

KANNAPOLIS



BICYCLE PLAN

August 2014



KANNAPOLIS



Funded by
**NORTH CAROLINA
DEPARTMENT OF HEALTH
Community Transformation Grant**



Planning Consultant
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NARRATIVE

1.1 PROJECT BACKGROUND

The Kannapolis Bicycle Plan was funded by the North Carolina Department of Health through the Region IV Community Transformation Grant (CTG). The grant was administered by the Cabarrus Health Alliance, which partnered with the Centralina Council of Governments (CCOG) to offer the Planning for Healthy Communities Grant for fiscal year 2013-2014. Through this program, CCOG offered health related planning assistance through a competitive application process to eligible local governments within the 10-county CTG region to support efforts of incorporating health into local government planning efforts. The City of Kannapolis applied for the grant to create a neighborhood bicycle network for the City and its environs.

1.2 PROJECT GOALS

The Kannapolis Bicycle Plan is not comprehensive in scope. But it is intended to serve as a guide and useful resource for the development of a bicycle system that serves both transportation and recreational goals. The goals stated for the overall proposed bicycle system in the CTG grant application include:

1. Increasing the amount of physical activity in the community by creating a bicycle network that is accessible to residents, safe, and does not require significant capital expenditure.
2. Improving the connectivity of neighborhoods by exploring the use of pedestrian and bicycle connections that could provide safe access between neighborhoods and to prominent destinations, such as schools, parks, businesses and civic buildings.



1.3 PROJECT COMPONENTS

The Kannapolis Bicycle Plan includes analysis of current conditions and recommendations for improvements. Recommendations include both projects and policies. All projects are depicted and labeled on the Phase I or Phase II **Project Maps**, and listed on the project spread sheet. Each project is described in terms of existing and proposed conditions for both project phases. Examples, illustrations and explanations of each recommended facility type are included in the **Facility Standards** section. All recommended policies are described in the **Proposed Policies** section. All analysis maps and other source materials are also included in the **Analysis Maps** section.



1.4 METHODOLOGY

CCOG began its planning process with a thorough review of current conditions. This information was amassed through research of available satellite and GIS data, prior plans and studies for the City, existing ordinance, meetings with local staff, and field reconnaissance. Public opinion was simultaneously gathered through an online public opinion survey housed at the City of Kannapolis website.

This information was next consolidated, analyzed, and presented for public review at two public input meetings that were held in conjunction with public review of the City's proposed road diet plan for Loop Road. At the first public meeting, thematic analysis maps were presented along with information about various bicycle friendly street improvements, such as bike lanes, paved shoulders, etc. Initial route ideas were solicited from the participants for beginner, intermediate, and advanced cyclists. At the second public meeting, initial proposed strategies were presented for public comment. An additional meeting was held with a targeted focus group of advanced area cyclists for their input on existing conditions, safety concerns and the needs of cyclists at various skill levels.

On the outset of the project, and after each public meeting, CCOG met with local staff to discuss findings and planning strategy. At this meeting, goals and priorities were established to guide the process of project selection. The four primary goals decided upon included:

1. Connecting all areas of the City with safe bicycle routes utilizing appropriate infrastructure improvements.
2. Providing bicycle-friendly connections to prominent destinations, including civic, retail, transit, and other types.
3. Establishing recreational bicycle routes for all rider skill levels. These routes should include linear and loop connections of various lengths.
4. Encouraging connections to neighboring municipalities and other regional destinations.

From the input and comments gathered, CCOG developed a draft plan of road segment improvements that include the incorporation of various bicycle facilities onto existing roadways. These facilities are standard designs endorsed for use within North Carolina Department of Transportation public right-of-way.

In addition to on-road improvements, the proposed bicycle system also incorporates existing and planned off-road multi-use paths, or greenways, in and around the City, and makes recommendations for specific links to those facilities. Such off-road facilities are considered to serve both recreation and transportation needs.

Destinations of significance were identified on the maps at the outset to serve as a primary guide for route identification, in order that transportation needs would be given priority. These destinations include prominent civic buildings, retail centers, transit hubs, and parks. Particular emphasis is given to destinations – such as schools and parks - that serve those segments of the population that cannot drive and tend to rely more on bicycles for their transportation needs.



City staff made recommendations for revisions to the draft plan based upon input from the second public meeting, the advanced cyclist focus group, and from extensive on-the-ground reconnaissance. CCOG incorporated those recommendations to develop a two-phase plan.

The first stage of the Kannapolis Bicycle Plan (Phase I) is comprised of projects that meet the goal of limited capital expenditure in order to serve the most critical needs and provide increased awareness throughout the City of bicycle use. A majority of these projects are limited to bicycle-related signage that serves the dual purpose of guiding bicyclists through designated bike routes for both transportation and recreational purposes, and reminding and warning motorists of a potential increased presence of bicyclists on these preferred routes.

In addition to signage, Phase I of the plan also incorporates a number of facilities that require restriping the roadway to create or improve wide outside lanes and paved shoulders, or provide “sharrow” symbols that increase driver awareness as well as guide bicyclists on preferred routes. Recommendations for sharrows were concentrated in denser areas of the City, particularly around schools, and along roads where there was a particularly strong need for increased driver awareness.

Paved shoulders are also incorporated into the Phase I plan where no additional widening of the road is required. In these cases, the proper lane striping and adequate width of shoulder may already be in place, or the striping may still need to be installed. In either case, proper signage is still required. There are also segments shown in the Phase I plan where wide outside lanes can be created, requiring only restriping and signage.

Phase II of the plan features projects that are generally more expensive or must be accomplished in coordination with North Carolina Department of Transportation (NCDOT) road improvement schedules. Most of these Phase II projects involve either road widening, reconfiguration of street cross-sections, or greenway construction. Road widening projects often include the considerable expense of grading to relocate existing drainage ditches that closely parallel the road. Greenways also require grading, in addition to clearing, paving and accessory facilities. Reconfiguration of street cross-sections – also known as road diets – usually involves the construction of center medians with associated landscaping, along with restriping of the existing roadway to provide bike lanes and other amenities. A city’s first road diet project can be politically challenging and may require an extensive period of public input.

While most of the Phase II projects require a more significant investment of time, effort and funds than Phase I, some Phase II projects are low cost but are considered a second phase of improvement where an even lower cost first phase option is possible. One example is where striped bike lanes are proposed as a Phase II improvement of signed, unstriped wide outside lanes recommended in Phase I.

The Phase II project map depicts projects from Phase I where no further recommendations are made. In similar manner, the Phase I project map shows existing bicycle facilities where no additional improvements are proposed, such as exiting bike lanes or greenway segments.



2. CURRENT CONDITIONS

2.1 PROJECT AREA

The City of Kannapolis is located in central North Carolina, approximately 22 miles northeast of Charlotte on Interstate 85. Its municipal area of approximately 32 square miles (2010 census) lies primarily within Cabarrus County, with its northern area occupying Rowan County. The City includes several island annexations to its east and west, including areas to the west along the Mecklenburg County border that approach a distance of almost nine miles from the center of Kannapolis. Interstate-85 nearly defines the City's southern and eastern extents. Other major roads intersecting the City include US 29 and 29A, US 49, NC 3 and NC 73.

The project area includes the City's current incorporated limits, its extra-territorial jurisdiction (ETJ), and areas that lie between or in immediate proximity to City limits within Cabarrus and Rowan County. Project recommendations extend into the Counties and into neighboring municipalities, including Landis and Concord. Recommended cross-jurisdictional projects will require coordinated efforts with these neighboring jurisdictions.

2.2 ANALYSIS MAPS

Bicycling conditions throughout the project area are examined and documented here in terms of a wide variety of factors that influence bicycling safety, feasibility, practicality and overall desirability. These conditions are shown on the following analysis maps:

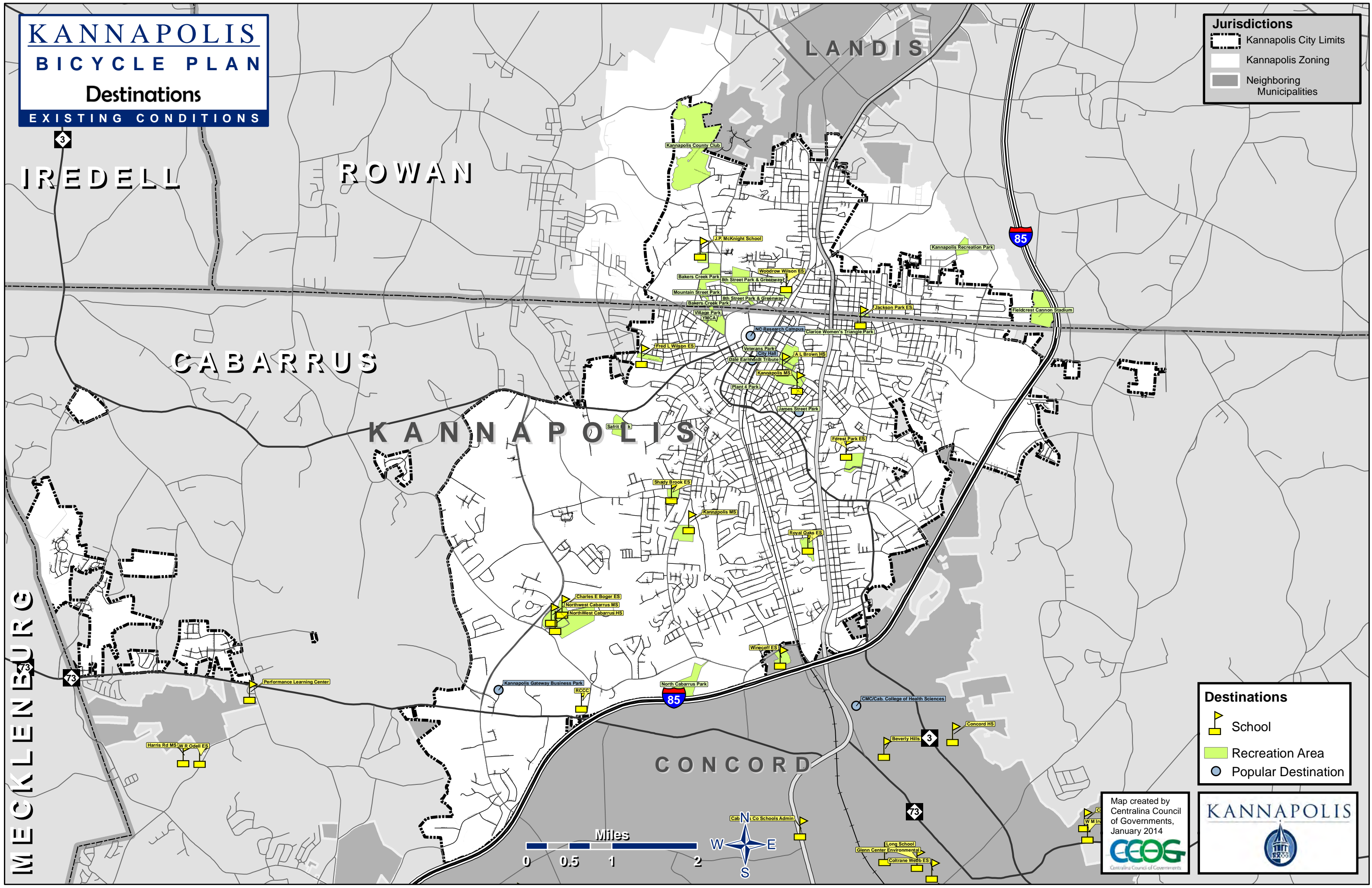
- Location of popular destinations and neighborhoods
- Current and planned bicycle facilities and greenways
- Posted speed limits
- Annual average daily traffic (AADT)
- Number of vehicular travel lanes
- Functional classification of streets
- Current estimated ridership skill levels
- Street maintenance jurisdiction
- Transit lines and stops
- Elevation and slope



