

*City of
Hutchinson*

Bicycle and Pedestrian Master Plan **Project No. 13-08**



**WILSON
& COMPANY**



Contents

1.0 Introduction..... 1

1.1 Benefits of Walking & Biking 1

Community Strength2

Safety.....2

Traffic & Air Quality2

Public Health2

Older Adults, the Disabled & Children2

1.2 Study Area.....3

1.3 Relevant Laws, Plans & Ordinances.....4

Chapter 15, Streets and Sidewalks (Hutchinson City Code)5

Chapter 23, Motor Vehicles and Traffic, Article V. Bicycles (Hutchinson City Code)6

Complete Streets Policy6

Kansas Bicycling Statutes6

Kansas Pedestrian Statutes.....8

Kansas Bicycle and Pedestrian Transportation Plan8

Linear Parks Master Plan8

MAP-21, Transportation Alternatives Program.....8

RCAT Rider Policies and Procedures9

Trail Courtesy and Public Safety (Trail Rules).....9

2.0 Public Involvement Process..... 10

2.1 Process..... 10

2.2 Engagement Techniques 11

Project Management Team11

Community Survey12

Open House12

2.3 What We Heard 13

3.0 Bicycle Facility Types 14

3.1 Share the Road..... 14

3.2 Bike Lane 16

3.3 Cycle Track 17

3.4 Bicycle Boulevard 18

3.5 Multi-use Path.....20



4.0 Pedestrian Facility Types..... 22

4.1 Detached Sidewalks22

4.2 Attached Sidewalks22

5.0 Existing Conditions..... 24

5.1 Speed.....24

5.2 Parking25

5.3 Traffic Volume.....25

5.4 Travel Lanes25

5.5 Additional Lane Widths.....26

5.6 Driveway Access32

5.7 Traffic Control32

5.8 Barriers32

5.9 Pavement Conditions.....33

5.10 Crash Characteristics38

5.11 Sidewalk Conditions.....42

 Sidewalk Presence.....42

 Sidewalk Typology42

 Sidewalk Condition42

 Sidewalk Widths.....43

5.12 Activity Generators.....49

 Schools49

 Recreation50

5.13 Multimodal Connectivity54

 Existing Bicycle Facilities.....54

 Transit55

 Linear Parks Master Plan Observations55

6.0 Bicycle Facility Opportunities & Constraints 63

6.1 Methodology63

6.2 Share the Road Application Potential.....65

6.3 Bike Lane Application Potential67

6.4 Cycle Track Application Potential69

6.5 Findings.....71



7.0 Pedestrian Facility Opportunities & Constraints 73

7.1 Methodology 73

7.2 Findings..... 74

8.0 Conclusion: City of Hutchinson, Bicycle & Pedestrian Master Plan..... 76

8.1 Bicycle Network 76

8.2 Pedestrian Network..... 89



1.0 INTRODUCTION

The City of Hutchinson, Kansas is developing their first Bicycle and Pedestrian Master Plan – a guiding document that provides direction on bicycle and pedestrian investments on the arterial and collector roadway network within the city limits. In 1999 the City developed the Linear Parks Master Plan which was similar in nature, but primarily focused on the off-street network/system of improvements. This study integrates the relevant elements of that Master Plan with an on-street network assessment. Section 1.1 outlines many of the benefits of bicycling and walking.

The City of Hutchinson is also undertaking efforts that many urbanized areas across the United States are doing – reclaiming Main Street to make it fit contextually in the community. When Main Street served as K-61, the primary function was to move vehicles and commerce in and through town. When the K-61 bypass was constructed, and Main Street was turned back to the City, the City gained the ability to reclaim the downtown and make Main Street function for the City, and not to accommodate regional traffic flows. The City is taking the opportunity to understand what options are available for Main Street to transform Hutchinson from a generally auto-oriented City to a multimodal friendly City. This Bicycle and Pedestrian Master Plan, coupled with the Main Street Concept Design between 7th Avenue and 30th Avenue, will provide a wonderful opportunity to engage the citizens of Hutchinson and provide a direction forward on these two very important efforts. The Main Street project is discussed in more detail in the Main Street Concept Plan report.

This report provides documentation of the existing conditions, and identified opportunities and constraints of the existing transportation system to integrate and accommodate bicycles and pedestrians safely within the public right-of-way. The Bicycle and Pedestrian Master Plan is laid out in a manner that takes the reader through the process of understanding how the ultimate bicycle and pedestrian master plan network was built through a thorough analysis process. This document is outlined as follows:

Chapter 1	Introduction
Chapter 2	Bicycle Facility Types
Chapter 3	Pedestrian Facility Types
Chapter 4	Existing Conditions
Chapter 5	Bicycle Facilities Opportunities & Constraints
Chapter 6	Pedestrian Facilities Opportunities & Constraints
Chapter 7	Linear Parks Master Plan Observations
Chapter 8	Conclusion: City of Hutchinson, Bicycle & Pedestrian Master Plan

1.1 BENEFITS OF WALKING & BIKING

Bicycling and walking are important to Hutchinson’s future because it potentially addresses several interrelated challenges, including traffic, air quality, public health, safety, and creating a sense of community. By planning a city that is more walkable the City can affect all of these areas, which collectively can have a profound influence on the quality of life in Hutchinson.



COMMUNITY STRENGTH

When people chose to walk or bike they increase the likeliness of chance meetings with other members of the community. These encounters build neighborhood and community relationships and provide “eyes on the street”, resulting in a real and perceived sense of safety. Additionally, improved bikeability and walkability significantly improve economic conditions in communities. Numerous studies have accounted for significant improvements in consumer cost savings, increased property values, and improved access to jobs for low- and moderate-income families. Other studies have found the related costs for roads, public parking, traffic congestion and crashes are significantly reduced by individuals shifting from motorized to non-motorized transportation modes.

SAFETY

Streets designed to accommodate pedestrians and bicyclists often result in safer conditions for bicyclists and pedestrians. Additionally, these streets often include other traffic calming measures that reduce vehicle travel speeds and provide access control. All of these improvements significantly reduce the number of crashes that occur along a roadway, particularly at driveways and intersections.

TRAFFIC & AIR QUALITY

When a person chooses to walk or bike they are removing one car from the road. With a more appealing bicycle and pedestrian environment a larger numbers of local trips will be made on foot, including shopping, restaurants, school, and recreational trips. This change in transportation choice has a cumulative impact on improving air quality. Poor air quality and air pollution have public health consequences including asthma and other respiratory conditions.

PUBLIC HEALTH

Public health and urban planning research indicates that impacts of automobiles on public health extend beyond air quality concerns to concerns about a lack of physical activity resulting from auto-oriented development patterns. The resulting consequence is various health-related issues including obesity and other chronic diseases such as coronary heart disease, stroke and diabetes. However, research also indicates that by providing pedestrian- and bicycle-friendly environments more people will choose to live an active and healthy lifestyle. As a result of this research many public health professions and organizations, such as the Kansas Health Foundation, have begun advocating for the creation of walkable and bikeable communities. As Hutchinson continues toward their goal of becoming a bike-friendly and walk-friendly city, they will witness a higher proportion of residents choosing to exercise and achieving recommended activity levels.

OLDER ADULTS, THE DISABLED & CHILDREN

Targeting pedestrian, bicycle and transit access improvements to these sectors of the population often results in high pedestrian, bicycle and transit user counts. Improved pedestrian and bicycle routes to schools provide a safe way for children to access school. The Safe Routes to School (SRTS) program from KDOT is a useful program for acquiring funding to design and construct sidewalk and bicycle facilities that connect students to their school. Properly designed pedestrian facilities can improve mobility and access for persons with disabilities. Many communities are actively going through the process of upgrading existing sidewalk and



path facilities to meet the latest Americans with Disabilities Act (ADA) design standards. Whether if the older adult population chooses to bicycle, walk or drive, improving pedestrian crossings, proving seating options, and improving lighting, signage and pavement markings are all beneficial improvements for communities with significant older adult populations.

1.2 STUDY AREA

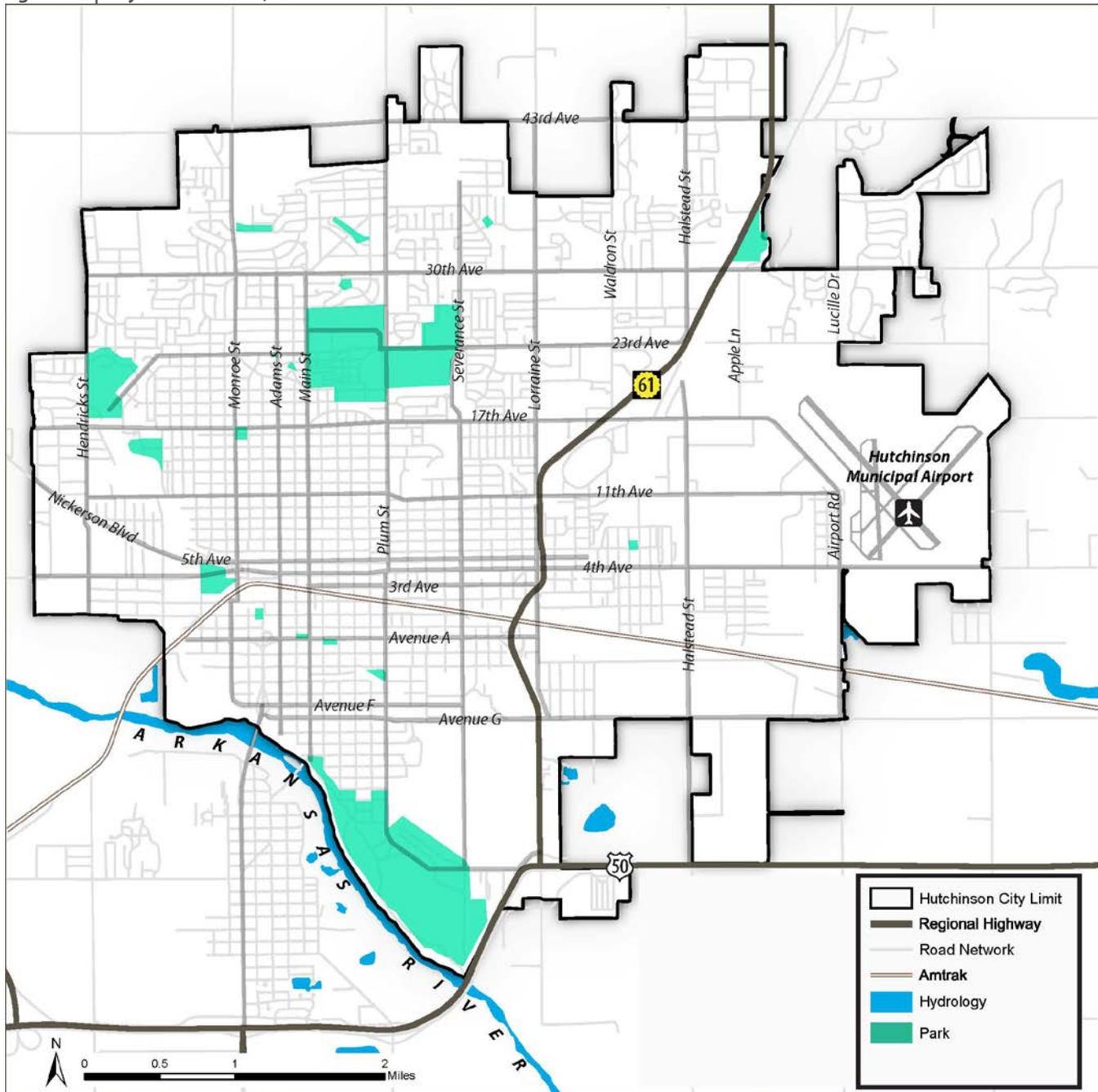
The Bicycle and Pedestrian Master Plan for Hutchinson, Kansas outlines a future multimodal transportation system for the full extent of the City limits. As Figure 1-1 illustrates, the City of Hutchinson is located northeast of the Arkansas River in central Kansas, less than 50 miles from downtown Wichita (less than a one hour drive). It is the largest city in Reno County and is the county seat. According to the 2010 US Census, the city had a total land area of 22.75 square miles and a population of 42,080. The City is located at the intersection of numerous transportation networks including three highways (K-61, K-96/K-14, and US-50), three railroad lines (utilized by BNSF Railways, Amtrak, Union Pacific, and Kansas & Oklahoma Railroad), and the Hutchinson Municipal Airport (Figure 1-2). Additionally, the Arkansas River borders the southern edge of the city with two key river crossings that connect Hutchinson to the City of South Hutchinson: the Woodie Seat Freeway and the Frank Hart Crossing.

Figure 1-1 | Hutchinson, KS Regional Vicinity





Figure 1-2 | City of Hutchinson, KS



1.3 RELEVANT LAWS, PLANS & ORDINANCES

A review of existing laws, plans, policies and ordinances that may impact bicycle and pedestrian facilities provides an understanding of current processes that guide these investments. This includes an understanding of all plans, reports or studies authored by the City of Hutchinson, Reno County, the State of Kansas and any other relevant public or semi-public agency. Table 1-1 includes a list of studies, plans and reports used as a reference for this Bicycle and Pedestrian Master Plan. The table summarizes all of these relevant resources; the



table includes the agency that authored the plan/study/report, the publication date, and the geographic context in relation to this study. A more detailed description of the relevant publications follows; they are organized alphabetically.

Table 1-1 | Relevant Laws, Plans & Ordinances

Plan, Code, or Statute	Date	Organization/ Agency	Geographic Context
Chapter 11, Trees and Shrubs, Article V. Street Trees	1994, 2002	City of Hutchinson	City-wide
Chapter 13, Parks	1972, 1976, 1996, 1997, 2007	City of Hutchinson	City-wide
Chapter 15, Streets and Sidewalks	1956, 1970	City of Hutchinson	City-wide
Chapter 23, Motor Vehicles and Traffic, Article V. Bicycles	1960, 1993, 1997, 1998, 2007	City of Hutchinson	City-wide
Complete Streets Policy	2012	City of Hutchinson	City-wide
Kansas Bicycling Statutes	1974, 1976, 1976, 1977, 1980, 1984, 1985, 1995	State of Kansas	State-wide
Kansas Pedestrian Statutes	1959, 1974, 1975, 1984, 1985, 1994, 1995	State of Kansas	State-wide
Kansas Bicycle and Pedestrian Transportation Plan	1995	Kansas DOT	State-wide
Linear Parks Master Plan	1999	City of Hutchinson	City-wide
Moving Ahead for Progress in the 21 st Century (MAP-21)	2013	US DOT	Nation-wide
Reno County Area Transit (RCAT) Rider Policies and Procedures	2013	Reno County Public Transportation Department	County-wide
Trail Courtesy and Public Safety (Trail Rules)	--	City of Hutchinson	City-wide

CHAPTER 15, STREETS AND SIDEWALKS (HUTCHINSON CITY CODE)

Relevant articles of **Chapter 15, Streets and Sidewalks** include Article I. In General and Article V. Driveway Approaches.

