aurora Avenue N at the far side of N 170th Street;
        - West side of N 5th Avenue at the near side of NE 163rd Street;
        - East side of Aurora Avenue N at the far side of N 155th Street;
        - West side of 15th Avenue NE at NE 177th Street;
        - South side of N 175th Street at Densmore Avenue N;
        - East side of Aurora Avenue at the far side of N 160th Street
    - Identify and improve lighting and visibility of bus stops.
        - Reference accident and crime statistics for incidents at or near transit stop locations.
    - Provide safe pedestrian crossings through the installation of curb "bulb outs" and pedestrian tablets.
- Consider the impact of proposed high-capacity transit corridors.
    - Identify preferred high-capacity corridors
        - Extensions of the Seattle Monorail Project's Green Line;
        - Sound Transit's Phase Two expansion;
        - Bus rapid transit opportunities, e.g. Metro Transit route 358 along Aurora Avenue N.
    - Consider impacts to existing transit service and conditions.
        - Improve pedestrian accessibility and facilities along proposed corridors;
        - Identify potential inter-modal transfer locations;
        - Coordinate Park and Ride locations and possible expansion.

Pedestrian Improvements

Shoreline's citizens continue to emphasize the importance of sidewalks for safety, enhanced mobility, convenience, and recreation. Pedestrian advocate Dan Burdin summarizes the value of pedestrian mobility in building communities:

"Every trip begins and ends with walking. Walking remains the cheapest form of transport for all people, and the construction of a walkable community provides the most affordable transportation system any community can plan, design, construct and maintain. Walkable communities … lead to more social interaction, physical fitness and diminished crime and other social problems."

*- **Walkable Communities Inc**., 320 S. Main St, High Springs, FL*

The City of Shoreline has great potential to be a "walkable community," with many activities and resources within walking distance of neighborhoods. The City's roadway grid system provides multiple east/west and north/south connections, and the City offers a number of public spaces, including parks, shopping centers and community centers. The challenge for Shoreline is knowing where to start: where to best spend limited resources to best serve the community.

Goal T III: Provide a pedestrian system that is safe, connects to destinations, accesses transit, and is accessible by all.

Td: *Provide adequate, predictable, and dedicated funding to construct pedestrian projects.*

T25: *Place high priority on sidewalk projects that abut or provide connections to schools, parks, transit, shopping, or large places of employment.*

T31: *Reinforce neighborhood character and abutting land uses when developing and designing the pedestrian system.*

T26: *Provide sidewalks on arterial streets and neighborhood collectors.*

Ts: *Develop flexible sidewalk standards to fit a range of locations, needs and costs.*

T27: *Partner with the School District to determine and construct high priority safe school walking routes. Support school crossing guard programs and other educational programs.*

Te: *Coordinate sidewalk design and construction with adjacent jurisdictions where sidewalks cross the City boundaries.*

T28: *Provide pedestrian signalization at signalized intersections, and install midblock crossings if safety warrants can be met. Consider over- and under-crossings where feasible and convenient for users. Use audio and visual pedestrian aids where useful.*

T29: *Implement the City's curb ramp program to install wheelchair ramps at all curbed* intersections.

T33: *Develop an off-street trail system that serves a recreational and transportation function. Preserve rights-of-way for future non-motorized trail connections, and utilize utility easements for trails when feasible.*

Candidate Project Improvements

Candidate projects were identified from several sources. The City's 1998 Comprehensive Plan identified many of the City's arterials as potential "urban standards" projects; that is, they needed to be upgraded from rural-type roads to a higher standard that would include curbs, gutters and sidewalks. These projects were located on most of the City's main roadways. In 2003, the City's Bond Advisory Committee also identified roadways within a given radius of schools as candidates for sidewalks, and the City worked with the Shoreline School District to update service area walk route maps.[2] In addition, the City's Parks Department has a "walking map," developed with the assistance of high school students, which provided valuable information about potential destinations in walking distance of neighborhoods.

These candidate projects were considered in relation to existing and proposed framework for the pedestrian system which includes

[2] Recommendations identified by the Bond Advisory Committee when considering a potential ballot measure for capital improvements.

