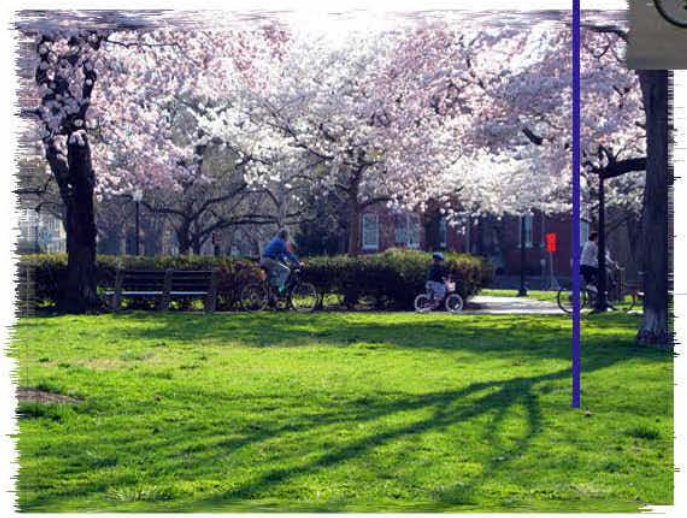
District of Columbia
Bicycle Master Plan



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District Department of Transportation
April 2005

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SECTION I. INTRODUCTION

Bicycling makes Washington, DC one of the most livable cities in the country. The District's population density, interconnected grid of streets, and renowned park system have long contributed to a favorable environment for bicycling.

Mayor Anthony A. Williams at Bike-To-Work Day

The *Bicycle Master Plan* will move the District to the next level, creating an even more bicycle-friendly city. This Plan is a guide to establishing high-quality bicycle facilities and programs over the next 10 years. Safe and convenient bicycle transportation is part of a broader initiative to create a sustainable, multi-modal transportation system in the nation's capital.

Implementing this Plan supports broader city goals. Mayor Williams has set a goal to increase the District's population by 100,000 residents in the next decade. Because there is little room to accommodate future growth with more automobile lanes, the city's transportation system must respond to this growth with other mode choices. The improvements outlined in this Plan will help accommodate the transportation needs of the city's growing population. Providing better conditions for bicycling will also help reduce automobile emissions, which will improve air quality in the DC region. This Plan also complements efforts to provide mobility along the Anacostia Waterfront and other revitalizing neighborhoods.

History of Bicycling in the District

Bicycling has long been a part of the transportation mix in the District of Columbia. In the late 19th Century and early 20th Century, bicyclists, pedestrians, buggies, and streetcars all shared District streets. The District of Columbia's interest in bicycling as an alternative to motorized transportation grew in the 1970s in response to the energy crisis. The first bicycle plan was adopted in 1976. Like most bike plans of the 1970s, it was not fully implemented.

The 1976 Bicycle Plan called for approximately 16 miles of bike lanes, 17 miles of trails, and 38 miles of signed bike routes. Some of these bikeways were completed in the 1980s, but due to budget cuts, the District was without a Bicycle Coordinator between 1992 and 2001. Today, the DC Bicycle Program has two full-time staff positions within the newly established Department of Transportation.

22nd St. N.W. Bike Rental, 1950s
(Photo: Library of Congress)

Bicycling Today

The use of bicycles for transportation and recreation is increasing within the District. Between 1990 and 2000, bicycle commuting grew by 55 percent, from a 0.75 percent share to a 1.16 percent share of all DC-based work trips[1]. More than 5 percent of work trips are made by bike in parts of the Mount Pleasant, Logan Circle, and Capitol Hill neighborhoods (see Map 1. Census Bicycle Commute Map). Thirty percent of all bike trips are for work[2]. The rest are for non-work purposes, such as shopping, school, and social/recreational trips.

More than 5% of workers commute by bicycle in several District of Columbia Neighborhoods.

Enthusiasm and interest in bicycling is also increasing. Between 1999 and 2002 the annual, non-competitive BikeDC tour grew from 1,500 to 10,000 participants. Regionally, membership in the Washington Area Bicyclist Association increased from less than 1000 in 1992 to more than 5,000 today. The annual Bike to Work day has increased from 300 participants at one location in the 1990s to 3,000 commuters at a dozen locations throughout the region.

Percent of households that do not own an auto:

District of Columbia: 37%
United States: 10%

There is great potential for increasing bicycle ridership in the District. The city's population contains a large pool of potential bicycle users. Almost thirty-seven percent of DC households do not have access to a motor vehicle[3]. Approximately 275,000 District residents live in households without an automobile or are too young for a driver's license. Bicycling is an inexpensive, flexible mode of transportation. Bicycle mobility helps people find and keep jobs, access health care services, and take advantage of shopping, education, and recreational opportunities.

DDOT has striped 15 miles of bicycle lanes since 2001.

Currently, the District has 17 miles of bike lanes, 50 miles of bike paths, and 64 miles of bicycle routes (see Map 2. Existing Facilities Map). Recent improvements to the bicycle system include:

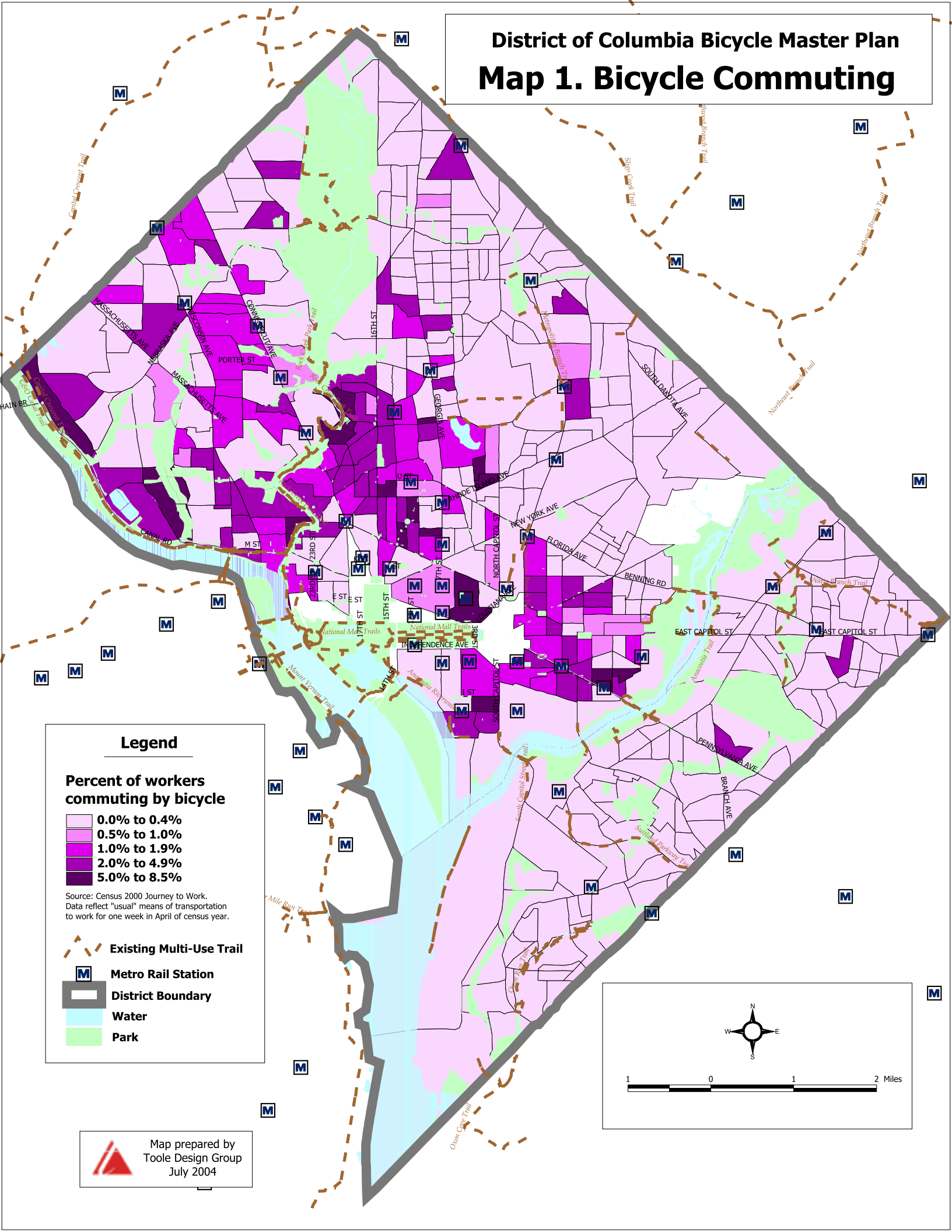
- 15 miles of bike lanes have been added since 2001.
- 20 miles of additional bike path are under design and will be constructed by 2007.
- More than 400 bike racks have been installed in the Downtown area, at District government offices and public libraries, and at retail locations since 2001.
- Metrorail eliminated the permit required for bringing bikes on trains and expanded bike access hours in 2000[4]. More than 8,000 bicycle trips were made on Metro trains in a two week period in August 2001[5].
- All Metro buses were equipped with bicycle racks in 2002.

[1] U.S. Census Bureau. *State and County Quickfacts*, Online: http://quickfacts.census.gov/qfd/states/11000.html, 2004.
[2] Metropolitan Washington Council of Governments. *Metropolitan Washington Regional Household Travel Surveys*, 1988, 1994, 1999.
[3] U.S. Census Bureau. State and County Quickfacts, Online: http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&_lang=en&_ts=93199688005, 2004.

[4] Bicycles are not allowed on Metrorail during the 7 a.m. to 10 a.m. and 4 p.m. to 7 p.m. peak ridership periods.
[5] Washington Metropolitan Transit Authority. Bicycle on Bus Survey, August 9 to August 23, 2001.

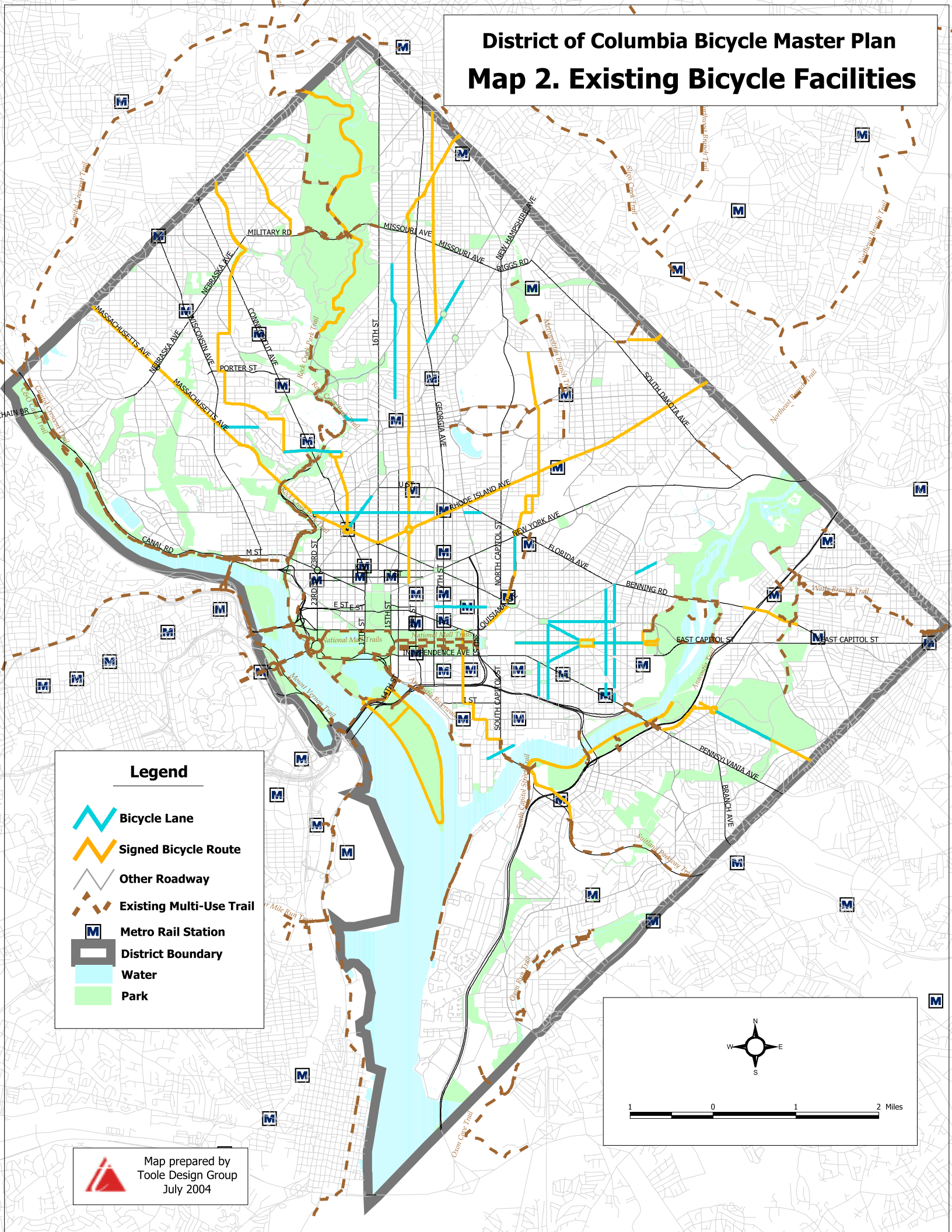
District of Columbia Bicycle Master Plan

Map 1. Bicycle Commuting



District of Columbia Bicycle Master Plan

Map 2. Existing Bicycle Facilities



Map prepared by
Toole Design Group
July 2004

The high-density land use development pattern in the District can support higher levels of bicycle transportation. More than 570,000 residents live on only 61 square miles of land in the District—more than 9,000 people per square mile[6]. There are more than 650,000 payroll jobs in DC, and most are located in the central business district[7]. The downtown office, commercial, and residential buildings are spread over a wide area. Approximately 500,000 jobs are distributed from Foggy Bottom to the Southwest Waterfront and from L'Enfant Plaza to the Convention Center, covering an area of approximately six square miles. Trips in the downtown area are often too far to walk and difficult to drive due to traffic congestion and scarce parking. Bicycling is often the fastest way to travel downtown.