Relevant sections of **Article I**, In General include the following:

15-103 Obstructing streets or sidewalks generally. Any person who shall obstruct any street, alley, public grounds or sidewalks within the city, by piling, placing or maintaining thereon or therein any filth, litter, debris, equipment or other materials, or any goods, wares, merchandise or signs, or by placing or erecting any building or fence thereon, or by placing any benches or seats on any part of any sidewalk, or by removing any earth from any street, alley or public grounds or sidewalk except as hereinafter provided shall, upon conviction, be deemed guilty of a misdemeanor; provided, that nothing herein shall be so construed as to prohibit persons engaged in the erection of buildings or improvements from using a portion of the street adjacent to such building or improvements, in such manner and to the extent prescribed by the building regulations of the city; provided further, that the governing body shall have authority to grant the temporary use of the streets, alleys, sidewalks and public grounds in the public interests and when such permission is granted, this section shall not apply but such permission shall state for what purposes and the length of time such streets, alleys, sidewalks or public grounds shall be used and any violation of such permission shall be unlawful.



CHAPTER 23, MOTOR VEHICLES AND TRAFFIC, ARTICLE V. BICYCLES (HUTCHINSON CITY CODE)

Relevant sections of **Article V. Bicycles** include the following:

Sec. 23-502 Parking. No person shall park a bicycle upon a street or against a building or curb in such manner as to obstruct pedestrian traffic. Any bicycle parked upon a street in a manner not in compliance with the provisions of subsection "a" of this section shall constitute a nuisance and shall be abated by impounding of such bicycle by the chief of police. (*Ord. 2007-04, Adop. 2/20/07; Ord. 4750, Adop. 12/09/60*)

Sec. 23-503 Riding on sidewalks. No person shall ride a bicycle or skateboard or use in-line skates upon a sidewalk within the business district or any place within Avenue A Park. Persons riding upon any other such sidewalk shall yield the right-of-way to any pedestrian and shall give an audible signal before overtaking and passing such pedestrian. (*Ord. 2007-04, Adop. 2/20/07; Ord. 7575, Adop. 2/10/98, Ord. 7554, Adop. 6/17/97*)

COMPLETE STREETS POLICY

The *City of Hutchinson Complete Streets Policy* is an official, adopted City Council policy for the implementation of a multimodal roadway system. The policy purpose is to address the needs of all roadway users (pedestrians, bicyclists, transit riders, and automobile drivers) in design, construction, and maintenance of transportation infrastructure wherever feasible and fiscally appropriate. The policy includes definitions, guiding principles, applicability, as well as methods for data collection, progress reporting and public input.

KANSAS BICYCLING STATUTES

A review of relevant laws pertaining to bicycling in Kansas is necessary for effective plan development. The State of Kansas Bicycling Statutes is referenced on the City's website and includes the following:

8-1405. "Bicycle" defined. "Bicycle" means every device propelled by human power upon which any person may ride, having two (2) tandem wheels, either of which is more than fourteen (14) inches in diameter. (*L. 1974, ch. 33, § 8-1405; July. 1*)

8-1586. Unlawful acts; application of regulations. (c) The provisions of K.S.A. 8-1587 to 8-1592, inclusive, which are applicable to bicycles, shall apply whenever a bicycle is operated upon any highway or upon any path set aside for the exclusive use of bicycles, subject to those exceptions stated herein. (*L. 1974, ch. 33, § 8-1586; L. 1975, ch. 39, § 14; L. 1984, ch. 39, § 10; Jan. 1, 1985*)

8-1587. Traffic laws apply to persons riding bicycles. (All traffic laws apply to bicyclists) Every person riding a bicycle upon a roadway shall be granted all of the rights and shall be subject to all of the duties applicable to the driver of a vehicle by this act, except as otherwise provided in K.S.A. 8-1586 to 8-1592, inclusive, and except as to those provisions of this act which by their nature can have no application. (*L. 1974, ch. 33, § 8-1587; L. 1975, ch. 39, § 15; April 19*)

8-1588. Riding on bicycles. (Limitations specified on the number of riders per bicycle) (*L. 1974, ch. 33, § 8-1588; July 1*)

(a) A person propelling a bicycle shall not ride other than upon or astride a permanent and regular seat attached thereto.



(b) No bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped.

8-1590. Riding on bicycles or mopeds; riding on roadways and bicycle paths. (Bicyclists must ride to the right) (*L. 1974, ch. 33, § 8-1590; L. 1995, ch. 188, § 7; July 1*)

(a) Every person operating a bicycle or a moped upon a roadway at less than the normal speed of traffic at the time and place and under the conditions then existing shall ride as near to the right side of the roadway as practicable, except under any of the following situations when: (1) Overtaking and passing another bicycle or vehicle proceeding in the same direction; (2) preparing for a left turn at an intersection or into a private road or driveway; or (3) reasonably necessary to avoid conditions including, but not limited to, fixed or moving objects, parked or moving bicycles, bicycles, pedestrians, animals, surface hazards or narrow width lanes that make it unsafe to continue along the right-hand edge of the roadway.

(b) Any person operating a bicycle or a moped upon a one-way highway with two or more marked traffic lanes may ride as near to the left side of the roadway as practicable.

(c) Persons riding bicycles upon a roadway shall not ride more than two abreast, except on paths or parts of roadways set aside for the exclusive use of bicycles.

(d) Wherever a usable path for bicycles has been provided adjacent to a roadway, bicycle riders shall use such path and shall not use the roadway.

(e) For purposes of this section, "narrow width lane" means a lane that is too narrow for a bicycle and a vehicle to travel safely side-by-side within the lane.

8-1592. Lamps, brakes and other equipment on bicycles. (Light/lamp visibility specifications) (*L. 1974, ch. 33, § 8-1592; L. 1975, ch. 427, § 29; Aug. 15*)

(a) Every bicycle when in use at nighttime shall be equipped with a lamp on the front which shall emit a white light visible from a distance of at least five hundred (500) feet to the front and with a red reflector on the rear of a type approved by the secretary of transportation which shall be visible from all distances from one hundred (100) feet to six hundred (600) feet to the rear when directly in front of lawful lower beams of head lamps on a motor vehicle. A lamp emitting a red light visible from a distance of five hundred (500) feet to the rear may be used in addition to the red reflector.

(b) Every bicycle shall be equipped with a brake which will enable the operator to make the braked wheels skid on dry, level, clean pavement.

(c) No person shall sell a pedal for use on a bicycle, unless such pedal is equipped with a reflector of a type approved by the secretary of transportation which is visible from the front and rear of the bicycle to which it is attached during darkness from a distance of two hundred (200) feet, and no person shall sell a new bicycle, unless it is equipped with pedals meeting the requirements of this subsection.

Kansas State bicycle statutes do not indicate specifically how bike lanes or share the road facilities grant right-of-way to the cyclist. The standing statutes indicate that cyclists are entitled to the full use of a lane; this should be affirmed through signed city ordinance along roads with bicycle facilities.



KANSAS PEDESTRIAN STATUTES

The State of Kansas has developed statutes relevant to pedestrians. This file is *not* referenced on the City's website; however, state laws as they relate to pedestrian movement are important. These statutes can be found at the following website: <http://www.ksdot.org/burRail/bike/biking/KssidewalkStatutes.asp>

KANSAS BICYCLE AND PEDESTRIAN TRANSPORTATION PLAN

The most recent document relevant to bicycle and pedestrian planning for KDOT is the 1995 *Kansas Bicycle and Pedestrian Transportation Plan*. The plan "Purpose" states that KDOT's goal is to provide a statewide intermodal transportation system that provides opportunity for safe and convenient pedestrian and bicycle transportation as part of residents' everyday lives. The document is a component of the Kansas Long-Range Transportation Plan (LRTP) that serves as a broad based policy guide for KDOT's planning process.

This plan also identifies the potential funding programs for bicycle and pedestrian enhancements and the project funding history of this program. At the time of adoption of this plan, federal law stipulated that Kansas annually allocate 10% of the Surface Transportation Program (STP) to be spent on Transportation Enhancement (TE) projects (divided into three categories: historic; scenic/environmental; bicycle/pedestrian). KDOT's TE program included a competitive application process; bicycle and pedestrian applications were reviewed by KDOT's Bicycle and Pedestrian Coordinator. Requirements for TE projects were broad including: meeting all federal, state and local laws; constructed to standards and guidelines including American Association of State Highway and Transportation Officials (AASHTO); demonstration of public support; and other requirements. The TE funding program was determined based on the then current federal transportation law, Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). Since then a new federal transportation law has changed the way transportation projects, including pedestrian, bicycle and trail projects, are funded within the State. The new federal transportation law, Moving Ahead for Progress in the 21st Century Act (MAP-21) (P.L. 112-141), became law in July of 2012. MAP-21 includes a new program titled "Transportation Alternatives."

For further information on bicycling in Kansas, please reference the *Kansas Bicycle Guide*, published by the Kansas Department of Transportation (KDOT): <http://www.ksdot.org/burRail/bike/biking/ksbicyguid.asp>

LINEAR PARKS MASTER PLAN

The *City of Hutchinson Linear Parks Master Plan* was adopted in 1999 as a guiding document for build out of a city-wide trail system. The planned trail system includes 31 different trail routes made of varying materials, including asphalt, limestone gravel, and concrete. Three of the trail routes include segments of on-street bike lane or bicycle route facilities. The plan also outlines trailhead locations and criteria. An assessment of this plan is further described in Chapter 7.

MAP-21, TRANSPORTATION ALTERNATIVES PROGRAM

Signed into law in July 2012, *Moving Ahead for Progress in the 21st Century Act* (MAP-21) (P.L. 112-141) includes a new program titled "Transportation Alternatives" (TA). The TA program combines bicycle and pedestrian funding that were previously separated into National Recreational Trails, Transportation Enhancements (TE), and Safe Routes to School (SRTS) programs. Allocation of the TA funds includes specific funding for the



Recreational Trails Program being utilized first and the remaining TA funding being divided evenly between KDOT’s competitive grant process and a scaled allocation of funds for geographic areas based on the population as a percentage of the state.

KDOT is implementing the TA program by continuing to do separate calls for projects for SRTS, TE, and Recreational Trails programs. The SRTS applications can be submitted between March and June annually. KDOT releases a call for proposals for all other TA eligible projects in the fall. KDOT provides several useful resources for TA funding applications; these resources are listed in the table below.

Table 1-2 | KDOT MAP-21 Transportation Alternatives Resources

Title	Website
Transportation Alternatives Application Guidance, 2014	http://www.ksdot.org/burtransplan/TransEnhance/TransportationAlternativeProgramApplicationGuidance.pdf
Transportation Alternatives Program website	http://www.ksdot.org/burtransplan/TransEnhance.asp
Transportation Alternatives Workshop (archived presentation), 2013	http://www.ksdot.org/burtransplan/TransEnhance/TEwebpg.pdf
Kansas Safe Routes to School	https://www.ksdot.org/burTrafficEng/sztoolbox/Safe_Routes_to_School.asp
Safe Routes to School Application Guidance, 2013	http://www.ksdot.org/burTrafficEng/sztoolbox/pdf/SRTS-Application.pdf
T-Works Program, Local Partnership Opportunities	http://www.ksdot.org/tworks/ecodevo/programs.html
Recreational Trails Funding Press Release, 2012	http://www.ksdot.org/PDF_Files/recreationaltrailsrelease.pdf

RCAT RIDER POLICIES AND PROCEDURES

Published October 2013, the *RCAT Rider Policies and Procedures* is a guide to the services and policies of RCAT. Relevant information referenced from this report includes information about the transit system, transit service types, funding allocations, and designated stop locations. Further information on RCAT service in Hutchinson is provided in the Existing Conditions section of this report.

TRAIL COURTESY AND PUBLIC SAFETY (TRAIL RULES)

The *Trail Courtesy and Public Safety* file provided on the City’s website includes a list of trail rules, a list of “important things to remember”, and “bicycle safety tips”. Some important components to mention in regards to trail operations include the following:

- The trail is multi-use for pedestrians and bicyclists; trail users should ride on the right side and pass on the left.
- Pedestrians have the right-of-way; bicyclists should alert others of their approach.
- When crossing streets, pedestrians and bicyclists should yield to vehicles and cross with caution.
- Pulling into traffic from between parked cars is discouraged.
- Bicyclists should ride with the flow of traffic and not against it.



2.0 PUBLIC INVOLVEMENT PROCESS

2.1 PROCESS

The Public Involvement Process for the Bicycle and Pedestrian Master Plan (BPMP) and Main Street Concept Design (MSCD) was strategically designed to engage with groups that are already actively involved on these topics in the community and to build excitement in the community and to broaden the audience of interested individuals. This strategy was developed as a multi-part process focusing on transparency and engagement with the goal of fostering ownership in the plan documents and the plan outcomes; Figure A-1 illustrates this simplified Public Involvement Process Goal.

Figure 2-2-1 | Public Involvement Process Goal



Throughout the planning process, a series of public and stakeholder outreach activities were conducted. The ultimate goal of the outreach effort was to provide educational materials and ensure opportunities for stakeholder and public feedback which allowed for greater support and community ownership of the resulting recommendations. The outreach process provides citizens, affected public agencies, and other interested parties with reasonable opportunities to be involved in the planning process. The engagement techniques specific to the Bicycle and Pedestrian Master Plan are listed in Table A-1 and are more fully described in Section 2.2.

Table 2-2-1 | Engagement Techniques

Audience	Activity
City	Project Management Team (PMT) Meetings
Public/Stakeholders	Community Survey Open House
Media	Newspaper Article City Website



2.2 ENGAGEMENT TECHNIQUES

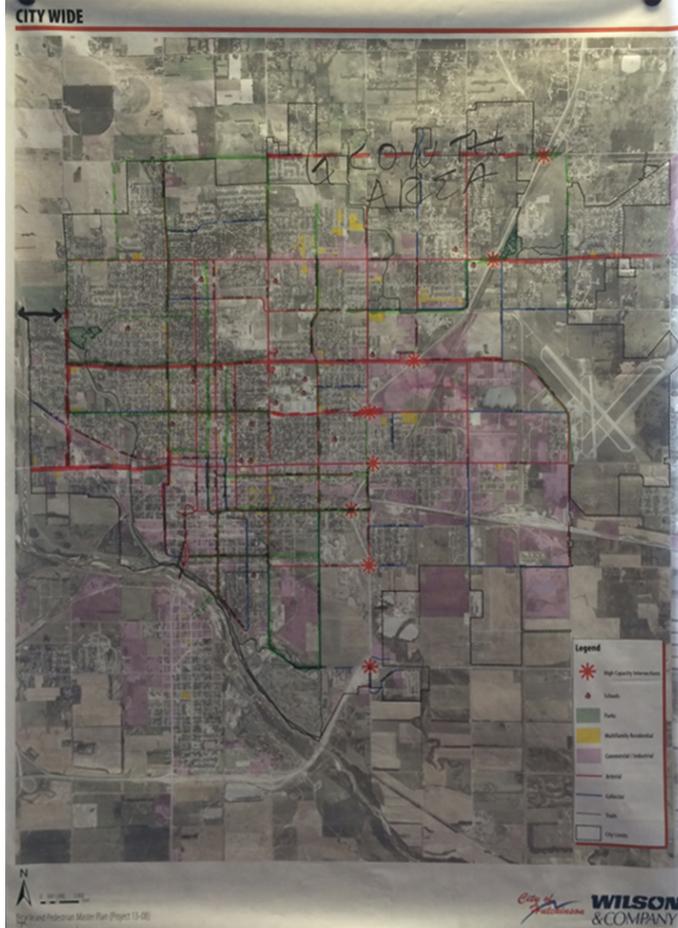
The following subsections define the intent and outcome of each of the engagement activities previously listed in Table 2-1.