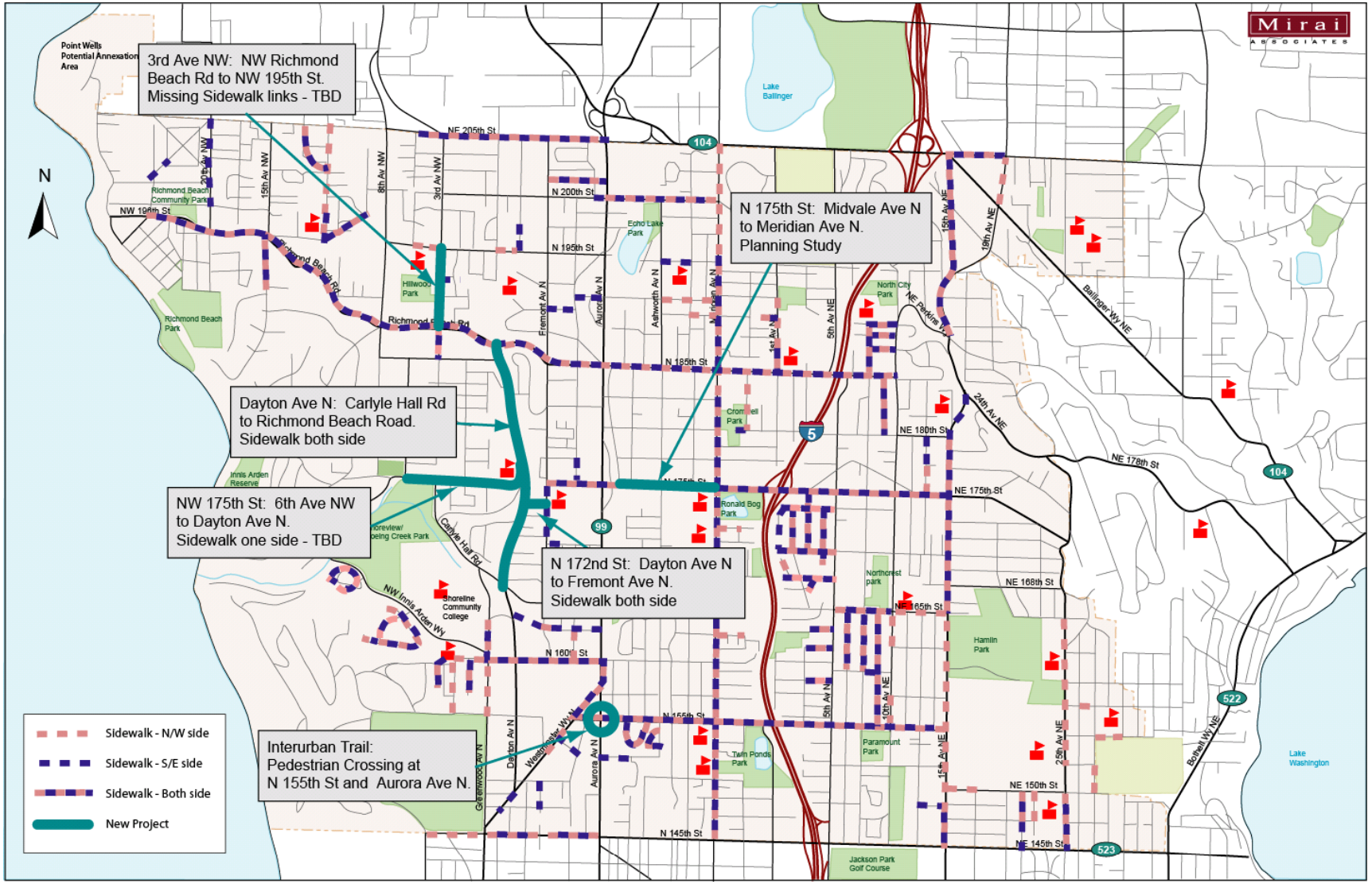
- the location of existing sidewalks,
- existing bus routes,
- the Interurban Trail, and
- a proposed continuous pedestrian/bicycle "Shoreline Loop" within the city limits that will connect neighborhoods with schools, local businesses, community institutions and other parts of the city.

Each of these potential projects was evaluated within a prioritization matrix to establish the highest priority needs (see chapter 5). The top priority projects connect to the existing and proposed sidewalk framework, provide school and/or park access along arterials, link neighborhood destinations and connect to transit service. Those recommended for funding are described below in **Table 6-5**. For a listing of all the evaluated pedestrian projects, please see **Appendix 5-2**. **Figure 6-3**, the pedestrian system proposed project map, identifies projects recommended for funding in relation to the existing sidewalk system.

