Chapter 3: Bicycle Network Recommendations

Chapter 3 presents the recommended network of on-street bicycle facilities that will help Bellingham meet the goals of this Plan. It describes the methodology used to develop the proposed network and suggests facility types for each street segment in the network. This chapter also provides a prioritized list of recommendations to facilitate strategic and timely implementation of the Plan.

Network Opportunities and Constraints

The City of Bellingham street system presents both opportunities and constraints for developing an on-street, city-wide bicycle network that safely connects all major destinations for bicyclists of all skill levels. In areas of the City that have a traditional street grid pattern, such as Downtown, Fairhaven, and neighborhoods west of Interstate 5 (I-5), there are strong opportunities on local and arterial streets to develop a system of well-connected bicycle facilities. In newer sections of the City, particularly to the east and north of I-5, there are more dead-end streets and larger blocks, making it harder to develop an extensive network of bicycle facilities in these areas. Many of these areas with limited connectivity were built under the current land use and local, State, and federal environmental regulations, which are much more restrictive than in the past and can make street and trail construction - and associated environmental impact mitigation - very expensive.

One of the most significant challenges for creating a connected bicycle network is I-5. There are currently eleven arterial streets that cross I-5 over a nine-mile stretch and many of these are intimidating to novice and intermediate bicyclists. There are also currently two bicycle and pedestrian-only bridges across I-5. A new grade-separated Orchard Drive arterial street with on-street bicycle lanes and an adjacent off-street Bay to Baker multiuse trail are both currently under design in the central portion of Bellingham. This situation severely limits east/west and north/south bicycle travel options and isolates many destinations in the City. Addressing major barriers such as I-5 through improved connectivity is central to the goals and objectives of this Plan. Recommendations for enhancing existing crossings and adding new crossings are listed in Appendix B.

Another challenge is determining how to proceed with planning for bicycle facilities within the Urban Growth Area (UGA). In more developed areas where streets have been platted, on-street bicycle facilities that tie into the larger network can be identified and recommended. However, in less developed areas of the UGA, planning for bicycle facilities will need to be incorporated into the platting and design of new streets. Under modern land use and environmental regulations and mitigation requirements, street connectivity in the Bellingham UGA will be very challenging to accomplish due to the presence of significant environmental features, including streams, wetlands, steep slopes, and wildlife habitat. In the near term, widened shoulders should be considered on existing UGA arterial streets until they are annexed to the City and improved to Bellingham's urban street standards.

Off-street facilities such as trails, side paths, and widened sidewalks, while not evaluated in this Plan, help to complete the on-street bicycle network by providing parallel routes or short, critical connections where there is not an on-street option. For example, The Railroad Trail serves as an off-street alternative to help address the lack of on-street bicycle facilities on the north side of Alabama Hill. In cases where off-street facilities cross major arterials, additional improvements may be needed to help trail-users safely cross the street.

Network Development

The bicycle facility network was developed in three phases: 1) a study network was developed using existing plans and input from public and agency stakeholders; 2) a technical demand analysis was completed to identify key destinations, and; 3) a field review was completed to refine the network. From the beginning, it was recognized that there was a need for a network that would accommodate both experienced and less experienced bicyclists. This emphasis is based on previous work completed in conjunction with the Transportation Element of the Comprehensive Plan, input received from the public, and guidance in the new 2012 AASHTO Guide for the Development of Bicycle Facilities (AASHTO Bike Guide).

The 2012 AASHTO Bike Guide discusses the different ways in which bicyclists can be classified, according to *skill level*, *comfort level*, *physical ability*, and *trip purpose*. It recommends *skill level* as one of the most important factors to consider when developing a bicycle network. The AASHTO Bike Guide categorizes bicyclists by *skill level* as “experienced and confident” and “casual and less confident”. The majority of the population will fall into the latter category, including children, recreational riders and individuals who prefer off-street facilities or those on low-traffic streets. Table 3.1, taken from the AASHTO Bike Guide, summarizes the common characteristics of experienced versus casual bicyclists.

Table 3.1: Bicyclists of Different Skill Levels Use of On- and Off-Street Bicycle Facilities

Experienced/Confident Riders	**Casual/Less Confident Riders**
Most are comfortable riding with vehicles on streets, and are able to negotiate streets like a motor vehicle, including using the full width of a narrow travel lane when appropriate and using left turn lanes.	Prefer shared use paths, bike boulevards, or bike lanes along low-volume, low-speed streets.
While comfortable on most streets, some prefer on-street bike lanes, paved shoulders or shared use paths when available.	May have difficulty gauging traffic and may be unfamiliar with rules of the road as they pertain to bicyclists; may walk bike across intersections.
Prefer a more direct route.	May use less direct route to avoid arterials with heavy traffic volume.
Avoid riding on sidewalks. Ride with the flow of traffic on streets.	If no on-street facility is available, may ride on sidewalks.
May ride at speeds up to 20 mph on flat ground, up to 45 mph on steep descents.	May ride at speeds around 8 to 12 mph.
May cycle longer distances	Cycle shorter distances: 2 to 5 miles is a typical trip distance.

Another way to categorize bicyclists was developed by the Portland Department of Transportation. The following figure (3.2) illustrates categories of bicyclists and also estimates the percent of the total population who fall into each category. The "interested but concerned" group is estimated to represent 60 percent of the population and, because they have a desire to bicycle more if certain barriers were removed, they are often viewed as the target audience for bicycle improvements like those recommended in this Plan.

Figure 3.2: Four Types of Cyclists by Proportion of Population

Development of the Study Network

The study network served as the basis for subsequent field work and the development of a final recommended network. The map of the study network shown in Figure 3.4 was developed using the following sources:

- Existing bicycle facilities (shown in Figure 3.3)
- Planned bicycle facilities as identified in the Transportation Element of the Bellingham Comprehensive Plan
- Projects identified on the Bellingham Transportation Commission project list
- Projects identified in the Greenstreets Committee report
- Recommendations received at the public open house, through the on-line survey and interactive map, and focus group discussions
- Recommendations received from the project Steering Committee
- Recommendations received from the Plan project team; and Public Works, Planning and Community Development, and Parks and Recreation departments

Completion of Demand Analysis

ViaCity[1] is a proprietary GIS-based analysis tool developed by Transpo Group, Inc., which uses traffic data along with parcel-based land use and demographic data to determine likely destinations for bicyclists. Destinations are typically areas with high concentrations of housing, jobs, or services. Using the ViaCity tool, thirty-seven destination points were identified and placed on the draft network map (depicted as grey circles with black borders in Figure 3.4 below). The draft study network was then adjusted to ensure that it served all of the destination points identified using the ViaCity tool.

Field Review

The consultant team conducted a field review in order to address gaps in the study network, especially in areas with low street connectivity where there are fewer roads that have potential for bicycle improvements. Duplicative facilities were eliminated and others were added. The team also identified off-street trail segments that were needed to serve key destinations. The final study network included 131 miles of streets.