KANNAPOLIS
BICYCLE PLAN
Destinations
EXISTING CONDITIONS

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Destinations

- School
- Recreation Area
- Popular Destination

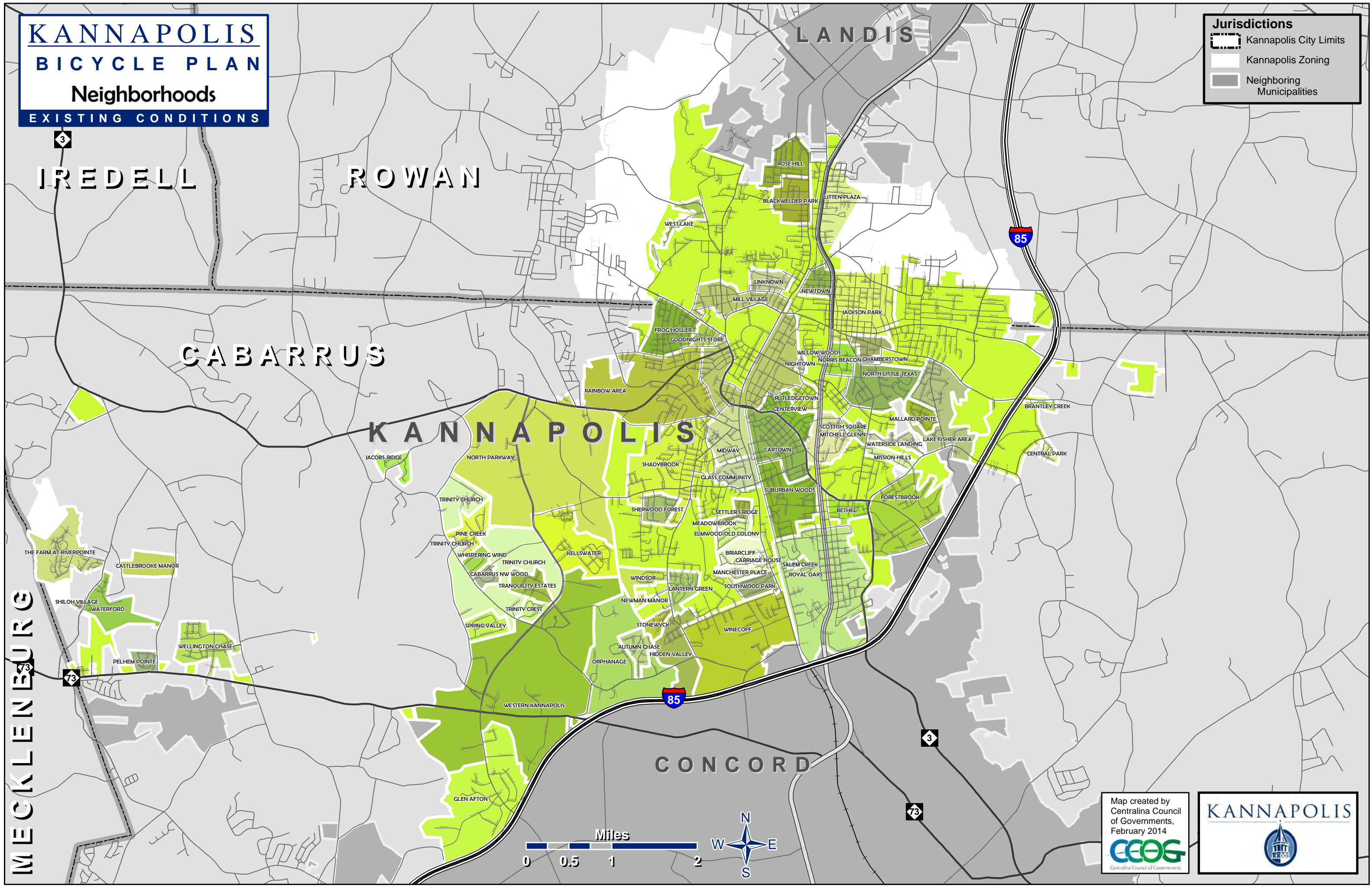
Map created by
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 January 2014



KANNAPOLIS
BICYCLE PLAN
 Neighborhoods
 EXISTING CONDITIONS

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Map created by
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 February 2014



MECKLENBURG



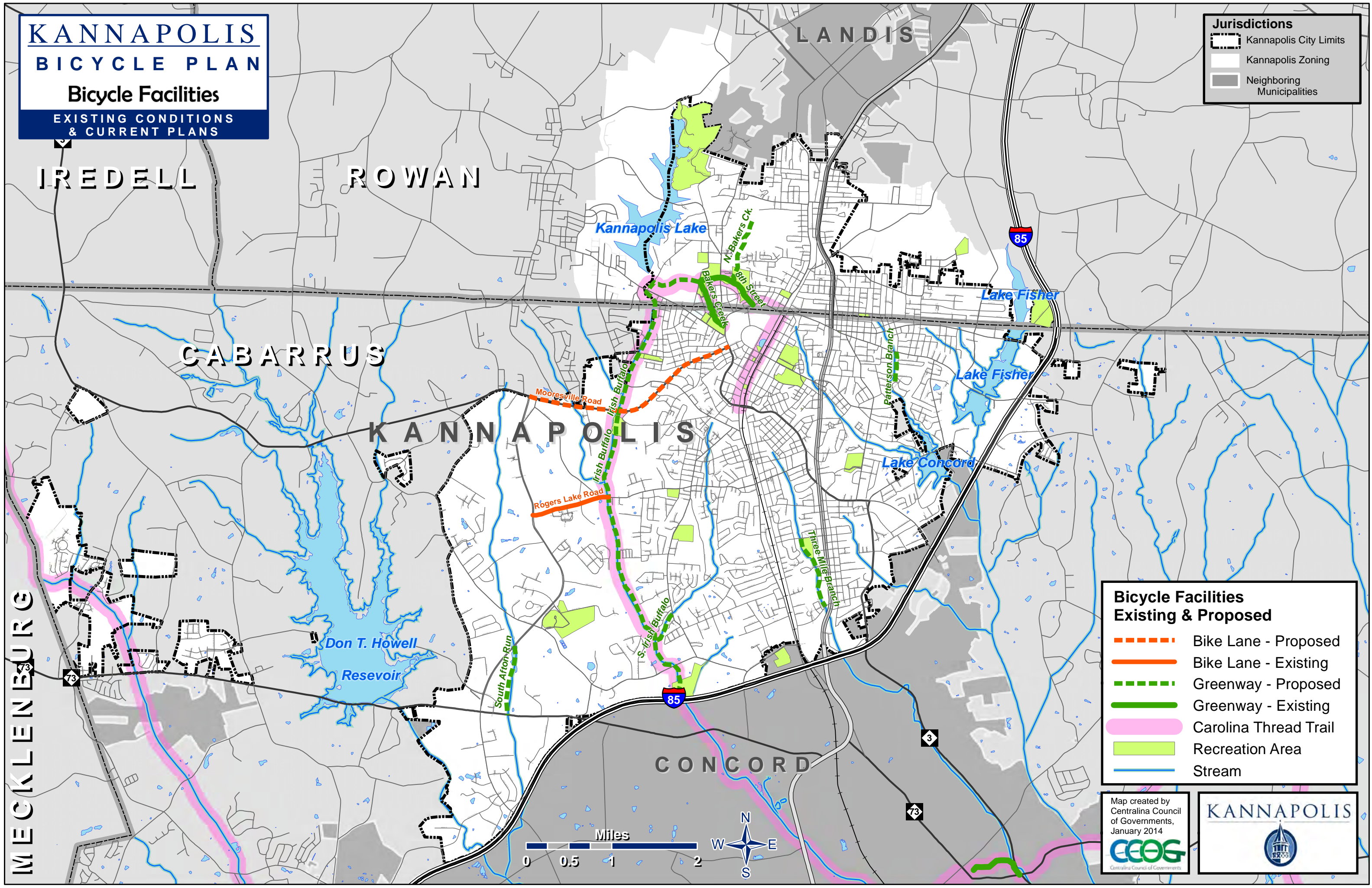
KANNAPOLIS BICYCLE PLAN

Bicycle Facilities

EXISTING CONDITIONS & CURRENT PLANS

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Bicycle Facilities Existing & Proposed

- Bike Lane - Proposed
- Bike Lane - Existing
- Greenway - Proposed
- Greenway - Existing
- Carolina Thread Trail
- Recreation Area
- Stream






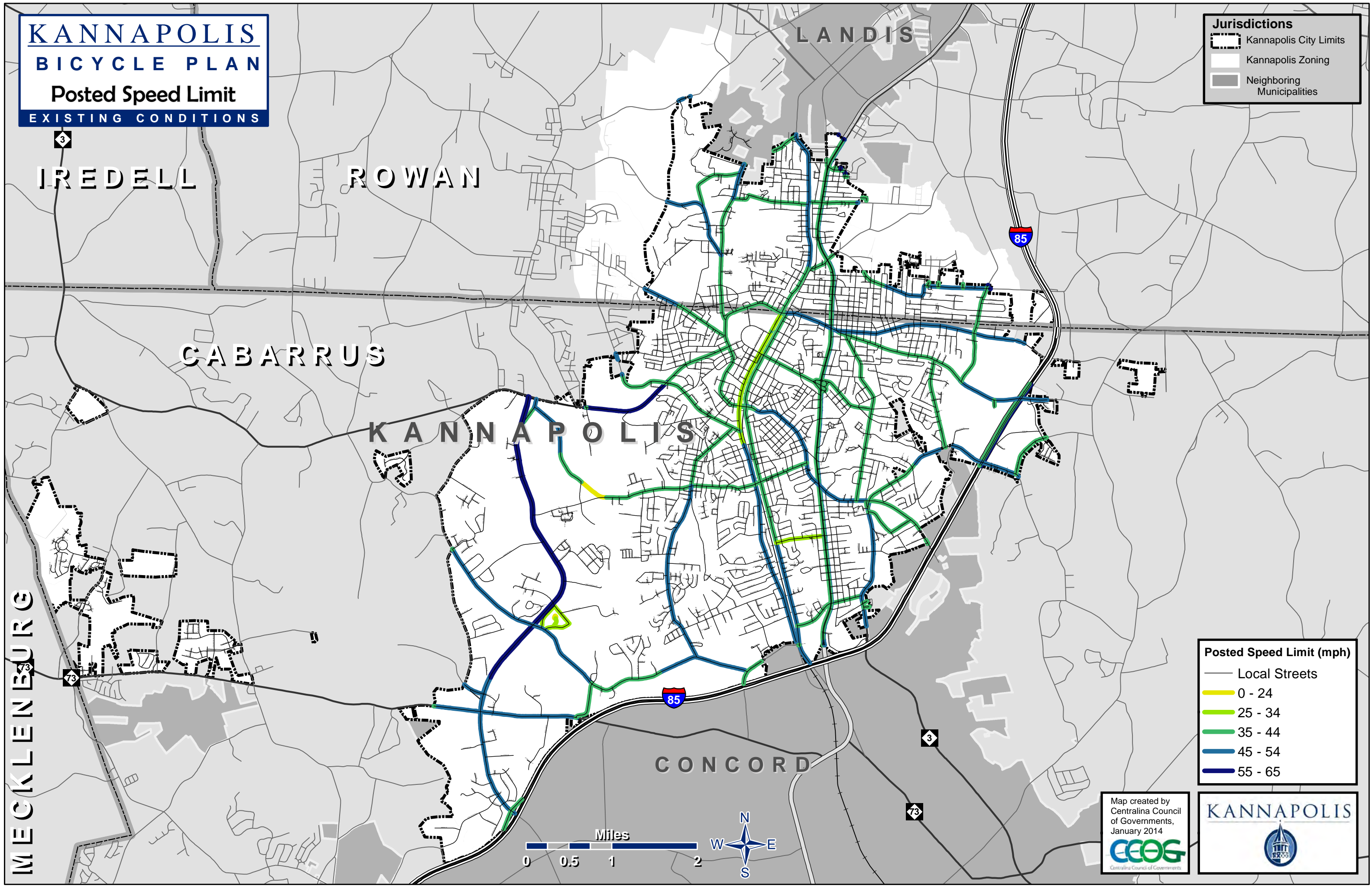
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KANNAPOLIS
BICYCLE PLAN
Posted Speed Limit
EXISTING CONDITIONS

Jurisdictions

-  Kannapolis City Limits
-  Kannapolis Zoning
-  Neighboring Municipalities



Posted Speed Limit (mph)

-  Local Streets
-  0 - 24
-  25 - 34
-  35 - 44
-  45 - 54
-  55 - 65




Map created by
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 January 2014