National statistics show that bicycle commuting in the District is higher than most major cities in the United States (see Table 1. Bicycle Commuting in Selected U.S. Cities), but still much lower than other capital cities in the world (see Table 2. Bicycle Commuting in Selected World Capitals). The new bicycle facilities and programs recommended in this plan can help the District achieve even higher levels of bicycling.

Table 1. Bicycle Commuting in Selected U.S. Cities[8]

City	Bicycle Mode Share
Madison, WI	3.19%
San Francisco, CA	1.98%
Seattle, WA	1.88%
Portland, OR	1.76%
Washington, DC	**1.16%**
Philadelphia, PA	0.86%
Los Angeles, CA	0.61%
Chicago, IL	0.50%
New York, NY	0.47%
Houston, TX	0.46%
Baltimore, MD	0.33%
Nationwide Average (includes suburban and rural)	0.38%

Table 2. Bicycle Commuting in Selected World Capitals[9,10]

City	Bicycle Mode Share
Amsterdam, Netherlands	50%+
Beijing, China	48%
Tokyo, Japan	25%
Moscow, Russia	24%
Copenhagen, Denmark	20%
London, United Kingdom	3%
Ottawa, Canada	1.92%

[6] U.S. Census Bureau. State and County Quickfacts, Online: http://quickfacts.census.gov/qfd/states/11000.html, 2004.
[7] Bureau of Labor Statistics, 2000.

[8] U.S. Census Bureau. State and County Quickfacts, Online: http://factfinder.census.gov/servlet/DTGeoSearchByListServlet?ds_name=DEC_2000_SF3_U&_lang=en&_ts=93199688005, 2004.
[9] International Bicycle Fund. Online: www.ibike.org/statistics.
[10] Transport for London. *Transport Statistics for London, 2001.* Online: www.transportforlondon.gov.uk/tfl/pdfdocs/stats2001.pdf

While these conditions provide a firm foundation for bicycling, bicycle transportation improvements are needed in many parts of the District. According to District bicyclists, building bikeways is the most effective way to encourage bicycling in the District. (This was chosen by 59 percent of 258 respondents to an informal survey; no other response had more than 10 percent.) According to one District resident, "Traffic is too heavy, pavement is too rough, and there is no space for bikes." An average of 270 bicycle crashes is reported to police every year. Though crash reports tend to underestimate the total number of bicycle crashes, this still represents approximately two percent of all reported crashes in the District.

There is an average of 270 crashes involving bicyclists every year in the District. Bicycling accounts for about 1 percent of trips, but 2 percent of all crashes in the District.

Additional barriers to bicycling include:

- Inadequate space for bicycling on downtown streets
- Busy arterial roadways with high-speed traffic
- No visible bike facilities on most roadways
- Curbside management issues (double-parking, tour bus parking, trucks loading in bike lanes, etc.)
- Complex intersections with vehicles turning in many directions
- Freeway ramp crossings
- Potholes, roadway debris and other road surface problems
- Narrow, crumbling, and/or debris-filled bicycle trails
- Poor access to bridge sidewalks
- Conflicts with buses
- Deteriorating bike route signs
- Unmarked bike routes
- Scarce bicycle parking in some areas, especially near schools and universities
- Limited understanding and respect for bicyclists among taxi, bus, and other drivers
- Limited awareness of potential bicycle opportunities among residents and visitors

Benefits of Bicycling

Encouraging greater bicycle travel in the District will bring many benefits to residents and visitors. These benefits are summarized below.

Traffic Relief

Increasing bicycle travel reduces the number of motor vehicles on District of Columbia roadways. Improving intersections, completing bicycle paths, and providing more paved shoulder space and bike lanes will provide convenient transportation options for the growing DC population.

A bicycle takes up ¼ of the space of a car and is faster for most urban trips than driving or transit.

A motor vehicle is the second-highest household expense. Bicycling provides a cost-efficient means of travel for residents and visitors.

Environmental Benefits

The primary source of air pollution in the metropolitan Washington region is auto emissions. Motor vehicles are also a source of pollution in the Anacostia River, one of the most polluted rivers in the United States. Substituting bicycling trips for short auto trips will reduce the amount of pollutants generated by automobiles in the District.

The District and surrounding metropolitan region is classified as a severe non-attainment area for ground level ozone by the U.S. Environmental Protection Agency. Cycling 8 miles prevents 15 lbs. of air pollutants from contaminating the air. Bike travel already reduces automotive pollution by 1 percent nationally and saves an estimated 700 million gallons of fuel annually.

Economic Benefits

A motor vehicle is the second-highest household expense, after housing itself[11]. The option of bicycling can improve the mobility of the 275,000 District residents without access to a car and allow some households to own one vehicle instead of two. Pairing bike facility improvements with programs such as car-sharing gives residents more transportation choices.

Bicycling can also help bring tourist dollars into the city. Active vacations are one of the fastest growing sectors of the tourist industry. Bicycling also allows tourists to travel more quickly between sites and enables the District to better tap into the buying power of the 18 million tourists who often limit their DC visit to the National Mall and monuments.

Approximately 18 million tourists visit the District of Columbia each year. Bicycling allows tourists to explore the National Mall and beyond without having to walk long distances or be tied to a bus schedule.

Health Benefits

Increased levels of bicycling will improve the health of District residents. Biking to the store, school or work provides a time-efficient, low-cost way of attaining the U S Surgeon General's recommended daily allowance of physical activity. Bicycle exercise can help reduce heart disease, diabetes, and other chronic illnesses among District residents.

[11] Surface Transportation Policy Project. "Housing and Transportation," Online, www.transact.org/library/factsheets/housing.asp#_ednref1, February 23, 2004.

Master Planning Process

District residents played a significant role in the development of the Bicycle Master Plan. The Bicycle Advisory Council, appointed by the District Council, provided guidance throughout the process at bi-monthly meetings. The BAC established the vision and goals and worked with DDOT to create and refine the Plan. More than 150 citizens were involved in ward-based bicycle rides and workshops. They provided comments on survey forms, on maps, through the Plan website, and at BAC meetings. Citizens suggested bike facility, route, and policy recommendations for the Plan. Over the course of this study, more than 1,000 citizen comments were considered in the preparation of this Plan.

Participants at one of the 2003 public workshops.

The following is a timeline of public input opportunities for this Plan:

November 2002 to January 2005:
Bicycle Advisory Council meetings, bi-monthly

December 2002 to January 2005:
Website online with Plan information and feedback opportunities

May 2003:
Survey forms distributed at Bike to Work Day

April 2003 to July 2003:
Series of public rides in each Ward, followed by public workshops

March 2004:
Draft Plan posted on website for public review

May 2004:
Public Open House to review Draft Plan

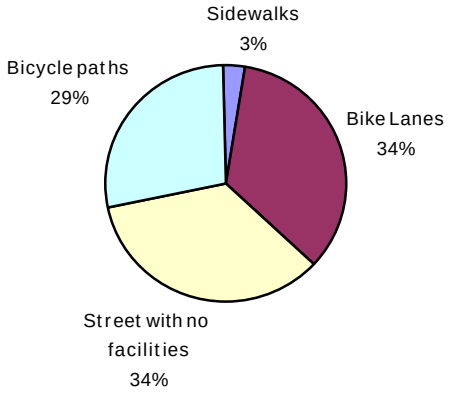
Survey Results

Informal surveys were given to interested District residents online, at Bike to Work Day, and at ward-based workshops in Summer 2003. 258 were completed. Most survey respondents were experienced with bicycling in the District*.

- Preferred facilities for bicycling:
  - Bike lanes: 34 percent
  - Street with no facilities: 34 percent
  - Bicycle paths: 29 percent
  - Sidewalks: 3 percent
- 59 percent recommended providing bikeway facilities as the best way to encourage bicycling in the District. The second and third most popular recommendations were enforcing laws applying to motorists (8 percent) and reducing street traffic (8 percent).
- 152 out of the 258 respondents (59 percent) had been involved in some type of crash.

*47% of surveys were submitted online, 38% at Bike to Work Day, 13% at ward meetings, and 2% by mail. The most common characteristics of survey respondents were: male (66%), between 30 and 39 years old (40%), and used their bike at least 5 days per week (40%).

Preferred Facilities for Bicycling



Workshop and survey feedback

Public feedback was obtained through ward-based workshops, e-mail comments, and an informal survey. The survey was distributed online, at Bike to Work Day, and at the ward-based workshops. A total of 258 survey responses were received.

In general, survey and workshop participants felt that streets with bike lanes, neighborhood streets with light traffic, and bridges with wide sidewalks are good places to bicycle. Poor places to bicycle are downtown streets, major thoroughfares between downtown and the neighborhoods, and streets with poor pavement quality.

Many participants felt that streets without bike facilities are difficult places to bicycle. Approximately 60 percent of respondents recommended providing more facilities, such as bike lanes and bike paths. Others emphasized improving access to trails, posting better bicycle signage, increasing education for motor vehicle drivers and bicyclists, and providing more stringent enforcement of traffic laws.

See Appendix A for a more detailed summary of the Bicycle Master Plan public review process, and Appendix B for an example survey form.

Geographic Information Systems Data

Objective data were also collected to inform Plan recommendations. The following data were analyzed with Geographic Information Systems (GIS):

- Bicycle crash locations from 1997 to 2002
- Bicycle-oriented destinations, such as parks, Metrorail stations, community centers, schools, universities, and tourist destinations.
- Roadway locations and characteristics

Roadway Inventory and Bicycle Level of Service Analysis

Conducting a comprehensive roadway inventory was an important component of the background analysis. Field measurements were taken on 406 miles of major collector and arterial streets in the District in early 2003. This accounts for about 45 percent of all DC streets. Roadway lane and shoulder width, speed limit, pavement condition, and on-street parking data were collected and used in the scientifically-calibrated Bicycle Level of Service (Bicycle LOS) Model to evaluate the comfort of bicyclists on roadway segments. The results are shown in Map 3.

Analysis found that about 32 percent of the study network received above average grades of A, B, or C on an A (best) to F (worst) grading scale. Streets with lower traffic volumes and bicycle lanes tended to have the highest Bicycle LOS grades. Most of the downtown streets and major arteries between downtown and the suburbs had grades of D or lower. Roughly 700 miles of streets were not evaluated. These were either local streets where conditions tend to already be good for bicycling (Bicycle LOS A or B) or limited access roads (freeways). See Appendix C for a more detailed description of the Bicycle LOS methodology and analysis results.

Bicycle Level of Service Summary

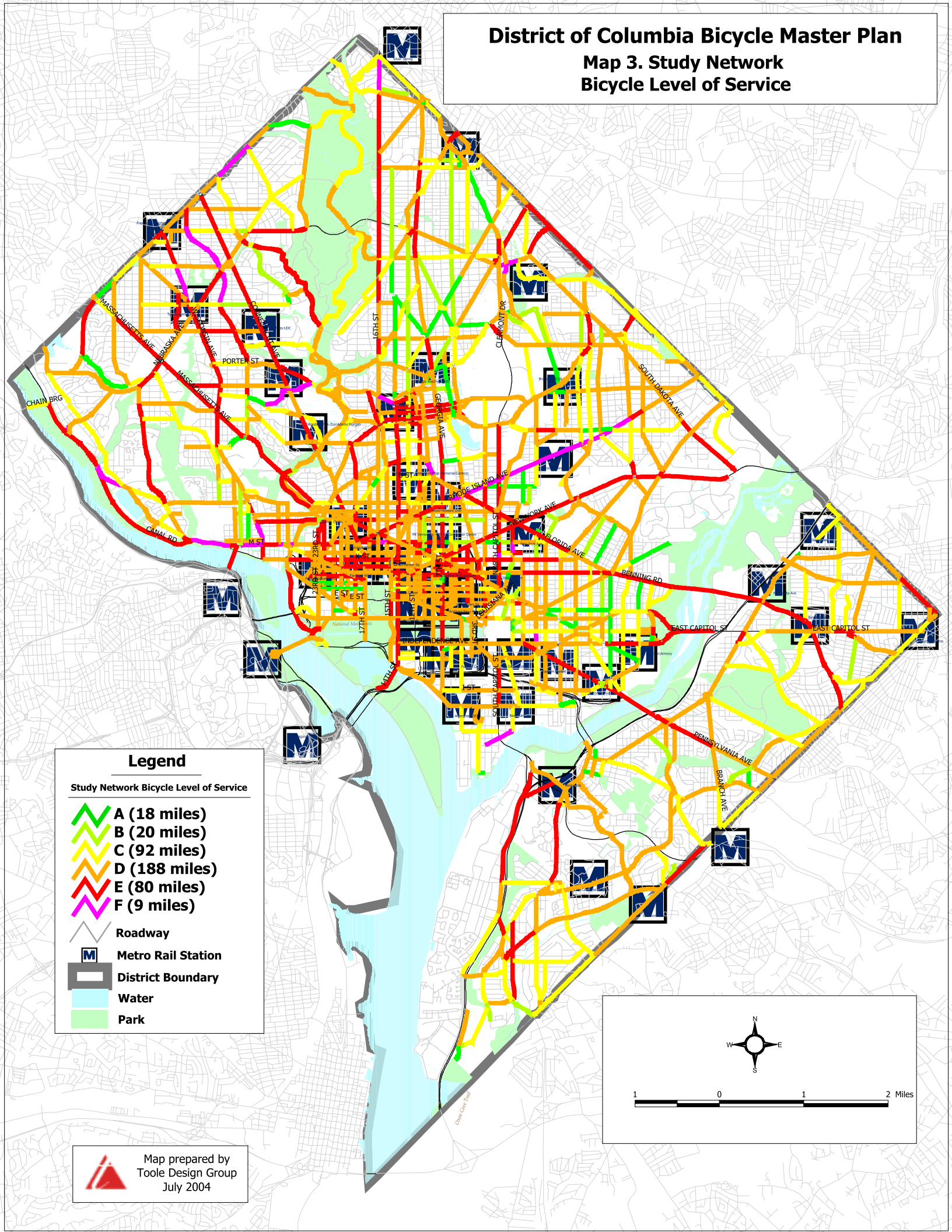
Bicycle Level of Service	Miles	% of Miles with BLOS
A	17.8	4.4%
B	19.9	4.9%
C	91.7	22.5%
D	188.1	46.2%
E	80.5	19.8%
F	8.9	2.2%
Total	**406.9**	**100.0%**
Not Evaluated	745.4	

NOTE: 745 miles of DC roadways were not evaluated. These were either local streets where conditions tend to already be good for bicycling or limited access roads (freeways).