Table 6-5. Pedestrian Projects Recommended for Funding

Pedestrian Projects Recommended for Funding			
Location	**Side of the Street**	**Comment**	**Cost ($1,000)**
IN 2004-2009 CIP			
Interurban Trail Pedestrian Crossing			$3,484
Curb Ramps Program			$300
Pedestrian Program			$1,440
NEW PROJECTS			
NW 175th St: 6th Ave NW to Dayton Ave N	One Side TBD	Grant candidate (20%)	$1,289
N 175th: Midvale to Meridian (Coordinate with subarea study)	Both		Included with roadway project.
N 172nd St: Dayton Ave N to Fremont Ave N	Both		$357
Dayton Ave N: Carlyle Hall Rd to Richmond Beach Rd	Both		$1,558
3rd Ave NW: NW Richmond Beach Rd to NW 195th St	One Side TBD		$818
Match local neighborhood LIDs for local sidewalks		Administer through existing Pedestrian program	$140

Figure 6-3. Pedestrian Projects Recommended for Funding



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Bicycle Improvements

Shoreline is generally well suited for bicycle travel. The topography is relatively flat between Dayton Avenue and Lake Forest Park. Bicycles can legally use all streets in Shoreline (except I-5). The Interurban Trail (currently under construction) and its future segments, will serve as the north-south spine for bicyclists. East/west bicycle lanes are currently provided on N/NE 155th Street (Hwy 99 to 15th NE) and N/NE 185th Street (Stone Avenue North to 1st NE). Other bike facilities include recreational off-street trails in Hamlin Park and Innis Arden Reserve.

Bicycle System Scheme

Shoreline recognizes the importance of bicycling as a mode that addresses the city's transportation and recreational needs. At the city level, bicycle routes in the network connect neighborhoods to schools, city institutions, community businesses and recreational and commuter destinations including transit linkages. At a larger scale, these bike routes provide connections that link to the regional network.

Figure 6-4 identifies the corridors for regional and city bike routes. The Lake to Sound Trail (blue) provides east-west connections through the city and provides connections to Richmond Beach Saltwater Park and the Burke-Gilman Trail.

Currently under construction, the Interurban Trail provides north-south connections to neighboring Seattle and Mountlake Terrace. The Shoreline Loop is a circulator route providing connections from surrounding neighborhoods to many of the city parks, schools, and businesses as well as regional bike routes. The Cross-Town Connector provides for linkages from the center of the city to the rest of Shoreline.

Goal T IV Develop a bicycle system that is connective and safe and encourages bicycling as a viable alternative method of transportation

Tf: *Reinforce neighborhood character and abutting land uses when developing and designing the bicycle system.*

T34: *Work with the bicycle community to develop bicycle routes connecting schools, recreational and commuter destinations, including transit linkages. Aggressively pursue construction of the Interurban Trail as the spine of the City's bicycle system.*

T35: *Work with neighboring jurisdictions and other agencies to ensure that Shoreline's bicycle routes/corridors and designs are compatible and connect with one another.*

Tg: *Work with Lake Forest Park to develop a bicycle linkage to the Burke-Gilman trail.*

T36: *Work with the School District to determine and encourage safe bike routes to schools. The City should partner with the School District to achieve these goals.*

T37: *Accommodate bicycles in future roadway or intersection improvement projects.*

T38: *Require new commercial developments to provide convenient bicycle parking facilities for employees and visitors/customers. Encourage merchants to install bike parking facilities.*

Lake to Sound Trail (east-west link)

An east-west connection through the city of Shoreline would link North City with Richmond Beach. It would also provide an important connection between the Puget Sound and the Burke-Gilman Trail along Lake Washington. Along the corridor, many businesses and institutions are located including the Shoreline community center, the post office, and the police station. As **Figure 6-4** shows, one potential route from west to east would start at Richmond Beach Saltwater Park, go north on 20th Avenue NW, and then go east on NW 195th Street to Richmond Beach Road. It would then use the existing bike lanes on 185th Street. Northwest 195th Street / Richmond Beach Road has the potential to be restriped to three lanes, which can include bike lanes (see recommended planning study). Twentieth Avenue NW is a low-traffic residential street with minimal shoulders.

At 10th Avenue NE, several possible connections to the Burke-Gilman Trail through Lake Forest Park have been identified. One route follows NE Perkins Way to 15th Avenue NE, where bicyclists can cross at the signalized intersection. At 15th Avenue NE, a sidewalk is provided on the east side of the street. From 15th Avenue NE, the route takes 24th Avenue NE / NE 178th Street. At the intersection of NE 178th Street, NE 180th Street and Brookside Boulevard NE in Lake Forest Park, one route takes NE 178th Street to Ballinger Way NE where bicyclists can cross at the signalized intersection at Bothell Way NE. The other connection takes bicyclists down Brookside Boulevard NE to a signalized intersection at NE 170th Street and Bothell Way NE where the Burke-Gilman Trail meets. The route has very limited right-of-way for bike lanes and the terrain is quite steep in certain sections. A combination use of bike lanes, sidewalks and mixed traffic applications are needed.