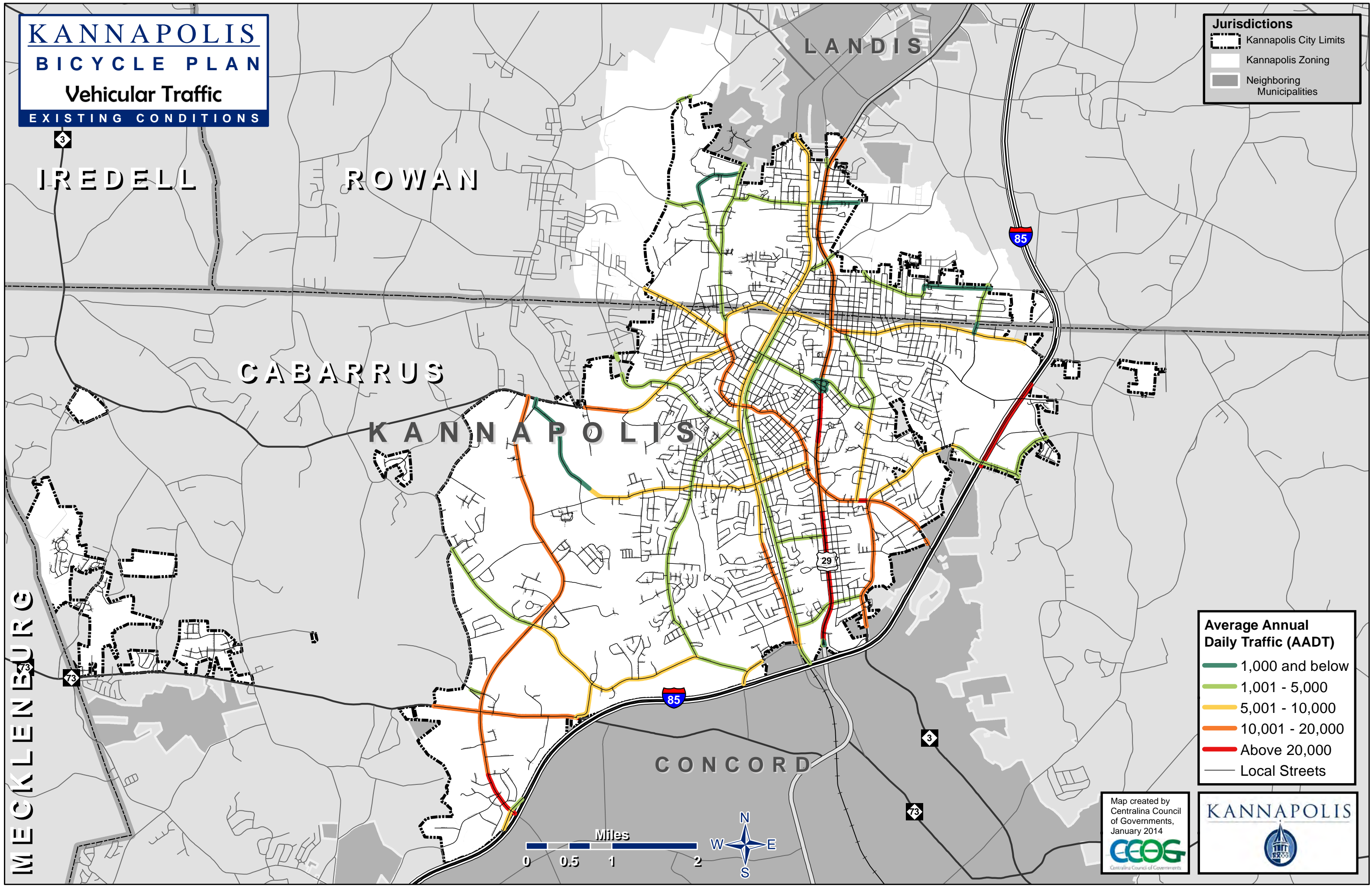

KANNAPOLIS










KANNAPOLIS
BICYCLE PLAN
Vehicular Traffic
 EXISTING CONDITIONS

Jurisdictions

-  Kannapolis City Limits
-  Kannapolis Zoning
-  Neighboring Municipalities



Average Annual Daily Traffic (AADT)

-  1,000 and below
-  1,001 - 5,000
-  5,001 - 10,000
-  10,001 - 20,000
-  Above 20,000
-  Local Streets

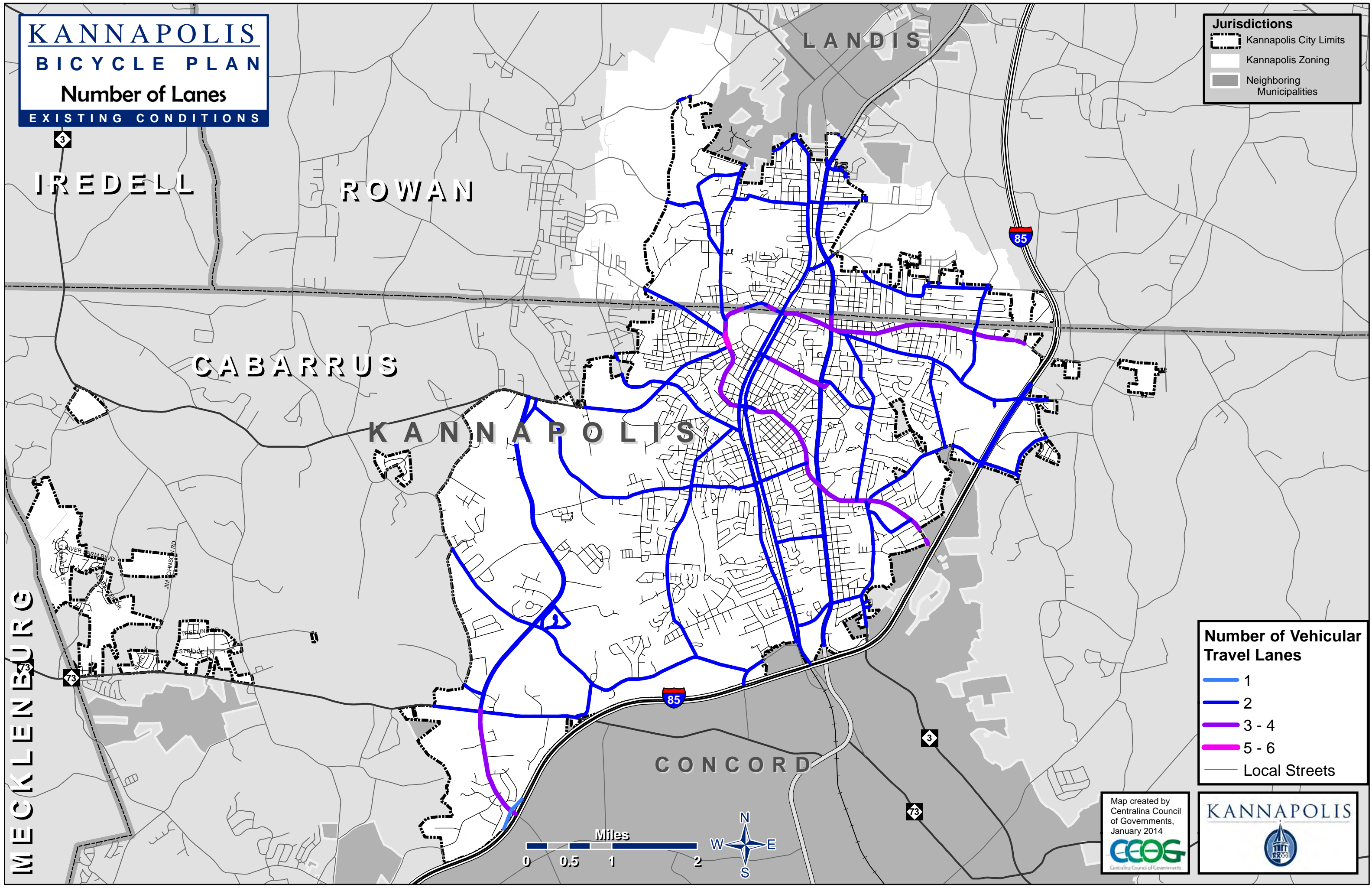
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KANNAPOLIS
BICYCLE PLAN
Number of Lanes
EXISTING CONDITIONS

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Number of Vehicular Travel Lanes

- 1
- 2
- 3 - 4
- 5 - 6
- Local Streets



Map created by
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MECKLENBURG

IREDELL

ROWAN

LANDIS

CABARRUS

KANNAPOLIS

CONCORD

KANNAPOLIS BICYCLE PLAN

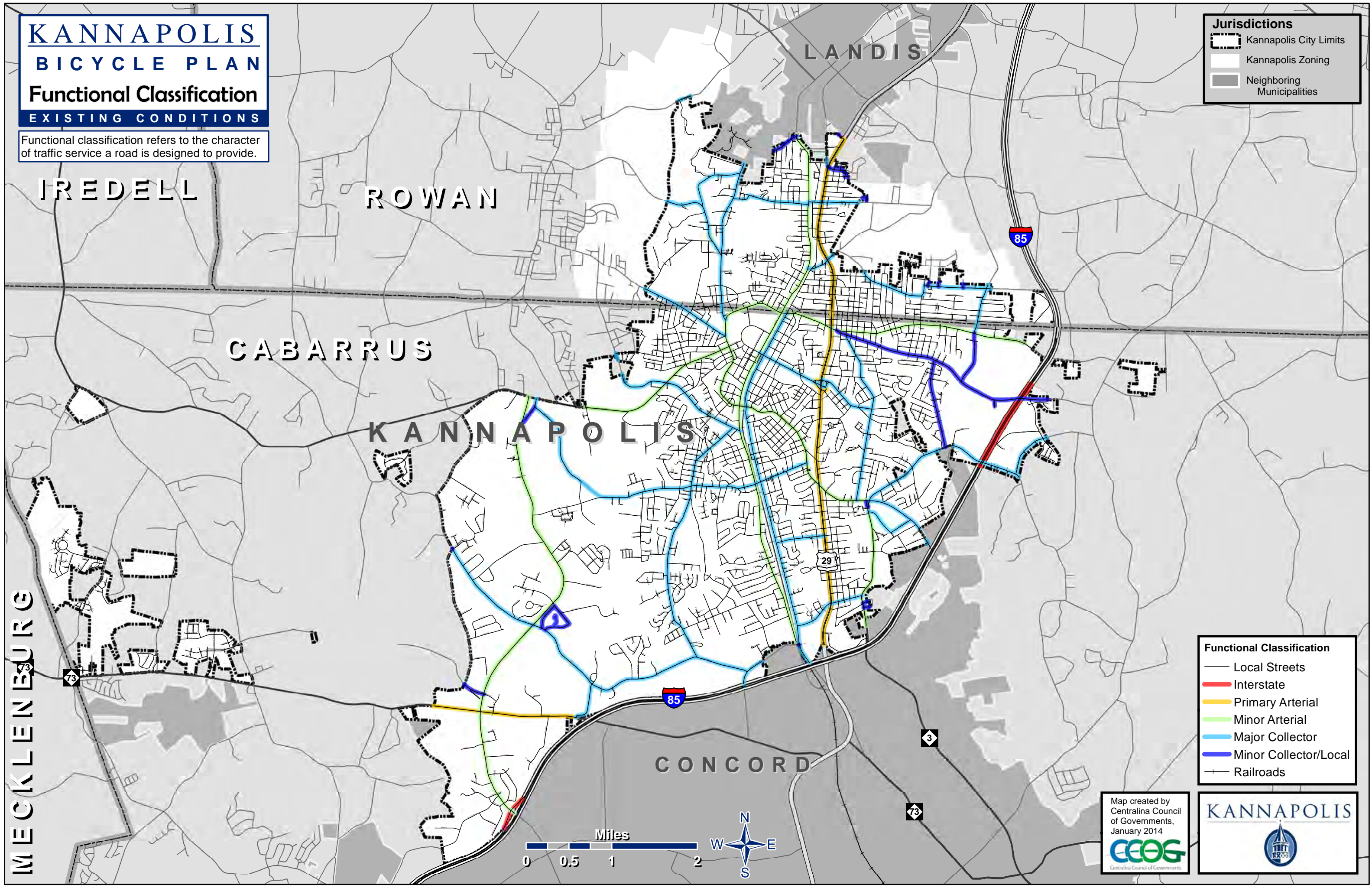
Functional Classification

EXISTING CONDITIONS

Functional classification refers to the character of traffic service a road is designed to provide.

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Functional Classification

- Local Streets
- Interstate
- Primary Arterial
- Minor Arterial
- Major Collector
- Minor Collector/Local
- Railroads

Map created by
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January 2014




KANNAPOLIS BICYCLE PLAN

Current Skill Level

POTENTIAL SEGMENTS

IREDELL

ROWAN

LANDIS







CABARRUS

KANNAPOLIS

CONCORD




MECKLENBURG

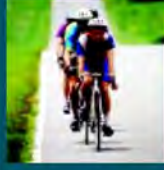
General Legend

-  Greenway - Planned
-  Carolina Thread Trail
-  Recreation Area
-  School
-  Popular Destination
-  At Grade RR Crossing


Potential Bike Route Segments

Skill Level


-  A = Advanced
-  B = Intermediate
-  C = Beginner



Group A
Advanced or experienced riders generally using their bicycles as they would a motor vehicle. They are riding for convenience and speed and want direct access to destinations with a minimum of detour or delay. They are comfortable riding with motor vehicle traffic; however, they need sufficient operating space on the traveled way or shoulder to eliminate the need for either themselves or a passing motor vehicle to shift position.



Group B
Basic or less confident adult riders using their bicycles for transportation, but prefer to avoid roads with fast and busy motor vehicle traffic unless there is ample roadway width to allow easy overtaking by faster motor vehicles. Thus, basic riders are comfortable riding on neighborhood streets and shared used paths and prefer designated on-road facilities such as bike lanes or wide shoulders.



Group C
Children, riding on their own or with their parents, may not travel as fast as their adult counterparts but still require access to key destinations in the community, such as schools, libraries, parks, and recreational facilities. Residential streets with low motor vehicle speeds, linked with shared used paths and busier streets with well-defined pavement markings between bicycles and motor vehicles, can accommodate children without encouraging them to ride in the travel lane of major arterials.