Bicycle Level of Service results were one of several sources of information used to select the bicycle route network. Specifically, routes with a Level of Service D or above, or with the potential to be improved to this level, were selected. The Bicycle Level of Service model and associated roadway inventory were also used to prioritize street improvements and identify potential for striping bike lanes and making other bicycle improvements.

District of Columbia Bicycle Master Plan

Map 3. Study Network Bicycle Level of Service



Goals and Core Recommendations

Fourteen core recommendations and other supporting recommendations will be pursued to improve bicycle transportation in the District of Columbia. The core recommendations are listed in three goal areas:

Goal 1: More and Better Bicycle Facilities

Recommendation 1.1.
Improve and expand the bike route system and provide functional and distinctive signs for the system.

Recommendation 1.2.
Provide bike facilities on roadways.

Recommendation 1.3. Complete ongoing trail development and improvement projects.

Recommendation 1.4.
Improve bridge access for bicyclists.

Recommendation 1.5.
Provide bicycle parking in public space.

Recommendation 1.6.
Encourage bicycle parking in private space.

Goal 2: More Bicycle-Friendly Policies

Recommendation 2.1.
Update District of Columbia laws, regulations and policy documents to address bicycle accommodation.

Recommendation 2.2.
Provide training to District staff.

Recommendation 2.3.
Review District of Columbia projects to ensure they provide bicycle accommodation.

Vision Statement

"The District of Columbia will be a world-class bicycling city that offers a safe and convenient network of bikeways for all types of trips."

Goal 3: More Bicycle-related Education, Promotion, and Enforcement

Recommendation 3.1.
Educate motorists about safe operating behavior around bicyclists.

Recommendation 3.2.
Educate bicyclists about safe bicycling.

Recommendation 3.3. Enforce traffic laws related to bicycling.

Recommendation 3.4.
Establish a Youth Bicycle and Pedestrian Safety Education Program.

Recommendation 3.5.
Distribute the District of Columbia Bicycle Map to a wide audience.

Section II provides additional details about the goals, core recommendations and supporting recommendations. Section III includes a table with the partners, timeframe, and milestones for implementation of the recommendations.

Bicycle Route Network

The Proposed Bicycle Facilities Map (see folded insert) identifies the arterial network for bicycling in the city, the Bicycle Route Network. This Network includes routes where facilities can be added within the next five to ten years.

While some streets in the Bicycle Route Network have poor bicycling conditions today, they can be converted to high quality bike facilities through a stand-alone project or as part of a future road reconstruction project. All routes in the network should have facilities that provide a visible indication that they are a bikeway.

Background information used to select the Bicycle Route Network included:

- Existing and planned bike lanes
- Existing and proposed bike path locations
- Existing signed bike routes
- Historic bike routes (1975 District of Columbia Bikeway Planning Study, 1987 Bike Route Network, 1995 Metropolitan Washington Council of Governments (MWCOG) Bicycle Plan, 1998 ADC Washington D.C. Regional Bike Map)
- Bicycle Level of Service (BLOS) analysis
- Locations of major destinations for bicycling, such as parks and Metro stations
- Extensive fieldwork
- Public input from website, survey, and workshop maps and comments
- BAC and DDOT staff input

Basic Principles of the Bicycle Route Network

- All streets in the District of Columbia should accommodate bicyclists; however, the bicycle network will provide an arterial network for cycling in the city.
- All bicycle network routes should be developed with facilities that provide a visible indication that they are a bikeway (bike lanes or signs).
- All District residents will live within ½ mile of a bicycle route or trail.
- The bicycle route network will provide connectivity within and between:
  - downtown and other employment centers
  - residential neighborhoods
  - parks and recreational facilities
  - schools and universities
  - adjacent jurisdictions
  - transit

Milestones for Implementation

There are three major milestones for measuring long-term progress on the Plan:

1) 50 miles of DC streets will have better Bicycle Level of Service ratings by 2010 and 100 miles will have better Bicycle Level of Service ratings by 2015.

2) The proportion of bicycle trips will increase from about 1 percent of all trips in 2000 to at least 3 percent in 2010 and 5 percent of all trips in the District of Columbia by 2015.

3) The rate of bicycle collisions with motor vehicles will decrease from 26 reported bike crashes per 1 million bike trips in 2000 to 20 per 1 million in 2010 to 15 per 1 million in 2020.

District of Columbia Planning Context

The recommendations of this Bicycle Master Plan help achieve the goals set forth in a variety of other District of Columbia and regional plans. The following plans either lend support to the objectives of this Plan, or otherwise relate to the goals and objectives herein. Coordination with the development and implementation of these plans is important.

National Capital and Regional Plans

- *Extending the Legacy: Planning America's Capital for the 21st Century* (National Capital Planning Commission, 1997): The Legacy Plan calls for Washington to become a "national model of enlightened urban transportation." Obtrusive highways and bridges should be removed, pedestrian and bicycle access should be provided on major bridges, and the District's waterfront should be developed.

- *Transportation Improvement Program (TIP)* (National Capital Region Transportation Planning Board, updated annually): This is a listing of the federally funded transportation projects, including bicycle and trail projects. A project must be in the TIP to receive federal funding.

- *Constrained Long Range Plan (CLRP)* (Metropolitan Washington Council of Governments, updated every 3 years): The CLRP identifies major capital improvements, studies, actions and strategies that the region proposes to carry out in a 20-year period. Specific regional bicycle projects are recommended.

District of Columbia Plans

- *District of Columbia Comprehensive Plan* (1999): Transportation is specifically referenced in Chapter 5, the Transportation Element, Chapter 9, the Downtown Plan Element, and Chapters 11 through 19, the Ward Plan Elements. The current document is limited in its guidance and support for non-motorized modes of travel. At present, the DC Office of Planning is leading a process to revise and update the Comprehensive Plan. This process offers an opportunity to strengthen the Comprehensive Plan with regard to bicycle transportation.

- *Strategic Transportation Plan for District of Columbia/State Long Range Transportation Plan (LRTP)* (1997): This plan emphasizes providing a multi-modal transportation system, including a "world-class bicycle transportation network". The Action Plan (Action Item 7.17) calls for the development of District-wide "bicycle spine network," to connect existing, dedicated bicycle paths with one another and with new paths and dedicated bicycle lanes. The District is currently updating the LRTP, which includes a multi-modal analysis of 27 roadway corridors. The LRTP update provides an opportunity to update and expand upon the recommendations for bicycle facilities and policies.

- *Capital Improvement Plan (CIP)* (updated annually): The CIP is a comprehensive, six-year plan for the development, modernization or replacement of city-owned facilities and infrastructure. It includes street and bridge projects.

SECTION II. RECOMMENDATIONS

This section lists core and supporting recommendations that will establish a world-class bicycle transportation system in the District of Columbia. The recommendations are listed in the three goal areas: Goal 1, Facilities, Goal 2, Policies, and Goal 3, Education, Promotion, and Enforcement.

The strategies below will increase bicyclist safety and security while improving the connectivity and accessibility of destinations and activity centers within the District of Columbia and adjacent jurisdictions.

Goal 1: More and Better Bicycle Facilities

Facilities are the physical improvements to the city's bicycle infrastructure such as trails, bike lanes, bike route signs and bicycle parking.

Core Recommendations

Recommendation 1.1. Improve and expand the bike route system and provide functional and distinctive signs for the system.

DDOT will post bike route signs along key bike network routes. These bicycle routes will have signs posted frequently and have arrows that show every turn clearly. The signs will have sub-plates showing the direction and distance to significant destinations on and near the route. This plan calls for 150 miles of signed bicycle routes (see enclosed map).

DDOT will conduct a field inventory of the signs on an annual basis and replace missing and damaged signs.

Recommendation 1.2. Provide bike facilities on roadways.

The District's existing system of bike lanes and bike routes will be expanded to create a comprehensive, interconnected network of bicycle facilities. Bicycle facilities will be improved and maintained whenever streets are repaved or reconstructed. Special attention should be given to accommodating bicycles on streets that are designated as a part of the Bicycle Route Network.

DDOT will provide on-road bicycle facilities such as bike lanes, wide outside lanes, and on-road separated bike facilities. Roadway striping and geometric improvements will be made when streets are repaved. DDOT will publicize these bicycle improvements. This plan calls for 60 miles of bicycle lanes over the next 10 years (see enclosed map).

Recommendation 1.3. Complete ongoing trail development and improvement projects.

The District will build and maintain a high-quality system of shared-use paths. DDOT will continue to play a lead role in the development of two new trails that will fill major gaps in the District and regional trail systems (see Map 4. Trail Map):

- Metropolitan Branch Trail
- Anacostia Riverwalk and Trail

DDOT and NPS are planning a new trail along the Anacostia River

Completion of these projects will bring multi-use trails to Northeast and Southeast DC, areas of the city that are currently underserved by trails. These trails will also connect the city to extensive suburban trail networks in Prince George's and Montgomery counties. DDOT will continue to work with DPR, WMATA, NPS, Maryland-National Capital Park and Planning Commission (MNCPPC), Maryland DOT, and community-organizations to ensure that these trail systems realize their full potential.

DDOT will also improve existing DC and NPS trails. Projects planned and underway include such trails as Watts Branch, Oxon Run, and Rock Creek trails. This plan calls for building or improving 90 miles of trails.

Recommendation 1.4. Improve bridge access for bicyclists.

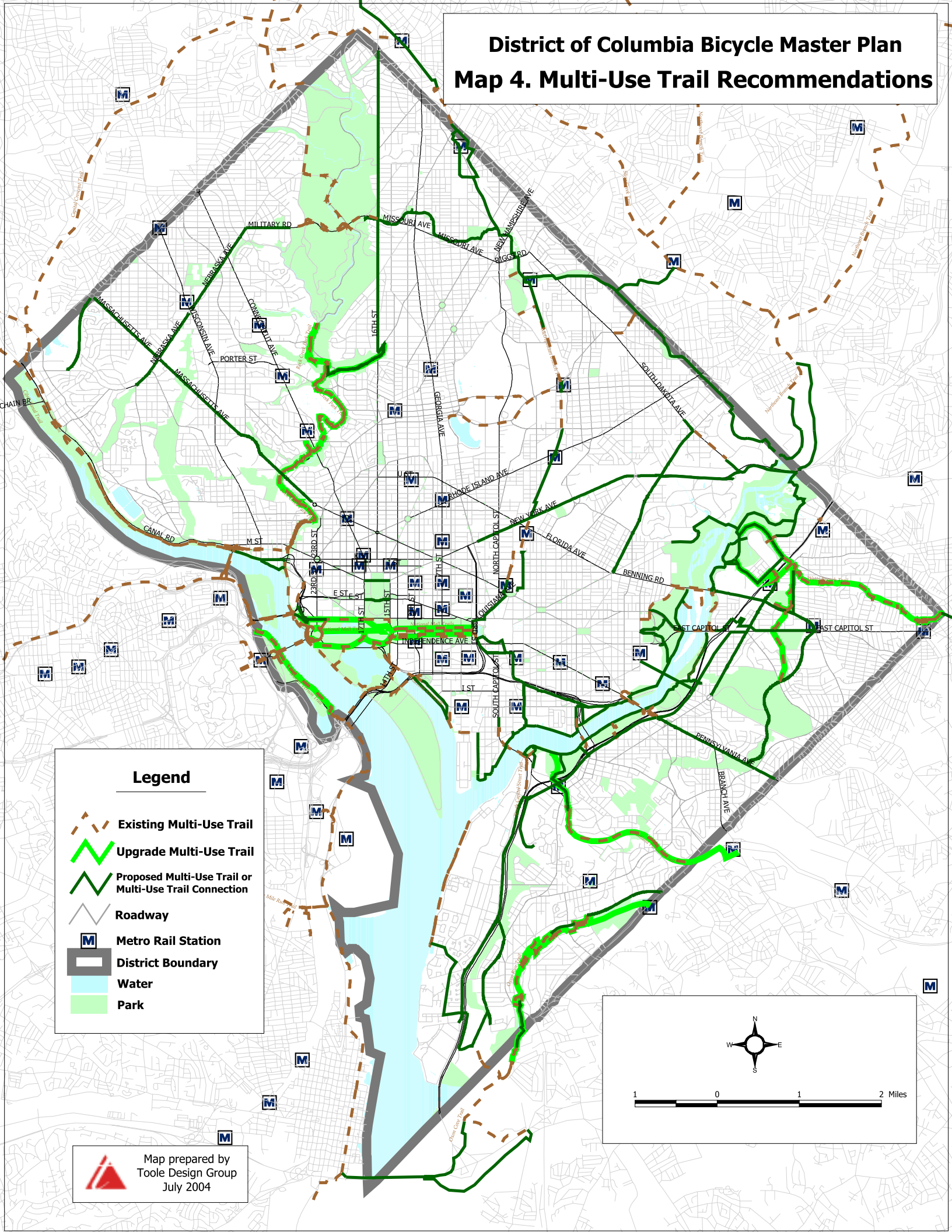
Access to many of the Potomac and Anacostia River Bridges is difficult and will be improved. Since most bridge access points are on NPS land, DDOT should work with NPS to provide these connections. Space for bicyclists must be provided on street and highway bridge structures and in the roadway corridors under the structures. Where the bridge replacement project impacts other roadways, bicycle access must be provided on these roadways. Top priority bridge access improvements include the following (see Map 5. Bridge Access Improvements Map):

The Benning Road Bridge was improved with wider sidewalks for bicyclists and pedestrians.