Interurban Trail (north-south link)

Shoreline is pressing ahead with the construction of the Interurban Trail. Using the former Interurban Light Rail Line right-of-way, this off road facility offers bicyclists and pedestrians a safe, separated trail along the Aurora Avenue N corridor. In addition to the many business nearby, it connects to the Shoreline Park-and-Ride and Aurora Village Transit Center from the neighboring residential communities, When completed, this 3.25 mile trail will connect to Seattle and Snohomish County.

Shoreline Loop (circulator route)

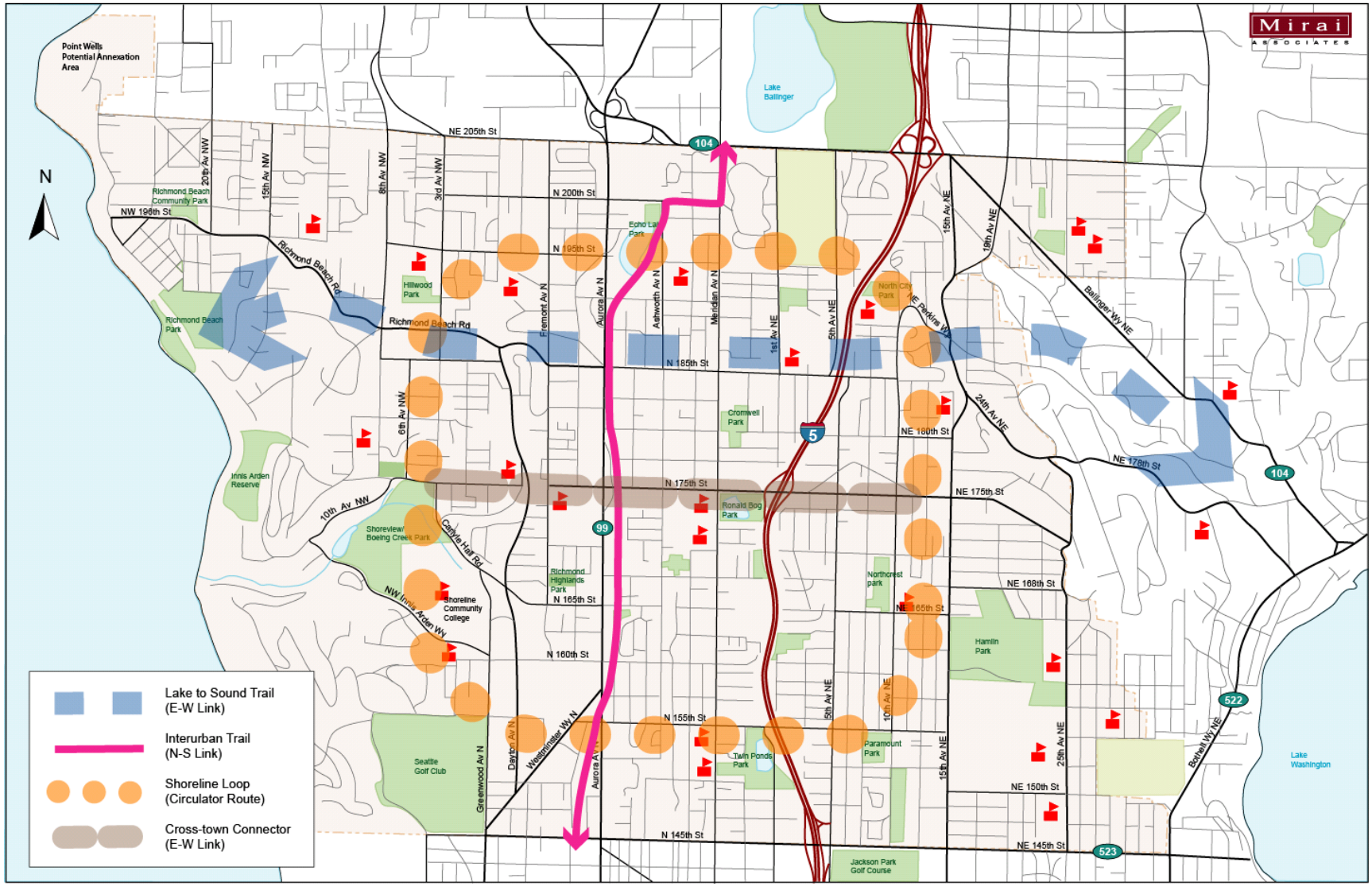
Construction of a continuous pedestrian/bicycle loop within the city limits can focus missing links between neighborhoods with schools, local businesses, community institutions and other parts of the city. It can provide a clear and safe route for bicycle enthusiasts, walkers and school kids to get around Shoreline. **Figure 6-4** shows one such potential “grand loop”, using the existing bike lanes on 155th Street and 15th Avenue NE as interim system anchors. Additional major improvements will be needed on the western and northern parts of the loop. Areas include the hilly Innis Arden/Shoreline Community college vicinity and along N 200th Street and 8th Avenue NW.