Jurisdictions

-  Kannapolis City Limits
-  Kannapolis Zoning
-  Neighboring Municipalities

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August 2014






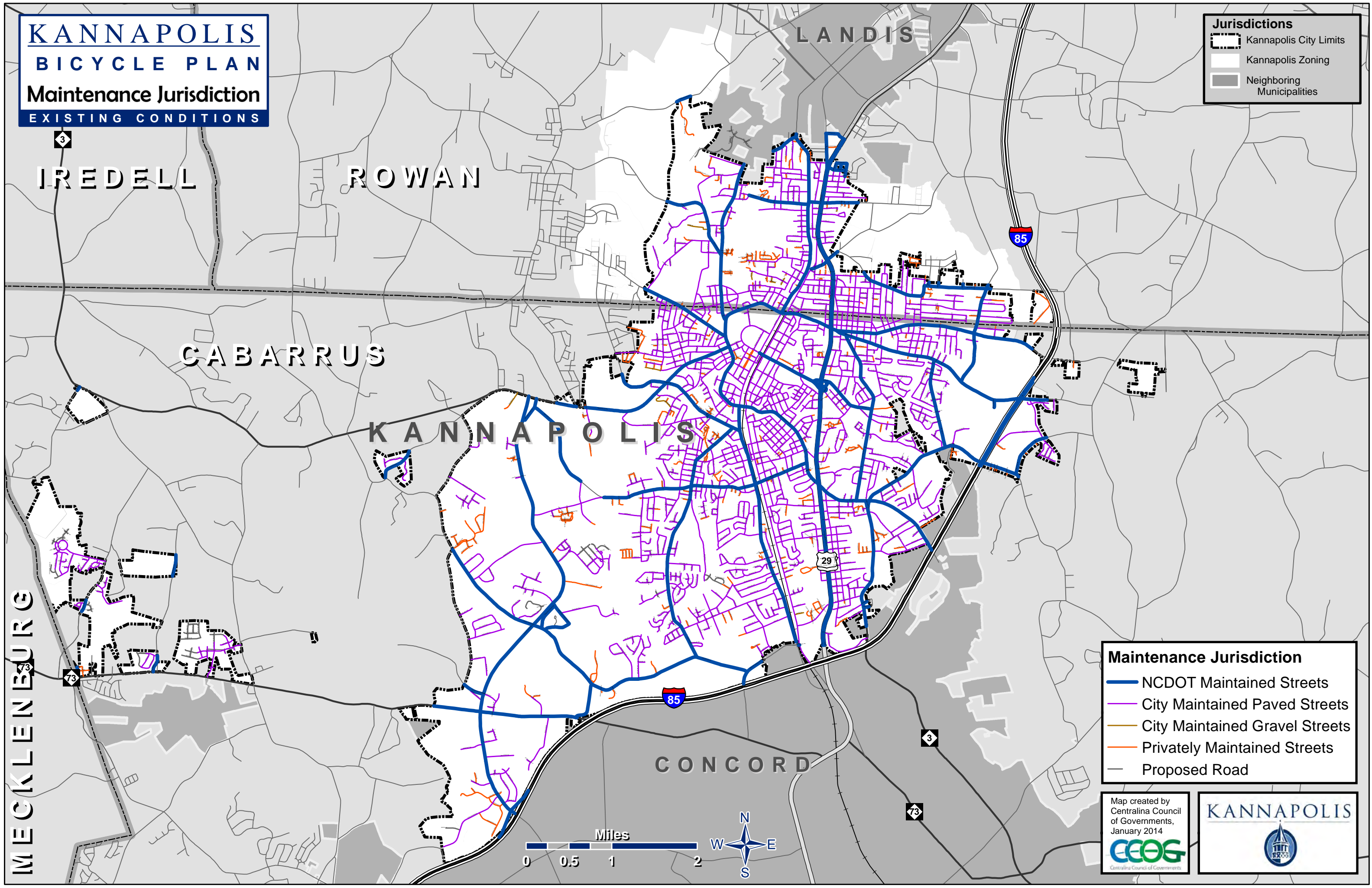
KANNAPOLIS









KANNAPOLIS
BICYCLE PLAN
Maintenance Jurisdiction
EXISTING CONDITIONS

Jurisdictions

-  Kannapolis City Limits
-  Kannapolis Zoning
-  Neighboring Municipalities



Maintenance Jurisdiction

-  NCDOT Maintained Streets
-  City Maintained Paved Streets
-  City Maintained Gravel Streets
-  Privately Maintained Streets
-  Proposed Road

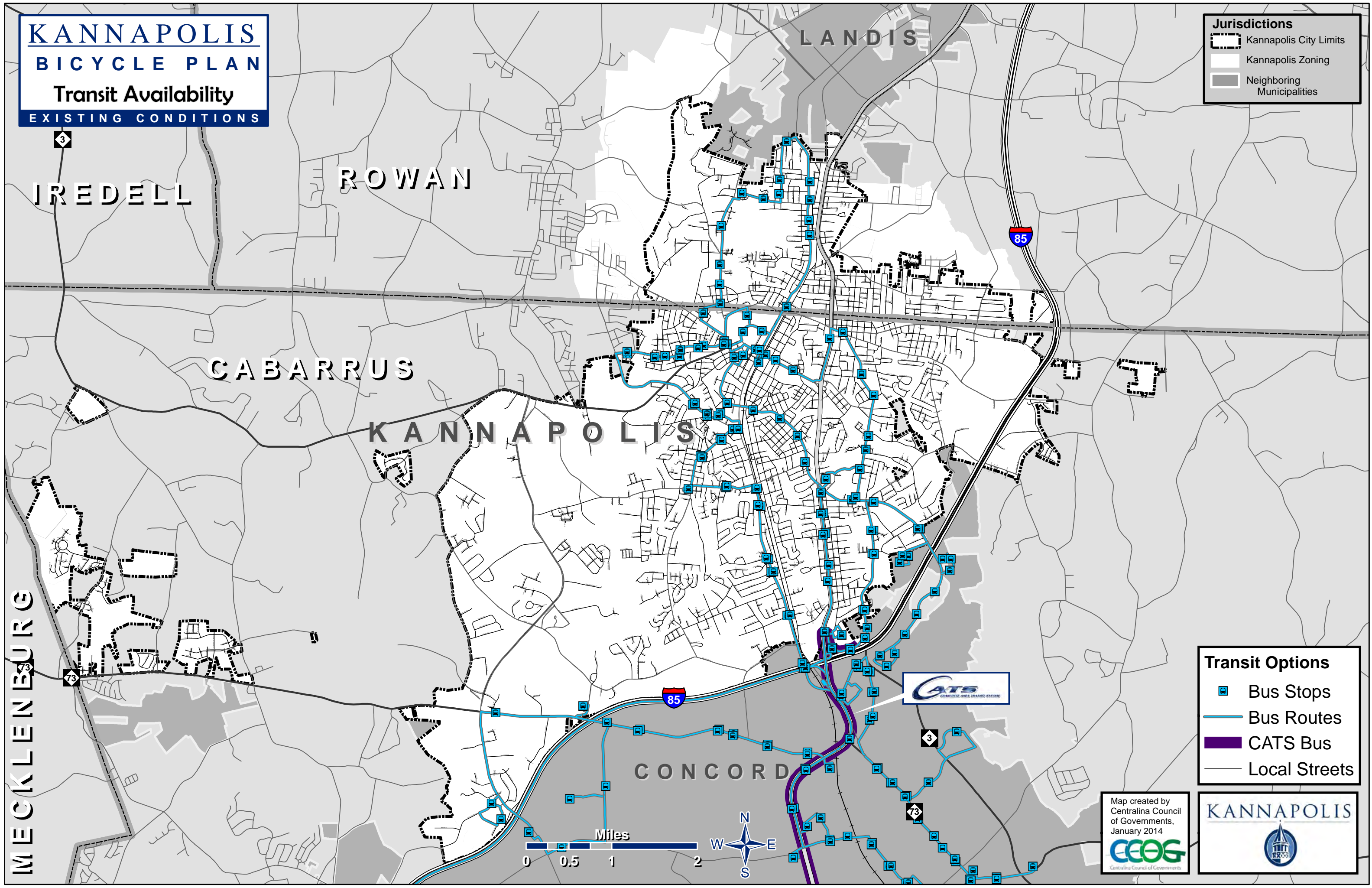
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KANNAPOLIS
BICYCLE PLAN
Transit Availability
EXISTING CONDITIONS

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Transit Options

- Bus Stops
- Bus Routes
- CATS Bus
- Local Streets



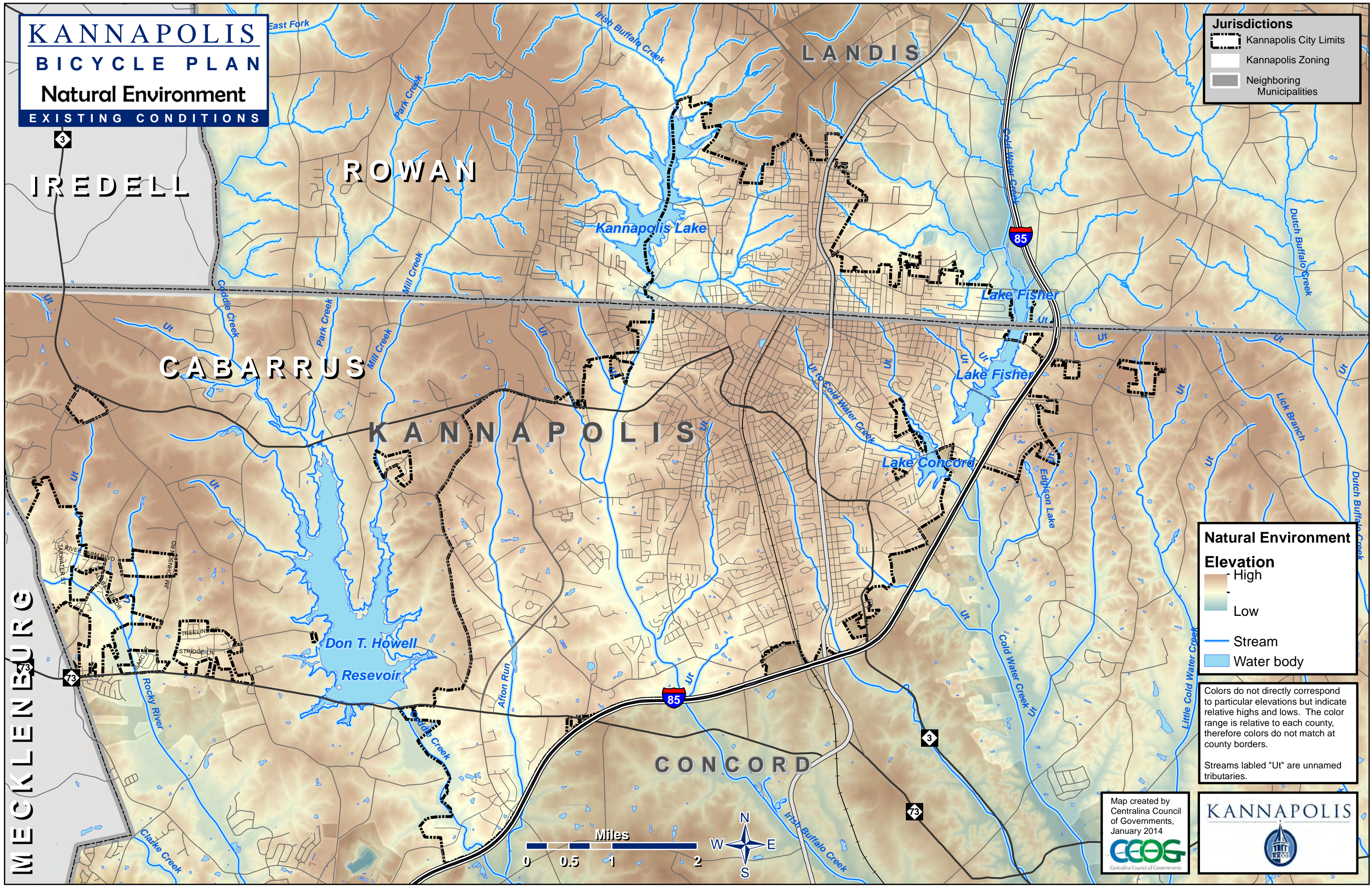
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KANNAPOLIS
BICYCLE PLAN
Natural Environment
EXISTING CONDITIONS

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities



Natural Environment

Elevation

- High
- Low
- Stream
- Water body

Colors do not directly correspond to particular elevations but indicate relative highs and lows. The color range is relative to each county, therefore colors do not match at county borders.

Streams labled "Ut" are unnamed tributaries.