PROJECT MANAGEMENT TEAM

The Project Management Team (PMT) is comprised of fourteen individuals including city staff and any additional outside agency representatives the City views as critical partners in implementing these plans. The PMT was charged with data compilation, stakeholder identification, and vetting the BPMP against existing agency policies and plans. The PMT meetings and updates provided for an organized communication structure between the consultant team and the PMT. The PMT met at two strategic points in the project at key milestones and prior to any public outreach activities.

The first PMT meeting was held October 29, 2013, 1:30pm to 3:30pm at the Water Treatment Center (23rd and Severance). This meeting focused on kicking off the project, discussing the project’s scope and schedule, and discussing the role of the PMT on this project. Additionally, the consultant team conducted an exercise with the PMT to gain initial thoughts on the topic of biking and walking in the community. Figures 2-2 captures the notes taken during this exercise.

Figure 2-2 | PMT Initial Thoughts on Bicycle and Pedestrian System





The second PMT meeting was held March 18, 2014, 1:30pm to 3:30 at the City Hall Council Chambers. At this meeting the consultant team updated the PMT on the current status of both project and prepared them for the first public open house that would occur a few weeks after this meeting. Conversations on the BPMP covered the latest community survey results, the existing conditions analysis, the bicycle facility assessment, and the pedestrian facility assessment. Eight of the fourteen PMT members attended this meeting.

COMMUNITY SURVEY

A community survey was created to capture opinions of the broader community regarding bicycle and pedestrian movement throughout the City. The survey was hosted via the Survey Monkey website and a link and advertisement for the survey was provided on the City's website. Additionally, the Reno County Chamber of Commerce utilized funding from their Healthy Communities Initiative grant to fund a full page advertisement for the survey and the upcoming public meeting. In total, 834 responses were gathered for the BPMP survey. Figure 2-3 illustrates this newspaper advertisement. The summarized survey results are included in Appendix A: Companion Products.

Figure 2-3 | BPMP Survey Newspaper Advertisement



OPEN HOUSE

Instead of formal town hall meetings, the consultant team and PMT determined that conducting an open house meeting would provide some flexibility in attending the meeting and would allow citizens to have one-on-one conversations with the consultant team and City staff. This method allowed for a more constructive conversation between the public and project team and provided some assurance for the meeting attendees that their opinions were heard.



The first open house was held April 1, 2014, 1:30pm to 6:30pm at the Homebuilders Shelter Building in Carey Park. In total, more than fifty individuals attended this open house. At the open house attendees were stepped through the factors related to bicycle and pedestrian planning city-wide and were shown the preliminary results of that analysis. All of the Open House boards are displayed in Appendix A: Companion Products. A second open house was held during the charrette week which will be further discussed in the following section.



Photo Caption | Open House 1



2.3 WHAT WE HEARD

We took to heart the feedback from many area residents and stakeholders throughout these public involvement exercises. The team had the opportunity to reach out, listen and learn through surveys, open houses, charrettes, project management team meetings, and walking tours.

Despite a variety of interests in the community, the overwhelming support for city-wide bicycle and pedestrian improvements was apparent. Importantly, we heard overwhelming support that although bicycle facilities are not ideal on all corridors throughout the city, it is important to plan for where they are best incorporated as part of a robust multimodal transportation system.



3.0 BICYCLE FACILITY TYPES

There are three types of bicycle facilities that are widely implemented in urban environments: share the road facilities (which include signed bike routes and sharrows), bike lanes, and cycle tracks. There are other facility types; however, they are simply modified versions of the aforementioned facilities.

The level of protection varies between these facility types. Generally the more separated a bicyclist is from vehicular traffic the greater the level of protection and real or perceived sense of safety. Figure 3-1 illustrates the variation in level of protection for bicycle facilities by bicycle facility type.

Figure 3-1 | Most to Least Protected Bicycle Facilities



3.1 SHARE THE ROAD

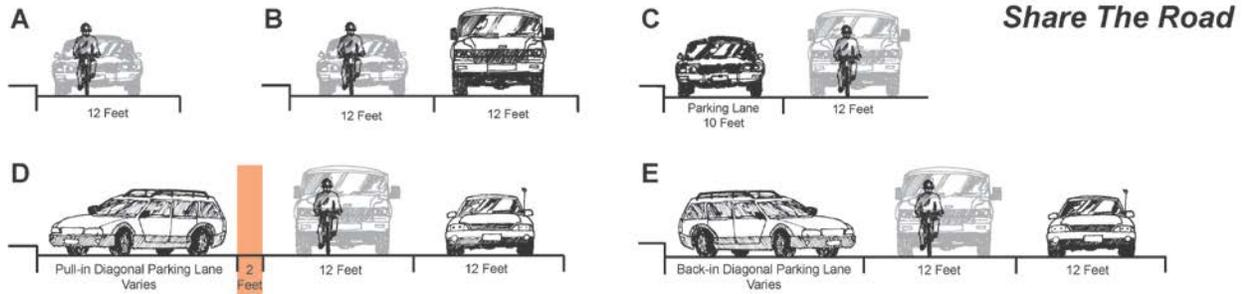
Share the road facilities (also known as sharrows) are the most widely implemented facility types in the United States, the appeal to municipalities is that they are very inexpensive and generally require no capital improvements to the road width. Share the road facilities require careful considerations in terms of streets in which they are incorporated. This treatment is typically reserved for streets with low traffic volumes and slower speeds as the travel lanes are shared by both vehicles and bicycles.





Figure 3-2 illustrates ideal applications for share the road facilities based on street section conditions. In the figure there are five main facility application types: A) two lanes with no on-street parking; B) four lanes with no on-street parking; C) two lanes with parallel parking; D) four lanes with pull-in diagonal parking; and E) four lanes with back-in diagonal parking.

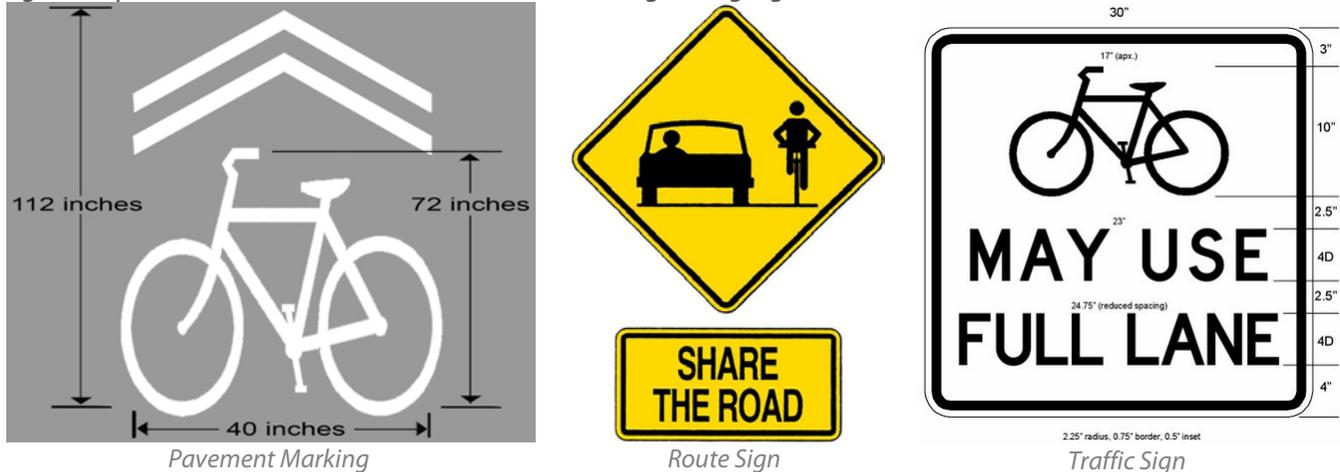
Figure 3-2 | Share the Road Facility Types



Types A through C are most commonly seen in cities throughout the Midwest, often these facilities will be accompanied by share the road signage, bike route signage, sharrows pavement markings, and/or ordinance signage. It is critically important that visible signage noting city ordinances accompany share the road facilities as this type of facility has no line delineation to separate vehicle and cyclist travel lanes. Some typical signage types recommended by AASHTO, MUTCD and FHWA are provided in Figure 3-3. The existing City of Hutchinson ordinances do not address safe passing distances; it is recommended that the City adopt an ordinance similar to the City of Prairie Village, Kansas, *Article 3. Obedience to and Effect of Traffic Laws, Sec. 40. Overtaking a Vehicle or Bicycle on the Left.*

Motorists and cyclist can become confused as to who has right-of-way within the travel lane. Typically a share the road facility behind pull-in diagonal parking is dangerous for the cyclist and should be accompanied by a delineated buffer no smaller than 2 feet. To avoid this hazard, diagonal parking can be reversed so vehicles back-in to diagonal parking spaces. This application mitigates two problems, first it allows cyclists to make eye contact with the driver of the vehicle on the driver's side, and second, it allows drivers to see oncoming cars or cyclists before entering the travel lane.

Figure 3-3 | Recommended Share the Road Pavement Marking and Signage





3.2 BIKE LANE

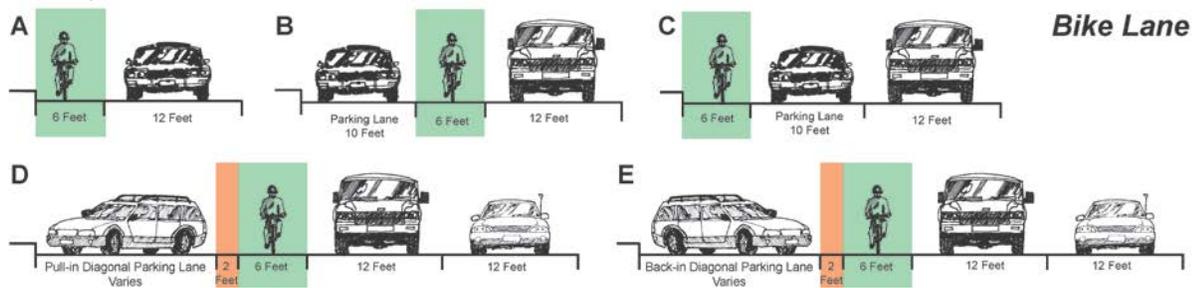
Bike lanes are relatively inexpensive bicycle treatments that can go a long way in helping to increase safe and convenient cycling. Given roadway conditions, particularly geometry, roadway width, traffic volume, and number of travel lanes, bike lanes can be installed economically.

One of the largest advantages of implementing bike lanes is that they delineate the travel lanes for cyclists and drivers. This delineation cannot be overemphasized when considering the safety of users of bike lanes. Additionally, bike lanes are easily recognizable to drivers and help to visually communicate city ordinances in relation to shared right-of-way use. Whenever road conditions permit a bike lane, this facility type should be considered over share the road facilities, especially in the case of higher traffic volumes or wide streets.



Figure 3-4 illustrates five different bike lane facility types that are applicable to the road network in Hutchinson. The different applications include: (A) typical application; (B) bike lane with on-street parallel parking; (C) parking lane buffered bike lane; (D) pull-in diagonal parking lane with a buffered bike lane; and (E) back-in diagonal parking lane with a buffered bike lane. The typical applications vary between three to five feet for the bike lane width, however, six feet is strongly recommended for bike lanes to increase comfort and safety for both the cyclist and driver.

Figure 3-4 | Bike Lane Facility Types



The 2012 AASHTO Guide for the Development of Bicycle Facilities recommends a minimum of five feet for bicycle lanes. Where roadways have no curb and gutter and no on-street parking the minimum width of a bike lane is four feet. Bike lanes wider than five feet are recommended under several circumstances including high-volume streets, high speed streets, truck routes, where on-street parking is present, or to allow two bicyclists to ride side-by-side.

Bike lanes along streets with parallel parking can avoid potential conflicts with drivers exiting vehicles if there is an adequate buffer. This buffer is recommended when a bike lane is narrower than five feet. With a six foot bike lane, the cyclist has enough room to maneuver around curb side obstacles while avoiding the travel lane traffic. Bike lanes buffered by parallel parking (type C) provide an excellent barrier to ensure the safety of the

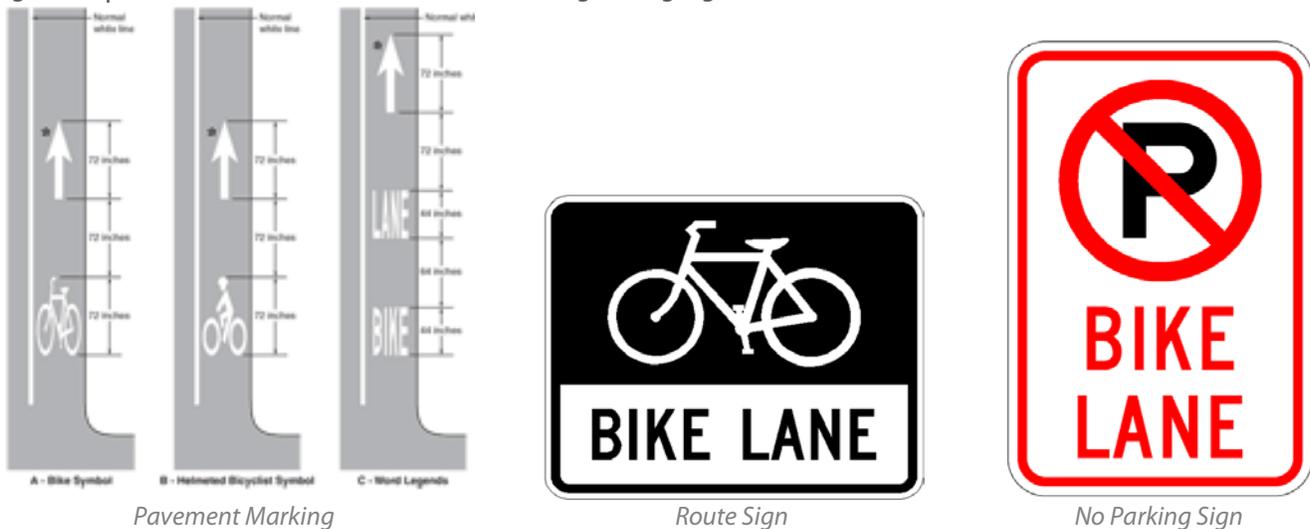


cyclist and drivers exiting vehicles. These applications are best implemented along commercial corridors or near high density residential developments. Additionally, the width of the bike lane is more flexible with this application and a six foot lane width may not be necessary for optimal comfort.