Currently, there is a pedestrian crossing over I-5 at NE 195th Street. For the future loop trail, the accommodation of both pedestrians and bicyclists may bicyclists to walk their bikes over the bridge or widening of the crossing. Also, similar considerations need to be made for the planned pedestrian bridge to be constructed over Aurora Avenue N between N 155th Street and N 158th Street. Additional spurs linking to neighboring communities, parks and schools should be considered.

Cross-town Connector (east-west link)

I-5 presents a major obstacle for east-west connections in the city. Additional connections are desirable for residents, particularly between 175th Street and 155th Street. Currently, bicyclist can cross I-5 in the north at either the 195th Street pedestrian bridge or the185th Street overpass and at the155th Street underpass in the south. 175th Street provides a major vehicular link in the center of Shoreline but the limited right-of-way does not allow for simple bike improvements.

Figure 6-4. Major Bicycle Corridors



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Creating a new overpass crossing at either 167th Street or 165th Street will require substantial grade work on the west side of I-5. There have also been discussions about providing additional east-west connections for vehicles at this location and the possibility of constructing a new auto bridge, which can include a bike lane and convert the connecting streets to "green streets."

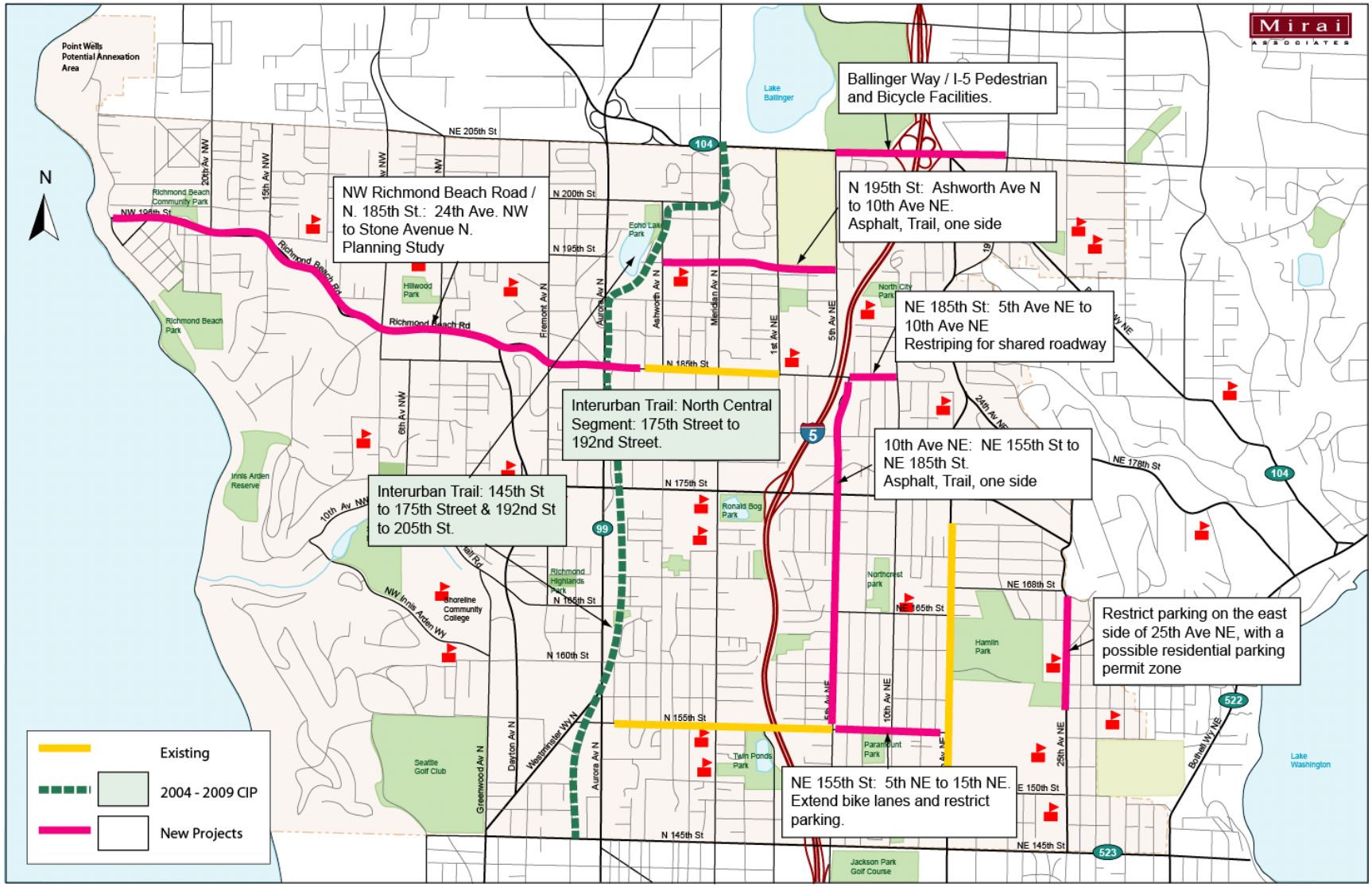
Another possible crossing is the Metro underpass for the maintenance garage near 163rd Street. This would be a bicycle and pedestrian link only. Traffic volumes at this underpass are relatively lower due to the vehicle-restricted interchange. However, this crossing makes routing for the cross-town connector more difficult due to the lack of street connectivity to the west of I-5. Additional study is needed for creating an additional east-west link at these locations.