Map created by
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 January 2014





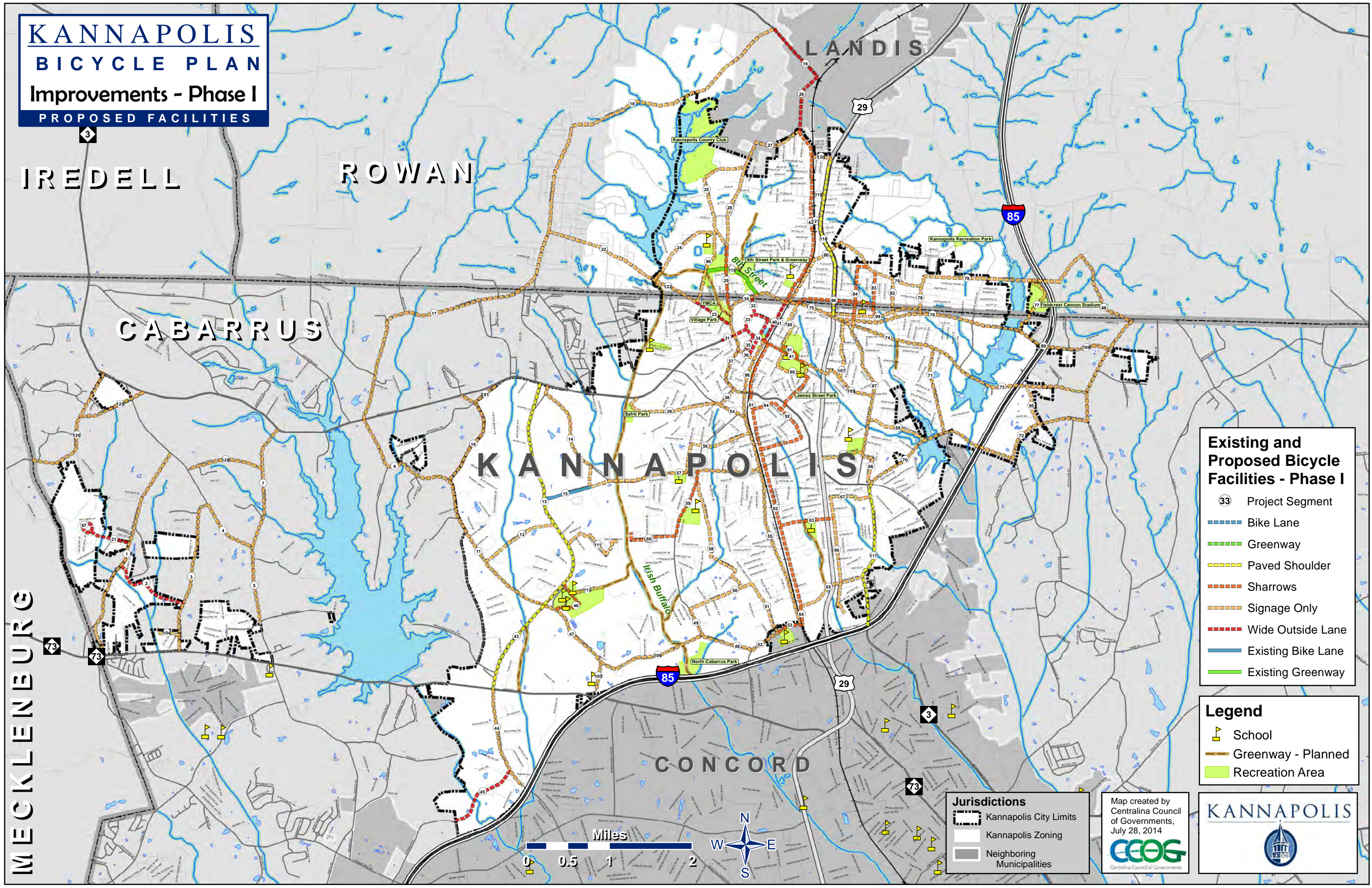
3. PROPOSED PROJECTS

The recommendations of this plan are consistent with previous plans for bicycle and multi-purpose path improvements within the City of Kannapolis, particularly the Cabarrus-Rowan MPO 2035 Long Range Transportation Plan (LRTP). Suggested on-road improvements correspond to the road cross sections that are part of the LRTP.



Bakers Creek Greenway entrance, Kannapolis

KANNAPOLIS
BICYCLE PLAN
Improvements - Phase I
PROPOSED FACILITIES



Existing and Proposed Bicycle Facilities - Phase I

- ③③ Project Segment
- Bike Lane
- Greenway
- Paved Shoulder
- Sharrows
- Signage Only
- Wide Outside Lane
- Existing Bike Lane
- Existing Greenway

Legend

- School
- Greenway - Planned
- Recreation Area

Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities

Map created by
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 July 28, 2014

KANNAPOLIS

KANNAPOLIS
BICYCLE PLAN
Improvements - Phase II
PROPOSED FACILITIES

IREDELL

ROWAN

LANDIS

CABARRUS

KANNAPOLIS

CONCORD

MECKLENBURG

Existing and Proposed Bicycle Facilities - Phase II

- ③③ Project Segment
- Complete Street
- Bike Lane
- Greenway
- Paved Shoulder
- Sharrows
- Wide Outside Lane
- Signage Only
- Existing Bike Lane
- Existing Greenway

Legend

- School
- Greenway - Planned
- Recreation Area

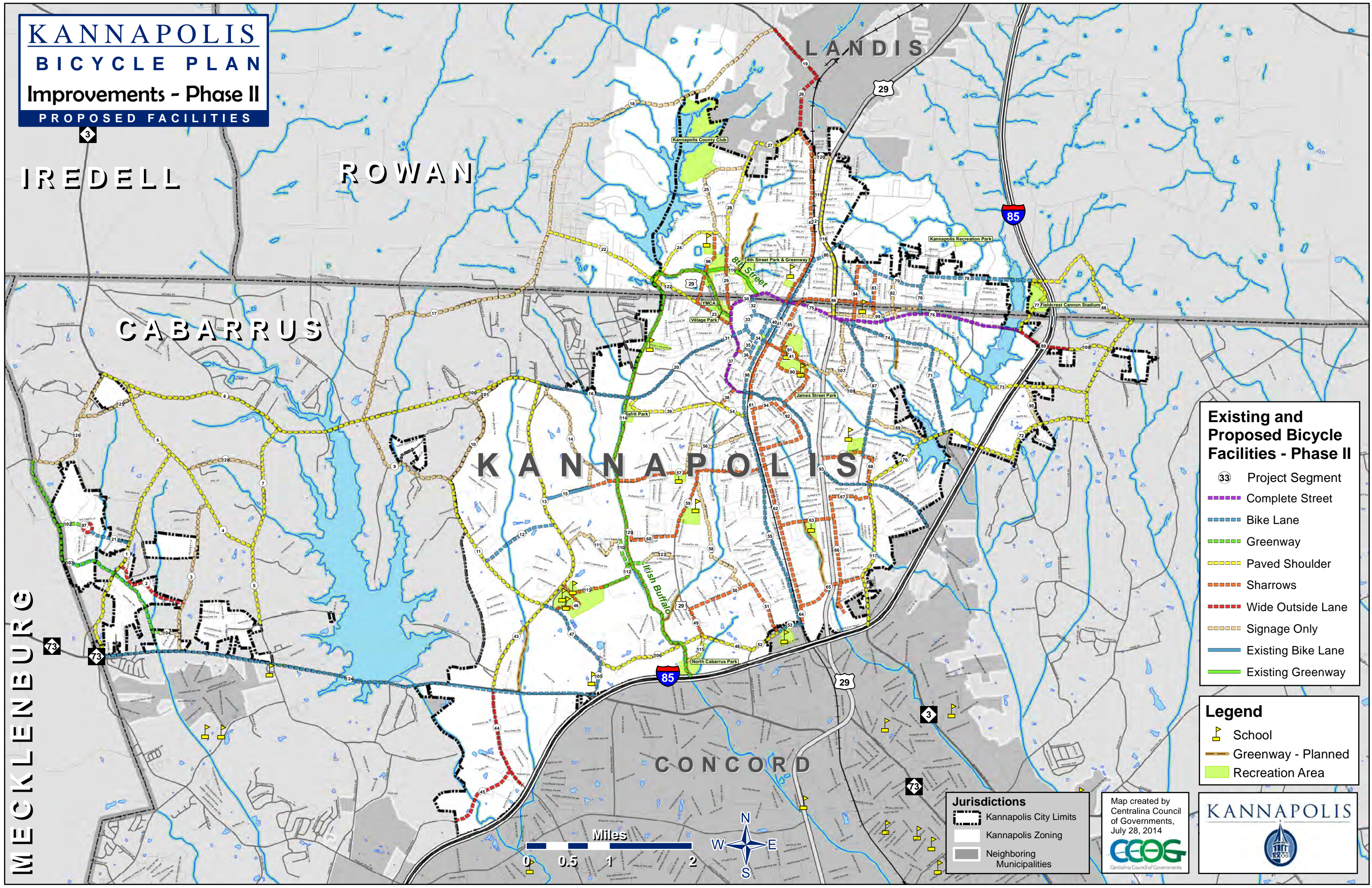
Jurisdictions

- Kannapolis City Limits
- Kannapolis Zoning
- Neighboring Municipalities

Map created by
 Centralina Council
 of Governments,
 July 28, 2014



KANNAPOLIS



KANNAPOLIS BICYCLE PLAN

Designated Routes

PROPOSED FACILITIES

IREDELL

ROWAN

CABARRUS

KANNAPOLIS

CONCORD

MECKLENBURG

LANDIS

Proposed Bicycle Routes

Improvements

- Proposed

Route (miles)

- Circuit (32)
- Transect (19)
- East School (9)
- West School (7)
- Pump Station (3)
- Jackson Park (3)
- Dogwood (3)

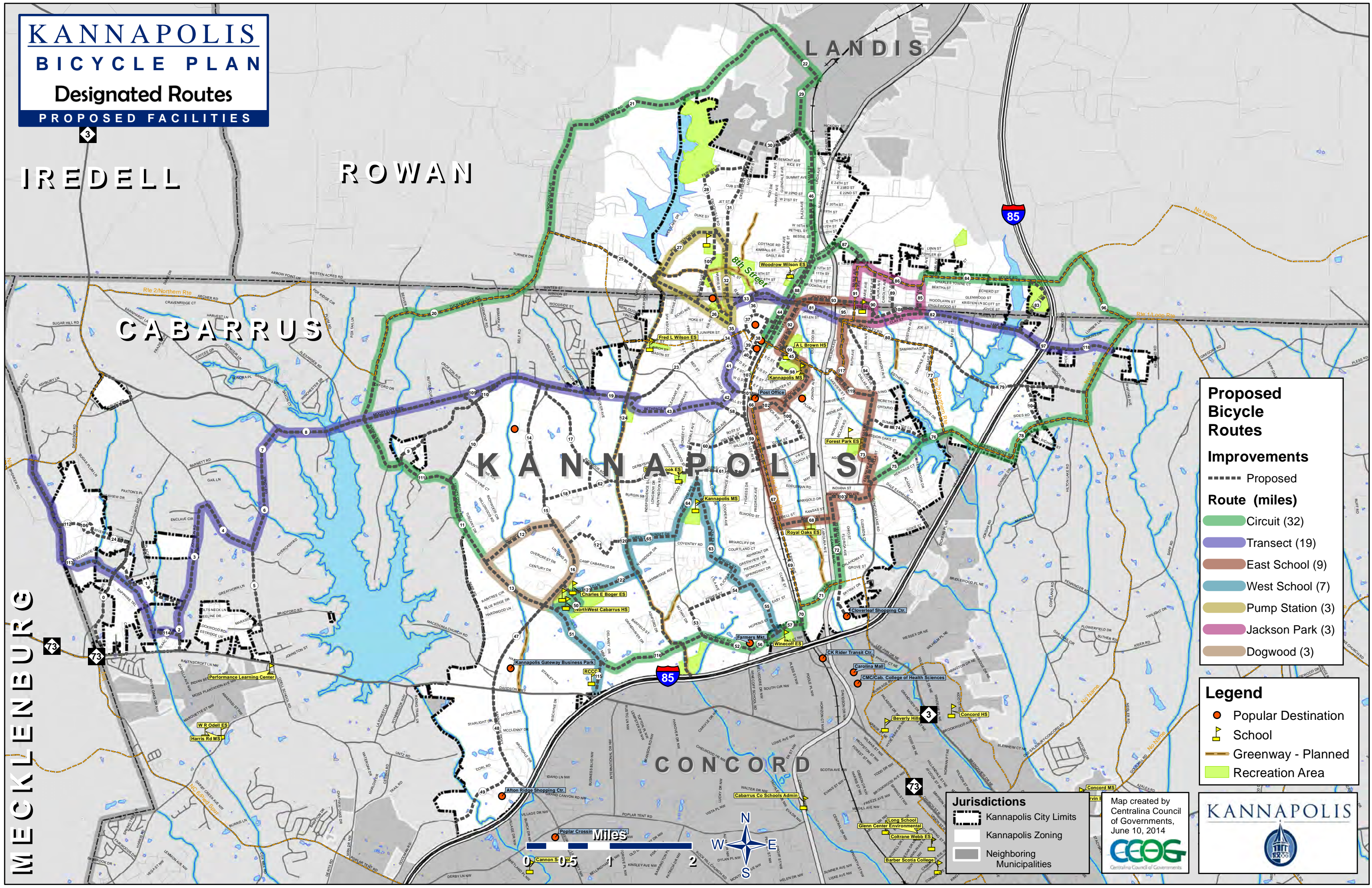
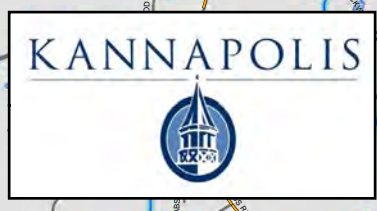
Legend