- Roosevelt Bridge from the Kennedy Center area and Virginia
- Memorial Bridge from both sides of the Potomac River
- 14th Street Bridge from L'Enfant Plaza and the Mall
- East Capitol Street Bridge from Anacostia.
- Benning Road bridge over the railroad and freeway east of the Anacostia River
- 11th Street Bridge from Anacostia and Capitol Hill
- South Capitol Street Bridge from Anacostia and Capitol Hill
- Designated bicycle space on the Military Road Bridge through Rock Creek Park
- Access to and designated bicycle space on bridges in the Michigan Avenue/Irving Street area

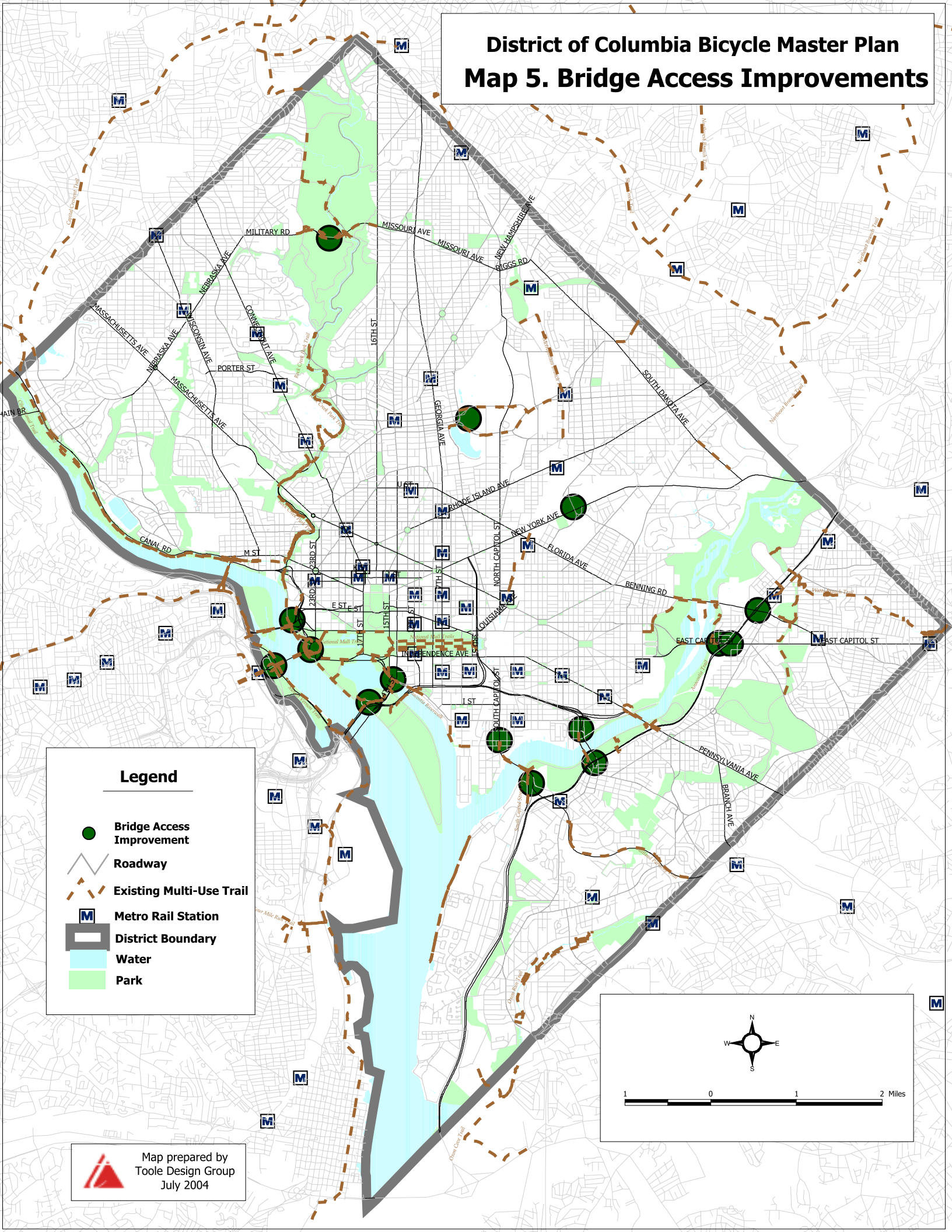
District of Columbia Bicycle Master Plan

Map 4. Multi-Use Trail Recommendations



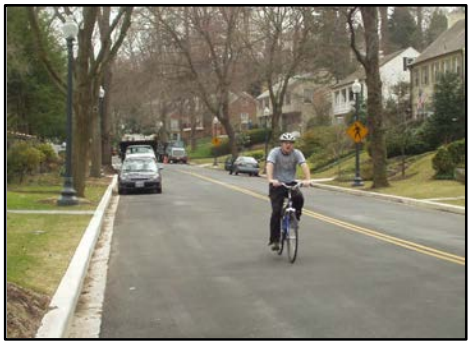
District of Columbia Bicycle Master Plan

Map 5. Bridge Access Improvements



Description of Common Bicycle Facilities

Different types of facilities will be needed to provide safe and comfortable accommodation for bicycles in the District of Columbia bicycle network. This is a short list of common types of bike facilities. Specific design guidelines for these and other bike facilities are provided in the *District of Columbia Bicycle Facility Design Guidelines* document.



Shared Roadways

Shared roadways are streets and roads where bicyclists can be served by sharing the travel lanes with motor vehicles. Usually, these are streets with low traffic volumes and/or low speeds, which do not need special bicycle accommodations in order to be bicycle-friendly. Shared roadways can also include streets with wide outside lanes (13 to 14 feet). Increasing the outside lane width increases comfort for bicyclists.

Signed-Shared Roadways

A signed-shared roadway is roadway which has been designated by signing as a preferred route for bicycle use. Bike route signs can be posted on key routes to indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes. This type of facility may also include pavement symbols to help direct bicyclists.

Bike Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is 5 feet.

Shared-Use Pathways/Multi-Use Trails

Shared-use pathways (multi-use trails) provide a high quality walking and bicycling experience in an environment that provides separation from traffic. Shared-use paths should be a minimum of ten-feet wide and paved. Their width may be reduced to eight feet if there are physical or right-of-way constraints. These types of paths can be constructed within a roadway corridor right-of-way, in their own corridor (such as a greenway trail or rail-trail), or be a combination of both. In some cases, there is a need for shared-use paths *in addition to* bike lanes on busy streets. Wide sidewalk facilities can also be designated as shared-use paths, with or without marked bicycle space. Shared-use paths should not be used to preclude on-road bicycling but rather to supplement a system of on-road bicycle facilities for less experienced cyclists.

Description of Common Bicycle Facilities, continued

Bike-friendly traffic calming

Slowing motor vehicle speeds helps improve the Bicycle Level of Service of a road. Traffic circles and landscape medians are examples of facilities that can be added to a roadway to slow motor vehicles. Bike lanes and shoulders can also calm traffic when outside edge-lines are used to narrow the motor vehicle lanes.

Exclusive bus and bicycle lanes

Multi-lane streets that serve as bus routes have the potential to accommodate exclusive bus and bicycle lanes. On many bus routes with frequent bus stops, regular automobiles back up behind buses in the outside lane, significantly reducing the utility of the outside lane for non-transit use. Exclusive lanes ensure that regular vehicles do not get stuck behind buses, allow buses to avoid traffic congestion, and also provide a wide lane for bicyclists. These lanes should be used on streets with frequent bus service and with potential to serve large numbers of bicyclists. Exclusive bus and bicycle lanes were used in the District in the 1980s on Connecticut Avenue.

Bike boxes at intersections

Bike boxes are installed to allow bicyclists to move in front of cars waiting at an intersection to increase their visibility and reduce conflicts with turning vehicles. They are typically used at intersections with left-turning cyclists and/or right turning vehicles. It employs an advanced stop bar at a signalized intersection, creating a 10-foot to 15-foot long area between the crosswalk and the stop bar. During a red signal phase, bicyclists are able to better position themselves for a left turn by moving left across the bike box. This device is profiled in the Institute of Transportation Engineers *Innovative Bicycle Treatments* report, and has been tested in several cities around the country.

Recommendation 1.5. Provide bicycle parking in public space.

DDOT will continue to provide bicycle parking in public spaces throughout the District. DDOT should work with the Metropolitan Police Department (MPD) and security companies to reduce bike theft and damage at bicycle racks.

Recommendation 1.6. Encourage bicycle parking in private space.

DDOT will encourage building managers and property owners to provide bicycle parking as required by DC regulations. Bicycle parking must be provided in parking garages, and it must be designated by prominent signage. Zoning requirements for bicycle parking will be enforced.

Supporting Recommendations

Recommendation 1.7. Establish a major bicycle station and an automated bicycle rental system.

DDOT should work with WMATA, NPS, and private vendors to establish a bicycle station at Union Station. The bike station should have bike retail, parking, storage, and rental opportunities. DDOT should also implement an automated bicycle rental system, with rental kiosks throughout the downtown area.

A Bike Station in Palo Alto, California provides free guarded parking, bike rentals and other bicycle commuting services.

Recommendation 1.8. Upgrade and extend key existing trails.

Upgrading old and sub-standard trails is critical to improving bicycle transportation and safety. Coordination between DDOT and NPS is essential for many of these projects. The following projects should be undertaken in future years (see Map 4. Trail Map):

Many of DC's older trails, like the Rock Creek Trail, are in need of improvement.

- Establish and upgrade two shared use path routes traversing the National Mall from the Theodore Roosevelt and Memorial Bridges to the Capitol

Grounds, one serving north side Mall destinations and one serving south side destinations.

- Upgrade portions of the Mount Vernon Trail, including George Washington Parkway crossings and Memorial Bridge access.
- Upgrade Rock Creek Trail between P Street and Broad Branch Road, including a new bridge south of the zoo tunnel.
- Upgrade the Suitland Parkway Trail and extend it to the Anacostia River Trail in the District and to the Naylor Road Metro Station and Andrews Air Force Base in Prince George's County.
- Upgrade the Watts Branch Trail.
- Upgrade the Oxon Run Trail and extend it to the Oxon Cove Trail.
- Pave and upgrade the Fort Circle Trail from Fort Dupont Park to the Watts Branch Trail near Fort Mahan.
- Construct a Piney Branch Parkway trail spur from Rock Creek Trail to Arkansas Avenue.
- Construct a sidepath and trail along M Street, SE and Virginia Avenue, SE connecting the Anacostia River Trail with "I" Street and Garfield Park.
- Construct a shared use path along Dalecarlia Parkway.

Recommendation 1.9. Initiate focused trail planning efforts to eliminate gaps in the Bicycle Route Network and trail network.

Through this and other planning efforts, key gaps in the bicycle network have been identified. Recent planning initiatives such as the Anacostia Waterfront Initiative, Fort Circle Parks General Management Plan, and the Potomac Heritage National Scenic Trail Plan have identified a number of new trail opportunities that could fill these missing links. Ongoing transportation and park planning projects in the following locations should include planning for trails and bikeways to ensure that bicycle network gaps are eliminated and trail system access is enhanced (see Map 4. Trail Map):

- Historic Anacostia: Utilize right-of-way along the abandoned railroad spur and/or adjacent street for a trail alongside the Light Rail Line planned for the same corridor. This trail will link residential neighborhoods, schools, and metro stations along the east side of the Anacostia River and could be extended to St. Elizabeth's.
- Georgetown Waterfront: Develop a plan for connecting the Capital Crescent Trail to the Rock Creek Trail along the Georgetown waterfront.
- South Capitol Street/I-295 Corridor: Identify an efficient trail and bikeway alignment from the Capitol to Oxon Cove and to the bicycle facilities on the new Woodrow Wilson Bridge.
- New York Avenue Corridor: Plan for a trail or bikeway connecting Mt. Vernon Square to the National Arboretum, Fort Lincoln area, and Anacostia River Trail System in Prince George's County.
- Kennedy Center/Theodore Roosevelt Bridge: Improve trail and bicycle access around and to the Kennedy Center and the Theodore Roosevelt Bridge as part of the reconstruction projects for both entities.
- NE/NW DC and Military Road Crossing of Rock Creek Park: Develop the portion of the planned Fort Circle Parks Trail between Fort Lincoln and Fort Reno as a shared use path for bicycles and pedestrians.
- Kenilworth Park/Arboretum: Plan for a bridge or ferry crossing and associated trails, between Kenilworth Park and the National Arboretum connecting the Deanwood and Kingman Park neighborhoods. Seek an alignment and design that can be kept open beyond the Arboretum's 8 a.m. to 5 p.m. hours.
- Massachusetts Avenue Bridge: Provide bicycle trail access on and to the proposed bridge across the Anacostia River.
- Beach Drive in Upper Rock Creek Park: Plan for an improved bicycle connection between the north end of the Rock Creek Trail at Broad Branch Road and the south end of the Rock Creek Trail in Maryland. Beach Drive is dedicated to non-motorized traffic on weekends but bicycles must share this narrow road with motor vehicles on weekdays.

Recommendation 1.10. Facilitate and support development of regional and national trail routes through the District of Columbia. DDOT and other agencies should support the DC sections of the following regional trails (see Map 6. Regional and National Trail Map).

- Two East Coast Greenway routes through the District: 1) Along the Metropolitan Branch Trail and Anacostia River Trail and 2) through the National Mall.
- Three Potomac Heritage National Scenic Trail routes: 1) Along the Potomac River waterfront, 2) through the historic waterfront settlements, and 3) along the Ft. Circle Parks route (along portions of this route hiking and bicycling paths will follow different alignments).
- American Discovery Trail: along the C and O Canal, Rock Creek Trail and DC streets.