[1] http://www.viacity.info/

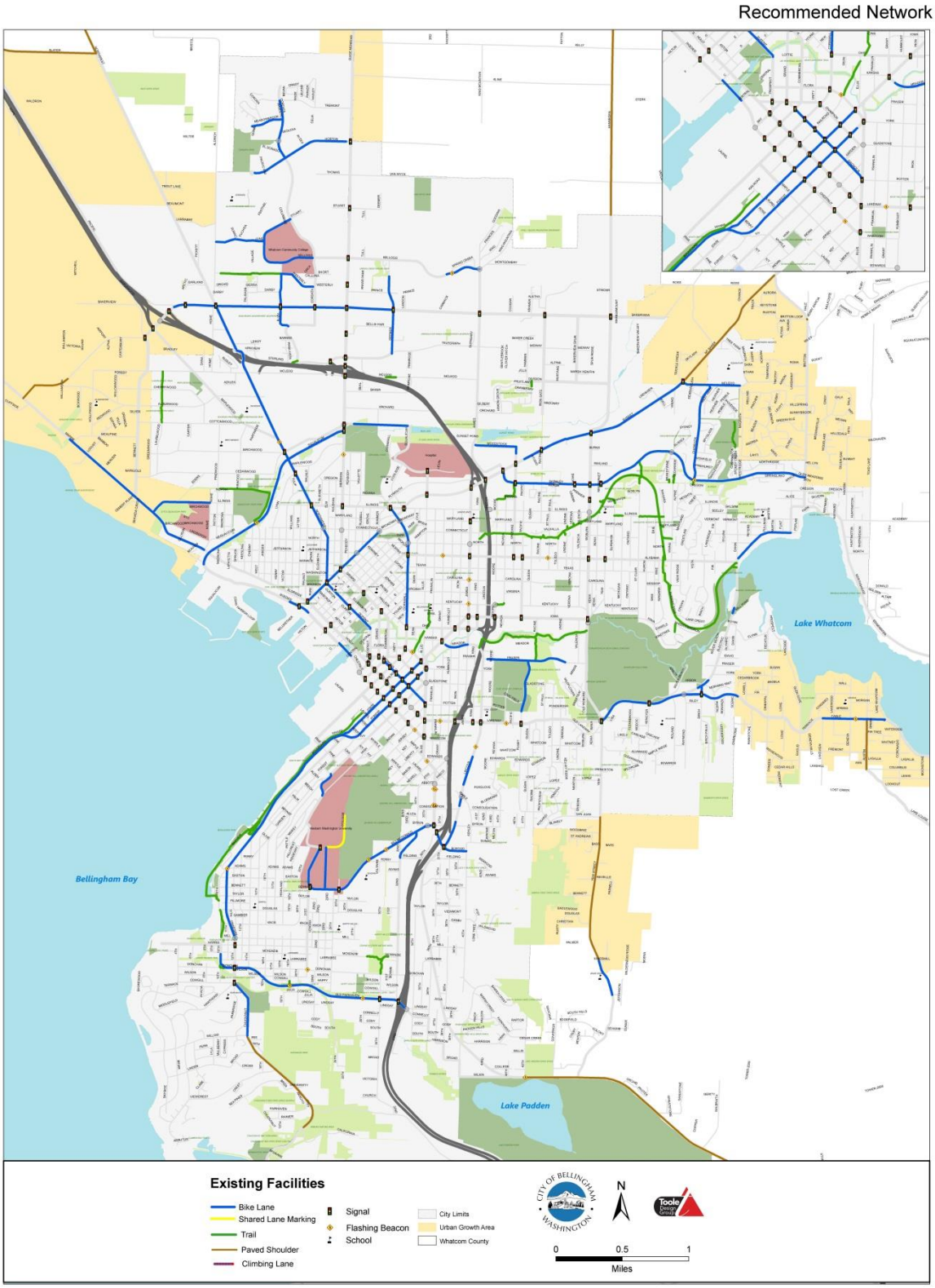

Figure 3.3: Existing Bicycle Network

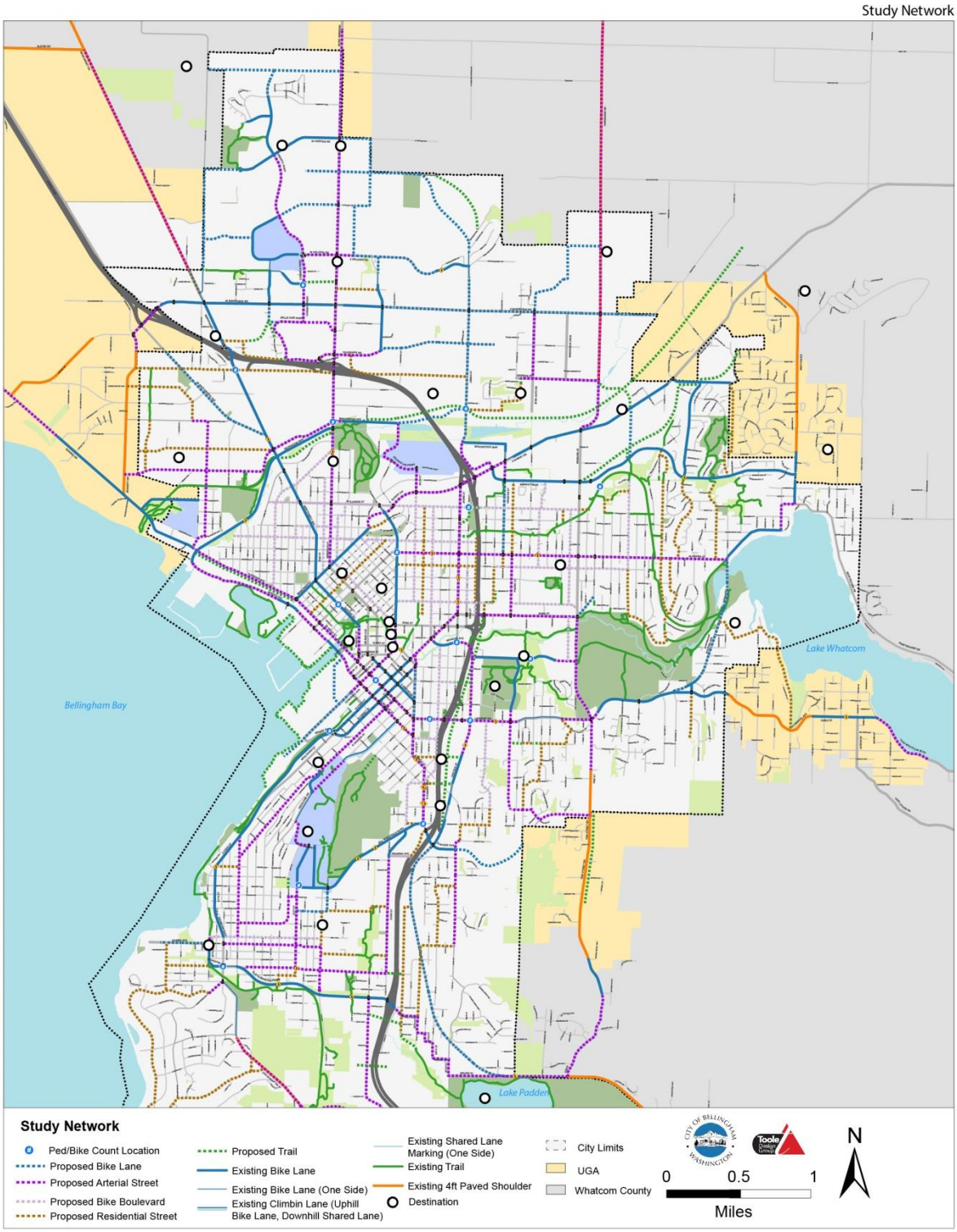

Figure 3.4: The Study Network

Network Analysis & Recommendations

Recommended Network

The study network served as the basis for the field work which was completed by two Toole Design Group teams. Each street in the network was evaluated for its potential to accommodate a bicycle facility. This included assessing roadway configuration (street widths, number of travel lanes, parking, and intersection treatments), reviewing connectivity opportunities and evaluating safety challenges. From the field work, a draft network plan was developed and then reviewed by the Plan project team, Public Works, the project Steering Committee, other City departments and the general public. Based on extensive feedback, the draft network was revised to produce the final, recommended network.