Similar to share the road facilities, bike lanes are not highly recommend along roads with pull-in diagonal parking. However, if there is an adequate buffer (two feet) between the bicycle and parking lane, a safe facility is possible. Ideally, if bike lanes are to be implemented along a street with diagonal parking, the parking should be switched to back-in. As mentioned in the previous section, this application helps mitigate the risk for the cyclist and driver, adding the bike lane facility greatly improves both actual and perceived safety.

It is highly recommended that bike lanes be constructed with proper pavement markings and signage to inform drivers that the bike lane is not a roadway shoulder or parking area. Some typical signage types recommended by AASHTO, MUTCD and FHWA are provided in Figure 3-5.

Figure 3-5 | Recommended Bike Lane Pavement Marking and Signage



3.3 CYCLE TRACK

Cycle tracks utilize similar applications as bike lanes but they include a physical buffer and can also facilitate two-way movement within the traveled area. Cycle tracks are often utilized for highly trafficked roads and facilitate inclusive use for riders of all comfort levels. The advantage of cycle tracks, as opposed to off-street facilities, is that they provide a similar level of comfort to the cyclist without the large expenditure of constructing off-street trail facilities.

Figure 3-6 illustrates four typical applications of cycle tracks: (A) a single cycle track is essentially a bike lane with a bollard system or curb barrier; (B) a cycle track buffered by a parallel parking lane; (C) a two-

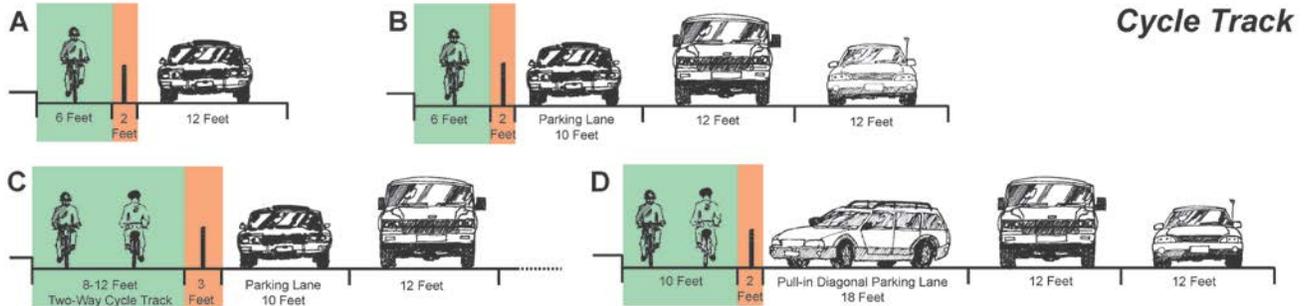


Photo: City of Austin, TX



way cycle track (or contra-flow) buffered by on-street parallel parking; and (D) a two-way cycle track buffered by pull-in diagonal parking.

Figure 3-6 | Cycle Track Facility Types



The protection level of cycle tracks is high. Given adequate curb to curb width of a street, cycle tracks can make some of the most undesirable bicycle routes feel comfortable and make the route more appealing. However, this does not hold true for all routes. Despite the protection level afforded by a cycle track, some streets may have very low application potential as a cycle track route. This can be due in part to the presence of a large concentration of unrestricted driveways and frequency of traffic signals within a mile. Cycle tracks work best along uninterrupted arterials and collectors where cars interact with the cycle track as little as possible. This is because the cycle track acts as a barrier for turning movements of vehicles and vehicles entering or exiting a driveway.

Signage and pavement markings for cycle tracks are not consistently applied across the country. A cycle track can be implemented by using the same signage as a bike lane but incorporating a physical barrier such as bollards, a curb, or on-street parking located between the cycle track and the vehicular travel lanes. Figure 3-7 illustrates some examples of cycle track facilities that include colored pavement markings and signage.

Figure 3-7 | Recommended Cycle Track Pavement Marking and Signage



3.4 BICYCLE BOULEVARD

Bicycle boulevards function very similarly to a share the road facility but can include traffic calming devices that help to lower the speed and increase safety for bicyclists. Candidate streets are typically low volume and low speed streets that have the potential for high bicycle ridership because of proximity to many destinations or adjacency to a corridor with high vehicular traffic volumes or speed.



Traffic calming is the intentional design of a roadway to slow down traffic and improve safety for pedestrians and bicyclists. Typical traffic calming strategies are illustrated in Figure 3-8 and include:

- Speed hump
- Speed table
- Raised crosswalk
- Raised intersection
- Traffic circle
- Roundabout
- Chicane
- Pedestrian refuge
- Center island narrowing
- Neckdown
- Diagonal diverter
- Median



Photo: "Bicycles May Use Full Lane" - Madison, WI

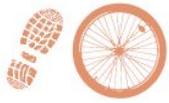
Figure 3-8 | Typical Traffic Calming Strategies

What is traffic calming?

Traffic calming is the intentional design of a roadway to slow down traffic and improve safety for pedestrians and bicyclists.

Typical strategies include:

		
Speed Hump	Traffic Circle	Center Island Narrowing
		
Speed Table	Roundabout	Neckdown
		
Raised Crosswalk	Chicane	Diagonal Diverter
		
Raised Intersection	Pedestrian Refuge	Median



Bicycle Boulevard pavement markings are similar to those used for Share the Road facilities. However, signage for these facilities often also includes directional wayfinding signs as well as placemaking signage that identify the route as a “significant place”. Examples of these pavement markings and signs are included in Figure 3-9.

Figure 3-9 | Recommended Bicycle Boulevard Pavement Marking and Signage



Pavement Marking



Route Sign



Wayfinding Sign

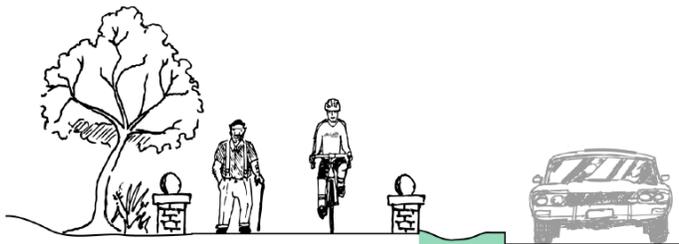


Street and Wayfinding Sign

3.5 MULTI-USE PATH

Multi-use paths are off-street facilities reserved for the use of pedestrians and bicyclists exclusively. These paths are typically built for recreational riders and typically do not serve local trip options or experienced riders. Figure 3-10 illustrates a conceptual layout of a multi-use path. To accommodate pedestrians and bicyclists as well as two way traffic, a 10 to 12 foot width of the path is recommended.

Figure 3-10 | Multi-use Path



10 to 12 Feet Multi-use Path



Signage and markings for Multi-use Paths can vary. Identified in Figure 3-11 are recommended signage illustrating proper use of the path, path etiquette, and path routing and wayfinding. Figure 3-12 illustrates example pavement markings and traffic control devices to use when Multi-use Paths intersect with roadways.

Figure 3-11 | Recommended Multi-use Path Signage



Pavement Marking



Wayfinding and Etiquette Sign



Figure 3-12 | Recommended Multi-use Path Intersection Marking



Local Road with Stop Sign



Local Road with Flashing Beacon



Local Road with No Traffic Control Device



Collector Road with Refuge



Collector with Hawk Signal



Arterial with Signalized Intersection



Bicycle Lane to Path Transition



4.0 PEDESTRIAN FACILITY TYPES

The existing pedestrian facilities in Hutchinson can be classified in two types: detached sidewalks and attached sidewalks. These two facility types are not exclusive to urban or suburban development patterns. The two facility types can be integrated along any functional classified street and are considered a base standard for streetscape design.

4.1 DETACHED SIDEWALKS

Detached sidewalks are sidewalks that incorporate a buffer between the traffic lane and the pedestrian zone. These buffers can be merely concrete extensions of the sidewalk or they can be landscaped with bollards, planters, grass, textured surfaces, or trees. The main idea is to provide a barrier between the street and pedestrian zone. Figure 4-1 illustrates common types of detached sidewalks; the buffer zone of a detached sidewalk can vary depending on local or state design standards.

The width of the sidewalk is important in understanding the functionality of the sidewalk space and its capacity for pedestrian movement. A four foot detached sidewalk typically is designed to accommodate the lowest amount of pedestrian traffic and is wide enough for one person to walk comfortably. The most common application of this type of facility is along residential streets. A five foot detached sidewalk is very similar in function to the four foot detached sidewalk but allows for up to two people to walk comfortably side-by-side. A seven or eight foot detached sidewalk will allow up to three people to walk comfortably and can accommodate larger volumes of pedestrian traffic; this type of detached sidewalk is more appropriate in areas with higher amounts of commercial or institutional land uses. Lastly, ten foot detached sidewalks are the optimum facility for pedestrians in heavily trafficked commercial areas. This sidewalk type can accommodate four people abreast and has a larger capacity to handle higher than normal pedestrian activity. Additionally, in less developed areas a ten foot pedestrian route may be designed and engineered to operate as a multi-use path accommodating both pedestrians and bicyclists.

4.2 ATTACHED SIDEWALKS

Attached sidewalks are sidewalks that are not separated or protected from the curb. This facility type is more common in older or historic blocks where there are large concentrations of commercial and public/institutional uses. This is the common type of sidewalk facility in downtown Hutchinson. This facility type is also found along commercial corridors and sometimes in residential developments where there may be a smaller right-of-way.

Figure 4-2 illustrates four common applications of attached sidewalks; the difference in types is that as the width increases the capacity of the pedestrian zone increases. When compared against Figure 3-2, attached sidewalks do not accommodate as many pedestrians as detached sidewalks; this is because pedestrians tend to shy away from vehicular traffic. For this reason, attached sidewalks are not recommended for highly trafficked corridors. In the instance of a road right-of-way being narrow, attached sidewalks can be implemented as long as there is ample width given the demand of the facility.



Figure 4-1 | Detached Sidewalk Types and Capacity

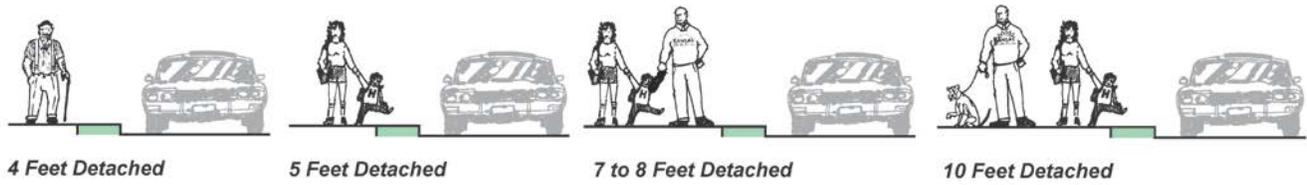


Figure 4-2 | Attached Sidewalk Types and Capacity





5.0 EXISTING CONDITIONS

The City of Hutchinson provided the study team with an extensive GIS dataset to perform an in-depth evaluation of the existing physical conditions associated with bicycle and pedestrian travel within the city limits. The arterial and collector roadway network within the city was analyzed based on ten criteria, including:

- speed limits;
- parking;
- traffic volume;
- travel lanes;
- road and lane widths;
- driveway access;
- traffic control;
- physical barriers;
- pavement conditions; and
- crash characteristics.

The following subsections provide a discussion and summary of the evaluations.

5.1 SPEED

Speed plays a significant factor in determining the application potential of a bicycle facility. Generally, roads with a speed limit of 35 mph or greater are not recommended for on-street shared bicycle facilities as the probability of fatal or disabling crash is high. Roads where the speed limit is 30 mph or less have a preferable application potential for most bicycle facility types. Figure 5-1 illustrates how speed affects peripheral vision of the driver. As Figure 5-2 illustrates, as speed increases crash severity increases.

Figure 5-2 | As Speed Increases Crash Severity Increases

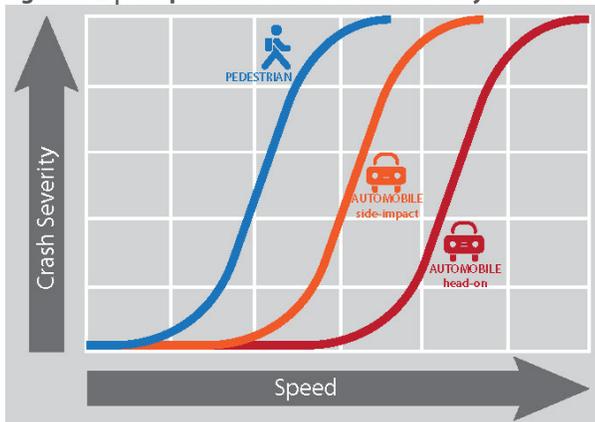
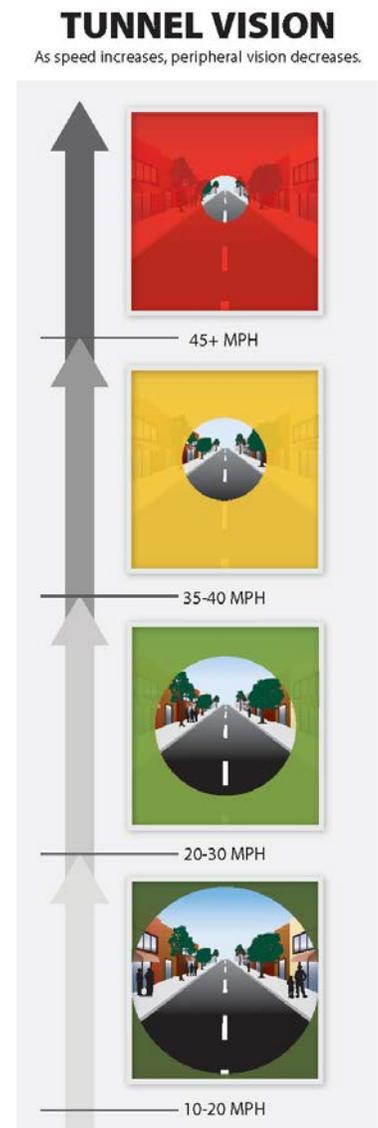


Figure 5-3 illustrates the speed limits on the arterial and collector roadway network. Three speed breakpoints were examined to understand area opportunities and constraints including: limits of 30 mph and under, 35 to 45 mph, and 45mph and higher. A majority of the arterial and collector streets have speed limits at or below 30 mph and are concentrated west of K-61, predominantly around the downtown area. Generally, streets along the outer periphery of the city have higher speed limits, in particular 30th Avenue, Airport Road, and 43rd Avenue. Community residents are often concerned that

Figure 5-1 | Traveling Speed Affects Driver's Peripheral Vision





a slower speed limit will add unnecessary travel time. As an example, if you were to reduce the speed on 30th Avenue from 40 mph to 30 mph the time it would take to travel from Main Street to K-61 would increase by just one minute and 22 seconds (1' 22"). Given how significant a factor speed is in terms of safety, this is a tradeoff many communities are willing to consider for certain routes.

5.2 PARKING

Parking conditions also influence the safety and acceptance of on-street bicycle facilities. As a rule of thumb, streets with pull-in diagonal parking are not recommended to include share the road bicycle facilities; rather bicycle facilities on these roads should be segregated facilities. As discussed in Chapter 3, the only instance where diagonal parking can interact safely with a bicycle facility is when the parking is back-in or there is a significant buffer (minimum 2') from the bicycle facility like a cycle track. Parallel parking, on the other hand, is generally safe for most bicycle facility types. In all instances caution is urged; buffers between parking lanes and bike lanes and share the road markings should be moved further into the travel lane and be accompanied by signage. Figure 5-4 calls out locations of diagonal parking.