Recommendation 1.11. Establish bicycling as a preferred mode of transportation in the National Mall area.

DDOT should work with NPS to increase the convenience and visibility of bicycling in the National Mall area. Designating space for bicyclists is a vital component of this effort. The existing trails on the north and south side of the Mall should be upgraded and maintained. They will allow faster-moving bicyclists to travel on the edge of the mall and avoid central areas that have slower-moving pedestrians. These parallel trails should be complemented by other high-quality bike facilities that connect tourist destinations in the Mall area and connect the Mall to the downtown business district, the Kennedy Center, and to surrounding neighborhoods. Important connections in the Mall area also include:

- Trail and road crossing improvements around each side of the Tidal Basin (between the Mall and the Southwest Waterfront and between the Mall and Hains Point).
- Improved connections from the Rock Creek Trail and National Mall trails to the Memorial and 14th Street bridges.

Bicycling is already popular on the National Mall.

DDOT should work with NPS to designate major bicycle routes in the Mall area with distinctive signs and pavement markings. The signs are essential for helping direct residents and tourists to destinations in the Mall area and identifying through-routes. They can also serve to advertise bicycling as a useful mode of transportation. Additional bike parking is also needed on the Mall. Increasing bicycling in the Mall area would extend the distance tourists could travel,

allowing them to visit more sites and to access more historic and diverse neighborhoods of the District.

Recommendation 1.12. Evaluate and improve sites of high concentrations of bicycle crashes.

DDOT should use its report on bicycle crashes in the District to select crash evaluation sites. Seventeen intersections had four or more bicycle crashes during the three-year crash analysis period. DDOT should choose one or two locations per year to evaluate, starting with the following (see Map 7. Bicycle Crash Locations Map):

- 17th Street and K Street
- 14th Street and Columbia Road
- 14th Street and L Street
- 13th Street and G Street
- 16th Street and L Street
- 18th Street and Kalorama Road
- 19th Street and L Street
- 19th Street and M Street
- 20th and Massachusetts Avenue
- Pennsylvania Avenue and 20th Street
- 13th Street and I Street
- 17th Street and I Street
- 18th Street and California Street
- 22nd Street and M Street
- Calvert Street and Wisconsin Avenue
- Connecticut Avenue and T Street
- Georgia Avenue and Newton Place

This list of intersections should be revised and reprioritized periodically as locations are improved, intersection audits are completed, and crash reports are analyzed.

Recommendation 1.13. Improve bicycle access through complex intersections.

The District should improve bicycle access at complex intersections, such as traffic circles and six-way intersections. While all intersections should be safe and convenient for bicyclists, the following intersections have complicated traffic patterns and are key locations on the Bicycle Route Network:

- DuPont Circle, NW
- Ward Circle, NW
- Washington Circle, NW
- New York Avenue intersections with Florida Avenue, Montana Avenue, and Bladensburg Road, NE
- L'Enfant Square, SE (the intersection of Pennsylvania and Minnesota Avenues)

Recommendation 1.14. Provide bike access through barrier areas.

DDOT should provide safe and convenient bike connections through areas that are barriers to cyclists. Barriers include freeways, railroad and highway grade separations, neighborhoods with heavy traffic, and other impediments to bicycle travel. Several institutions in the District are not open to public traffic. There may be opportunities to provide important bikeway connections through some of these institutions if and when they undergo change. DDOT should concentrate on the following barrier areas (see Map 8. Barrier Areas to Bicycling Map):

Corridors

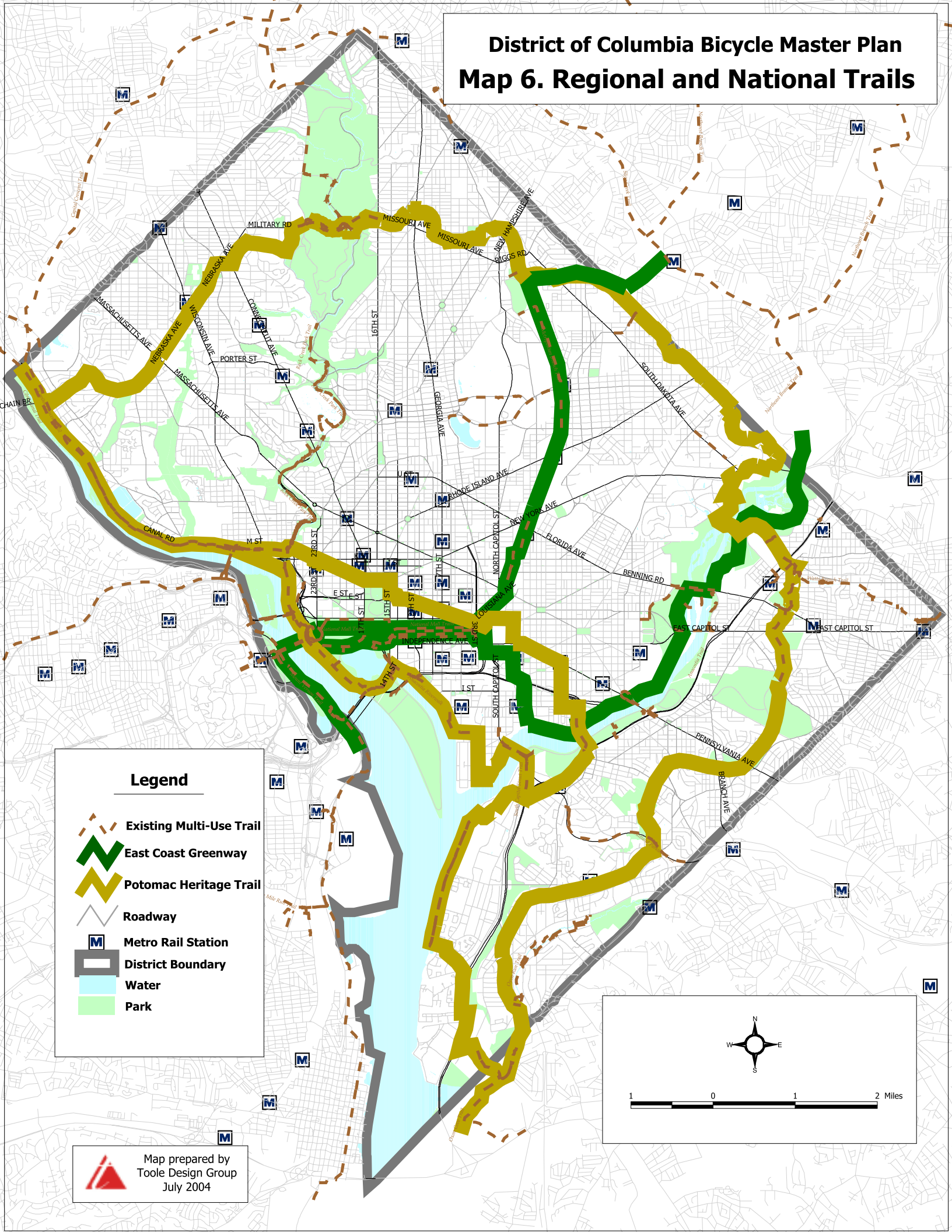
- Anacostia Freeway and Railroad Corridor
- South Capitol Street Corridor
- I-395 Corridor
- Southwest Waterfront Corridor (from I-395 to M Street, SW)

Areas

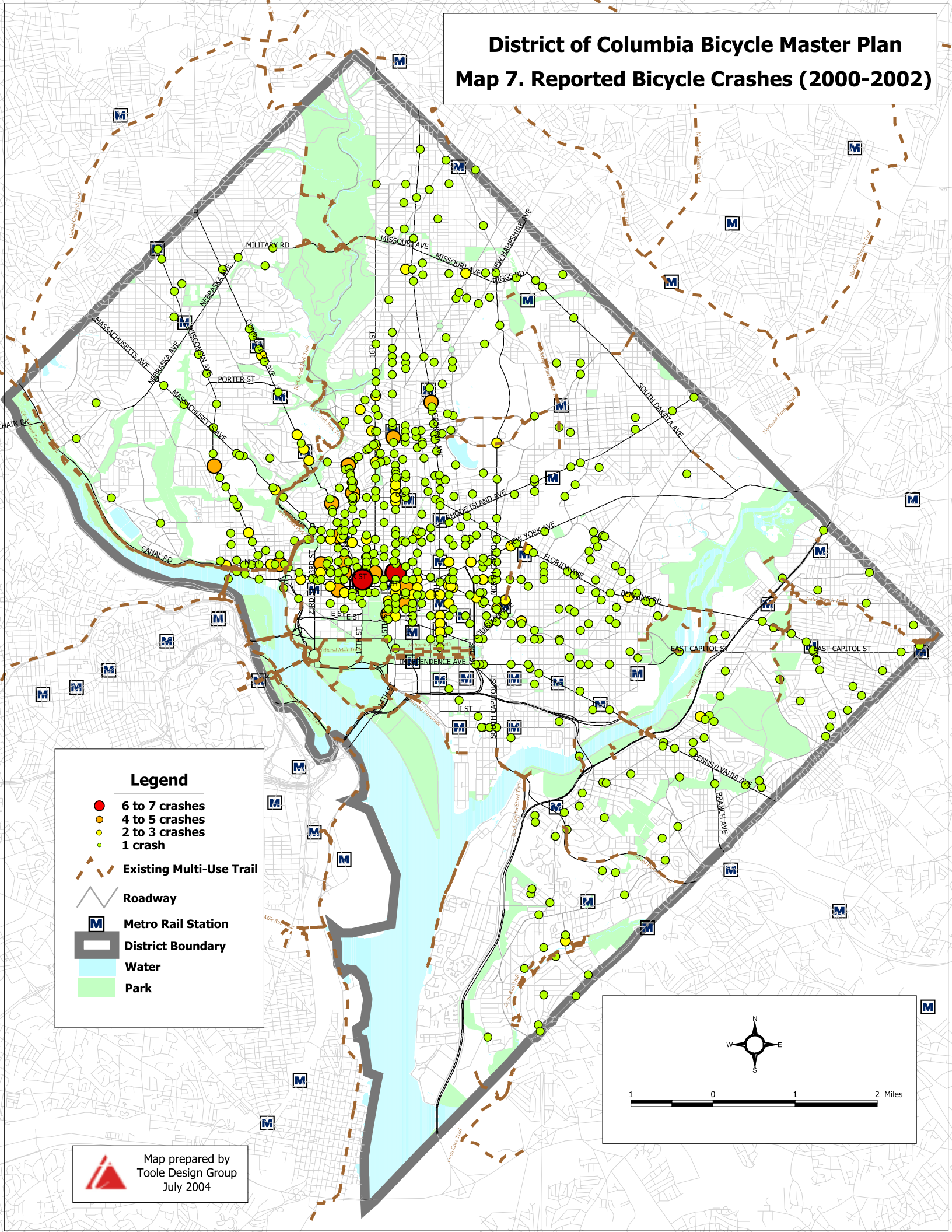
- Kennedy Center
- Washington Hospital Center
- New York Avenue/New Jersey Avenue/Interstate 395 Tunnel
- Columbia Heights Metro Station
- Cleveland Park Metro Station
- Minnesota Avenue Metro Station
- Benning Road Metro Station
- Fort Totten Metro Station
- Anacostia Metro Station
- Lincoln Memorial
- L'Enfant Plaza
- Union Station/Columbus Circle area

District of Columbia Bicycle Master Plan

Map 6. Regional and National Trails

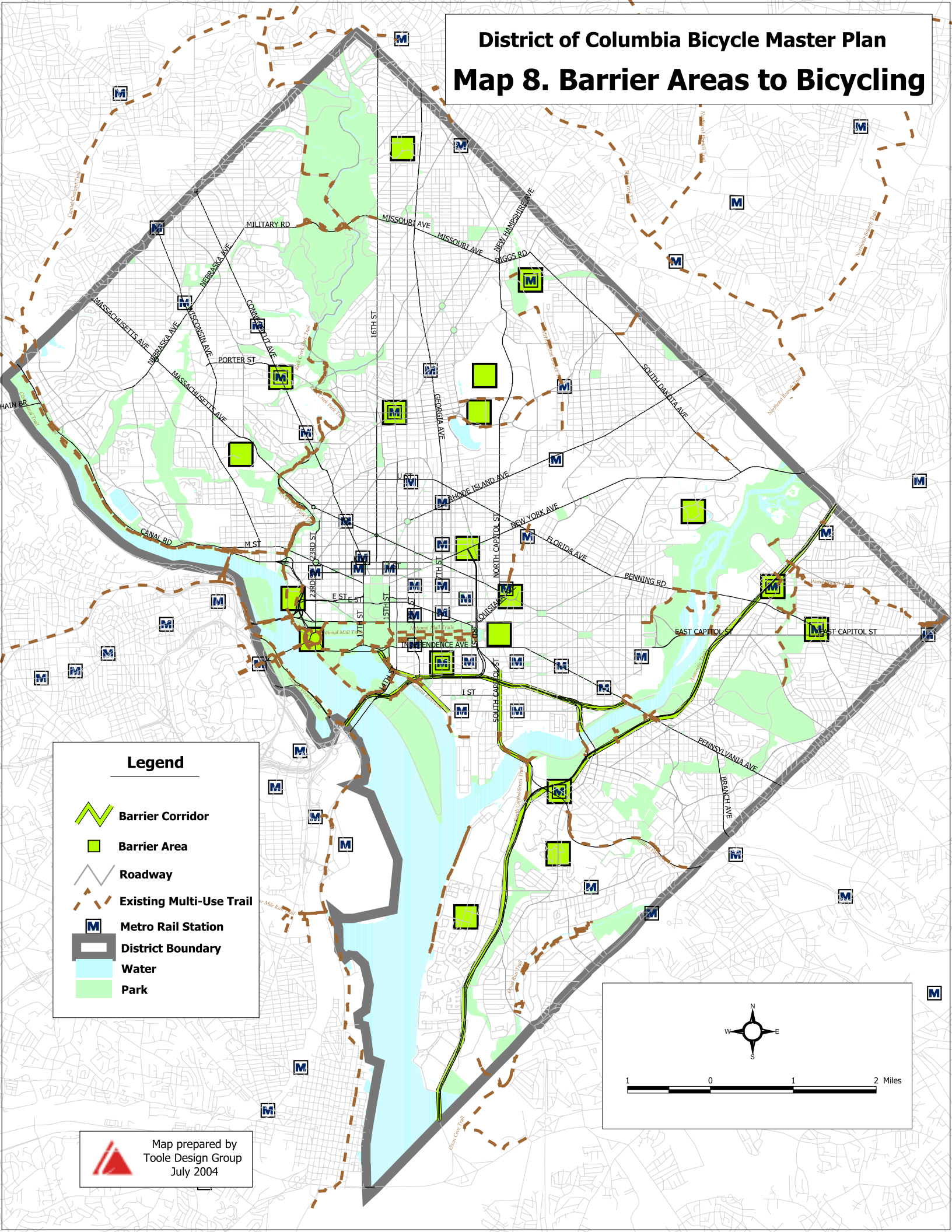


District of Columbia Bicycle Master Plan
Map 7. Reported Bicycle Crashes (2000-2002)