The recommended network is a comprehensive, safety focused, convenient, and comfortable network designed to accommodate both experienced and less experienced bicyclists while promoting bicycling as a practical form of transportation throughout the City. The recommended network includes 129 miles of on-street bicycle lanes, bicycle boulevards, shared lane markings, a cycle track and paved shoulders in addition to the 45 miles of existing on-street bicycle facilities for a total of 175 miles. The mileage for each type of facility is summarized in Table 3.6.

Table 3.5: Definitions of the bicycle facility types that make up the existing and recommended network

Facility Type	Definition
Bike Lane	Marked space along a length of roadway designated for use by bicyclists
Buffered Bike Lane	A bike lane with additional buffer space between the bike lane and the auto lane or parked cars, used on high-volume or high-speed roads, or roadways with high parking turnover.
Shared Lane Marking	A pavement marking symbol that indicates appropriate bicycle positioning in a shared lane (typically on downhill or connector areas).
Climbing Lane	On a sloped roadway: a bicycle lane on the up-hill to provide space for slow climbing bicycles and shared lane marking on the downhill.
Bicycle Boulevard	A low-volume and low-speed street or series of streets that have been optimized for bicycle travel while discouraging or calming through automobile travel. Local access is maintained.
Paved Shoulder	The portion of the roadway between the travel way and the edge of pavement, for accommodation of stopped vehicles, emergency use and often used by cyclists where paved.
Cycle Track	A portion of a right-of-way which has been designated by pavement markings, curb, cross-hatched paint, planting strip or parked cars for the exclusive use of

	bicyclists. Cycle tracks are typically one-way (not always). Cycle tracks can be adjacent to the sidewalk.

Table 3.6: Existing and Recommended Facility Types for the Full Bicycle Network

	Existing Network Miles	Percent	Total Recommended Miles	Percent	Complete Network (Existing + Recommended)	Percent
On-Street Facilities						
Bike lanes	34.35	75.3%	46.66	36.0%	81.01	46.2%
Buffered Bike Lanes	0	0%	4.01	3.1%	4.01	2.3%
Shared lane markings	0.35	0.8%	7.04	5.4%	7.39	4.2%
Climbing Lane	.72	1.6%	7.23	5.7%	7.95	4.5%
Bicycle boulevard	0	0%	51.51	39.7%	51.51	29.4%
Paved shoulder	10.19	22.3%	0	0%	10.19	5.8%
Cycle Track	0	0%		0.6%	0.83	0.5%
Further Study	0	0%	12.36	9.5%	12.36	7.1%
TOTAL	**45.61**	**100%**	**129.64**	**100%**	**175.25**	**100%**

The recommended bicycle network is designed to connect all neighborhoods and to provide access to the key destinations identified by the Steering Committee, through public input and using the GIS-based ViaCity analysis. Consistent with the vision of the Plan to provide a well-connected network for bicyclists of all ages and abilities, the recommended network includes a variety of facility types. The lower-stress bicycle boulevards use local streets that are already conducive to casual, lower speed bicycling. Traffic calming, wayfinding and crossing improvements at intersections with arterial streets can help to create a more comfortable riding environment on bicycle boulevards.

At the same time, it is equally important to continue to develop facilities that appeal to more experienced bicyclists, for example by providing bike lanes on arterial streets. Arterial streets provide more direct routes, improving the connectivity of the overall network. They can provide a convenient connection between destinations for many types of bicyclists, including commuters, recreational and casual/occasional riders. Additionally, as bicycling continues to increase in Bellingham, a growing number of novice riders will gain enough confidence to feel comfortable riding in bike lanes on busy, arterial streets.

Recommended Network Maps

The recommended network is shown in Figures 3.7 through 3.12. The incorporated areas within Bellingham have a gray background, and the current Urban Growth Areas are shown with a beige background. The maps show recommended facilities for each on-street section of the bicycle network

and identify intersections that need additional study for possible improvements (gray circles). Figure 3.7 shows the entire City and the subsequent five maps zoom in on the northeast, northwest, southeast and southwest quadrants of Bellingham, as well as downtown.