5.3 TRAFFIC VOLUME

Very similar to speed characteristics, traffic volume is a significant factor in determining the level of safety and application potential of a bicycle facility. Generally, roads with a traffic count under, 5,000 vehicles per day can support most bicycle facilities without a buffer or dedicated facility. Roads which have traffic volumes over 5,000 vehicles per day can still provide for safe bicycling activities but are encouraged to have additional protection such as a buffered bike lane or cycle track. Share the road facilities are generally not recommended, unless there is a generous paved shoulder, bike lanes are moderately recommended, and cycle tracks have the greatest application potential because there is a physical barrier separating the cyclist from traffic.

Figure 5-5 illustrates the 24 hour traffic volume classifications for the City of Hutchinson for the arterial and collector street system. The most heavily used roads are 30th and 17th Avenues between Main Street and K-61, suggesting that these arterials act as regional connectors from K-61 west towards destinations between Main Street and the highway. These east-west arterials are further served by Plum Street, Severance Street, and Lorraine Street between 17th and 30th Avenue, which carry over 12,000 trips per day and higher. Similarly, 11th Avenue, 4th Avenue, and Avenue A carry traffic from the west towards downtown destinations, but with lower daily volumes.

5.4 TRAVEL LANES

Travel lane characteristics, in conjunction with traffic volume, play a key role in the application potential of bicycle facilities. Two lane roads generally have less capacity to carry large volumes of traffic; however this is not to suggest that all two lane roads would be the only roadways recommended for bicycle facilities. Four lane roads can provide the same level of comfort to a cyclist as a two lane road if the appropriate facility conditions are available. Figure 5-6 illustrates the number of travel lanes for the arterial and collector streets throughout the city. Three and five lane roads indicate a center turn lane is present, Predominantly most of the streets in Hutchinson are 2 or 3 lanes, and there are only sections of some arterials that are 5 lanes wide, specifically; Main Street, 17th Avenue, 30th Avenue, and Lorraine Street.



5.5 ADDITIONAL LANE WIDTHS

Analyzing road width in relation to the number travel lanes is important when evaluating the application of bicycle and pedestrian facilities. Larger road width in the absence of on-street parking can facilitate more comfortable bicycle facilities for the average rider. Typically, the ideal width for any bicycle facility is five to eight feet of clear surface. Determining the available curb to curb space on arterials and collectors can help identify potential locations for on-street bicycle facilities that can be easily implemented for a fraction of the cost of improving the roadway surface or constructing paved off street facilities within the right-of-way. Pedestrian facilities, more specifically pedestrian crossings, become less ideal as road widths increase. In many instances, in order to create safe and comfortable pedestrian crossings across wider roads, installing bulb-outs or pedestrian refuge islands are options.

Figure 5-7 illustrates the additional width analysis of arterial and collector streets. For this analysis, 12 foot lanes were assumed as a standard. Using city data including road widths and travel lane counts, additional width was determined by subtracting the amount of 12 foot travel lanes from the curb to curb dimension. This analysis helps to eliminate and identify potential on-street facilities based on width potential. Severance Street, 4th Avenue and 23rd Avenue, for example, should be further analyzed for the application of on-street, dedicated bicycle facilities. Adams Street, Plum Street, 17th Avenue, 30th Avenue and Avenue G on the other hand, seem to have geometric constraints resulting in costlier potential improvements.