- Popular Destination
- 🏫 School
- Greenway - Planned
- 🌳 Recreation Area

Jurisdictions

- ▭ Kannapolis City Limits
- ▭ Kannapolis Zoning
- ▭ Neighboring Municipalities

Map created by Centralina Council of Governments, June 10, 2014



KANNAPOLIS BICYCLE PLAN PROJECT LIST

Project Location				Existing Conditions			Recommended Improvements				
Proj. No.	Streets	From	To	Length (miles)	Width (feet)	Posted Speed	Edge Conditions	Phase I	Phase II	Work Required*	Designated Route
1	Shiloh Church Rd S	Odell	NC 73	2.70	20	45	rural, ditches	Sign	PS	grading, widening	
2	Alabaster/Feldspar	Shiloh Church	Jim Johnson	1.00	28	35	wide, C&G, arrested	WOL	WOL	development	
3	Jim Johnson Rd N	Odell Sch.	NC 73	1.86	20	45	ditches	Sign	Sign	signage	Transect
4	Odell School Rd E	Jim Johnson	Odell Sch. S	0.78	22	45	ditches	Sign	PS	grading, widening	Transect
5	Odell School Rd S	Odell Sch.	NC 73	1.44	24	45	ditches	Sign	PS	striping	
6	Odell School Rd W	NC 3	Jim Johnson	1.77	20	45	ditches	none	PS	grading, widening	
7	Windy Rd N	Odell Sch.	NC 3	1.50	20	45	ditches	Sign	PS	grading widening	Transect
8	Mooreville Rd W	Davidson	Rankin	3.37	23	55	pre-graded	none	PS	widening	Transect
9	Rankin/Drakestone	NC 3	Trinity Church	1.48	20	45	ditches	Sign	Sign	signage	Circuit
10	Trinity Church Rd N	NC 3	Drakestone	1.11	20	45	ditches	Sign	Sign	signage	
11	Trinity Church Rd M	Drakestone	K. Pkwy	1.98	20	45	ditches	Sign	PS	grading, widening	Circuit
12	Dogwood Blvd	Trinity Church	K. Pkwy	0.97	20	35	ditches	Sign	BL	grading, widening	
13	Kannapolis Pkwy N	NC 3	Trinity Church	2.94	28	55	PS	PS	PS	signage	
14	Isenhour Rd	NC 3	Rogers Lake	1.45	20	45	ditches	Sign	Sign	signage	
15	Rogers Lake Rd	K. Pkwy	Isenhour	0.58	30	45	bike lanes	BL	BL	existing	
16	Mooreville Rd M	K. Pkwy	Bethpage	1.18	23	55	graded for PS	none	BL	widening	Transect
17	Tuckaseegee Rd	NC 3	W C	3.72	22	55	ditches	Sign	Sign	signage	Circuit
18	Enochville/Cannon Farm	W C	W Rice	4.16	22	45	ditches	Sign	Sign	signage	Circuit
19	W Rice St	Cannon Farm	S Main	0.78	32	45	C&G	WOL	WOL	signage	Circuit
20	Mooreville Rd E	Bethpage	Pine	1.25	22	55	2 Lane narrow	none	BL	widening	
21	Riverfarm	Riverfarm	Shiloh Church	0.49	32	35	C&G	Shiloh	BL	striping	
22	W C St M	Enochville	Pump Station	1.43	24	45	ditches	Sign	PS	grading, widening	
23	W C St E	Glenn	N Loop	0.50	33	35	WOL width	WOL	Sharrows	striping	
24	Pump Station Rd	W C	Enochville	1.02	18	45	graded for PS	Sign	PS	widening	
25	Enochville/Fairway	W A	W A	1.41	22	45	35 mph 18' Fairway	Sign	Sign	signage	
26	S Main St	W Rice	Airport	0.74	32	45	C&G	WOL	WOL	signage	Circuit
27	Airport Rd	W A	N Main	0.90	18	35	some ditches	Sign	PS	grading, widening	
28	W A St N	Fairview	Enochville	1.00	18	35	some ditches	Sign	PS	grading, widening	
29	W A St S	Enochville	N Loop	0.77	26	35	C&G to 8th	Sharrows	Sharrows	grading, cont. C&G, striping	
30	N Loop Rd	W C	N Main	0.92	54	35	5 lanes, C&G	Sign	Diet	median, striping	Transect
31	Watson Creek Dr	Pine	Laureate	0.34	16	35	wide lanes, C&G	WOL	BL	striping	
32	Biotechnology Ln	N Loop	Laureate	0.22	22	35	wide lanes, C&G	WOL	BL	striping	
33	Laureate Way	N Main	S Main	0.74	14	35	wide lanes, C&G	WOL	BL	striping	
34	N Research Campus Dr	Laureate	Vance	0.50	15	35	wide lanes, C&G	WOL	BL	striping	
35	Oak Ave	Laureate	Vance	0.25	60	35	diag pkg	WOL	BL	striping	
36	Vance St	NC 3	S Main	0.22	28	35	4 lanes, C&G	Sign	Sharrows	striping	
37	Dale Earnhardt Blvd M	W C	S Main	1.00	55	35	5 lanes, C&G	Sign	Diet	median, striping	Transect
38	Leonard Ave	Rainbow	NC 3	0.26	26	35	C&G	Sign	Sharrows	striping	Transect
39	Bethpage Rd W	NC 3	Rainbow	1.23	20	35	ditches	Sign	PS	grading, widening	Transect
40	N Main St	N Loop	S Main	0.53	15	35	wide lane, C&G	WOL	BL	striping	Circuit
41	E 1st St	S Main	Harding	0.54	40	25	C&G, school zone	Sharrows	Sharrows	striping	
42	N Main St	Airport	N Loop	2.20	22	45	some C&G 35mph @ Kim	Sharrows	Sharrows	striping	Circuit
43	Kannapolis Pkwy S1	Trinity Church	NC 73	1.21	30	55	some C&G	PS	PS	signage	
44	Kannapolis Pkwy S2	NC 73	I 85	1.24	58	45	5 lane, C&G	Sign	WOL	demo, widening	
45	Glenn Afton Blvd	K. Pkwy	terminus	0.95	36	35	C&G	WOL	WOL	striping	
46	NW Cabarrus Dr	K. Pkwy	Trinity Church	0.61	22	25	ditches	Sharrows	Sharrows	striping	
47	Trinity Church Rd S1	K. Pkwy	Orphanage	1.00	20	45	ditches	Sign	BL	grading, widening, striping	Circuit
48	Orphanage Rd	Oakwood	Wincoff	0.62	20	45	steep	Sign	PS	grading, widening	Circuit
49	Oakwood Ave N	Fisher	Orphanage	0.37	20	45	ditches, 8' path	Sign	Sharrows	grading, widening	
50	Fisher St W	Oakwood	Shady	0.81	20	35	ditches	Sign	Sharrows	grading, widening	
51	Shady Lane Ave	Fisher	Wincoff	0.68	18	35	ditches	Sign	Sharrows	grading, widening	
52	Wincoff Sch Rd W	Orphanage	Shady	0.38	21	35	ditches	Sign	PS	grading, widening	Circuit
53	Wincoff Sch Rd E	Fisher	S Main	0.33	20	35	C&G, school zone	Sharrows	BL	grading, widening	Circuit
54	Bethpage Rd E	Rainbow	S Main	0.33	18	35	ditches	Sign	PS	grading, widening	
55	S Main St N	Bethpage	Wincoff	2.60	30	45	3 lane	Sign	BL	grading, widening, striping	
56	Klondale/Walker	Rogers Lake	S Main	1.10	18	35	ditches	Sign	Sign	signage	
57	Rodgers Lake Rd M	Isenhour	S Main	2.08	18	35	ditches	Sign	Sharrows	striping	
58	Azalea Ave	Oakwood	Fisher	1.55	18	35	partially unpaved	Sign	Sign	signage	
59	Oakwood	Rogers Lake	Windsor	1.11	20	45	some C&G, sch. zone	Sharrows	Sharrows	striping	
60	Irish Buffalo/Wrenn/Sunset	Irish Buffalo	Oakwood	0.65	20	35	ditches	Sharrows	Sharrows	striping	
61	S Ridge Ave N	E 1st	Rogers Lake	1.54	28	35	C&G	Sharrows	Sharrows	striping	
62	S Ridge Ave M	Rogers Lake	Mt Olivet	1.73	22	35	ditches	Sharrows	Sharrows	striping	
63	Dakota St	S Ridge	Pennsylvania	0.65	20	35	some C&G, sch. zone	Sharrows	Sharrows	striping	
64	S Ridge Ave S1	Mt Olivet	Wincoff	0.23	20	35	ditches	Sharrows	Sharrows	striping	Circuit
65	Mt Olivet Rd	S Ridge	Concord Lake	0.85	32	35	some C&G	Sign	Sharrows	striping	Circuit
66	Pennsylvania Ave S	Rhode Island	Cloverleaf	1.21	18	35	ditches	Sign	Sharrows	striping	Circuit
67	PA/RI/Holland	Dakota	Concord Lake	0.77	20	35	ditches	Sign	Sharrows	striping	Circuit
68	Eastway/Hyde/S Little Tex	Little Texas	Centergrove	0.45	22	35	ditches	Sign	Sharrows	striping	
69	Summit Ridge Ln	Little Texas	Centergrove	0.74	22	25	C&G	Sign	Sign	signage	
70	Centergrove	NC 3	Midlake	1.10	22	35	some 45mph	Sign	PS	grading, widening	Circuit
71	Midlake Ave	Brantly	Centergrove	1.05	20	35	ditches	Sign	BL	grading, widening, striping	
72	Centergrove/Old Salisbury	Midlake	Brantly	2.42	20	45	ditches, some PS	Sign	PS	grading, widening	Circuit
73	Brantly Rd E	Midlake	Old Salisbury	2.01	20	45	ditches	Sign	PS	grading, widening	
74	Brantly Rd W	Pearl	Midlake	1.14	18	35	ditches	Sign	BL	grading, widening, striping	
75	Jackson Park Rd	N Main	Pearl	0.74	42	45	4 lane, C&G	Sign	Diet	median, restriping	Transect
76	Lane St W	Jackson Park	Stadium	2.22	45	45	4 lane, C&G	Sign	Diet	median, restriping	Transect
77	Stadium Dr	Moose	Lane	0.81	24	35	ditches	Sign	PS	striping	
78	Moose Rd M	Wright	Stadium	1.43	18	45	2 lane, ditches	Sign	BL	grading, widening, new bridge	Circuit
78	Wright Ave	Moose	Lane	0.34	20	35	ditches, small yards	Sign	BL	grading, widening	
79	Moose Rd W	E 13th	Wright	0.69	18	45	ditches	Sign	BL	grading, widening	Circuit