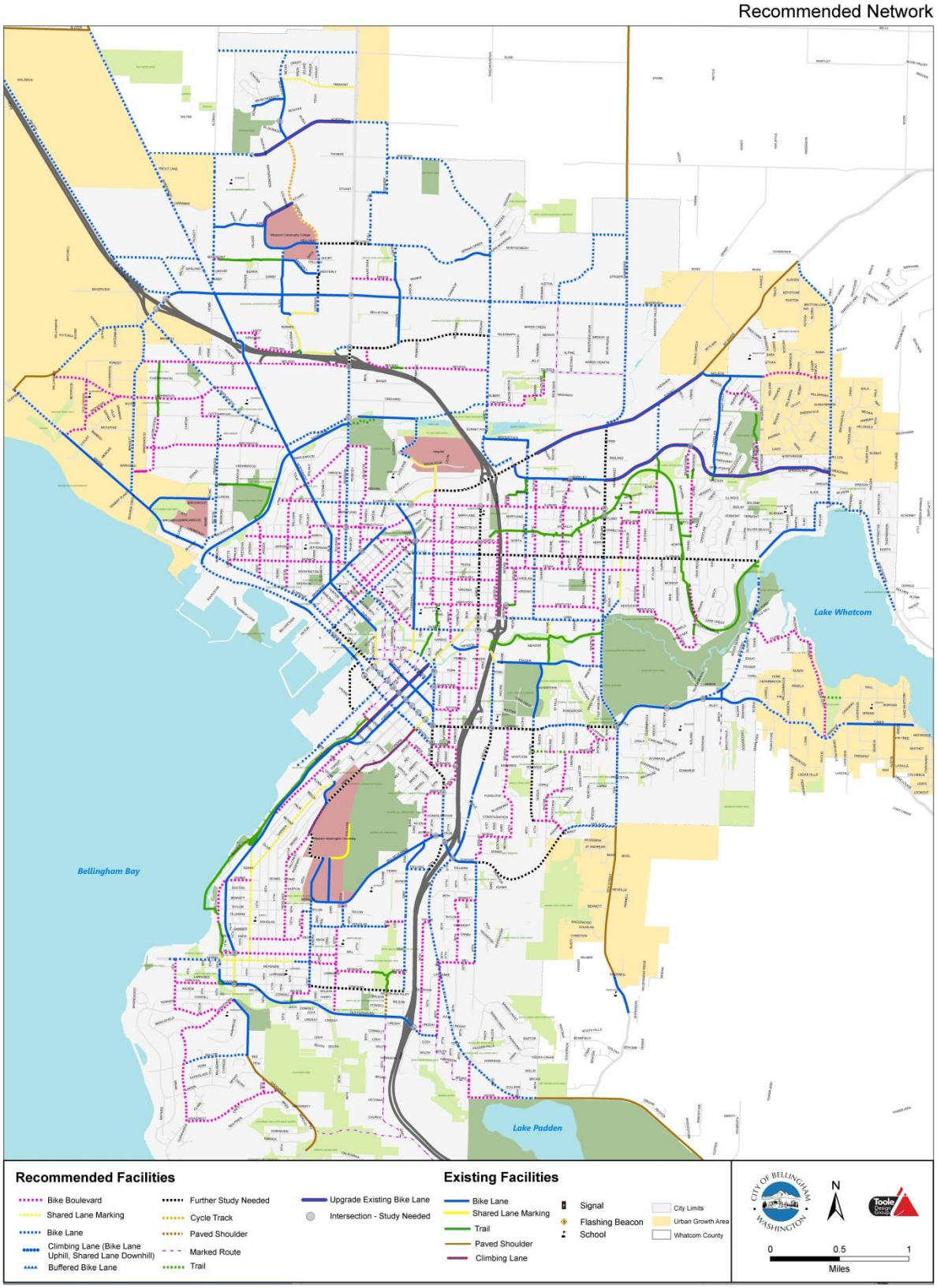

Figure 3.7: The Recommended Network

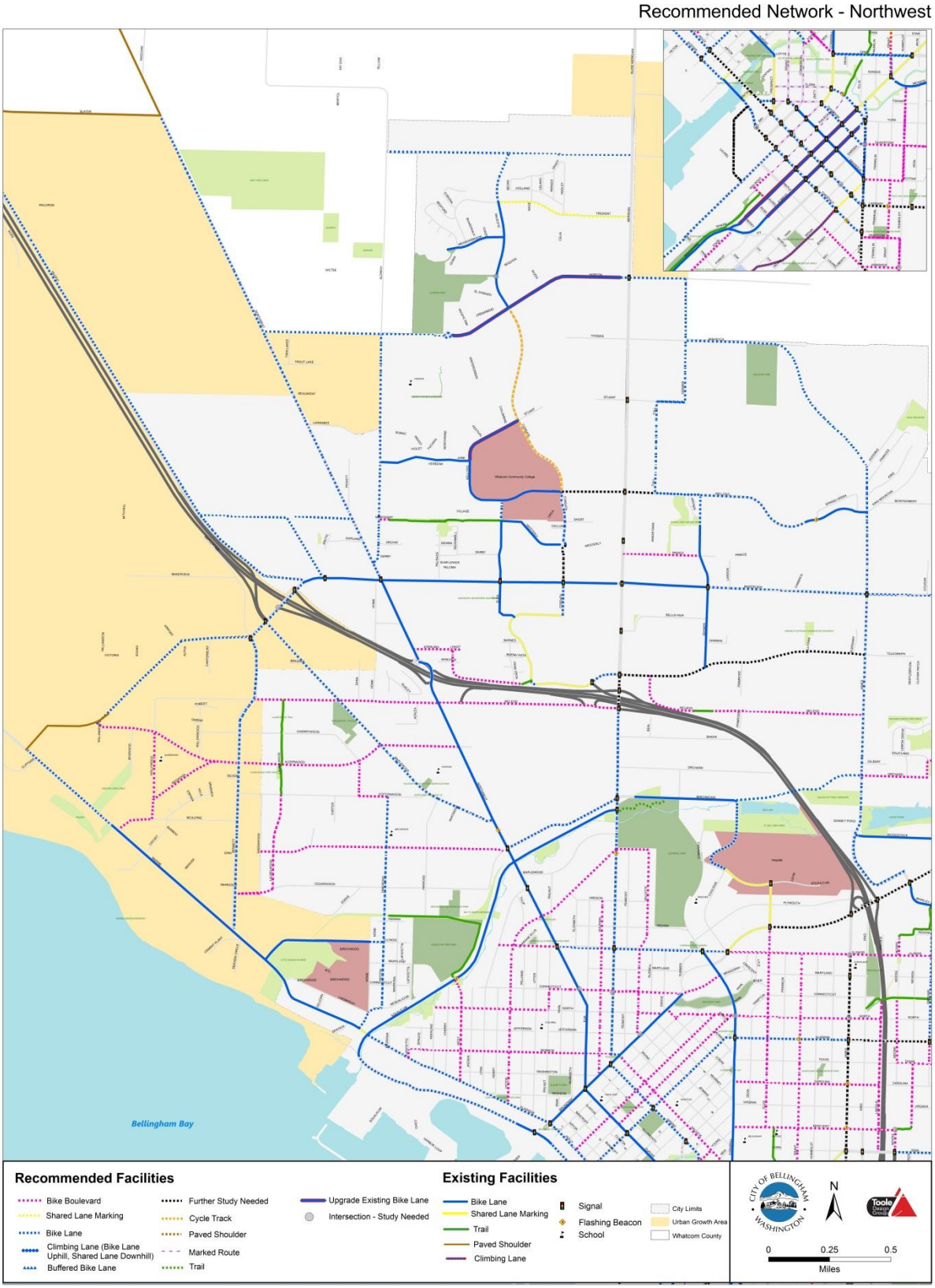

Figure 3.8: The Recommended Network, Northwest

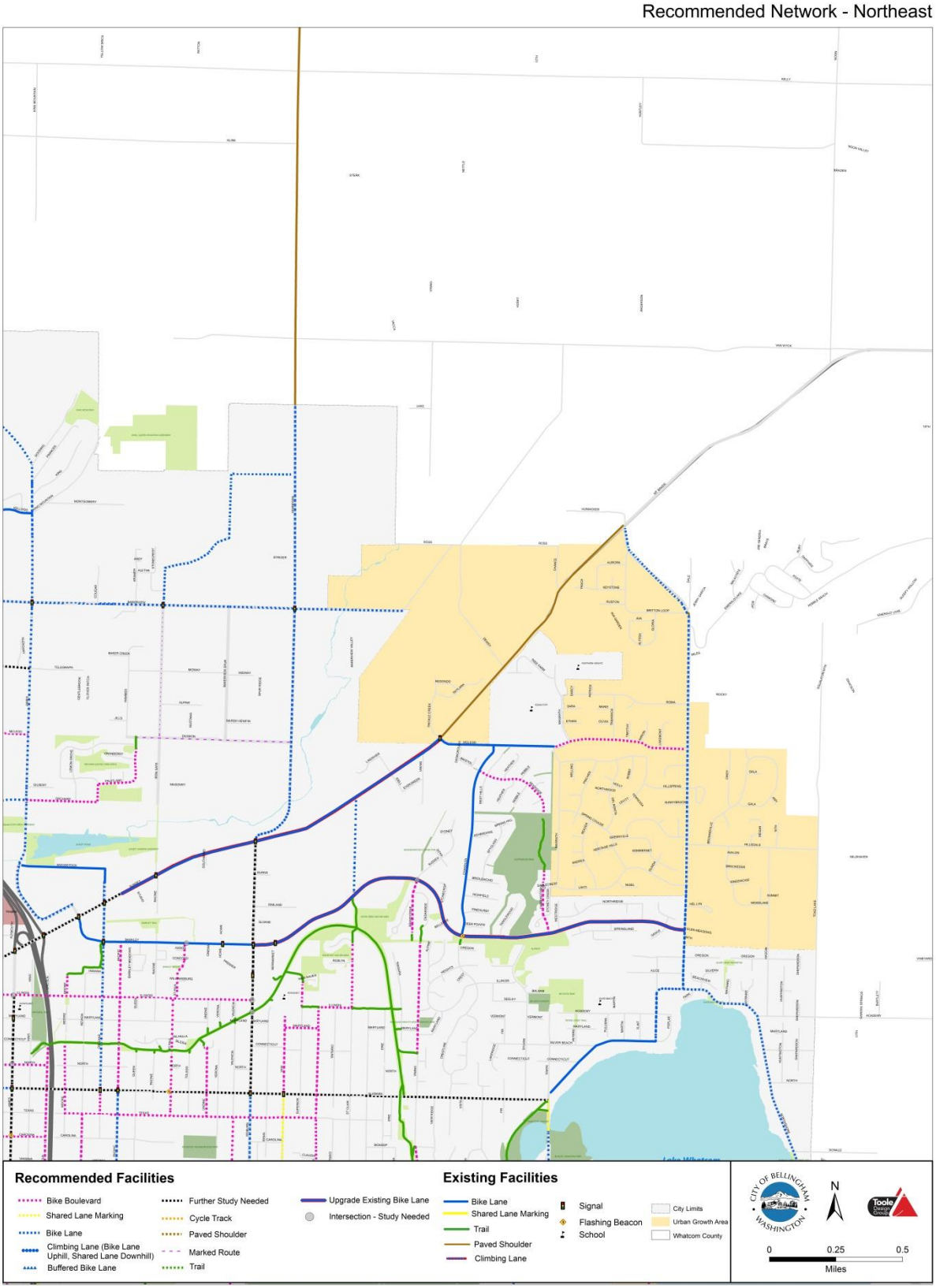

Figure 3.9: The Recommended Network, Northeast

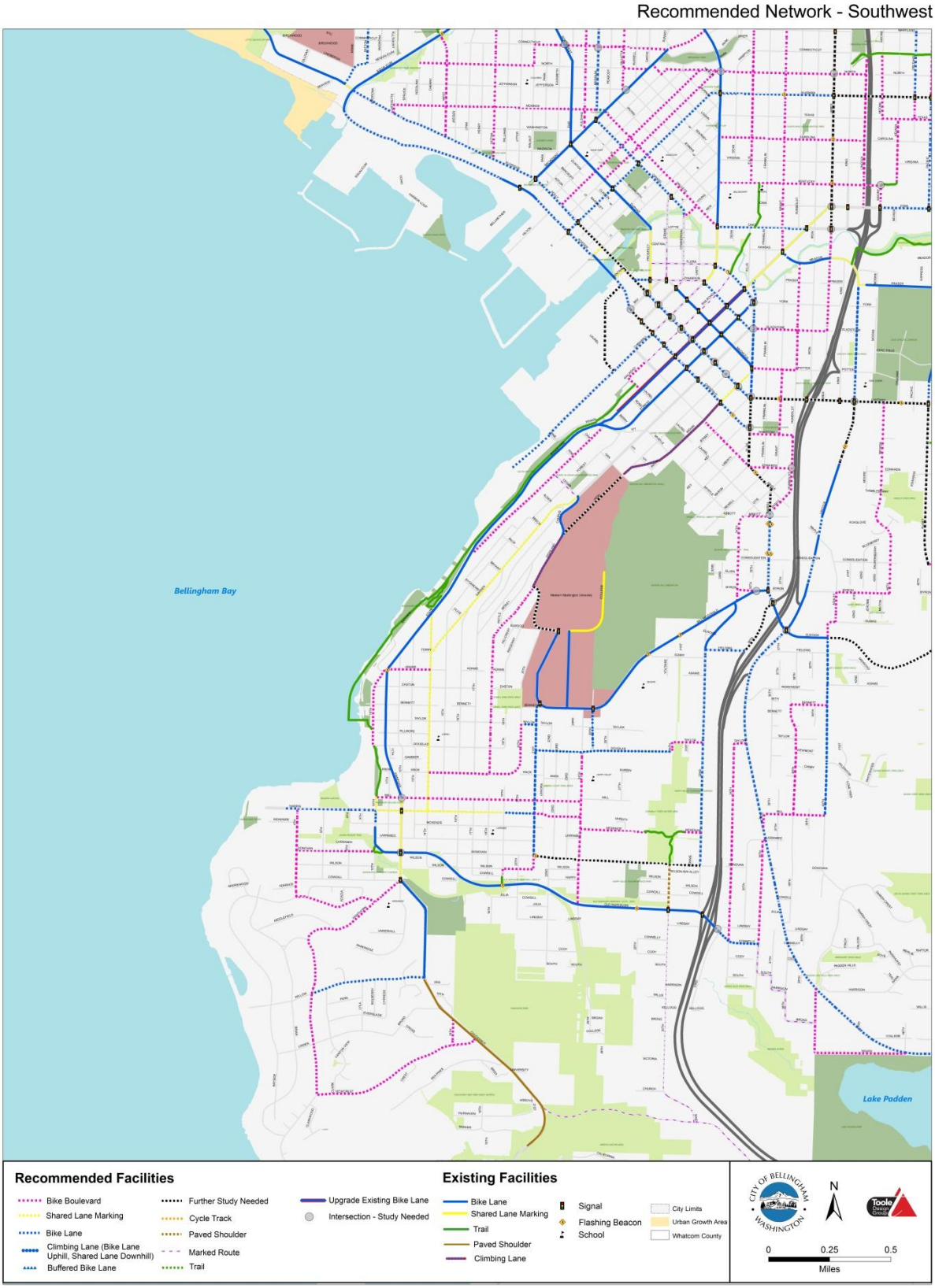

Figure 3.10: The Recommended Network, Southwest

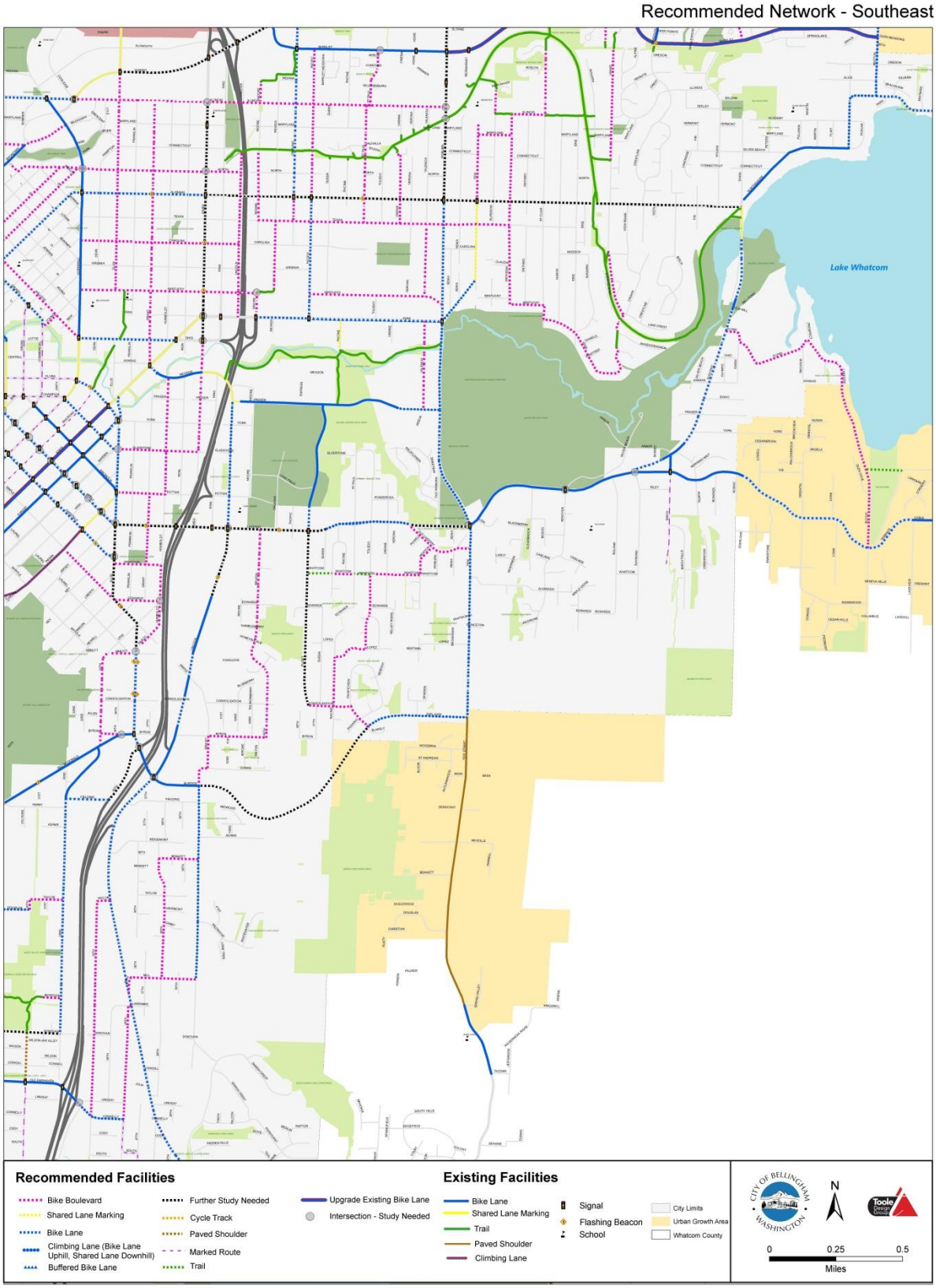

Figure 3.11: The Recommended Network, Southeast

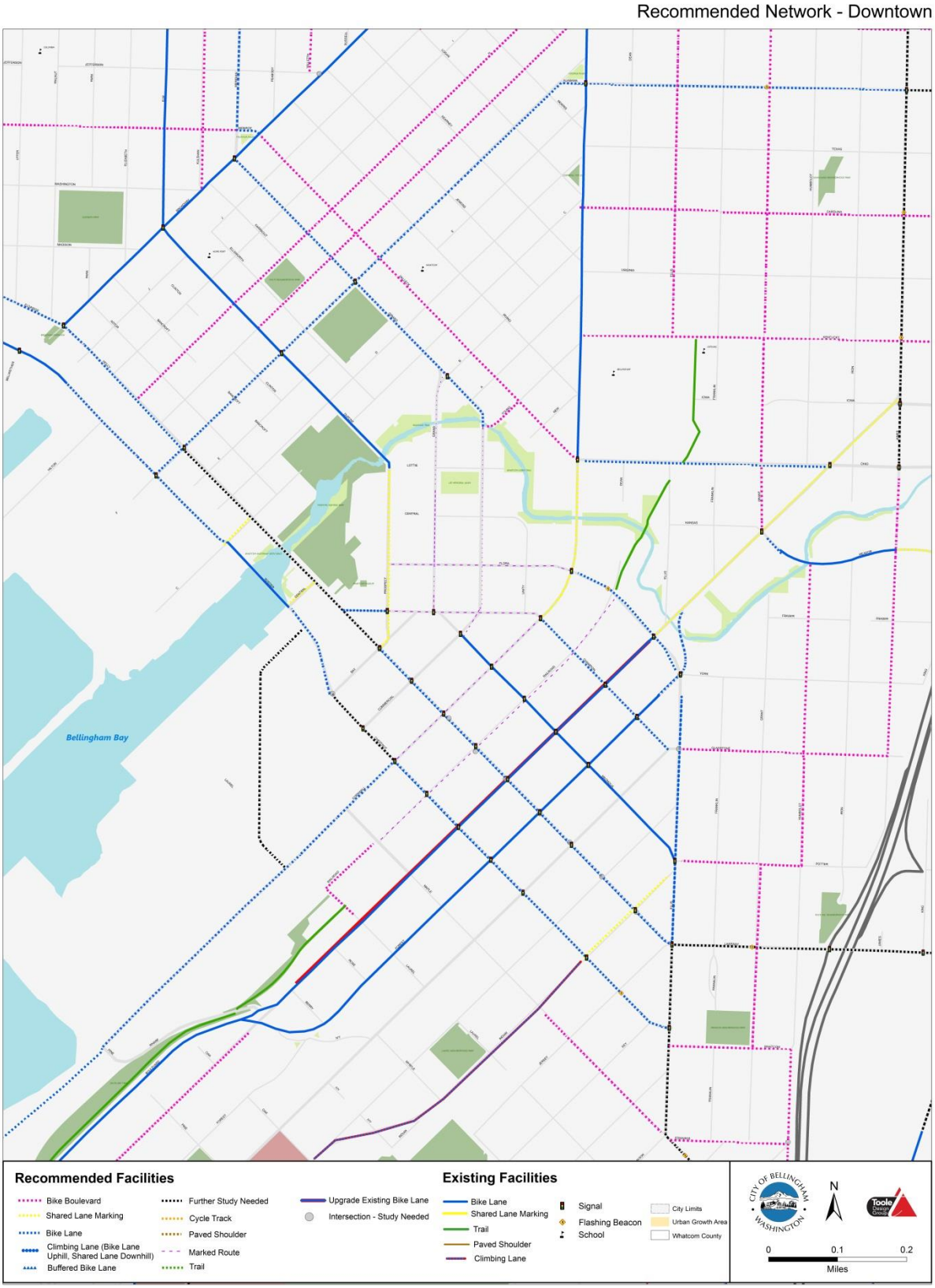

Figure 3.12: The Recommended Network, Downtown

Further Study Needed

Over 12 miles, or 9.5%, of the Recommended Bicycle Network is listed as "Further Study Needed," which means that a specific facility type cannot be identified until further analysis of the link is conducted by City staff. Some of these links score very high when compared to other links in the recommended network due to benefits in bicycle connectivity, safety, and mobility. In light of this, the City should commit annual funding to complete the additional studies necessary to identify viable improvement options. Descriptions for each of the network links requiring further study are listed below Table 3.13.

Table 3.13: Recommended Bicycle Network Links Needing Further Study

Bellingham Bicycle Network Link	Bicycle Master Plan Prioritization Score	Priority Rank (Out of 184)
Lakeway Drive (Queen to Ellis)	57.312	2