Figure 5-3 | Speed Limits

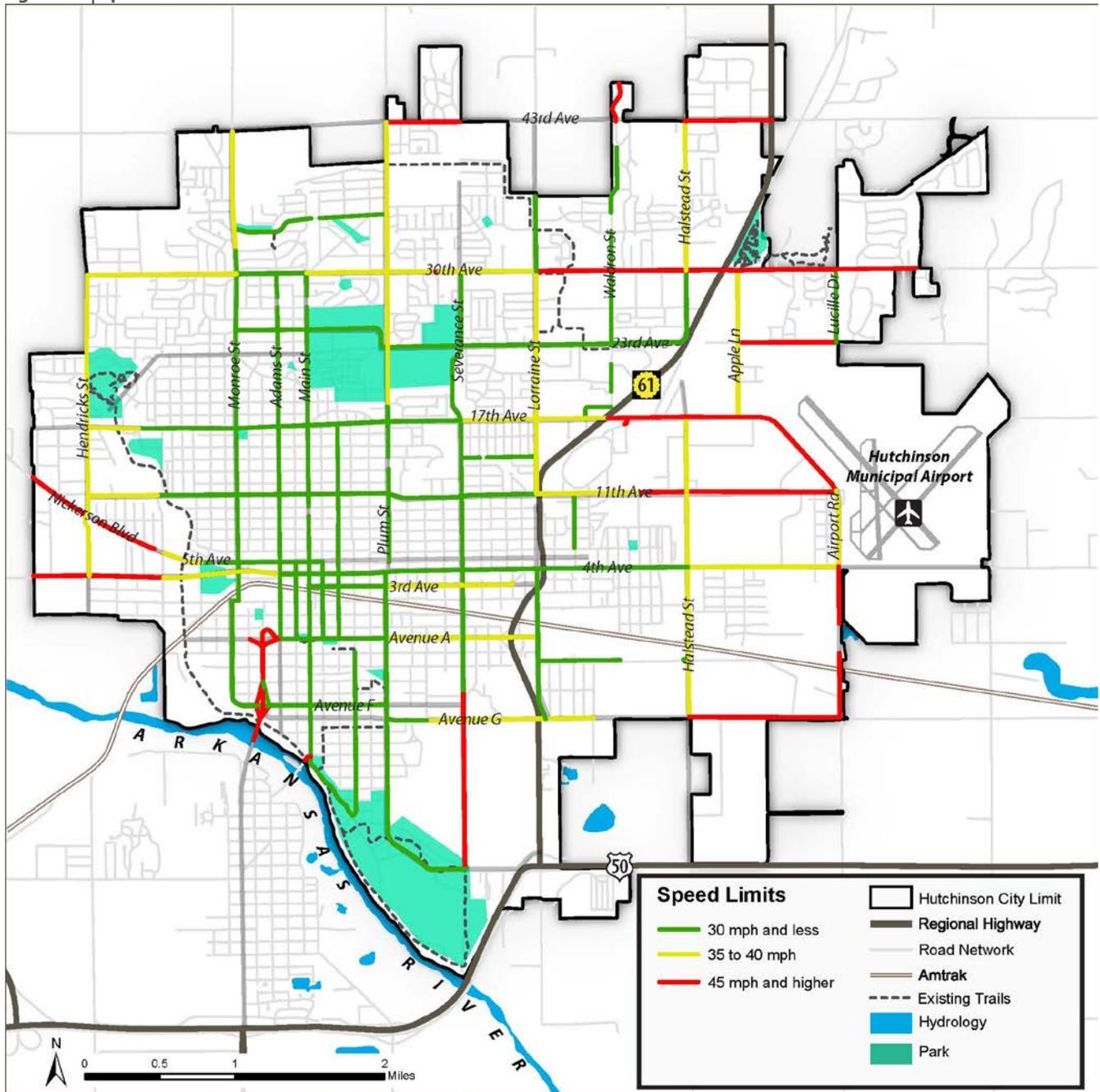




Figure 5-4 | Parking

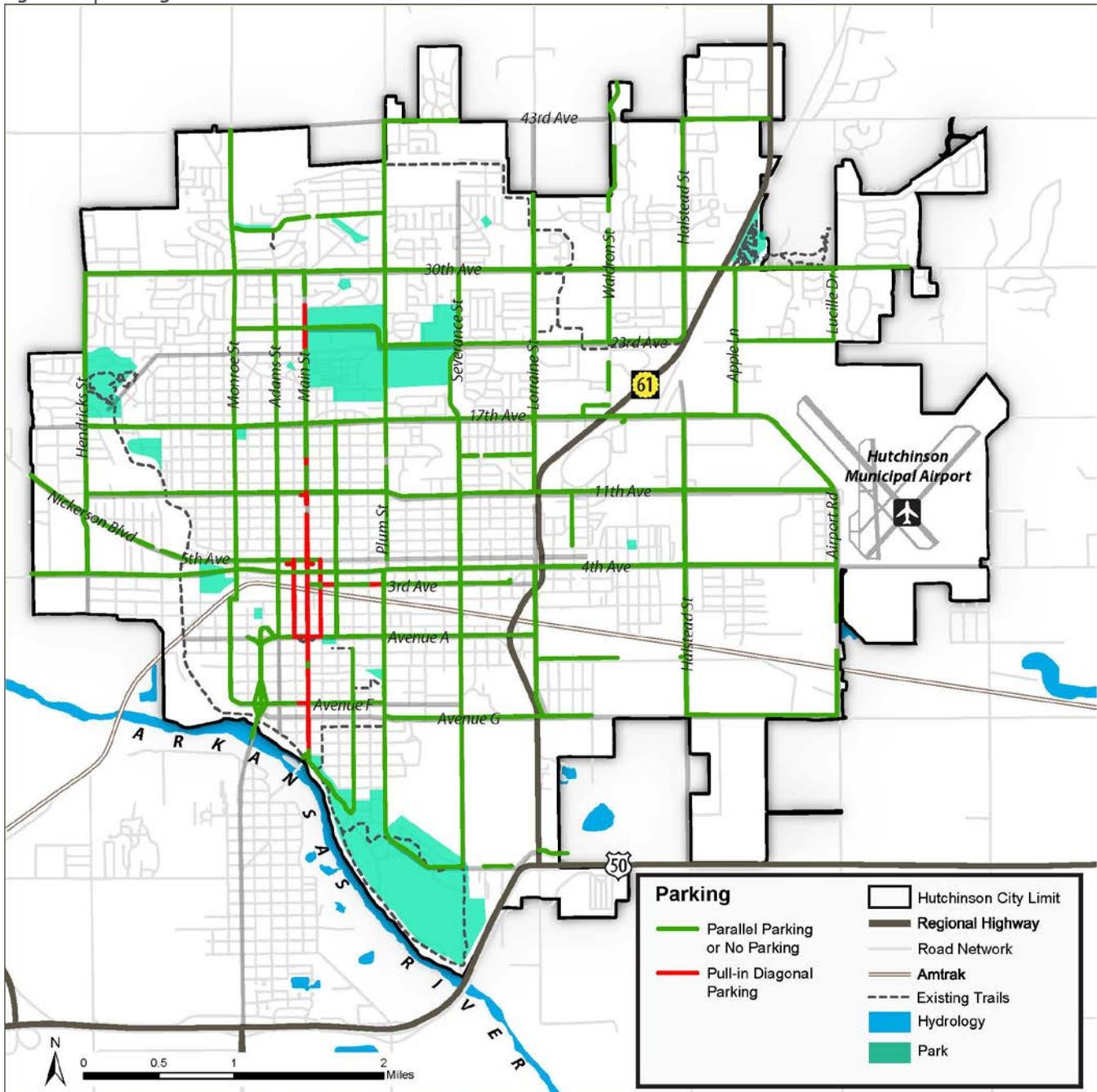




Figure 5-5 | Traffic Volume

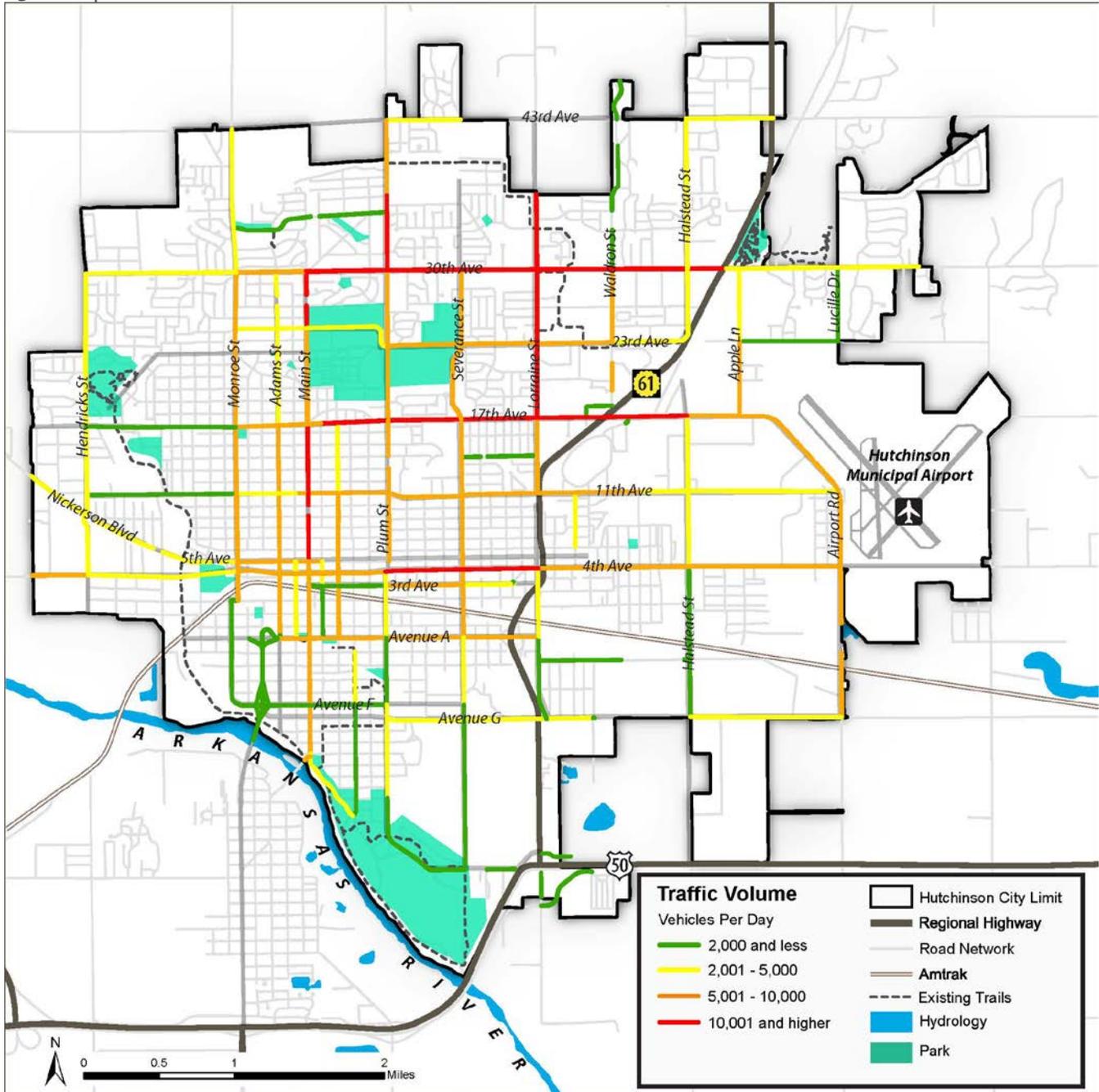




Figure 5-6 | Travel Lanes

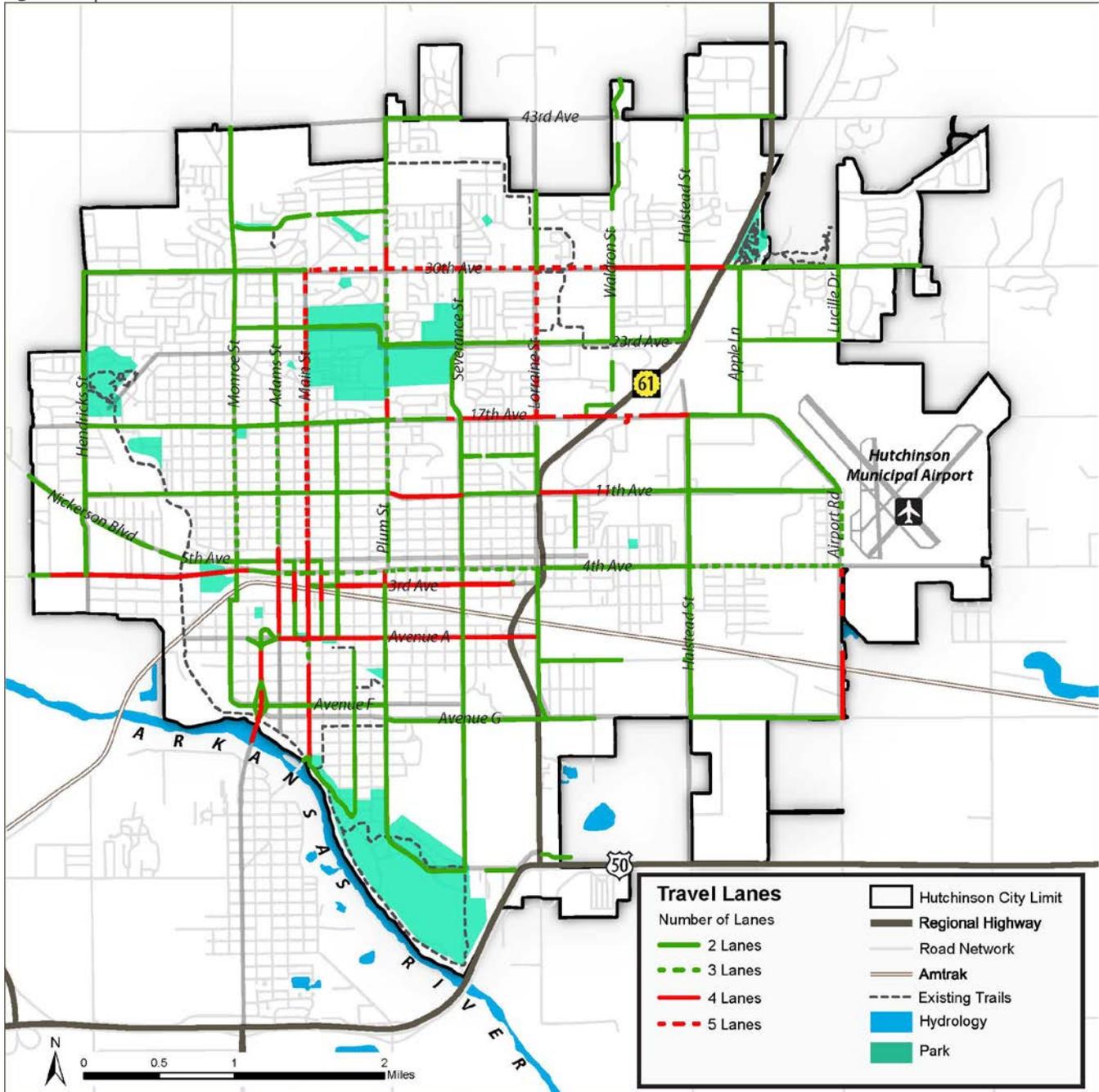
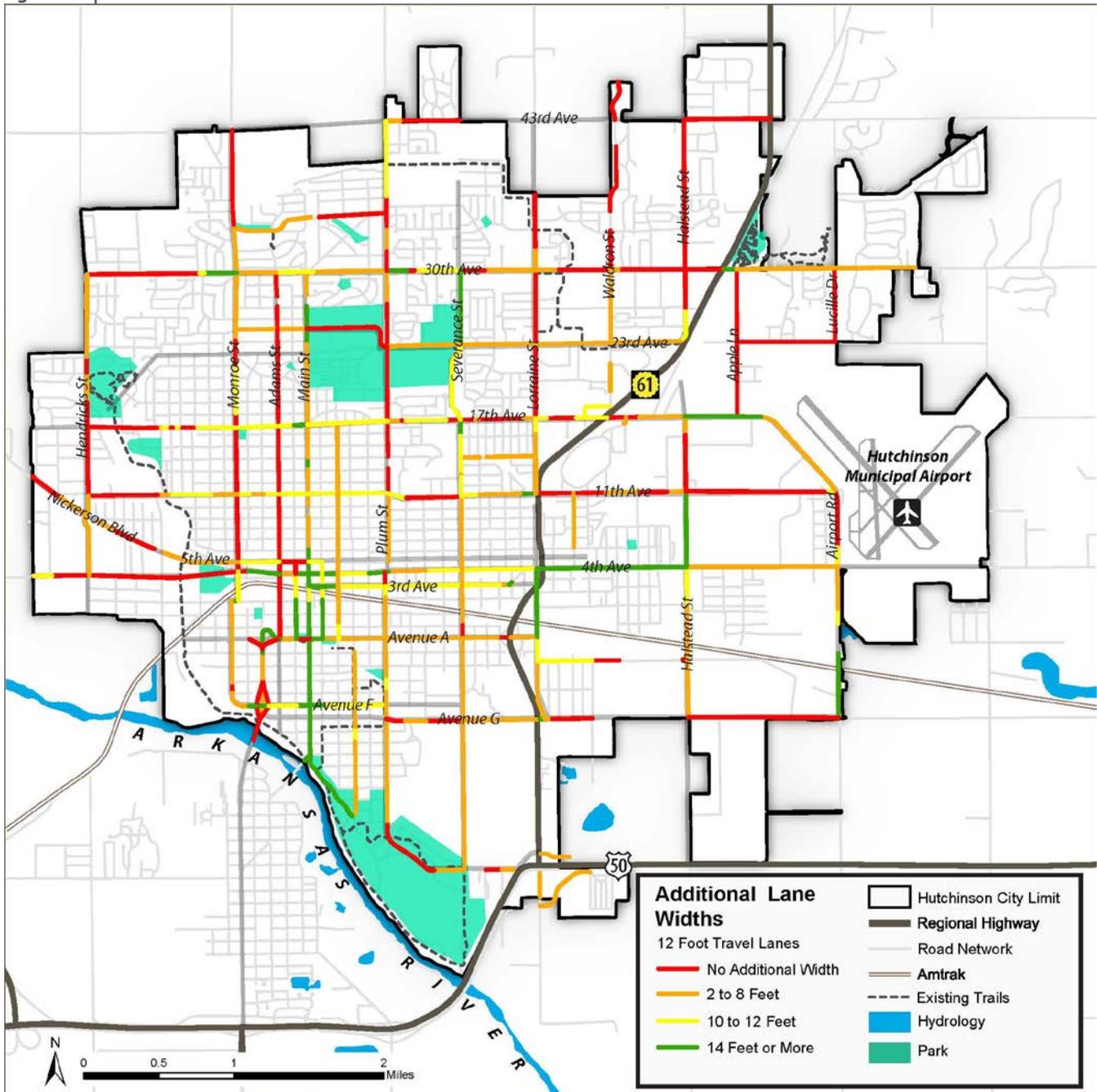




Figure 5-7 | Additional Lane Widths





5.6 DRIVEWAY ACCESS

Driveway access is a critical roadway characteristic that has a direct impact on the level of safety for all right-of-way users including motorists, bicyclists and pedestrians. More specifically, commercial driveways can pose a significant safety issue due to heavier traffic volumes, wider driveway widths, the presence of a left-hand turn lane, and more frequent use of the driveway when compared to residential driveways.

For the purpose of this analysis, residential driveway access was omitted due to the relatively low amount of traffic volume and minimal risk that they pose to pedestrians and cyclists. Since the GIS data provided from the city does not include driveway counts and because residential driveways have been excluded, driveways were counted manually using aerial data from 2008 provided by the city. This analysis is an approximation of current conditions. Driveway access is classified in two categories; few or many. “Few driveways” are 160 feet or more apart on collector streets and 330 feet or more apart on arterial streets, whereas “many driveways” occur more frequently than 160 feet on collector streets and more frequently than 330 feet on arterial streets.

Figure 5-8 illustrates these approximate distances for arterial and collector streets. The analysis does not include residential/local streets as there is a low volume of traffic on the streets and the residential driveways are infrequently used. The figure indicates that there are higher concentrations of driveways in the downtown vicinity, the blocks adjacent to the Hutchinson Sports Complex and Hutchinson Community College, as well as along 4th Avenue and 30th Avenue between Main Street and Lorraine Street. This access is also a reflection of the concentration of activity centers and land use patterns.

5.7 TRAFFIC CONTROL

Traffic control frequency plays a role in determining the convenience and safety of a potential bicycle facility based on how many signalized intersections are within a one mile segment. If there are 6 signals within one mile the frequency in which a cyclist would have to stop and wait for cross traffic would be inconvenient. As the amount of signalized intersections per mile decrease, upgraded facility types become more attractive because there are fewer interruptions. Conversely, more frequent signal controlled intersections can provide more opportunities for safe crossings for pedestrians.

Figure 5-9 shows the amount of signalized intersections within a contiguous one mile road segment along arterial and collector streets. This map indicates there are higher concentrations of signalized intersections along streets within the vicinity of downtown and along 11th and 17th Avenues. The frequency of these intersections could be attributed to the amount of traffic volume on intersecting arterials and collectors that connect to K-61. Additionally, 11th and 17th Avenues provide direct a direct connection from K-61 to downtown Hutchinson.

5.8 BARRIERS

There are two major barriers that pose a hazard when considering routes for bicycle or pedestrian facilities in Hutchinson; designated truck routes and highway interchanges.

Truck routes pose safety issues for cyclists, especially when there isn't a protective barrier separating traffic. In addition to the physical danger presented by truck routes, noise and particulate matter (PM) emitted from



large diesel vehicles present health risks if exposure is frequent. Similarly for pedestrians, who are not in the right-of-way, large diesel vehicles make walking uncomfortable and crosswalks more intimidating.

On-street bicycle facilities should not intersect with highway interchanges. The large amount of traffic coupled with large vehicles entering and existing highways can make cycling through intersections very dangerous. In some instances protected on-street bicycle facilities (i.e. bike lanes and cycle tracks) can interact with highway interchanges but only when engineering constraints and the safety of the bicyclist has been carefully considered.

Figure 5-10 shows the designated truck routes in Hutchinson in relation to highway interchanges, as well as existing and future commercial and industrial land use. The designated truck routes can be found on most arterial streets and some collector streets. The figure suggests the importance of the east-west arterial network for truck access to K-61.

There are 6 highway intersections/interchanges between K-61 and the arterial and collector streets. This topic is an important factor that is considered in the ultimate bicycle and pedestrian network presented in Section 8.0 in this report.

K-61 acts as a barrier for the large concentration of active and proposed industrial land uses to the east of the highway. The east-west truck routes are important routes that cross K-61 and are critical routes for freight traffic in southeast and southwest Hutchinson. These truck routes in particular are important for the future commercial and industrial development of the city. Any potential removal of a truck route designation would be carefully considered in light of the impacts to commercial and industrial activity and where the trucks would potentially be rerouted to.

5.9 PAVEMENT CONDITIONS

Data provided by the City included pavement conditions for the entirety of the city-wide street system. The data provided includes a pavement condition index (IRA values) which categorizes streets by physical condition and what action is required to maintain it. Figure 5-11 illustrates this pavement condition index as applied to arterial and collector streets.

Streets are classified via 5 categories; No Action, action needed in 6-10 years, action needed in 1-5 years, priority rehabilitation, and priority reconstruction. These indexes are an assessment of the conditions and indicate when or what type of intervention is necessary. The majority of the arterial and collector streets throughout the city fall within the 1-5 year index; this is especially the case for north-south oriented streets. Main Street has the largest amount of indexed street segments that require reconstruction, particularly between 4th and 18th Avenues. Additionally, there are concentrations of street segments in and around downtown that require rehabilitation or reconstruction. These patterns do not suggest any concentrated network deficiencies but more likely describe effects of roadway stress caused by traffic volume.