KANNAPOLIS BICYCLE PLAN PROJECT LIST

Project Location				Existing Conditions			Recommended Improvements				
Proj. No.	Streets	From	To	Length (miles)	Width (feet)	Posted Speed	Edge Conditions	Phase I	Phase II	Work Required*	Designated Route
80	Ridge/Ebenezer/Moose	Jackson Park	E 13th (east)	1.45	18	45	ditches	Sign	BL	grading, widening	Circuit
81	N Ridge Ave N	Jackson Park	E 1st	0.55	15	35	C&G	WOL	BL	striping	Circuit
82	Evelyn Ave	Moose	Lane	0.47	18	35	ditches	Sign	Sign	signage	
83	Grace Ave	Moose	Central	0.56	18	35	ditches	Sharrows	Sharrows	striping, reduce speed	
84	Mable Ave/E 13th	Moose	Lane	0.77	16	35	narrow 35 mph	Sharrows	Sharrows	striping, HAWK light	
85	N Rose/4th/N East	Jackson Park	E 1st	0.67	24	25	C&G	Sign	Sharrows	striping	
86	Jackson St	Jackson Park	Grace	0.93	36	25	some C&G, sch. zone	Sharrows	Sharrows	striping	
87	Little Texas Rd	Lane	Hyde	1.73	21	35	some C&G	Sign	BL	grading, widening, striping	
88	Moose/Goldfish/Old S-C	Stadium	Brantly	2.84	22	55	ditches	Sign	PS	grading, widening	Circuit
89	Lane St E	Stadium	Turkey	0.65	49	45	4 lane, C&G	Sign	WOL	redo interchange, striping	Transect
90	York/EC/Lowe/Harding	E 1st	E 1st	0.70	28	25	C&G	Sign	Sharrows	striping	
91	Brown High/Denver	Rose	E 1st	0.27	23	25	C&G	Sharrows	Sharrows	striping	
92	Wood/3/Ford/Cadillac/Cook/Be	E C	S Ridge	1.52	22	35	ditches, sch. zone	Sharrows	Sharrows	striping	
93	Dale Earnhardt	S Main	Roxie	3.01	78	45	C&G	none	BL	demo, widening, new C&G	
94	Cadillac St	S Ridge	Ford	0.40	18	35	ditches	Sharrows	Sharrows	striping	
95	Patterson	Brantly	Camp Julia	0.48	17	35	ditches	Sign	Sign	signage	
96	Glenn	Pump Station	W C	0.90	18	35	ditches	Sign	Sharrows	striping	
97	Riverfarm	Riverfarm	Riverfarm	0.35	28	35	C&G	WOL	WOL	signage	
98	S Main St	E 1st	Bethpage	0.97	36	30	C&G, on-street pkg	Sign	BL	striping	
99	Central Dr	Jackson Park	Wright	1.13	18	35	ditches	Sign	Sign	signage	
100	Mooreville Rd W	Tuckaseegee	K. Pkwy	2.22	20	55	graded for PS	none	PS	widening	Transect
101	Stirewalt/Trinity Church	NC 3	NC 3	0.50	16	45	ditches	Sign	Sign	signage	
102	Greenway connector	Rocky River	Riverfarm	0.30	10	0	wooded	none	Gway	clearing, grading, paving	
103	Rocky River corridor	Davidson	Shanaclear	2.95	100	0	cleared	none	Gway	grading, paving	Transect
104	Shanaclear Ave	Rocky River	Jim Johnson	0.26	24	35	C&G	Sign	Sign	signage	Transect
105	Trinity Church Rd	Orphanage	NC 73	0.35	20	35	ditches	Sign	BL	grading, widening, striping	
106	Orphanage Rd	Trinity Church	Oakwood	1.34	20	45	some ditches	Sign	PS	grading, widening	Circuit
107	E 1st/St Joeseeph/Pearl	Harding	Brantly	1.24	17	35	ditches	Sign	Sign	signage	
108	Lane St E	Turkey	Old Salisbury	0.50	22	35	ditches	Sign	PS	grading, widening	Transect
109	E. 1st St	St. Joseph	Little Texas	0.48	20	35	ditches	Sign	Sign	signage	
110	greenway	Lock Erne	greenway	0.35	10	0	semi-wooded	none	Gway	clearing, grading, paving	
111	Kellswater	K. Pkwy	Donegal	0.92	23	25	C&G	Sign	Sign	Signage	
112	greenway	Dovefield	Windsor	0.65	10	0	semi-wooded	none	Gway	clearing, grading, paving	
113	Dove Field Ln	NW Cabarrus	greenway	0.41	22	35	some C&G	Sign	Sharrows	striping	
114	Irish Buffalo Creek	N Loop	I 85	6.68	50	0	semi-wooded	none	Gway	clearing, grading, paving	
115	N. Cabarrus Park	Irish Buffalo	Orphanage	0.39	10	0	Multi-use path	none	Sign	signage	
116	8th St G-way	Irish Buffalo	N Loop	0.78	10	0	gway	Gway	Gway	existing	
117	Concord Lake Rd	NC 3	I 85	1.77	30	45	partial PS	PS	PS	some grading & widening	
118	N. Cannon Blvd	29th	Jackson Park	1.93	68	45	5-lane/med, some C&G	PS	PS	some widening, striping	
119	22nd St	N Main	N Cannon	0.14	20	35	ditches, pavement	Sign	Sign	signage	
120	29th St	N Main	N Cannon	0.25	18	35	ditches	Sign	Sign	signage	
121	18th St	N Main	N Cannon	0.10	24	35	some C&G, pvmt	Sign	BL	some widening, striping	
122	W C St W	Pump Station	Glenn	0.55	23	45	ditches	Sign	PS	grading, widening, <MPH	
123	Windsor Dr	greenway	Oakwood	0.43	24	0	C&G	none	Sign	signage	
124	NC 73	Meck Co.	I 85	6.06	25	55	some PS	none	BL	widening, striping	
125	Sudbury	Davidson	NC 3	0.84	18	35	ditches	Sign	Sign	signage	
126	Davidson Rd	NC 3	Rocky River	1.58	20	55	ditches	Sign	Sign	signage	
127	Barnett/Forest Pk	US 29	Little Texas	0.51	29	25	ditches/C&G	Sign	Sharrows	striping	
128	Barnett Rd	Odell School	Windy	0.91	17	55	ditches	Sign	Sign	signage	
129	Davie Ave	Irish Buffalo	Wren	0.05	10	0	dirt path	none	Gway	paving	
Total Project Miles =				148.76							



PROPOSED POLICIES

Kannapolis Bike Plan Implementation Strategies and Schedule			
Policy	Description & Strategy	Lead Departments	Schedule
Complete Streets	All new or renovated streets shall provide safe, comfortable, and convenient travel for all categories of users; including pedestrians, bicyclists, people with disabilities, transit users, and motorists. Ensure that the UDO and the Long Range Transportation Plan references the City's Complete Streets Manual. In some cases, developers will need to build the improvement even though striping may not occur until a later time (when there is enough length of the road to do so).	Planning, Public Works, Engineering, Police, Fire	2016
Greenways	Ensure that this Bike Plan is explicitly linked to the Parks & Rec Master Plan, greenway plan, and any other plans identifying connections to off-street paths.	Parks & Recreation, Planning	2014
Road Design Guidelines	Design new and renovated streets to maximize bicycle safety and convenience. Incorporate new road design guidelines into the rewrite of the UDO	Planning, Public Works, Engineering, Police, Fire, Active Routes to School, bicycling group	2016-2017
	Examine ways to improve intersections and crossings to be safer for cyclists and pedestrians. Consider Hawk signals at popular crossings and other ways to alert motorists. Ensure vehicle detectors also are sensitive enough to detect bikes. Consider using 'puck-type' detectors (with thermoplast locational outlines) instead of loop detectors, or video monitors where there is significant bike traffic but not enough motor vehicle traffic. Also consider street-side push actuators (with proper signage) for bike crossings.	Planning, Public Works, Engineering, Police, Fire, Active Routes to School, bicycling group	2016-17
	Update the parking regulations or policies in the UDO that guide the internal circulation of traffic within a new public and private development to be safer and make connections to existing and future pedestrian and bicycle infrastructure. Orient along the line of sight from external connections to areas near building entrances and other on-site destinations, such as requiring an ADA-accessible pathway from the nearest sidewalk to the main entrance, and from the property line to all major entrances. Consider thresholds that trigger these requirements, such as square	Planning, Public Works, Engineering, Police, Fire, Active Routes to School, bicycling group	2016-17

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	footage, large assemblies, or renovations of a certain size or value.		
Signage & Markers	Install signage & road markers to make motorists aware of cyclists and their rights. Use "Bikes may use full lane" signs rather than "Share the road". (See MUTCD 9B.06) Also install signage & road markers indicating bike routes. (Contact UNC-HSRC for the latest on signage and markings.)	Public Works, bicycling group	2015-16
Traffic Calming	Reduce vehicle speed and decrease dangers posed by cars to those bicycling and walking by encouraging use of traffic control infrastructure or reducing speed limits. Identify streets (such as bike routes) that are good candidates for traffic calming measures and create implementation schedule. If speed humps, tables, etc., are used, their design should accommodate bicycle use on both sides (the slope in height from edge of curb to 3' into the street).	Planning, Public Works, Engineering, bicycling group	Start 2015
Road Diets	Retrofit existing streets to improve safety for other modes of travel, including bike lanes. Identify streets that are good candidates for road dieting and create implementation schedule. (Ex: Loop Rd 0-5 years, Lane St 5-8 years)	Planning, Public Works, Engineering	Start 2015
Bike Parking	Install bike racks in existing areas where there is demand for bike parking. Aim to install five bike racks per year on public property. Consider bike racks as public art or branding, but be sure that bike racks selected are suitable (not "wheel benders").	Planning, Public Works, Parks and Recreation, bicycling group	Start 2015
	Require new and renovated public and private development to install bike racks, particularly with employment centers, large assembly uses, retail, and multifamily uses. Work with existing development to install bike racks. Provide guidelines to encourage selection of appropriate bike racks (not "wheel benders").	Planning, Public Works	2014
	Install bike racks at bus stops where there is significant demand.	CK Rider, Public Works	2015
Safe Routes to Schools	Adopt Resolution of Support for Safe Routes to School program, a national program supported by NCDOT that promotes biking and walking to school. Partner with schools to establish the program in Kannapolis, including a Walk/Bike to School Day. Develop a city-wide Action Plan for SRTS; which should include elements from all 5 E's; an example is: http://www.wilsonnc.org/userimages/image/WilsonSRTS-Final-2012.pdf .	Planning, Public Works, Kannapolis City Schools, Cabarrus County Schools, Active Routes to School	2014
	Prioritize in the CIP the installation of sidewalks within 1/2 to 1 mile of all schools in Kannapolis.	Public Works	2015

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Bicycle Safety Education	Incorporate bike safety and awareness into driver's education classes. Use coursework and driver training to educate young and new drivers that cyclists have a right to the road and how to safely navigate around cyclists.	Kannapolis City Schools, Cabarrus County Schools, bicycling group	2015
	Encourage community partners to provide bicycle skills and education programs, such as bike rodeos and the Let's Go NC! Program.	Safe Kids Coalition, YMCA, churches, schools, camps, after-school programs	2015
	Offer bicycle skills class as an enrichment class in community college. Help new riders gain skills and confidence to ride on the roads. Help them figure out safe routes. Target novice riders, women, and older adults. Consider adapting the 'Let's Go NC!' program for this purpose, or contact the UNC-HSRC for additional resources.	Rowan-Cabarrus Community College	2015
	Law enforcement will receive training on traffic laws relating to pedestrians and cyclists. Apply for the Watch for Me NC program and launch an awareness program that includes an enforcement component. (Ex: Town of Davidson's Phillip Geiger can provide training.)	Police, Communications	2015
Maintenance	Ensure regular, adequate street sweeping of bicycle facilities (shoulders and bike lanes) to remove hazardous debris. Fund the purchase of sweeper trucks in the Capital Improvement Plan.	Public Works	2015
	Identify and address road conditions that are hazards for cyclists, such as catch basin inlet grates and pot holes. Ensure adequate funding of this in the CIP.	Public Works	2015
Transit	Ensure inspection & finished grade of catch basin inlet grates to the level of the road when roads are repaved.	Public Works	2014
	Involve CK Rider with planning and development efforts to ensure coordination of public transit and bicycle facilities. Incorporate requirement of consideration of public transit facilities in development ordinances.	Planning, Public Works, CK Rider	Ongoing



5. FACILITY STANDARDS

Any road, bridge, tunnel or trail is potentially a bicycle facility. To varying degrees, bicycles will be ridden wherever they are permitted (limited access highways being one example of where they are not). Each of these facilities should therefore be designed, constructed and maintained with bicyclists in mind. However, as most road facilities are designed to accommodate motorists as well, safety precautions must be made in their design and in their use if they are to be safely shared.

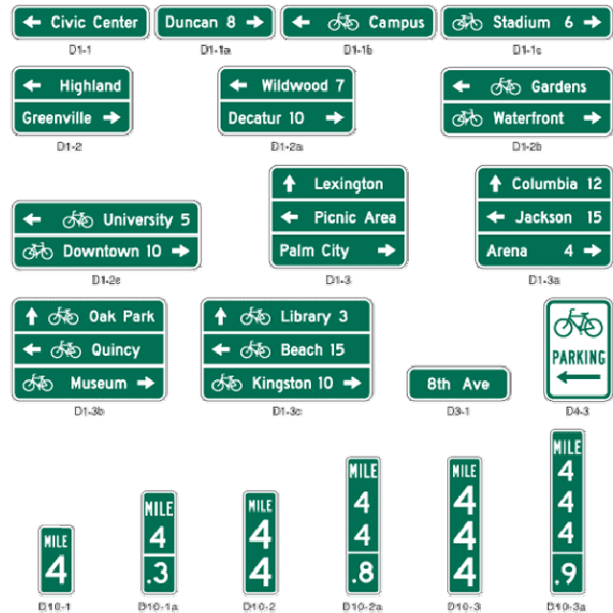
5.1 Signage

The various kinds of bicycle signage serve various functions. **Warning and regulatory signage** can alert drivers to reduce speeds and to warn bicyclists to use extra caution. This type of signage should always be used to signal the presence of bicycle lanes, sharrows, or similar treatments, but it can also be used independently to indicate that a road is a common bicycle route. **Wayfinding and directional signage** provides direction to specific destinations or guides bicyclists as they use special bicycle routes. Too much signage, however, can produce visual “clutter” and can encourage complacency and noncompliance with signs in general. Signs, and the sign text, should be large enough to be seen from a distance. The distance is dependent upon the road speeds. It is imperative that all signs be properly located so as not to obstruct bicyclists or pedestrians, and the visibility triangles of motorists.

Figure 9B-4. Guide Signs for Bicycle Facilities



Figure 9B-4. Guide Signs and Plaques for Bicycle Facilities (Sheet 1 of 2)



Sample bicycle signage from the Manual for Uniform Traffic Control Devices (MUTCD). Refer to the MUTCD for signage standards.

For information on the NCDOT Share the Road signing program, see www.ncdot.gov/bikeped/safetyeducation/signing/



5.2 Sharrows

Shared Lane Markings

Also known as SLMs, or “sharrows”, these striped road markings indicate a shared lane environment of bicycles and motor vehicles. The sharrow lane marking is not a facility as it does not designate a particular part of the roadway for exclusive use of bicyclists. But they have a variety of uses to support a bikeway network:

- Alerts drivers to the potential presence of bicyclists and shows the lateral position bicyclists are likely to occupy within the street.
- Indicates the safest path for bicycle users through difficult or hazardous situations, such as adjacent to parked cars, or through busy or complex intersections.
- Provides wayfinding along bike routes.
- Advertises the presence of bikeway routes to all users.