Chestnut (Bay to Cornwall)	46.140	5
Alabama Street (James to Electric)	43.907	7
James Street (E. Illinois to Ohio)	42.037	8
Meridian Street *[SR 539]* (McLeod to Telegraph)	34.868	17
Lincoln Street (Lakeway to S. Fred Meyer driveway)	28.623	28
High Street (Oak to Highland - thru WWU)	27.706	32
Donovan Avenue (32nd to 21st)	23.947	45
West Holly Street (Bay to F)	23.760	48
Lakeway Drive (Old Lakeway to Woburn)	22.131	62
Ellis/Maple/N. Samish (Lakeway to Pasco)	21.671	65
Sunset Drive *[SR 542]* (James to Pacific)	19.078	88
Puget Street (Lakeway to Consolidation)	18.671	90
West College Way (Highland to Bill McDonald)	17.993	97
Bellis Fair Pkwy/Cordata Pkwy	17.326	101
Woburn Street (Sunset to Alabama)	17.218	104
36th (Fielding to Samish)	16.454	110
Kellogg Road (Tull to Cordata)	16.019	115
San Juan Boulevard (40th to Pacificview)	15.520	119
Cordata Parkway (Westerly to Bakerview)	14.573	126
Sunset Drive (Ellis to James)	13.631	139
Granary-Bloedel Avenue (Roeder to Cornwall)	10.661	161

Crossing Improvements

The Plan identifies forty-three intersections where further study is needed to assess the need for crossing improvements (gray circles on the network maps). Many are locations where bicycle boulevards or trails cross busy arterial streets. Possible crossing improvements include marked crosswalks, warning and regulatory signs, bulb-outs, crossing islands, rapid-flash beacons, high-intensity activated crosswalk (HAWK) signals, and full signalization. Determination of the appropriate crossing treatment should be consistent with Bellingham's Crossing Treatment Guidelines, which consider traffic volumes, speed,

number of travel lanes, lines of sight, proximity of other crossing treatments (e.g. signals) and on-street parking.

I-5 Corridor

The Interstate 5 (I-5) corridor is a significant physical and psychological barrier to intracity bicycle travel, literally dividing the City of Bellingham in half (see map). Creating better crossing conditions along this nine mile segment of freeway is absolutely essential to implementing a complete and connected bicycle network.

There are currently only eleven arterial streets that cross I-5 over a nine-mile stretch .Many of these are intimidating to novice and intermediate bicyclists due to high vehicle speeds, heavy automobile and truck traffic congestion, and a lack of dedicated bicycle facilities. There are also currently two bicycle and pedestrian-only bridges across I-5 between Alabama and Sunset. Bellingham is currently designing a new grade-separated Orchard Drive arterial street with on-street bicycle lanes and an adjacent off-street Bay to Baker multiuse trail in the central portion of Bellingham between Sunset and Meridian.