Figure 5-8 | Driveway Access

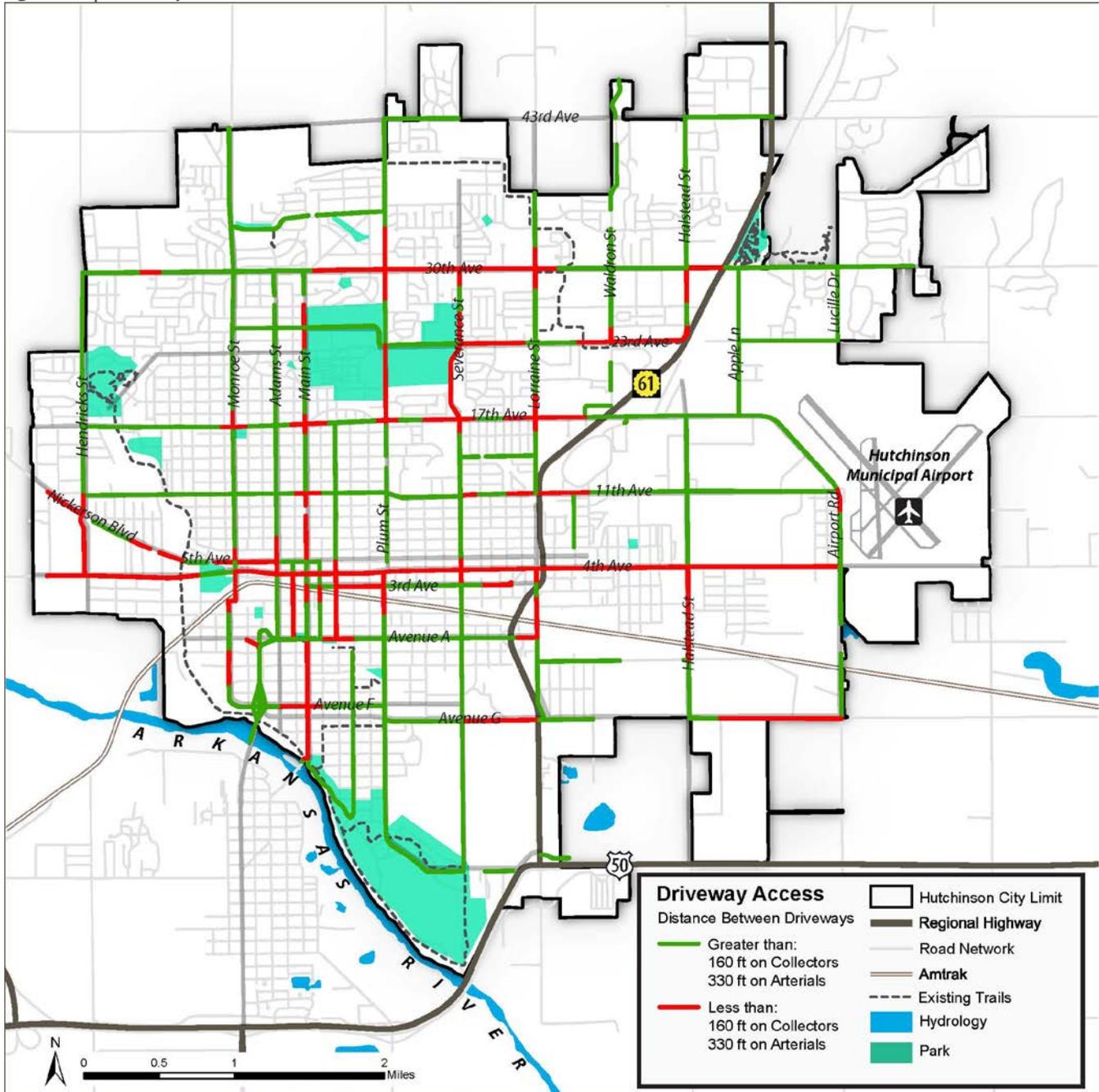




Figure 5-9 | Traffic Control

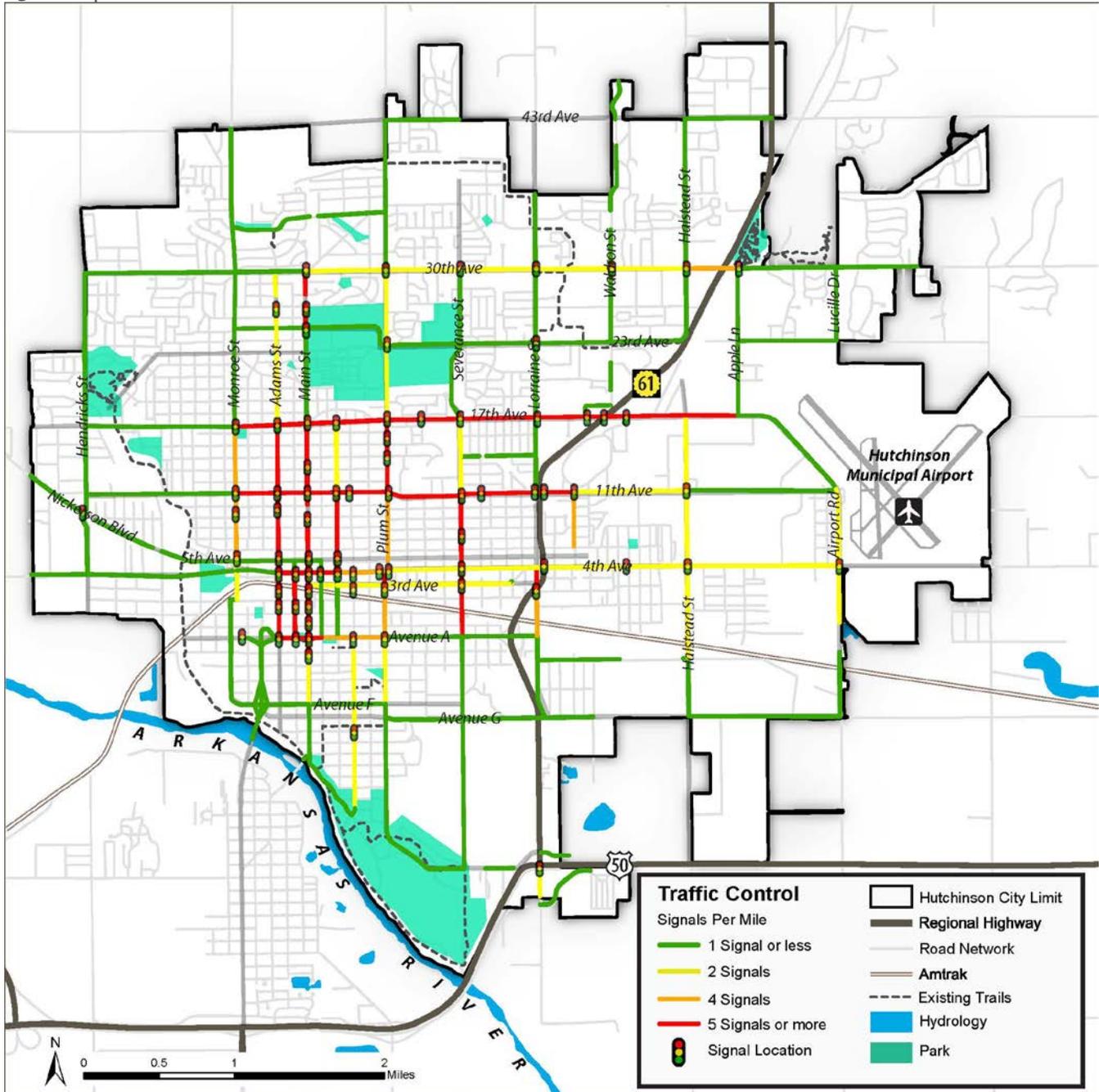




Figure 5-10 | Barriers: Highway Interchanges and Truck Routes

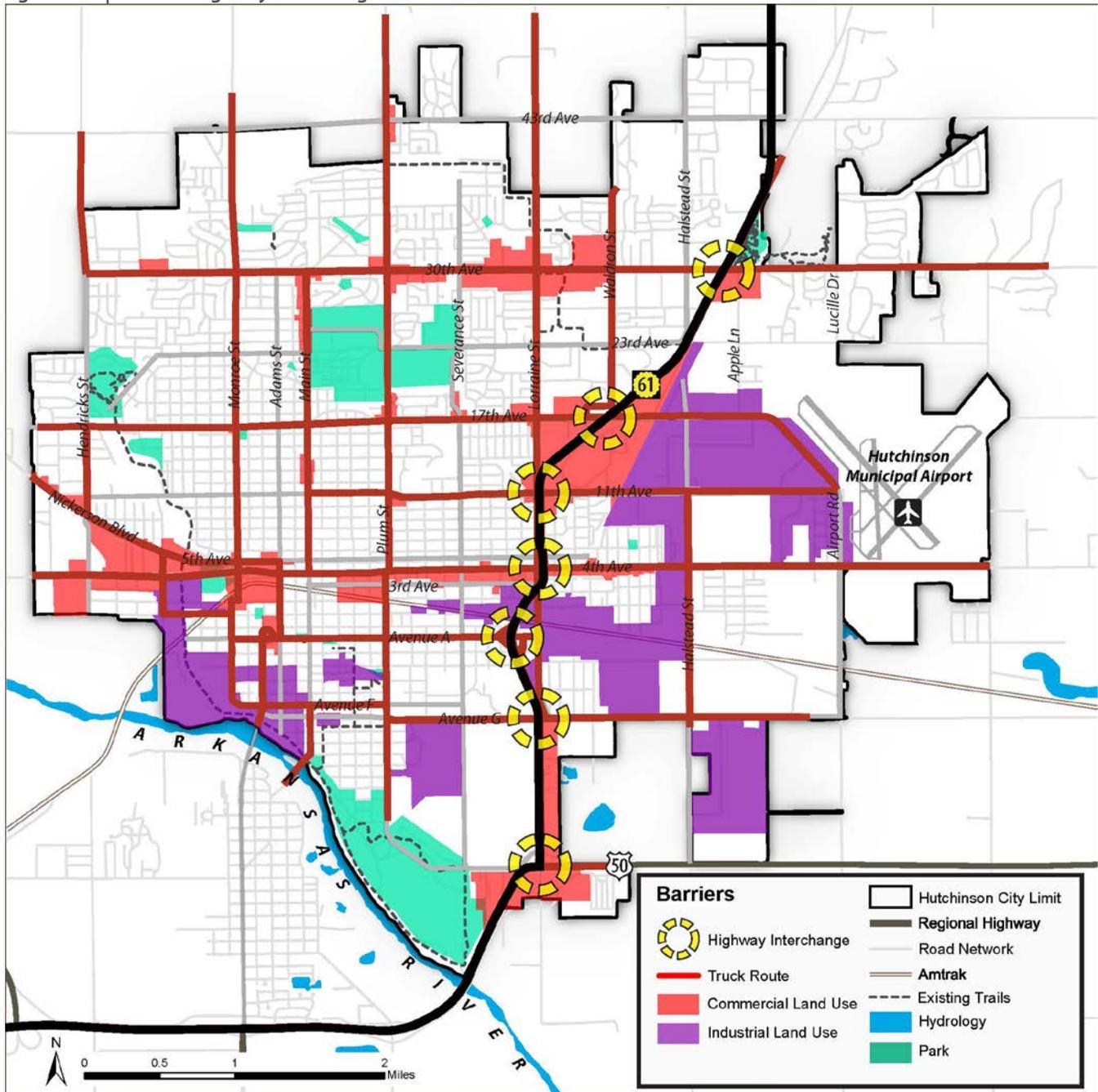
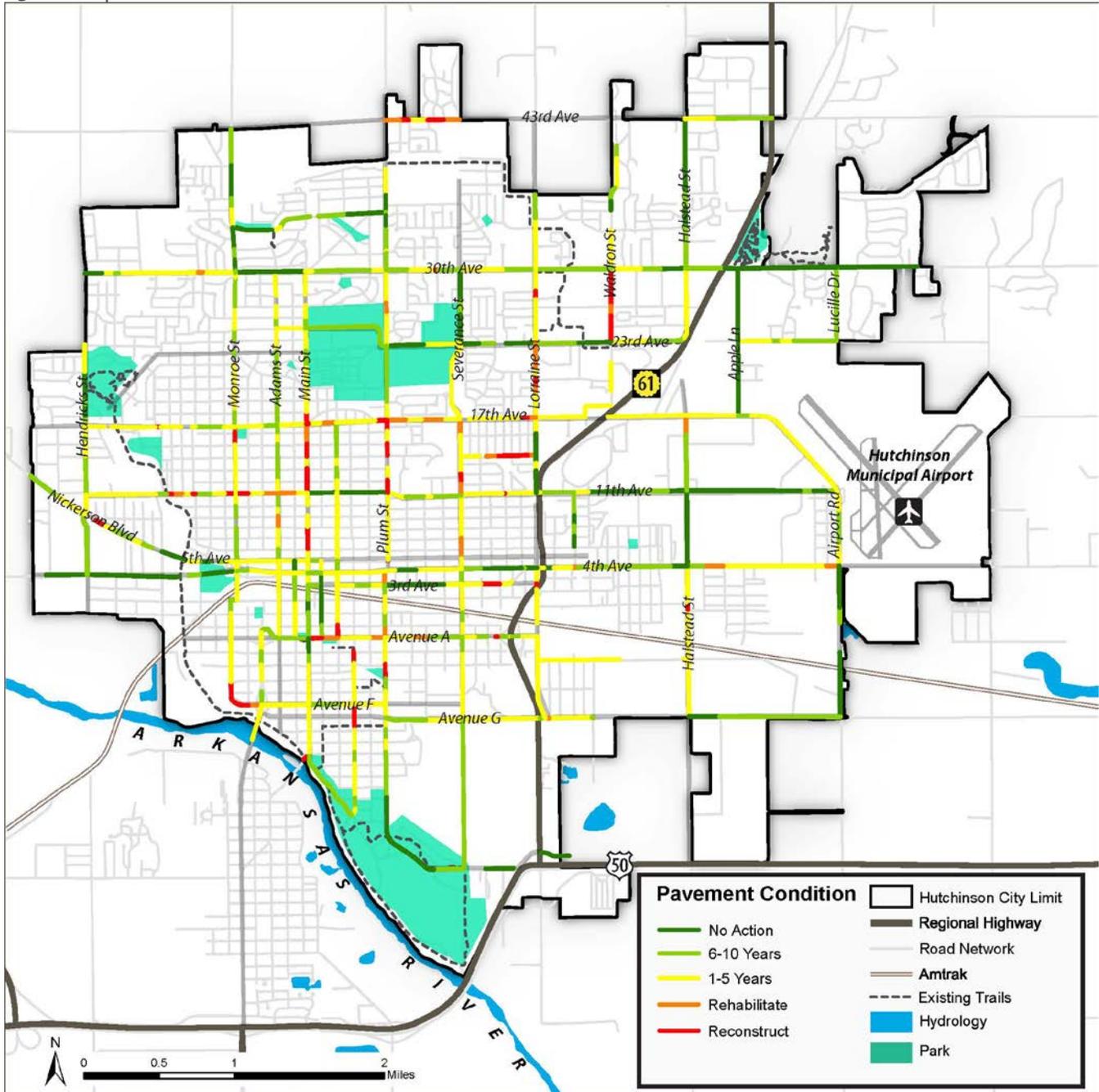




Figure 5-11 | Pavement Conditions





5.10 CRASH CHARACTERISTICS

Crash incidence data was obtained from the City. The crash characteristics were in the form of points which correlated to individual crash incidences in the City of Hutchinson between 2006 and 2010. The data was analyzed using a kernel density formula. Kernel density calculates a magnitude per unit area from a point using a function to fit a smoothly tapered surface to each point.

The kernel density analysis (Figure 4-10) indicates frequency of crash incidences using a gradient spectrum with lower crash frequencies shown in green and higher crash frequencies shown in red. These identify areas that need more detailed safety assessments.

This figure identifies where the hotspots are for all crash incidences. The highest frequency of crash incidences occur along the arterial and collector systems and most notably along or adjacent to K-61. Additional concentrations are found along Plum Street, 17th Avenue, and 30th Avenue. Figure 4-11 shows the total crash incidences from January to November, 2013. Being that the data is of a smaller collection of inputs, it is used only to verify the patterns seen in the previous figure. The figure indicates hotspot concentrations along 30th Avenue between Plum Street and Lorraine Street in addition to the arterials and collectors adjacent to and intersecting K-61.

Both crash incidence figures indicate a pattern similar to the traffic volume figures. Where traffic volume exceeds 10,000 vehicles per day on arterials and collectors, the intersections act as the concentration for higher frequencies of crash incidences. Figure 4-12 shows this correlation, the figure indicates eight major hot spot intersections that have high traffic volume, high crash frequencies, or both. These intersections include 30th Avenue at Plum Street, 30th Avenue at Lorraine Street, 17th Avenue and Plum Street, 17th Avenue at Lorraine Street, 17th Avenue at K-61, 11th Avenue at K-61, 4th Avenue at K-61, and 1st Avenue at Adams Street.