District of Columbia Bicycle Master Plan

Map 8. Barrier Areas to Bicycling



Map prepared by
Toole Design Group
July 2004

Institutions

- U. S. Capitol Complex
- U. S. Soldiers and Airmens Home
- Walter Reed Army Medical Center
- Naval Observatory and Dumbarton Oaks Park
- National Arboretum (streets are closed before 8 a.m. and after 5 p.m.)
- Bolling Air Force Base and Anacostia Naval Station
- Saint Elizabeth's

Redevelopment projects are excellent opportunities to remove these barriers. For example, bicycle access in the areas surrounding the intersection of New York Avenue, New Jersey Avenue, and the Interstate 395 tunnel can be improved with the North of Massachusetts Avenue (NoMa) redevelopment project. Bicycle access in the South Capitol Street Corridor can be provided on both sides of the Anacostia River with the South Capitol Street Corridor redevelopment project. In addition, the DC Office of Planning is planning an adaptive reuse of landmark buildings at Saint Elizabeth's in Southeast.

Recommendation 1.15. Provide innovative bicycle facilities to maintain the continuity of bike routes.

The designated bike routes in the District use roadways with a variety of cross-sections. Bike lanes and other pavement markings are appropriate bike facilities in some sections of these routes, while pathways are appropriate in other sections. Yet, there are considerable limitations to conventional bike facilities due to inadequate street width, intersection conflicts, high-frequency bus routes, high pedestrian use on sidewalks or other obstacles. The District should test a variety of different facility types along constrained streets. Many of the following innovative solutions have been successful in other U. S., European, and Canadian cities (see *District of Columbia Bicycle Facility Design Guidelines* document):

- Bike-in-arrow pavement markings
- Designated sidewalk space for bicycles
- Road surface bikeways (separated from motorized traffic by a physical barrier)

Part of the street can be used to create a separate trail, like this one in Montreal.

- Bike lane on one side, shared-use path on other side of the street
- Bike lane on one side, bike-and-arrow marking on other side of the street
- Exclusive bus and bicycle lanes
- Narrowing curb-to-curb width to provide more space for a separated bikeway
- Bike boxes at intersections
- Bicycle-activated signals
- Lifting rush-hour parking restrictions to provide lane space for bicyclists

In special situations, sidewalk space can be designated for bikes.

Bicycle Box at an intersection

Two-way road surface bikeways are one type of bicycle facility recommended for the District. These and other innovative facilities should initially be installed on a pilot test basis. If they don't work, it may be necessary to change the bicycle route.

Recommendation 1.16. Provide safe transitions between on-road and separated bicycle facilities.

DDOT should identify points on bike routes where safe transitions are needed to move bicyclists from on-road to separated bike facilities. These points should have prominent pavement markings that direct cyclists through the transition. All changes in grade should be continuous (i.e. not require the cyclist to climb a curb or steps). The design of transition points should not prevent more experienced bicyclists from riding the entire route along with motorized traffic.

Special markings can improve the transition between street and trail.

Recommendation 1.17. Provide bikeway connections into surrounding counties.

DDOT should work with Arlington, Montgomery, and Prince George's Counties to provide bicycle connectivity throughout the region. The Bicycle Program Manager should regularly communicate with neighboring governments about connecting and extending bike routes across jurisdictional boundaries (see Map 9. Connections to Maryland and Virginia).

Recommendation 1.18. Improve bicycle access to public transportation.

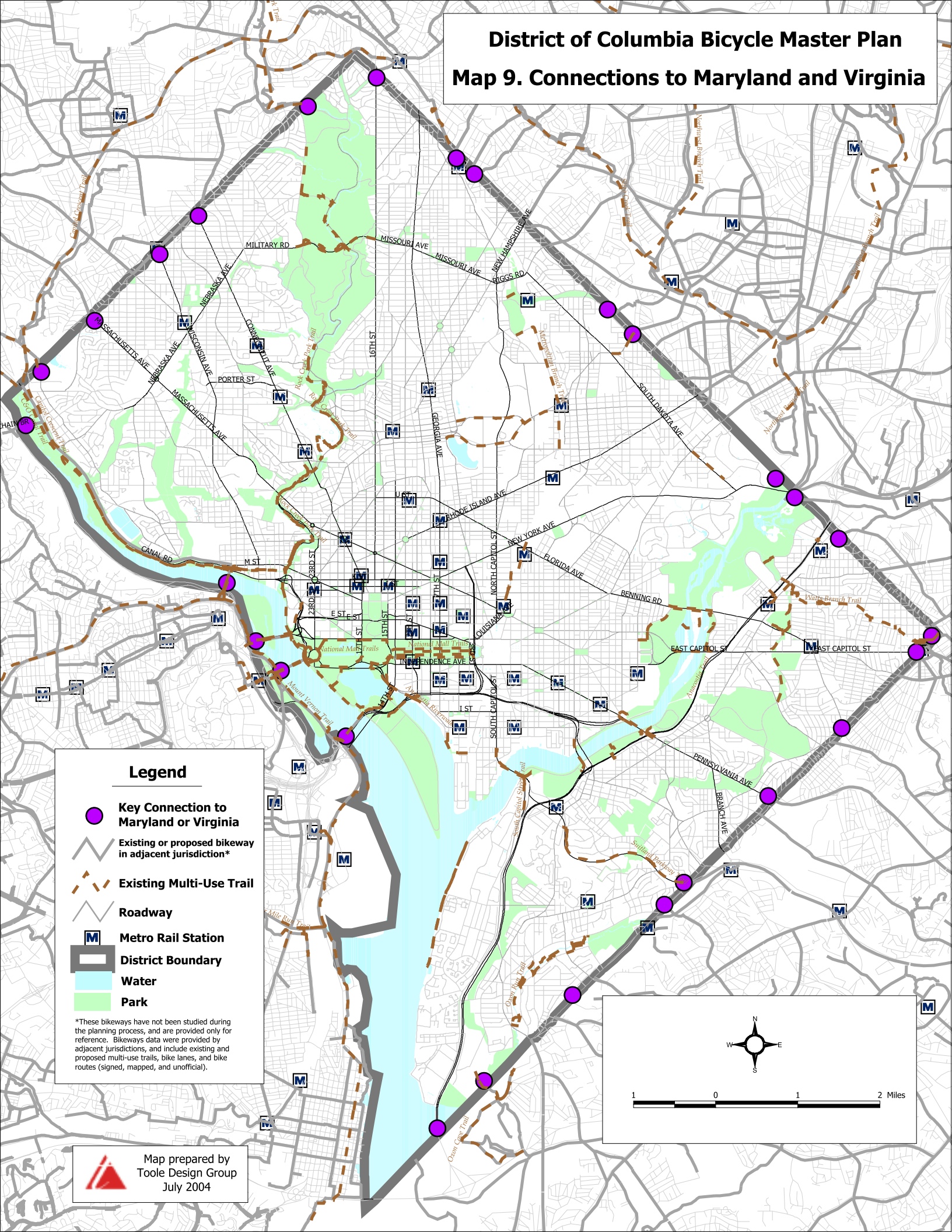
Most Metro stations have bicycle lockers and racks for bicyclists. However, as the Metro system and bicycle network expand, more and better bike parking should be provided. Providing lighted bicycle parking along with a canopy over the parking to protect bikes from the elements can help achieve this. In addition, clear signage must be provided at stations to direct cyclists to bike parking and nearby bikeways.

Bicycle racks and lockers at Metro station.

DDOT should work with WMATA to improve bicycle facilities on and near Metro station properties. Improving the quality of bicycling to Metro stations increases the catchment area for attracting riders and decreases the need for automobile pick-up, drop-off, and parking. All future public transportation improvements in the District, such as light rail and bus rapid transit, should be compatible with bicycling.

District of Columbia Bicycle Master Plan

Map 9. Connections to Maryland and Virginia



Recommendation 1.19. Develop a procedure for maintaining all bicycle facilities.

DDOT, DPW and other agencies should create a schedule for street and trail sweeping, landscape maintenance, repaving, restriping, and snow removal. DDOT should also ensure that the schedule is followed by the agency or group of agencies responsible for maintenance. Priority for street sweeping should be given to streets in the bicycle route network. DDOT should work with NPS to ensure that all NPS trails are maintained. DDOT may also ask existing Business Improvement Districts (BIDs) to help with bicycle facility maintenance.

Recommendation 1.20. Establish a spot improvement program to address bicycle facility maintenance problems.

DDOT should encourage citizens to notify the department about maintenance problems and bicycle planning issues by e-mail and phone. The department should expand this practice into an official spot improvement program in the following ways:

- Advertise a hotline for bicycle facility maintenance and bike parking requests through local newspapers, the DDOT website, and bicycle shops.
- Establish/enhance an online mechanism for reporting bike path and route deficiencies.
- Set aside a specific source of funds for bicycle facility spot improvements.

DDOT street maintenance crew applies thermoplastic bike lanes.

Goal 2. More Bicycle-Friendly Policies

Core Recommendations

Recommendation 2.1. Update District of Columbia laws, regulations and policy documents to address bicycle accommodation.

Changes will be made to the District's Comprehensive Plan (District of Columbia Municipal Regulations (DCMR) Title 10), Zoning Ordinance (DCMR Title 11), Traffic and Parking Regulations (DCMR Title 18), Open Space and Safety Regulations (DCMR Title 24), DDOT Design and Engineering Manual ("The Red Book"), and Long Range Transportation Plan (LRTP). [See Appendix E for a summary of District of Columbia policies affecting bicycle facilities and bicycle travel.]

Recommendation 2.2. Provide training to District staff.

Implementing the recommendations in the Bicycle Master Plan requires that District staff and consultants be familiar with bicycle issues and supportive of the Plan recommendations. The Bicycle Program Manager will hold regular trainings on the Bicycle Master Plan and on bicycle facility planning, design, operations and maintenance. Trainings should be conducted for DDOT, Office of Planning, National Park Service, and the Metropolitan Police Department as necessary.

Recommendation 2.3. Review all District of Columbia projects to ensure they provide bicycle accommodation.

All staff will review land development and transportation projects and studies to ensure bicycles are accommodated. These projects can provide key bicycle connections or create significant barriers to bicycle travel.

Bicyclists must be considered in all security improvements. The Bicycle Program Manager and supporting staff must review projects early in the process to increase understanding of bicycle issues among different groups working on all stages of each project.

Studies conducted by DDOT and the DC Office of Planning should address bicycle accommodation. Current and planned studies are listed in Section III.

DDOT should adopt a Bicycle Checklist to ensure that all transportation projects in the District accommodate bicycle transportation. This Bicycle Checklist will be included in the forthcoming *District Bicycle Facility Design Guidelines*. It should be incorporated into the DDOT's general transportation project checklist and used as a stand-alone document. Bicycle considerations must be included from the planning and scoping to design and construction of all projects.

Supporting Recommendations

Recommendation 2.4. Report regularly on Bicycle Master Plan implementation.

The Bicycle Program should prepare annual reports on bicycle crashes and bicycle facility mileage in the District. Bicycle trips should be included when census data is available, and should be included if DDOT or another agency implements a travel survey in the District. The BAC may help establish milestones for progress on Plan recommendations, which may also be addressed in the annual reports. These reports should be available on the Bicycle Program web page.

Recommendation 2.5. Improve bicycle crash reporting procedures.

DDOT should work with MPD and the NPS Police to report bicycle crashes more accurately. National studies show that less than half of all bicycle collisions with vehicles are reported to the police and reported officially. Underreporting causes crash trends to be missed by the police and not included in DDOT safety initiatives.

The District should consider the possibility of letting individuals report crashes online. This crash information would be unofficial, but it could help identify existing safety problems.

Recommendation 2.6. Collect more data on bicycle use and bicycle facilities.

DDOT should collect more data on bicycle use and facilities in the District. Better data can be used in annual reports, demonstrate the positive effects of the bicycle program, and justify further spending on bicycle transportation. The following types of data should be considered:

- Bicycle counts on trails and streets
- On- and off-road bicycle facility characteristics
- Counts and behavioral observations before and after a bike facility is installed
- Neighborhood travel diaries or District-wide surveys to find information about all types of bicycle trips

Recommendation 2.7. Update the Bicycle Master Plan every five to ten years.

DDOT should evaluate progress implementing this Plan in five to ten years. At that time, DDOT should evaluate Bicycle Level of Service on major roadways and prepare a Bicycle Master Plan Update.

Recommendation 2.8. Provide adequate staff to support bicycling.

DDOT should continue to support the Bicycle Program Office. According to DC Law, the Office of Bicycle Transportation and Safety must have at least three staff members.[1]

Recommendation 2.9. Receive support for bicycle project scoping and review from agencies throughout the District government.