The following section provides a brief description of each of the existing and proposed bicycle crossings of I-5. In the short-term, wayfinding signage and roadway markings should be utilized to direct cyclists to the safest crossings, and to legitimize bicyclists' presence in an automobile dominated environment. In the long-term, the addition of new I-5 crossings, improvements to access ramps, and the installation of on- and off-street infrastructure will better connect the east and west sides of Bellingham.

It is important to note that I-5 and the associated interchanges are federal highway facilities, operated by WSDOT. This presents both opportunities and constraints for the City as it moves toward the implementation of these recommendations. In 2008 WSDOT published an analysis of current and future traffic conditions on I-5 from Fairhaven Parkway to Slater Road (north of the City).[2] The report is out of date and some of the recommendations have been acknowledged as not constructible. However, it does provide recommendations for upgrading interchanges and surrounding streets, some of which serve as the foundation for the proposed improvements described below.

I-5 Intersections

Existing and proposed bicycle crossings of I-5 are presented here in order from north to south.

Bakerview Road

WSDOT's 2008 I-5 Master Plan recommends that this entire interchange be reconstructed as a Single Point Urban Interchange (SPUI) at an estimated cost of $45-50 million. Currently, there is no funding for

[2] http://www.wsdot.wa.gov/projects/i5/fairhaventoslater/
[3] http://www.wsdot.wa.gov/NR/rdonlyres/8E708C78-5AD3-445A-A206-7D006F4588DA/0/I5BakerviewPlanningStudyApril_25_11.pdf

this level of improvement, but several lower cost improvement options were identified in WSDOT's 2011 Bakerview/I-5 Value Planning Study Technical Report[3]. As a result of this study, Bellingham formed a public-private partnership and made $3.2 million in improvements to the West Bakerview/I-5 overpass in 2013, which added a new westbound lane to reduce traffic back-ups across the bridge, as well as a 6-foot wide sidewalk on the north side of the bridge. Further improvements include constructing a new northbound on-ramp on the east side of I-5 (est. $8 - 10 million), as well as reconstruction of the overpass bridge (est. $8-10 million) to include dedicated bicycle facilities.

Northwest Avenue

The City constructed two roundabouts on Northwest Avenue at I-5, accommodating bicyclists through a combination of bike lanes, side paths, and marked crossings. Bicyclists have the option of taking the lane and riding through the roundabout or riding onto the sidewalk and using the crosswalks as a pedestrian. Some bicyclists prefer to use the roadway while others are more comfortable using the sidewalk. A combination of roundabout bicycle facility education and the installation of shared lane markings at the entrance to the roundabouts should be considered for these locations.

Meridian Street

Meridian is Bellingham's busiest I-5 crossing and requires a long-term approach to integrate bicycles into an already heavily trafficked route. In the long term, all I-5 ramps should be upgraded to accommodate pedestrians and bicycles. Upgrades should include high visibility markings at all crossings, and the striping of bike lanes through the intersections. The Orchard Drive Extension (below) will relieve some traffic congestion at I-5/Meridian. WSDOT's 2008 I-5 Master Plan recommends that this entire interchange be reconstructed as a Single Point Urban Interchange (SPUI) at an estimated cost of $45-50 million.

Orchard Drive

The Orchard Drive Extension is currently being designed and right-of-way is being purchased to accommodate a new east-west arterial street between Meridian Street and James Street. This is the last opportunity within the city limits of Bellingham to create a multimodal grade-separated crossing of Interstate 5. The arterial street will have marked bicycle lanes and the associated "Bay to Baker" multi-use trail will offer an off-street pathway for bicyclists. Both the street and the trail will be constructed along the north side of a re-routed Squalicum Creek flowing between Sunset Pond Park and Bug Lake. When completed, the Orchard Drive Extension and the Bay to Baker Trail will allow bicyclists, pedestrians, future transit busses, and vehicles to avoid the congested interchanges at both I-5/Sunset and I-5/Meridian, while also providing transportation benefit to I-5, SR 539 (Guide-Meridian), and SR 542 (Sunset Drive-Mt. Baker Highway).

Sunset Drive

Sunset Drive is the second most heavily trafficked I-5 intersection in Bellingham. It is also a vital connection for bicyclists due to limited number of crossings to the north and the access it provides between neighborhoods, the hospital and Sunset Square. WSDOT's 2008 I-5 Master Plan recommends that this entire interchange be reconstructed as a Single Point Urban Interchange (SPUI) at an estimated cost of $45-50 million. In the short-term, shoulders on the overpass should be studied for upgrade to

bike lanes, connecting to the dedicated bicycle facilities that already exists to the east. Additionally, I-5 access ramps should be improved for pedestrians and bicyclists, including high visibility markings at all crossings, possible reductions to the curb radii, and the striping of bike lanes through the intersections.

Illinois Street

The bicycle and pedestrian bridge over I-5 at Illinois Street provides a high-quality, low-stress, and grade-separated travel connection for bicyclists. To increase awareness of this crossing, wayfinding signs should be installed that direct bicyclists from the proposed Illinois bicycle boulevard to the Barkley Trail via Moore Street; and to Barkley Boulevard and Sunset Drive.

Railroad Trail

The multiuse Railroad Trail is a very heavily used east-west gravel trail, which takes advantage of an old grade separated railroad bridge spanning I-5 to provide bicyclists and pedestrians with a low stress travel option across I-5 along the Connecticut Street alignment between Illinois and Alabama. This crossing ties into both the Lincoln Street and the Moore Street bicycle boulevards identified in this plan.

Alabama Street

The Alabama Street crossing of I-5 is not a freeway access point. Unfortunately, without implementation of a 4-to-3-lane "road diet" of the Alabama corridor, it is not possible to install bike lanes on this bridge across I-5. Crossing enhancements are recommended at the intersection of Alabama and Moore on the east side of the bridge, to allow bicyclists on the Texas Street bicycle boulevard to safely cross Alabama and proceed two blocks north to the Railroad Trail crossing of I-5 (above).

Texas Street

The Bellingham Pedestrian Master Plan recommends a new bicycle-pedestrian crossing of Interstate 5 along the Texas Street alignment. This would support the recommended bicycle boulevard improvements to Texas Street and provide an alternative to crossing I-5 at Alabama Street.

Kentucky Street

Kentucky Street passes beneath an I-5 bridge from Lincoln Street to Moore Street where it connects to a very short section of multiuse trail to Nevada Street. Wayfinding and sight distance improvements are recommended for Kentucky to enhance safety and comfort for bicyclists.

Iowa Street

Iowa Street is an important east-west arterial street, but presents a challenge for cyclists due to significant volumes of traffic entering and exiting I-5. WSDOT's 2008 I-5 Master Plan recommends that this entire interchange and associated I-5 bridges over Kentucky and Moore Streets be reconstructed at an estimated cost of $135 million. The installation of wayfinding signage to the Kentucky Street underpass, one block to the north, would allow cyclists to safely bypass the Iowa Street interchange. Additionally, by following this route, bicyclists can access the Kentucky Trail, which provides access to Nevada Street.

Meador Avenue

Meador Avenue is an important east-west bicycle connection that passes beneath I-5 from James Street to Fraser Street, but does not have enough curb-to-curb width to install bicycle lanes. If curb ramps were installed, the wide sidewalks that exist on Meador could function as shared use sidepaths, which would tie into the dedicated bicycle lanes on both Meador west of James and on Fraser Street, as well as the recommended uphill climbing lane/downhill shared lane on Lincoln Street, thus improving bicycle accessibility in this area. There is also a need for improved connections between Meador Avenue and the Whatcom Creek Trail. Making the side paths and trail accessible to cyclists will provide additional connectivity to Lakeway Drive, Fraser Street, and Woburn Drive.