Each of these potential projects was evaluated within a prioritization matrix to establish the highest priority needs (see chapter 5). Bicycle improvement projects recommended for funding are listed in **Table 6-6** and mapped on **Figure 6-5.** All evaluated bicycle improvements are included in **Appendix 5-3**.

Table 6-6: Bicycle Projects Recommended for Funding

Bicycle Projects Recommended for Funding			
Location	**Improvement**	**Comment**	**Cost**
IN 2004-2009 CIP			
Interurban Trail 145th Street to 175th Street & 192nd Street to 205th Street	Mixed use trail		$1,740
Interurban Trail North Central Segment: 175th – 192nd Street	Mixed use trail		$2,430
NEW PROJECTS			
10th Avenue NE: NE 155th Street to NE 185th Street	10' off-road asphalt trail, one side	Candidate for initial green street project	Study funded through Green Street project selection study
N 195th Street: Ashworth Avenue N to 5th Avenue NE	10' off-road asphalt trail, one side	Candidate for initial green street project	Study funded through Green Street project selection study
NW Richmond Beach Road / N 185th Street: 24th Ave NW to Stone Avenue N	Restriping, shared roadway, both sides		Study funded through roadway project study
Ballinger Way/I-5 Pedestrian and Bicycle Facilities	Improved pedestrian and bicycle access under I-5 at Ballinger Way/N 205th		Study funded through roadway project study
NE 185th Street: 5th Ave NE to 10th Ave NE	Restriping, shared roadway, both sides		$120
Restrict parking on the east side of 25th Ave NE in the vicinity of Shorecrest High and Kellogg Middle Schools, with a possible residential parking permit zone for neighborhood residents.	East		Not estimated
NE 155th St: 5th NE to 15th NE. Extend bike lanes and restrict parking	South	Completes bike lane	$22

Figure 6-5. Bicycle Facility Improvements Recommended for Funding



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Transportation Demand Management (TDM)

TDM promotes more efficient use of the existing transportation systems by influencing the time, route or mode selected for a given trip. TDM strategies increase travel choices, offering the opportunity to choose how, when and, if travel will be by car or in some other way, with the aim of balancing demand with the transportation system. Options include:

- Modal strategies such as vanpools and telecommuting;
- Incentives such as bus passes;
- Specialized services such as shuttles; and
- Design improvements such as bike lockers and preferential parking for ridesharing.

With limited resources to build new capacity and continued employment growth, Transportation Demand Management (TDM) strategies are cost-effective, complementary, and efficient alternatives to additional investment in transportation facilities.

Goal T VI: Encourage alternative modes of transportation to reduce the number of automobiles on the road.

T44: *Work with major employers, developers, schools, and conference facilities to provide incentives to employees, tenants, students, and visitors to utilize alternatives other than the single occupant vehicle.*

T46: *Support educational programs for children and residents that communicate transportation costs, safety, and travel choices.*

Tj: *Support state and federal tax policies that promote transit and ridesharing.*

Tk: *Develop parking system management and regulations to support alternatives to the single occupant vehicle*

Tl: *Analyze alternatives by which employers and/or developers not subject to the Commute Trip Reduction Act can encourage their employees and tenants to pursue alternative transportation choices.*

Tv: *Work with Shoreline Community College and King County Metro to reduce employee and student use of single occupant vehicles and promote transit and carpooling.*

TDM Recommendations: The City of Shoreline should emphasize the following elements in supporting TDM programs in the city and region:

- Provide tools and resources for employers and property owners to develop economical and effective choices for customers' and employees' access and mobility.
- Emphasize Incentives for developers and commuters. For employers and developers, incentives involve receiving a return for conducting TDM, such as preferential treatment in the development review process or bonuses in the development process. Incentives for travelers and commuters, on the other hand, can include subsidies, transit passes, and financial incentives.
- Encourage the development of organizations that coordinate transportation needs through public-private partnerships. A key TDM strategy supports the formation of organizing structures such as Transportation Management Associations (TMAs). These organizations allow local business, property owners, and residents to partner with the city to coordinate and implement comprehensive transportation services and infrastructure within a localized area.