All agencies and consultants of the District government should consider bicycle issues in the scoping and review of all projects. Distributing responsibility to address bicycle needs throughout DDOT and other agencies will allow the Bicycle Program Manager to influence projects during their initial conception and to consider long-range bicycle planning needs. This can be achieved by educating other agency staff and consultants about the Bicycle Master Plan and about the principles of bicycle planning and design.

Recommendation 2.10. Streamline the review process for common bicycle facility projects.

DDOT should streamline review of common bicycle facility projects, such as striping bike lanes. There should be consistency among the staff members that review the designs. There should be a standard checklist of issues to be considered for each type of project. Appendix D shows the existing review process for bike trails, bike lanes and pavement markings, bike routes and signs, and bike parking.

Reviewing plans early in the planning and design process helps ensure the inclusion of bicycle and pedestrian facilities in all transportation projects.

[1]DC Code, Title 50, Section 1603.

Goal 3. More Bicycle-Related Education, Promotion, and Enforcement

The strategies in this goal area will help educate all roadway users about bicycle safety and increase public awareness of opportunities for bicycling in the District of Columbia.

Core Recommendations

Recommendation 3.1. Educate motorists about safe operating behavior around bicyclists.

DDOT will educate motorists about bicycle safety through media campaigns, driver's tests, and the distribution of written materials. DDOT will also target taxi cab, bus, and truck drivers about safe driving behavior around bicycles.

Recommendation 3.2. Educate bicyclists about safe bicycling.

DDOT will educate bicyclists about traffic safety. Materials should emphasize helmet use and obeying traffic laws. DDOT will work through bicycle groups like WABA to educate their members on bicycle safety.

Recommendation 3.3 Enforce traffic laws related to bicycling.

The Metropolitan Police Department will enforce laws related to bicyclist and motorist behavior. MPD will target unsafe bicycling practices such as red light running, wrong-way riding, and riding on the downtown sidewalks. They will also target motorists who speed, run red lights, and pass too close to bicyclists.

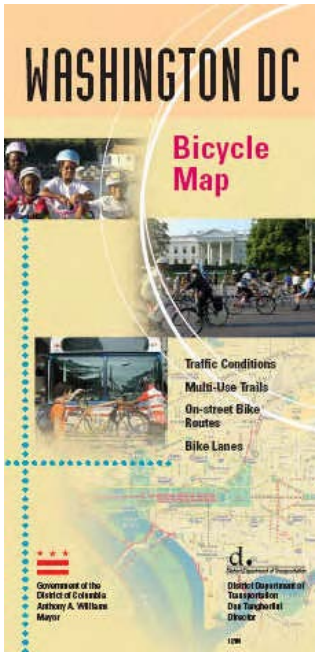
MPD and the Department of Public Works will ticket and tow vehicles that park in bicycle lanes. DDOT should reduce the impact of construction on bicycle facilities.

Recommendation 3.4. Establish a Youth Bicycle and Pedestrian Safety Education Program.

When educating cyclists, it's best to start young. DDOT is currently working with WABA on a youth Bicycle and Pedestrian Safety Education Program in DC Schools. This program will be evaluated and expanded. Supporting efforts can also be undertaken by the DC Department of Parks and Recreation. Over 50,000 students attend DC Public Schools (DCPS) and many more attend private schools. Efforts to encourage bicycling to school must be complemented by a program to improve the safety of the routes students take to school.

Recommendation 3.5. Distribute the District of Columbia Bicycle Map to a wide audience.

DDOT will produce a large number of DC Bicycle Maps for the general public. Maps will be easy for all residents and visitors to obtain. A press release will be issued when the Bicycle Map is first available. DDOT will update the bike map every five years to reflect improvements in bicycle facilities. The map will be distributed by DDOT with the help of WMATA, DPR, NPS, and tourism organizations at the following destinations for bicyclists:



- Metro stations
- Metro buses
- DC park and recreation centers
- Retail businesses
- Libraries
- Parks
- ANCs and other community groups

Supporting Recommendations

Recommendation 3.6. Increase the visibility of bicycling in the District government and encourage bicycle commuting.

DDOT should support Bike to Work Day, promote bicycle friendly DC government worksites, and encourage use of bicycle transportation among city service providers, such as police, parking enforcement agents, and building inspectors. DC Bicycle Program staff should develop a bi-monthly newsletter to share news about bicycle transportation successes and opportunities within the District government. It could provide agency staff with information about implementation of the Bicycle Master Plan and upcoming projects. These actions will set a positive example for residents of the District.

DDOT should encourage employees to bike to work. DDOT should make sure all DC offices have adequate bike parking. These efforts can be expanded to offer monetary incentives to employees who ride to work, making bicycles available during the day for bicycling to meetings, and providing shower facilities in buildings. Establishing a strong Bike to Work program at the District Government will make the program easier to market to other employers. District agencies could boost their efforts by creating a Bike to Work Day competition. The agency with the greatest number of employees bicycling to work would receive an award.

Recommendation 3.7. Establish a Safe Routes to Schools Program.

DDOT should establish a Safe Routes to Schools (SRTS) Program. This program will focus on making streets safer for bicycling and walking by adding sidewalks, making intersections safer, and calming traffic near the school. Secure bike parking should also be provided. The 2004 federal transportation reauthorization act contains funding for a safe routes program.

As part of the program, DDOT should encourage students to bike to school. Groups such as the Washington Area Bicyclist Association (WABA), universities, and health organizations can also become partners in this effort. Students at some of these schools are discouraged from riding to school because bicycle parking is prohibited or secure bike parking is not provided on school grounds. Classroom bicycling competitions, bicycle trip diaries, adult-led "bicycling school bus" groups, and visits from bicycle police are a few of the ways to encourage students to bicycle.

Recommendation 3.8. Maintain and expand the District Bicycle Program web page of the DDOT website.

DDOT should continue to maintain the District Bicycle Program web page on its website. Additions to this page should include:

- A comment form for people to submit maintenance requests and other ideas online
- A list of projects that have recently been implemented throughout the District
- A downloadable version of the Bicycle Master Plan
- A downloadable version of the District of Columbia Bicycle Map

DDOT has partnered with the Washington Area Bicyclist Association to provide bicycle and pedestrian safety training in DC elementary schools.

Recommendation 3.9. Inform residents about bicycle transportation opportunities on an individual basis.

DDOT should work with the Metropolitan Washington Council of Governments (COG), WABA, and WMATA to market alternative transportation, including bicycling, to individuals. Known as Travel Smart in some areas, the program works by sending letters to all homes in a specific neighborhood. These letters would ask residents to respond if they were interested in having a specially-trained representative show them how to make one of their typical trips by bicycle. These representatives, possibly WABA members, would come to the resident's home or workplace to ride with the resident on the bicycle trip. This program could be an extension of COG's existing Commuter Connections program. Travel Smart has increased the number of people making trips by bicycle in Paris, London, and Portland.

Recommendation 3.10. Market the District as an "Active Vacation Destination."

DDOT should work with NPS and the DC Heritage Tourism Corporation, DC Convention and Tourism Corporation, and the Greater Washington Board of Trade to market the District as an "Active Vacation Destination." Outdoor recreation is the second most popular activity for leisure travelers, behind shopping. About 27 million travelers took bicycling vacations in the past five years, making bicycling one of the top three most popular outdoor vacation activities[2]. Eighteen million people visit DC each year, but tourists spend most of their time in the Mall area. Bike rental stations and a well-advertised bicycle system would increase the mobility of tourists. This would allow them to bicycle between sites and explore the historic and diverse neighborhoods of the District. "Bike the Sites" already promotes bicycle tourism in the Mall area, and they should be invited to participate in this effort.

Bicycle transportation for visitors can be promoted by:

- Posting the DC Bike Map and information about bicycling.
- Distributing the DC Bike Map to all tourism organizations.
- Encouraging tourism organizations to distribute the DC Bike Map.

Recommendation 3.11. Establish partnerships with health care organizations to promote bicycling as a healthy activity.

DDOT should work with the DC Department of Health (DOH) and area hospitals to promote bicycling as part of the effort to prevent obesity, diabetes, heart disease, and cardio-vascular disease.

Recommendation 3.12. Support bicycling rides and events in the District of Columbia.

The District currently has several major bicycle events, including Bike DC and Bike to Work Day. Each of these events draws thousands of participants. The District government should continue to support these and other bicycling events in the City. Support can be provided through DDOT and the MPD. The DC Sports and Entertainment Commission, DC Convention and Tourism Corporation, and Greater Washington Board of Trade can also help rally the business community behind these events.

[2] Travel Industry Association. Online: http://www.tia.org, February 20, 2004

Section III. Implementation, Coordination and Schedule

Overview

Implementation of the recommendations in this plan will take serious effort and commitment on the part of District agencies, federal agencies, business leaders, elected officials, bicycling advocates, community groups, and others. This section of the Plan describes the timeline for implementation and the key players necessary for success.

Milestones for Implementation

There are three major milestones for measuring long-term progress on the Plan:

1) 50 miles of DC streets will have better Bicycle Level of Service ratings by 2010 and 100 miles will have better Bicycle Level of Service ratings by 2015.

2) The proportion of bicycle trips will increase from about 1 percent of all trips in 2000 to at least 3 percent in 2010 and 5 percent of all trips in the District of Columbia by 2015.

3) The rate of bicycle collisions with motor vehicles will decrease from 26 reported bike crashes per 1 million bike trips in 2000 to 20 per 1 million in 2010 to 15 per 1 million in 2020.

The implementation table on the following pages provides a general timeframe for achieving the core recommendations (see Table 3).

Table 3. Implementation Timeline, Part 1

Physical Improvements								
Core Recommendation	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2015**	**Total Cost**
Recommendation 1.1. Establish signed bicycle routes.	50 miles of bicycle route signs will be in place (including pre-existing routes).	60 miles of signed bicycle routes will be in place.	70 miles of signed bicycle routes will be in place.	80 miles of signed bicycle routes will be in place.	90 miles of signed bicycle routes will be in place.	100 miles of signed bicycle routes will be in place.	150 miles of signed bicycle routes will be in place.	
Cost (assumes 40 miles in place in 2004)	$15,000	$15,000	$15,000	$15,000	$15,000	$15,000	$80,000	$170,000
Recommendation 1.2. Provide bicycle lanes.	20 miles of bicycle lanes will be in place.	30 miles of bike lanes will be in place.	40 miles of bike lanes will be in place.	50 miles of bike lanes will be in place.			60 miles of bike lanes will be in place.	
Cost (assumes 10 miles in place in 2004 and that half of the bike lane mileage will be completed as part of road resurfacing projects	$50,000	$50,000	$50,000	$50,000			$50,000	$250,000
Recommendation 1.3. Complete Metropolitan Branch Trail.	Complete construction of 50% of trail. Complete design of entire trail.	Complete construction of 75% of the trail.	Complete construction of 100% of the trail.					
Cost	$6,000,000	$6,000,000	$6,000,000					$18,000,000
Recommendation 1.3. Complete Anacostia Trail.	Design Trail	Complete construction of 50% of the trail	Complete construction of 75% of the trail.	Complete construction of 100% of the trail.				
Cost	$2,000,000	$7,000,000	$7,000,000	$7,000,000				$23,000,000
Recommendation 1.4. Improve bridge access for bicyclists.	Identify bridges needing better bicycle access.	Improvements at 1 bridge complete.	Improvements at 2 bridges complete.	Improvements at 3 bridges complete.	Improvements at 4 bridges complete.	Improvements at 5 bridges complete.	Improvements at all bridges complete.	
Recommendation 1.5. Provide bicycle parking in public space	500 bicycle parking racks in place.	600 bicycle parking racks in place.	700 bicycle parking racks in place.	800 bicycle parking racks in place.	900 bicycle parking racks in place.	1000 bicycle parking racks in place.	2000 bicycle parking racks in place.	
Cost (assumes 200 racks in place in 2004)	$100,000	$30,000	$30,000	$30,000	$30,000	$30,000	$300,000	$550,000
Recommendation 1.6. Encourage bicycle parking in private space.	Conduct outreach to building owners and garage operators.	Continue outreach and conduct enforcement against non-compliers.	Continue outreach and conduct enforcement against non-compliers.	Continue outreach and conduct enforcement against non-compliers.	Continue outreach and conduct enforcement against non-compliers.	All garage and other off-street parking in compliance.		

Implementation Timeline, Part 2

Policy Recommendations								
Core Recommendation	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2015**	**Total Cost**
Recommendation 2.1. Update District of Columbia planning and policy documents to address bicycle accommodation.	Ensure inclusion of bikes in Comprehensive Plan, and Long Range Transportation Plan, and Roadway Design guide.	Update bicycle regulations and laws concerning fines, registration, and courier licensing.	Expand bicycle-related recommendations in Zoning Ordinance, Traffic and Parking Regulations, Open Space and Safety Regulation.				Review and update laws and regulations.	
Cost	$10,000	$10,000	$10,000				$10,000	$40,000
Recommendation 2.2. Provide training to District staff and consultants.	Train staff about the Bike Plan and bike planning, design and engineering.		Conduct training.		Conduct training.		Ongoing	
Cost	$3,000		$3,000		$3,000		$9,000	$18,000
Recommendation 2.3. Review all District of Columbia projects to ensure they provide bicycle accommodation.	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	
Cost	$10,000	$10,000	$10,000	$10,000	$10,000	$10,000	$50,000	$110,000

Implementation Timeline, Part 3

Program Recommendations								
Core Recommendation	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2015**	**Total Cost**
Recommendation 3.1. Educate motorists about safe operating behavior around bicyclists.	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	
Cost	$100,000	$100,000	$100,000	$100,000	$100,000	$100,000	$500,000	$1,100,000
Recommendation 3.2. Educate bicyclists about safe bicycling.	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	Ongoing	
Cost	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$250,000	$400,000
Recommendation 3.3. Enforce traffic laws related to bicycling.	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	Conduct enforcement wave targeted at bicyclists, pedestrians and motorists	
Cost	$25,000	$25,000	$25,000	$25,000	$25,000	$25,000	$250,000	$400,000
Recommendation 3.4. Establish a Youth Bicycle and Pedestrian Safety Education Program.	Launch bike/ped safety classes in 3 schools.	Conduct bike/ped safety classes in 6 schools.	Conduct bike/ped safety classes in 10 schools.	Conduct bike/ped safety classes in 20 schools.	Conduct bike/ped safety classes in 20 schools.	Conduct bike/ped safety classes in 20 schools.	Conduct bike ped safety classes in 20 schools.	
Cost	$80,000	$90,000	$100,000	$100,000	$100,000	$100,000	$500,000	$1,070,000
Recommendation 3.5. Distribute the District of Columbia Bicycle Map to a wide audience.	10,000 DC Bike Maps distributed.	20,000 DC Bike Maps distributed (cumulative).	30,000 DC Bike Maps distributed (cumulative). Revise Bike Map	40,000 DC Bike Maps distributed (cumulative).	50,000 DC Bike Maps distributed (cumulative).	100,000 DC Bike Maps distributed (cumulative). Revise bike map.	200,000 DC Bike Maps distributed (cumulative). Revise bike map.	
Cost	$60,000		$60,000			$100,000	$130,000	$350,000
Total Cost	**$8,478,000**	**$13,355,000**	**$13,428,000**	**$7,355,000**	**$308,000**	**$405,000**	**$2,129,000**	**$45,458,000**

Transportation and Land Development Review Process

The District Department of Transportation (DDOT) serves as the lead agency for bicycle transportation in the District. Yet other agencies and organizations both inside and outside District government influence bicycle transportation through transportation and land use development projects and policies. This section lists and describes agencies that address bicycling issues within the District, and it provides information to foster coordination and cooperation between these groups.