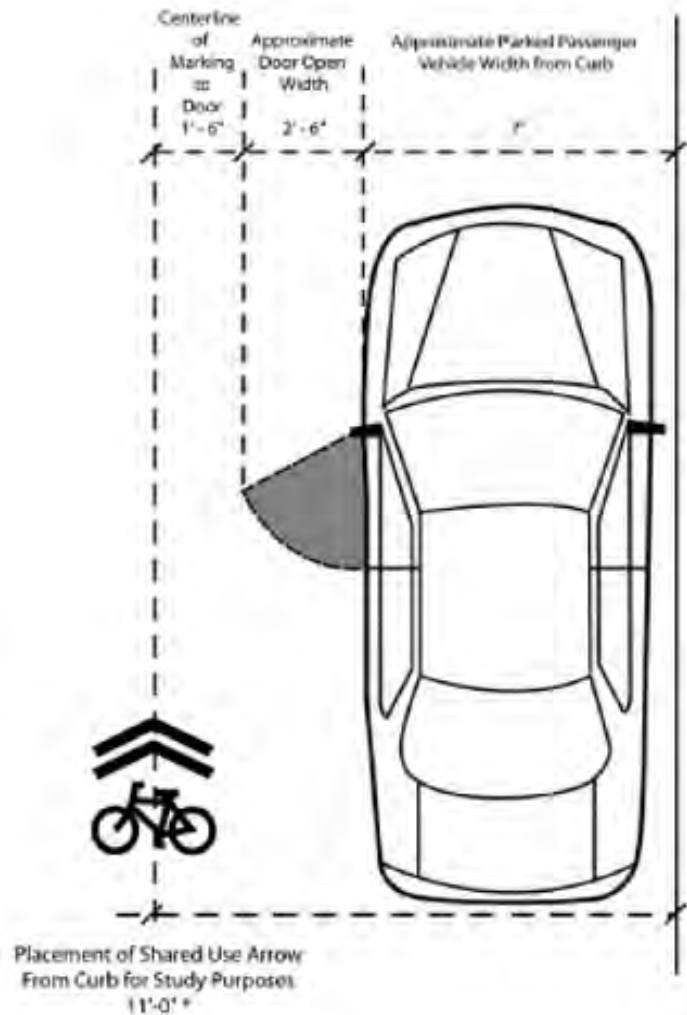


Design Considerations:

- Maximum speed for sharrow use: 35 mph.
- In locations without on-street parking, sharrows should be placed 4 ft. from curb face or edge of pavement.
- The frequency of markings along a street should correspond to the difficulty bicyclists experience taking the proper travel path or position. Sharrows used to bridge discontinuous bicycle facilities or along busier streets should be placed more frequently (as little as 50 feet) than along low traffic bicycle routes (250 feet or more).

Typical Applications for Sharrows:

- Adjacent to parallel parking: sharrows can help keep bicyclists out of the “door zone.”
- Where lanes are too narrow for striping of bike lanes
- Across signalized intersections, particularly through wide or complex intersections where the bicycle path may be unclear.





5.3 Paved Shoulders

Description:

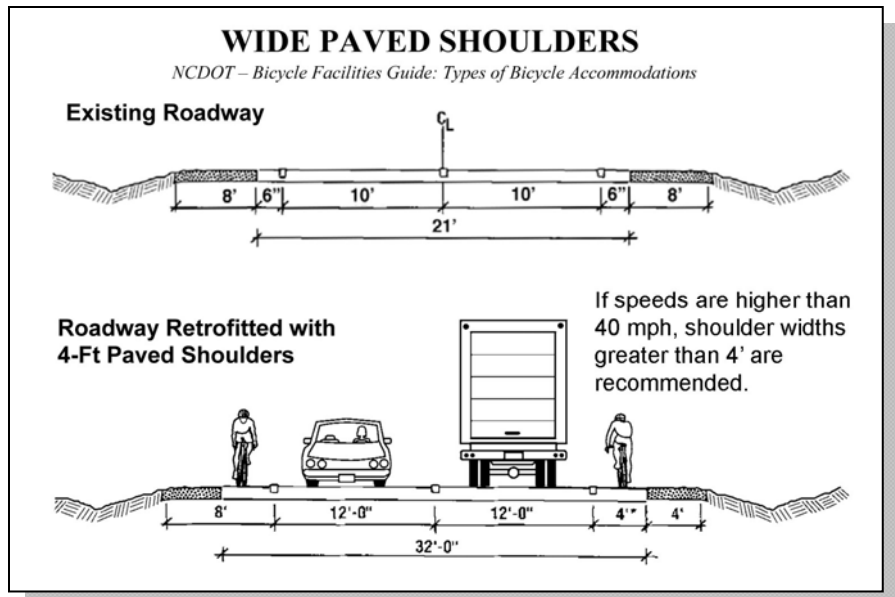
A paved shoulder is that part of the roadway that is adjacent to the vehicle lanes of the road on the same level. Wide paved shoulders feature as much as four feet of additional pavement width in order to accommodate bicycles in the safest manner. A paved shoulder four feet or wider can be striped as a bike lane with a bicycle logo installed on the lane.

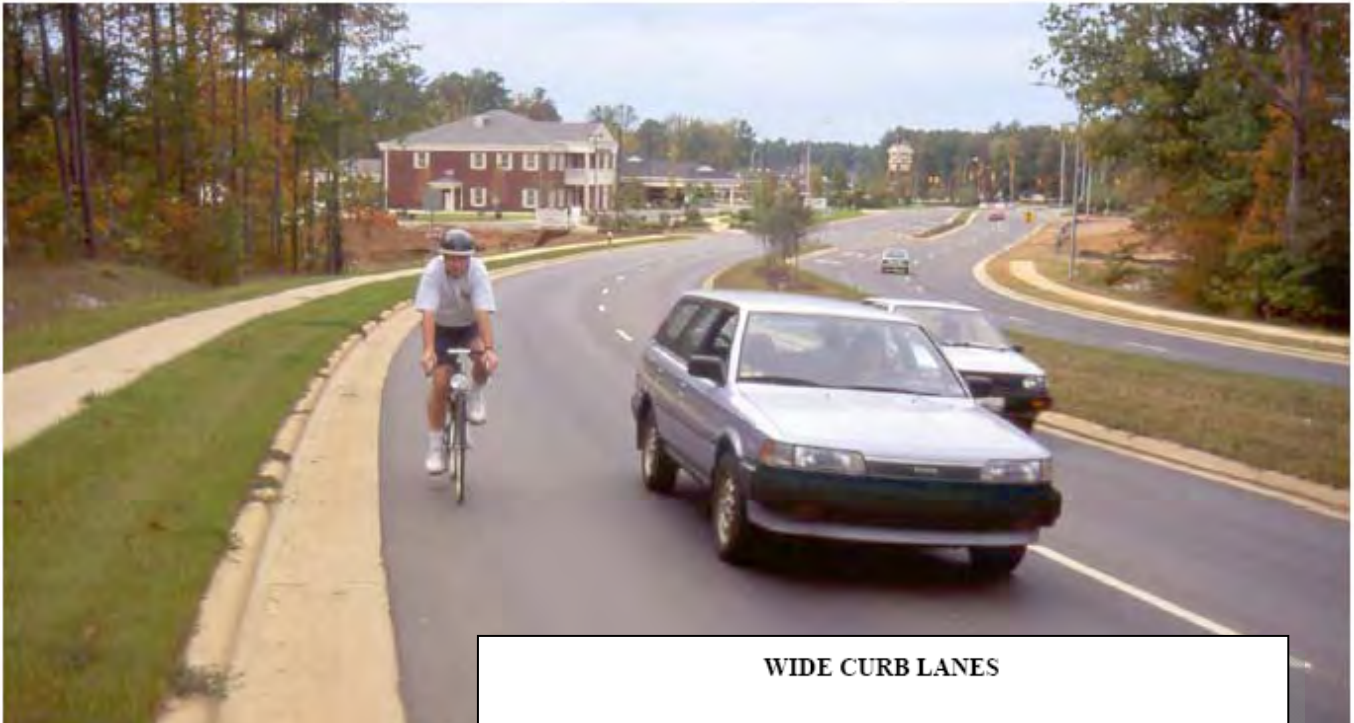
Recommended for:

- Rural roadways
- Secondary roads without curb & gutter with a limited number of driveways and intersections

Note:

- For roadways with speeds higher than 40mph and high ADT, wider shoulder widths are recommended.
- If rumble strips are installed, wide paved shoulders must maintain an unobstructed 4' width of bike accommodation.





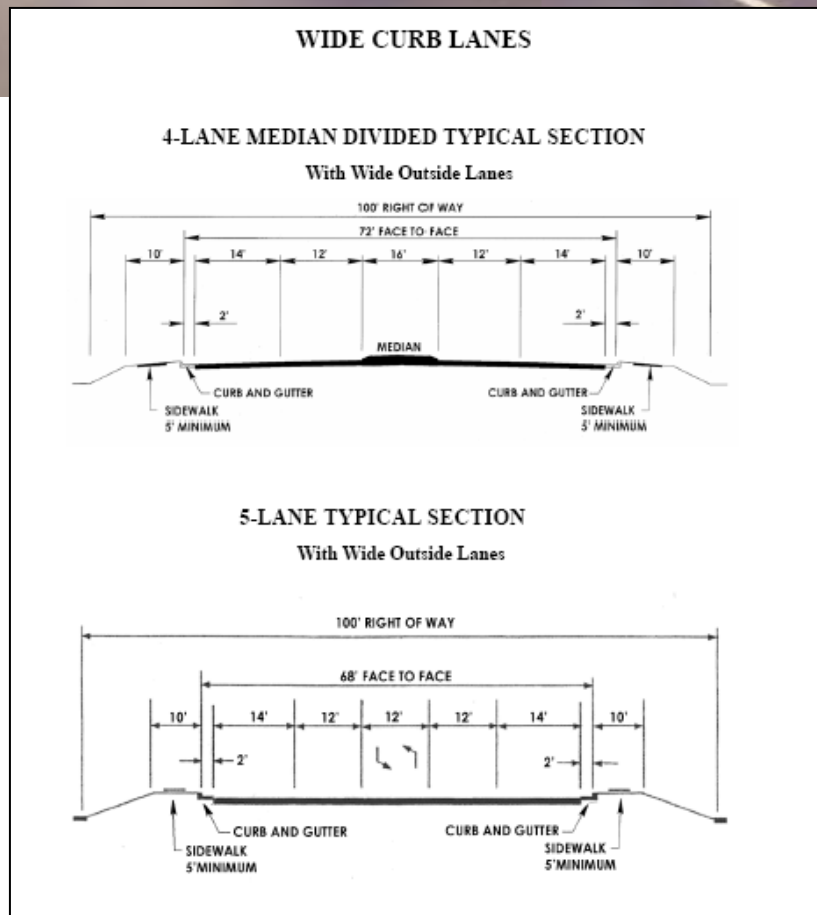
5.4 Wide Outside Lanes

Description:

Wide outside lanes (also known as Wide Curb Lanes) are comprised of extra width on a widened through lane closest to the curb and gutter. They allow motorists to move safely past slower moving bicyclists without changing lanes. Dedicated right turn only lanes are not used for wide outside lanes.

Recommended for:

- Four-lane roadways divided by a median or a center turn lane
- Low to medium volume local collector roads
- Wide roadways with curb & gutter where bike lanes are not feasible





5.5 Bike Lanes & Complete Streets

Description:

A portion of a road reserved for preferential or exclusive use by bicycles through striping, signing, and pavement markings at least four feet wide, not including concrete gutter pan.



Recommended for:

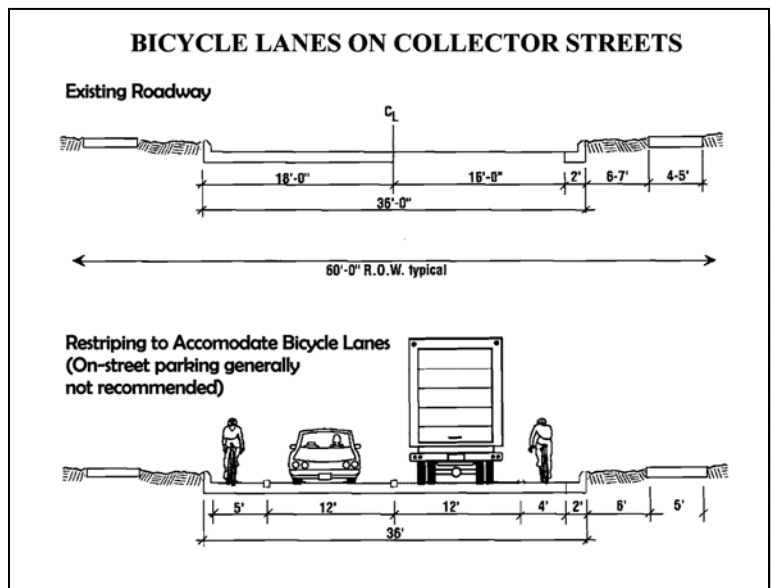
- Urban roads with curb and gutter
- Medium to high volume collector and arterial roads with curb and gutter

Complete Streets

Some streets can be retrofitted to allow sufficient width for bike lanes. This action requires evaluation of current lane widths, traffic volumes, and street classification.

See more at:

<http://www.smartgrowthonlineaudio.org/np2007/310c.pdf>





5.6 Multi-use Paths & Greenways

Description:

A pathway physically separated from motor vehicle traffic, within highway right-of-way or private easements or right-of-way. Multi-use pathways include bicycle paths, rail to trails or other facilities built for bicycle and pedestrian traffic. Travel surface is ten feet wide, with two-foot shoulders on either side. Total facility width is usually 20 feet.

Recommended for:

- Floodplains, sewer easements, public land
- Scenic corridors where easements or right-of-way may be obtained