Lakeway Drive

Lakeway Drive is the third busiest I-5 crossing in Bellingham (25,000 vehicles per day), but is also a critical connection for residents to access downtown services and other popular cultural destinations, including Civic Field, Whatcom Falls Park, and Lake Whatcom to the east. Due to the lack of an on-street bicycle facility, many cyclists currently utilize the narrow sidewalk, generating discomfort for pedestrians as well as cyclists. WSDOT's 2008 I-5 Master Plan recommends that access to I-5 at Lakeway be eliminated to meet the FHWA interchange spacing guidelines in conjunction with the construction of a set of parallel "collector-distributor" streets on either side of I-5 leading to a reconstructed Iowa/I-5 interchange and a newly constructed interchange at Maple/I-5 to replace the existing Samish/I-5 interchange. It is extremely unlikely that WSDOT's I-5 plan will be implemented and in the short-term, Bellingham should allocate transportation funds to study and determine feasible options to install dedicated bicycle facilities through the I-5 underpass on Lakeway Drive.

Maple Street/Consolidation Avenue

A relatively low section of Interstate 5 may offer an opportunity for a new bicycle and pedestrian overpass at either Maple Street or Consolidation Avenue, which would provide an alternative to the busy I-5 crossings at Lakeway Drive and Samish Way. While this could be an expensive option, a bicycle-pedestrian overpass in this location would complement the existing WWU Lincoln Street Park-N-Ride facility, which is served by high-frequency WTA transit busses, as well as several hundred student apartments that are currently being constructed at Lincoln/Maple. Bellingham will be constructing sidewalk along the WWU Park-N-Ride facility in 2015 and is working with private developers to ensure that the Lincoln/Maple intersection is improved with ADA crosswalks and preparation for future signalization. Bellingham should allocate transportation funds to work with WSDOT to study the feasibility of constructing a bicycle-pedestrian overpass in this location.

Samish Way

Samish Way is a key crossing from Lincoln Street into the Samish Way Urban Village and the main access to Western Washington University along Bill McDonald Parkway. The nearby WWU Lincoln Street Park and Ride, Sehome Village, and Lakeway commercial area are important destinations for University students and other local residents. In order to improve bicycle access in this area, the existing bike lanes on Samish Way should be upgraded to buffered bike lanes, pavement markings should extend through the intersections. Green bike lanes should be considered between travel lanes on the west side of the interchange to denote a vehicle-bicycle mixing zone and to enhance bicyclists' safety.

Old Fairhaven Parkway

The southernmost I-5 crossing connects the Samish neighborhood on the east to western destinations including Happy Valley, Fairhaven, and the Interurban Trail. This crossing is also significant due to its proximity to the heavily utilized Lake Padden Park. While bike lanes already exist on Old Fairhaven Parkway, they should be expanded from 4 to 5 feet wide. The crossing would be further improved by adding a climbing lane eastbound on Connelly Avenue, striping bike lanes through intersections, adding green bike lanes should be considered between travel lanes on the west side of the interchange to denote a vehicle-bicycle mixing zone and to enhance bicyclists' safety, and constructing a traffic signal at the currently off-set Connelly intersections for the northbound I-5 on-/off-ramps.

Data Driven Prioritization Methodology

The Bicycle Master Plan utilized a data-driven prioritization methodology evaluating projects according to key variables that are known to influence bicycling rates, in addition to policy-based variables that emphasize network access for low-income and vulnerable populations. The data layers used to represent these variables were grouped into weighted metrics for safety, connectivity, stress level, demand, and equity, as shown in Table 3.14. The metrics were applied to the recommended bicycle network using Geographic Information System (GIS) tools, ViaCity, and a heat-mapping technique. ViaCity is a proprietary GIS tool developed by Transpo Group that uses parcel-level analysis to calculate each individual project's impact on network connectivity. This tool includes parameters for modeling the stress level a cyclist may experience on different types of facilities in the recommended network. These parameters include posted speed limits, traffic volume, and street gradient (slope). The heat-mapping technique was used to incorporate the metrics for safety, demand, and equity. Each metric was weighted and then combined to create a priority heat-map. The ViaCity and heat-map models were then integrated with the recommended bicycle network to produce a cumulative prioritization score for each project. This modeling effort went through several iterations allowing opportunities for staff to calibrate individual data layers and metric weights as needed.

Table 3.14: Project Prioritization Methodology

Variables	Metric
Safety	• Bike Crashes 2006-2010
Connectivity	• Route Level of Stress and Directness • I-5 Barriers
Demand	• Density of Employment • Density of Population • Locations Near Schools • Bike Count Volumes • Locations Near Trail Access Points • Locations Near Parks
Equity	• High Concentration of Population Under 18 • High Concentration of Low Income Population

Prioritized Recommendations

Following the calibration process, the final prioritization map and matrix was used to define short-, medium-, and long-term priorities. Short-term projects are listed below in Table 3.17, while a full prioritized list of projects can be found in Appendix L. The prioritization list should be used by the City to help determine where to target investments and should be reevaluated over time. Although this prioritization method provides a useful framework for implementation, the City should also look for opportunities to implement all the projects in the recommended network, regardless of their priority level, if they can be accomplished as part of a larger road redesign, repaving, construction or development project.

Short-Term Projects

Approximately 23 miles of short-term projects have been identified. Short-term projects are those that provide critical access to key destinations and improve the continuity of the existing network. Short-term projects are expected to provide a high return on investment in terms of ridership.

Table 3.15: Proposed Short-Term Bicycle Projects

Street	From	To	Improvement
Kentucky / Nevada / Texas	Woburn	Cornwall	Bicycle Boulevard
Lakeway Dr	Queen St	Ellis St	Further Study Needed
Lincoln St/Meador/Grant/Ohio	Cornwall	Lakeway Dr	Mixed*
Illinois St	Woburn St	Lynn	Mixed
Holly / Chestnut	Ellis	Bay	Mixed
24th	Old Fairhaven Parkway	Douglas	Bicycle Boulevard
Alabama	James	Electric	Further Study Needed
James	E Illinois	Ohio	Further Study Needed
34th/Abbott/Pasco/Humboldt/Whatcom/ Grant/Potter/Humboldt	Bill McDonald	Gladstone	Bicycle Boulevard
Barkley Blvd / Chandler / Mcleod	Magrath	Woburn	Upgrade Existing Bike Lane
Lincoln	North	Iowa	Bicycle Boulevard
F	Roeder	Cornwall	Bike Lane
Mill	12th	24th	Bicycle Boulevard
Maplewood / Alderwood/Bennett	Airport	Northwest	Mixed
Holly/Eldridge/Nequalicum	Nome	F St	Mixed
Aldrich/Northwest	Horton	Bakerview	Bike Lane
Meridian	McLeod	Telegraph Rd	Further Study Needed
Fruitland/Orchard/Squalicum/Ellis	Fruitland/Division Trail Connection	Illinois	Mixed
Meridian	McLeod	Squalicum	Bike Lane

*Mixed projects combine more than one facility type (e.g. bike lane, bike boulevard, shared lane marking)

Medium- and Long-Term Projects

Approximately 34 miles of medium-term projects have been identified for development between 2021 and 2026. These projects will help link key facilities identified as short-term projects and begin to

complete a comprehensive network of bicycle facilities that serve all ages and abilities. Current long-term projects envision an additional 73 miles of bicycle facilities being constructed in 2027 and beyond. Long-term projects will fill remaining gaps and expand Bellingham's bicycle network into new developments within the City (particularly to the north and east of I-5). A full list of medium- and long-term projects can be found in Appendix L.

Updates to Project Lists

It is expected that as the bicycle network is implemented and as new development occurs in the City, additional bicycle projects will be identified and project prioritization will need to be reevaluated. It is recommended that this list be reassessed and updated periodically (e.g. every three years), using similar criteria and revising the results based on current conditions.