Freight and Mobility System

Trucks delivering wholesale and retail goods, business supplies and building materials throughout the City are impacted by and themselves impact traffic congestion. The City must ensure that trucks have the ability to move to and through Shoreline. On the other hand, the City needs to ensure that residential streets are not unnecessarily impacted by cut-through truck traffic. The November 2000 North City Sub-Area Plan designates a number of business access routes to provide safer freight movements off of the main 15th Avenue NE roadway. Development of a business access road for businesses along Highway 99 would provide extra access for freight deliveries while moving trucks off of the heavily used Highway 99 corridor. **Figure 6-6** shows the City's truck routes.

Freight Mobility Recommendation: Develop time-limited loading zones in commercial areas. Require business access plans as properties along Highway 99 redevelop.

Goal T VII: Develop a transportation system that enhances the delivery and transport of goods and services

T49: *Ensure that service and delivery trucks, and other freight transportation can move with minimal delay on appropriate streets and rail systems in our city as shown on the truck route map.*

T51: *Minimize the disruption of arterial traffic flow by developing time-limited loading zones in commercial areas and regulating areas that don't have loading zones. Develop a plan for business access streets to provide freight loading zones on less-heavily traveled roadways.*

Tm: *Work with developers/ property owners along the Aurora Avenue North corridor and in North City to plan business access streets as a part of redevelopment.*

Regional Coordination

The City of Shoreline's greatest increase in projected travel over the next 25 years is in the area of regional travel. New employment and shopping opportunities will increase the need for travelers to be able to get to, into and through Shoreline to reach their destinations. If Shoreline's businesses are to be successful and thrive, the City and region must provide a broad range of multimodal improvements to address congestion and mobility needs.

Shoreline's transportation system is affected by a dynamic and complex governance structure. Federal, state, regional and local governmental entities make funding, policy, and project decisions that affect Shoreline. These include the Washington State Department of Transportation, the Puget Sound Regional Council, Sound Transit, King County (including Metro Transit), Snohomish County, Community Transit, and the neighboring cities of Seattle, Lake Forest Park, Edmonds and Woodway. The City of Shoreline can play an important role in facilitating regional action to provide and fund convenient travel choices. It is possible that the King County Monorail organization may extend the Seattle Monorail Green Line into Shoreline. If this happens, the City should actively work together to enhance the public transportation system with new transit technology in the City.

Regional Coordination Recommendation: Shoreline will benefit from a more active role in representing the City's interests and the Comprehensive Plan goals and policies in this context. Given the multiplicity of forums, the City should focus its efforts on agencies that can provide funding or services to the City. This should be a three-step effort:

Regional Coordination Recommendation (continued):

Step 1: Identify priorities

- Identify those improvements involving other agencies that are most important to the City (especially transit and pedestrian improvements along Highway 99, the Interurban Trail, NE 145th, NE 205th and Interstate 5).

Step 2: Identify opportunities

- Become familiar with federal, state, regional and county budget and appropriations processes
- Participate in regional and county planning processes that will affect the City's strategic interests

Step 3. Form strategic alliances

- Identify and approach potential partners (adjacent jurisdictions or like-minded agencies)
- Develop federal and state legislative agendas and meet with US and state representatives (elected officials and staff) who can help fund key projects (esp. Highway 99 and the Interurban Trail)
- Develop regional legislative agenda and meet with area representatives elected officials and staff) to the PSRC, Sound Transit, the Regional Transportation Investment District

Goal T IX ***Coordinate the implementation and development of Shoreline's transportation system with our neighbors and regional partners***

Tn: *Advocate the City's strategic interest in high capacity transit, local and express bus service and other transit technologies. Work with local and regional agencies to obtain a fair share of transit service and facilities.*