Key Agencies for Bicycling Issues

Implementing bicycle projects and programs within the District requires coordination between many agencies and stakeholders. These groups and their roles are listed in Table 4.

Table 4. Key Agencies for Bicycling Issues

Agency	Bicycle-Related Responsibilities
Federal	
National Park Service-National Capital Region (NPS)	Trails, bicycle access through parks, Mall area improvements
General Services Administration (GSA)	Bike parking and access in federal buildings
National Capital Planning Commission (NCPC)	Long-range vision for DC land use and transportation system
US Commission of Fine Arts (CFA)	Aesthetic approval of major projects
United States Department of Transportation (US DOT)	Funding transportation projects, transportation research
Federal Highway Administration (FHWA), DC Division	Approval of federally funded projects
Architect of the Capitol	Capitol grounds bike access
Union Station Redevelopment Corporation (USRC)	Union Station bike access, bike parking, bike station
Regional	
Washington Metropolitan Area Transit Authority (WMATA)	Bike access to transit, bike-on-bus, bike-on-rail, bike parking
Transportation Planning Board (TPB) at Metropolitan Washington Council of Governments (MWCOG)	Regional bicycle network coordination, federal funding approval, regional bicycle data, Commuter Connections, exchange of technical expertise; Regional transportation facility funding approval

Agency	Bicycle-Related Responsibilities
District of Columbia	
District Department of Transportation (DDOT)	Leadership on Bicycle Master Plan implementation and most transportation projects in the District
DC Office of Planning	Bicycle accommodation in comprehensive planning and neighborhood planning
Department of Public Works (DPW)	Parking enforcement, street cleaning
Zoning Commission	Land use, bicycle parking regulations
Board of Zoning Adjustments (BZA)	Land use, bicycle parking
Deputy Mayor for Planning and Economic Development	Oversight, leadership on bicycle initiatives
Department of Housing and Community Development (DHCD)	Bicycle access and parking in developments
Metropolitan Police Department (MPD)	Motorist education and enforcement, bicyclist education and enforcement
Department of Parks and Recreation (DPR)	Bicycle facilities (trails), safety education and other bike programs
District of Columbia Public Schools (DCPS)	Safety education, Safe Routes to Schools, bike parking
Advisory Neighborhood Commissions (ANCs)	Public input about bicycling issues, maintenance and new facility requests
Business Improvement Districts (BIDs)	Bike parking, bike facility maintenance, input on new projects
Office of Property Management	Bicycle parking in District owned and leased buildings
Department of Motor Vehicles (DMV)	Motorist education and testing
Private developers	Bicycle access and parking in developments

Ongoing Initiatives

Bicycle issues should be included in all federal, regional, and local initiatives planned and implemented in the District. Several ongoing initiatives offer opportunities to improve bicycle transportation facilities. The list below is just a snapshot of initiatives underway in 2004.

District Department of Transportation Initiatives

- Anacostia Gateway
- Anacostia Access
- Brentwood Road
- Brookland Transportation Study
- Columbia Heights—Mount Pleasant
- Connecticut Avenue
- District of Columbia Scenic Byways Program
- Fourth Street, SW
- Friendship Heights
- H Street, NE Corridor
- Klingle Road Implementation
- L'Enfant Promenade Environmental Assessment
- L'Enfant Promenade Urban Planning

- Light Rail System Development
- Maglev Train Service
- Military Road/Missouri Avenue
- Motor Carrier Management and Threat Assessment
- New York Avenue Corridor
- Palisades Traffic Study
- Pennsylvania Avenue, SE Transportation Study
- South Capital Street Corridor
- Takoma Transportation Study
- Tour Bus Management Initiative
- Transit Studies
- K Street Corridor
- Long Range Transportation Plan

Organization of Key Agencies

DDOT, DC Office of Planning, DCDPW, and NPS are key organizations for implementing many recommendations in this Plan. The branches of each of these agencies are described below.

District Department of Transportation

The DDOT Bicycle Program is within the Transportation Policy and Planning Administration (see Figure 1). Other divisions within DDOT must also provide support for bicycling. Project scopes that are developed in all of DDOT's administrations should be reviewed by Bicycle Program Staff to ensure that bicycle needs have been accommodated.

The five administrations of DDOT play a variety of roles that affect a range of bicycle transportation issues. Following are some examples:

Public Space Management Administration (PSMA)

- Permitting bicycle racks in public space

Other District Initiatives

- Anacostia Waterfront Initiative (AWI)
- Downtown Action Agenda Project
- East of the River Project
- Georgia Avenue Revitalization Project
- H Street Corridor Revitalization
- McMillan Reservoir Project
- North of Massachusetts Avenue (NoMA)
- Reservation 13 Draft Master Plan
- Takoma Central District Plan Project
- Kennedy Center Redevelopment
- New York Avenue Corridor
- Anacostia Riverwalk
- Friendship Heights
- Columbia Heights
- Ivy City
- Trinidad
- Carver Terrace
- Poplar Point
- St. Elizabeth's
- Anacostia Gateway
- Minnesota-Benning
- American University, Georgetown University, and George Washington University Campus Plans (DC Office of Planning review)
- City Living, DC Style

Regional Initiatives

- Transit-Oriented Development near Metro stations (WMATA)
- Streetsmart: Pedestrian and Bicycle Safety (MWCOG)

Federal Initiatives

- National Mall Improvement Study (NPS)
- Rock Creek Park General Management Plan

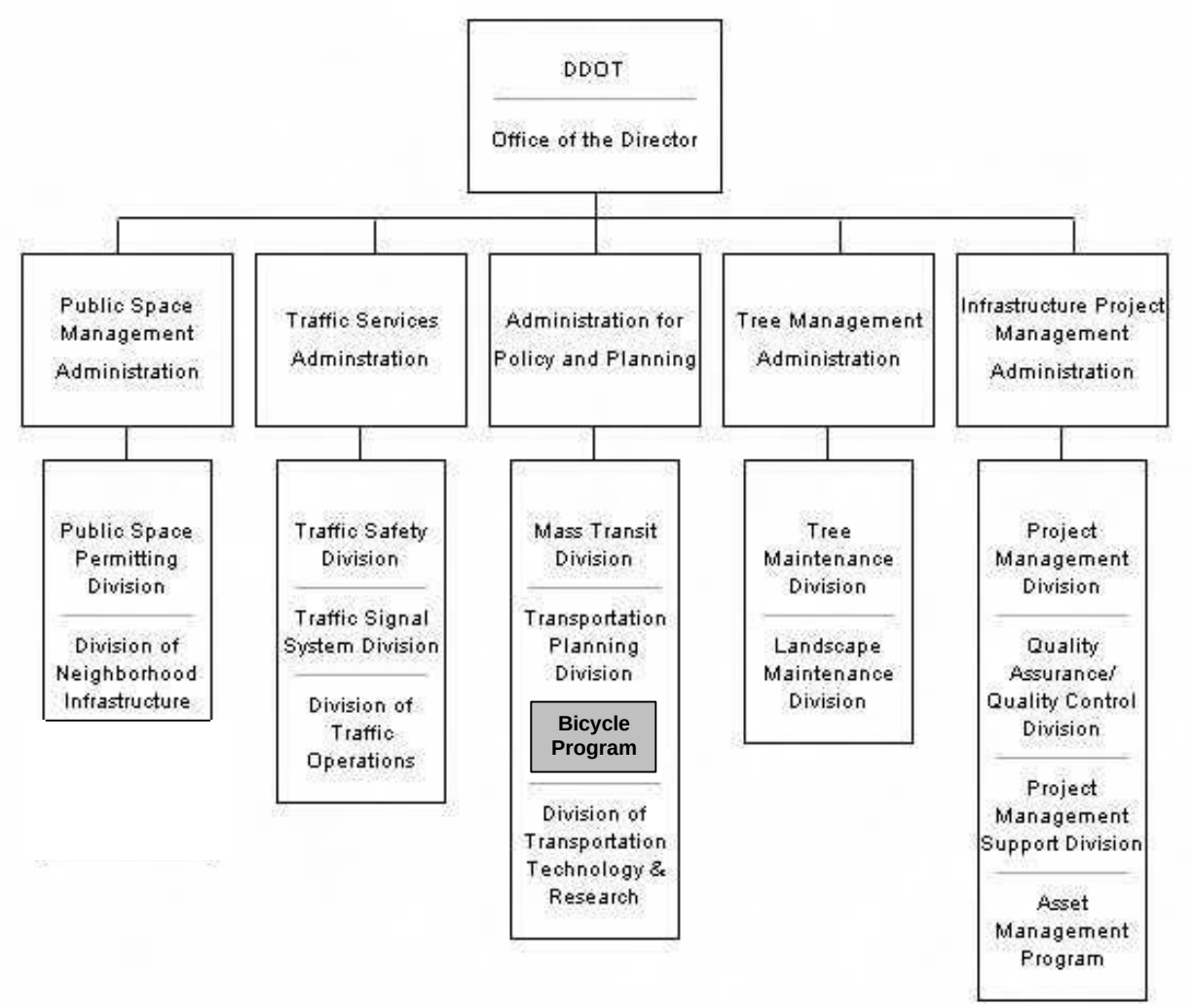


Figure 1. District Department of Transportation Organizational Chart

Traffic Services Administration (TSA)

- On-street parking changes
- Bike lane approval
- Bicycle-friendly signals
- Installing bicycle lanes and signs

Transportation Policy and Planning Administration

- Overall bike plan
- Transportation studies
- Public participation in all eight wards (each ward has a transportation planner)
- Transit program (transit funding and planning, WMATA relations)

Urban Forestry Administration (UFA)

- Tree planting and maintenance

Infrastructure Project Management Administration (IPMA)

- Integration of bikeways into road construction and reconstruction projects
- Technical support for trail design and construction projects
- Trail construction and maintenance

DC Office of Planning

DC Office of Planning plans most land use in the District of Columbia, including economic revitalization and neighborhood planning, and reviews zoning and historic preservation cases. Projects in the DC Office of Planning Long Range Planning Division, Revitalization Division, and Neighborhood Planning Division are likely to have an impact on bicycling in the District. The Bicycle Program Manager should be involved with these planning initiatives. All plans should be reviewed against the Bicycle Master Plan. All eight wards are assigned a planner in DC Office of Planning.

DC Office of Planning has helped create Strategic Neighborhood Action Plans (SNAPs) for each of the city's 39 neighborhood clusters. The SNAPs were released in Fall 2002. These short-term (two-year) plans detail the top priority issues in each neighborhood, as identified by residents working with the neighborhood planners from the Neighborhood Planning Initiative in the Office of Planning. The DC government uses SNAPs to inform and guide decisions on the city budget. DDOT, WABA, and Neighborhood Bicycle Advocates should be involved closely in the SNAP or other neighborhood planning efforts to take advantage of opportunities to extend the bicycle network.

DC Department of Public Works

The DC Department of Public Works (DCDPW) has the following responsibilities:

- Parking enforcement (ticketing and towing vehicles)
- Street cleaning
- Trash collection
- Fleet Management

DDOT should work with DCDPW to ensure that tickets are issued for parking in bike lanes and that bike lanes are cleared of debris and snow.

National Park Service, National Capital Region

Most of DC's bike trails are located in national parks. The National Park Service, National Capital Region consists of six NPS park units, each with their own Superintendent:

- National Capital Parks Central (National Mall)
- National Capital Parks East (Anacostia)
- Rock Creek Park
- C & O Canal National Historical Park
- George Washington Memorial Parkway
- Potomac Heritage National Scenic Trail

Example parks and facilities within these park units include the National Mall, Anacostia Park, Fort DuPont Park, Kenilworth Aquatic Gardens, Rock Creek Park and Trail, Mt. Vernon Trail, C & O Canal Towpath, and the Ft. Circle Parks. Recommendations of this Plan include bicycle access to and through these parks, so it is important for DDOT to work closely with NPS.

Within NPS, the Office of Lands, Resources, & Planning provides support for cultural and natural resource protection; planning, Geographic Information Systems (GIS), and environmental compliance; land acquisition, exchange and transfer; adjacent land use planning; right-of-way and special use permits; legislative proposals; and coordination of memorial proposals and major projects by state and local governments on park land.

The Geographic Information Systems (GIS) Regional Technical Support Center (RTSC) is located at the National Capital Region Office. This office has large amounts of GIS data covering the District of Columbia.