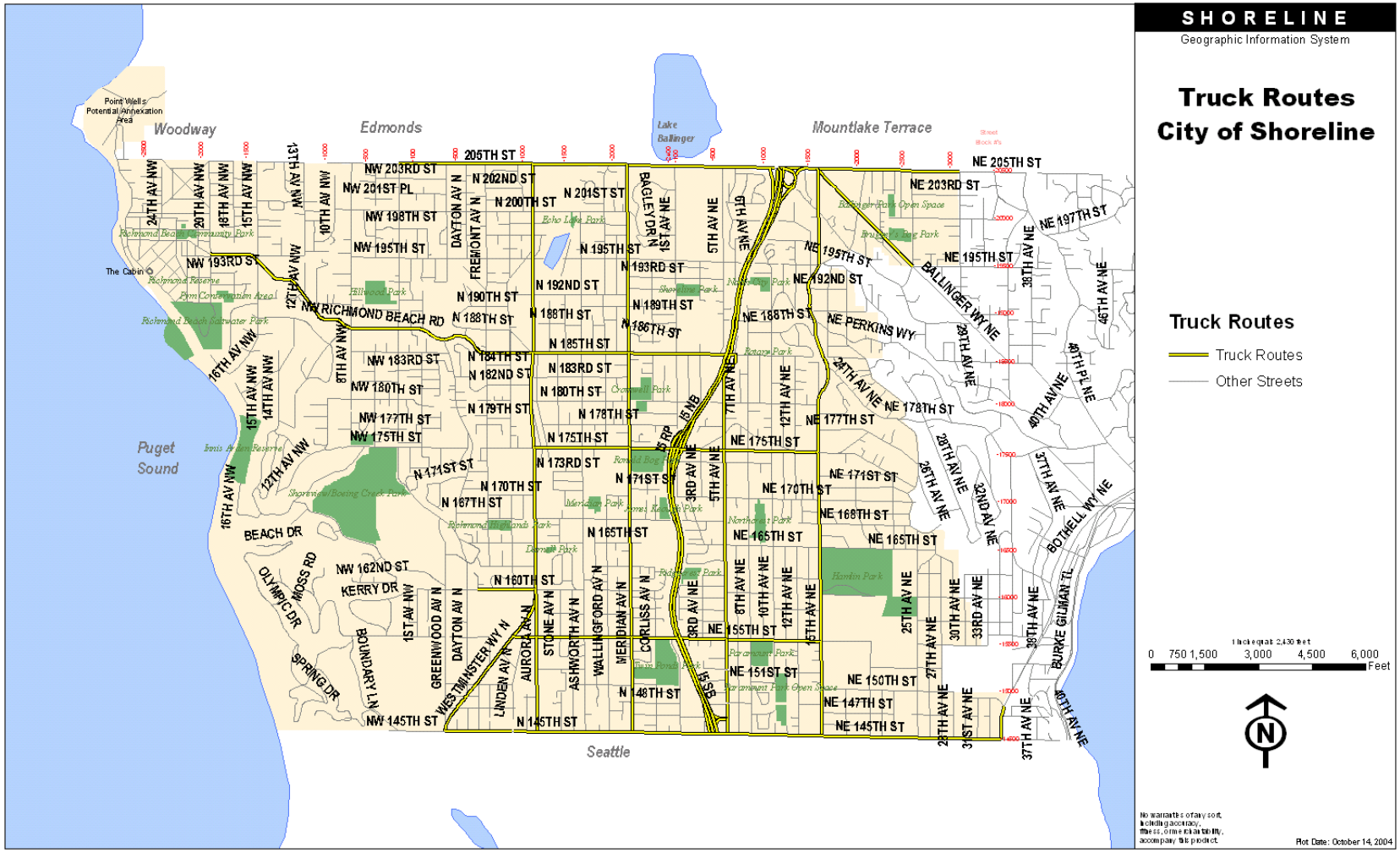
T62: *Develop short, medium- and long-range priorities and implementation strategies for improvements to the state highway system within and adjacent to the City of Shoreline. Advocate for added access to and connections to I-5 through the City of Shoreline.*

T65: *Develop interlocal agreements with neighboring jurisdictions for development impact mitigation, for coordination of joint projects, and management of pass through traffic. Consider annexing the sections of NE 145th and NE 205th Streets that are adjacent to the City. Ensure ongoing maintenance of these roadways for vehicle and pedestrian use. Work with adjacent jurisdictions and stakeholders to jointly study the 145th, 205th and Bothell Way NE corridors to develop level of service standards as part of a plan and funding strategy for future improvements.*

Tt: *Work with neighboring jurisdictions to reduce air quality impacts and manage storm water runoff from the transportation system.*

T68: *Pursue methods of reducing the impact on Richmond Beach Drive at the King/Snohomish County line (e.g. closing) if the Point Wells property is not annexed by the City of Shoreline. Consider the extension of 205th only as potential mitigation for future development of Point Wells.*

Figure 6-6. Truck Route Map



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