Figure 5-12 | 2006-2010 Crash Incidences

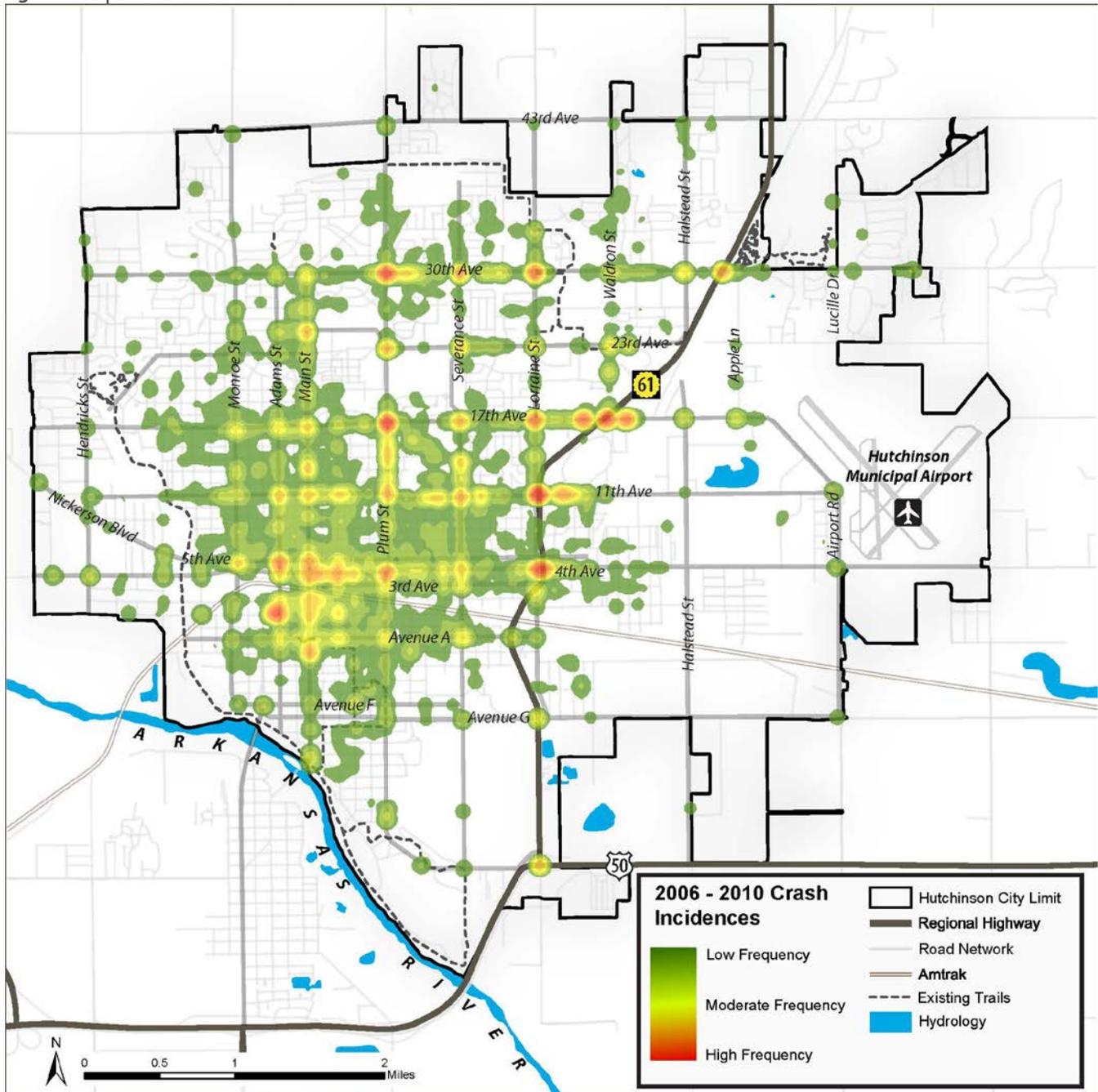




Figure 5-13 | 2013 Crash Incidences

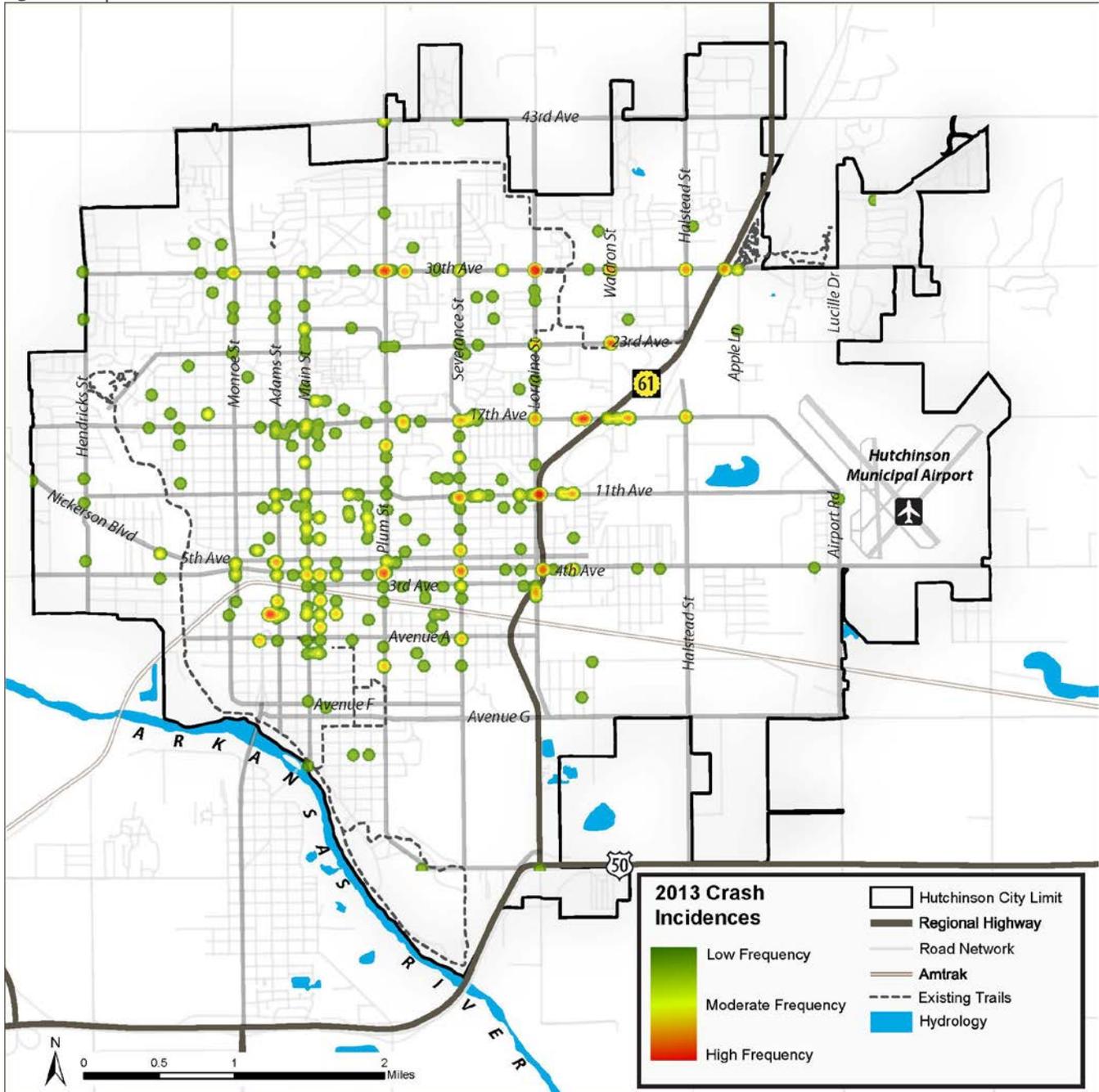
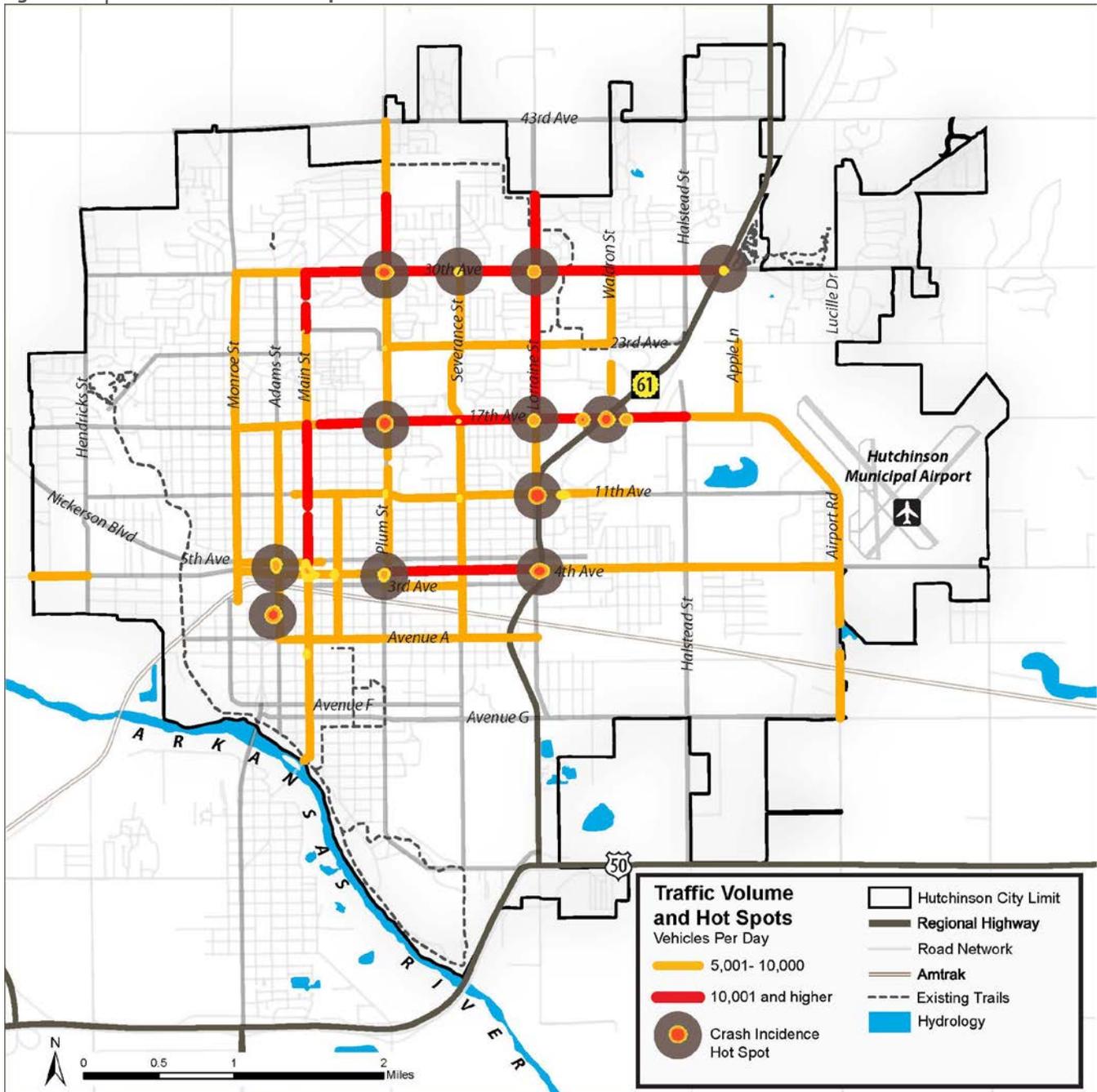




Figure 5-14 | Traffic Volume and Hot Spots





5.11 SIDEWALK CONDITIONS

Sidewalk conditions were analyzed using data provided by the City. The data of inventoried sidewalks included presence, typology, condition, and width. The sidewalk presence and width were provided in a separate line file, this file consisted of individual sidewalk segments which were translated in relation to the road network line file.

SIDEWALK PRESENCE

The presence of sidewalks is the basis for which a sidewalk system can be analyzed. The presence of existing sidewalks indicates patterns of major network connectivity.

Figure 5-15 illustrates that large segments of the city, especially towards the periphery, are not serviced by sidewalks; this is most likely reflective of development patterns that are more car-oriented. The areas of the city that are connected by the sidewalk network are concentrated around downtown and the historic neighborhoods surrounding it, again, indicative of a development pattern that at the time was less dependent on automotive mobility.

Figure 5-16 shows the presence of sidewalks along arterial and collector streets in relation to each side of the street. As mentioned previously, the line files provided by the City were translated in relation to the road network; therefore, if two separate line segments were present on both sides of the street, than the road network was coded for sidewalk presence on “both sides of the street”. Streets shown in red do not have sidewalks present. Streets shown in orange have sidewalk on at least one side of the street. Yellow streets indicate sidewalks on both sides of the street but not for an entire block segment. Green streets indicate sidewalks are present on both sides of the street for the entirety of the block segment. The figure indicates the areas north of downtown and within downtown have more cohesive sidewalk facilities than the remainder of the city. Furthermore, the absence of sidewalks along most of the periphery arterial and collector streets is illustrated. A detailed understanding of presence of sidewalks can help in prioritizing sidewalk gap opportunities.

SIDEWALK TYPOLOGY

Within the existing sidewalk inventory there are two types of sidewalk facility: detached and attached sidewalks. Detached sidewalks are sidewalks where a buffer is provided between the sidewalk and the street. Attached sidewalks are where there is no physical separation between the sidewalk and the curb. For a detailed description and graphics of these two sidewalk typologies refer to chapter 3 of this analysis. Figure 5-17 illustrates where detached and attached sidewalks are located throughout the city. Detached sidewalks (shown in blue) are highly concentrated in the residential neighborhoods surrounding downtown and north along Main Street. Attached sidewalks are more sporadic with smaller concentrations within downtown and some residential neighborhoods north of 23rd Avenue.

SIDEWALK CONDITION

Based on sidewalk condition data provided by the City, the physical condition of existing sidewalks can be assessed on a gradient from good to poor. Figure 5-18 illustrates this assessment for the existing sidewalk inventory. A large proportion of the sidewalks within the inventoried system are in good or good to fair



conditions, a very small amount of the sidewalks, roughly 13%, are assessed as poor and are concentrated along 4th Avenue between Lorraine Street and Halstead Street. Of the sidewalks where condition was assessed the existing inventory appears to be in good condition, indicating that the greatest opportunity for building a robust pedestrian network would focus on connecting gaps in the system, not repair of existing sidewalks.

SIDEWALK WIDTHS

Sidewalk widths were analyzed in a similar fashion as the sidewalk presence analysis; these values were compounded and coded in relation to the street line. There are multiple instances where “mixed” sidewalk widths are within a street segment. For example, there may be a 4’ sidewalk prior to a driveway and then an 8’ sidewalk attached to a building front for the remainder of the block. Both types of sidewalk occur within the block segment and both are recorded. Likewise, there may be two types of sidewalk on different sides of the street.

Figure 5-19 illustrates the “mixed” width conditions for the arterial and collector sidewalks. This level of analysis did not address residential/local streets. The majority of sidewalk widths fall within the 5-7 foot category. Sidewalks of varying widths between 5-7 feet and less than 4 foot categories are concentrated within local streets bound by arterials or collectors. In downtown, along east-west Avenues, there is a small concentration of sidewalks categorized as greater than 8 feet, which have the capacity to serve larger volumes of pedestrian traffic; these locations are primarily near the county courthouse and adjacent to public and commercial land uses.



Figure 5-15 | Sidewalk Presence

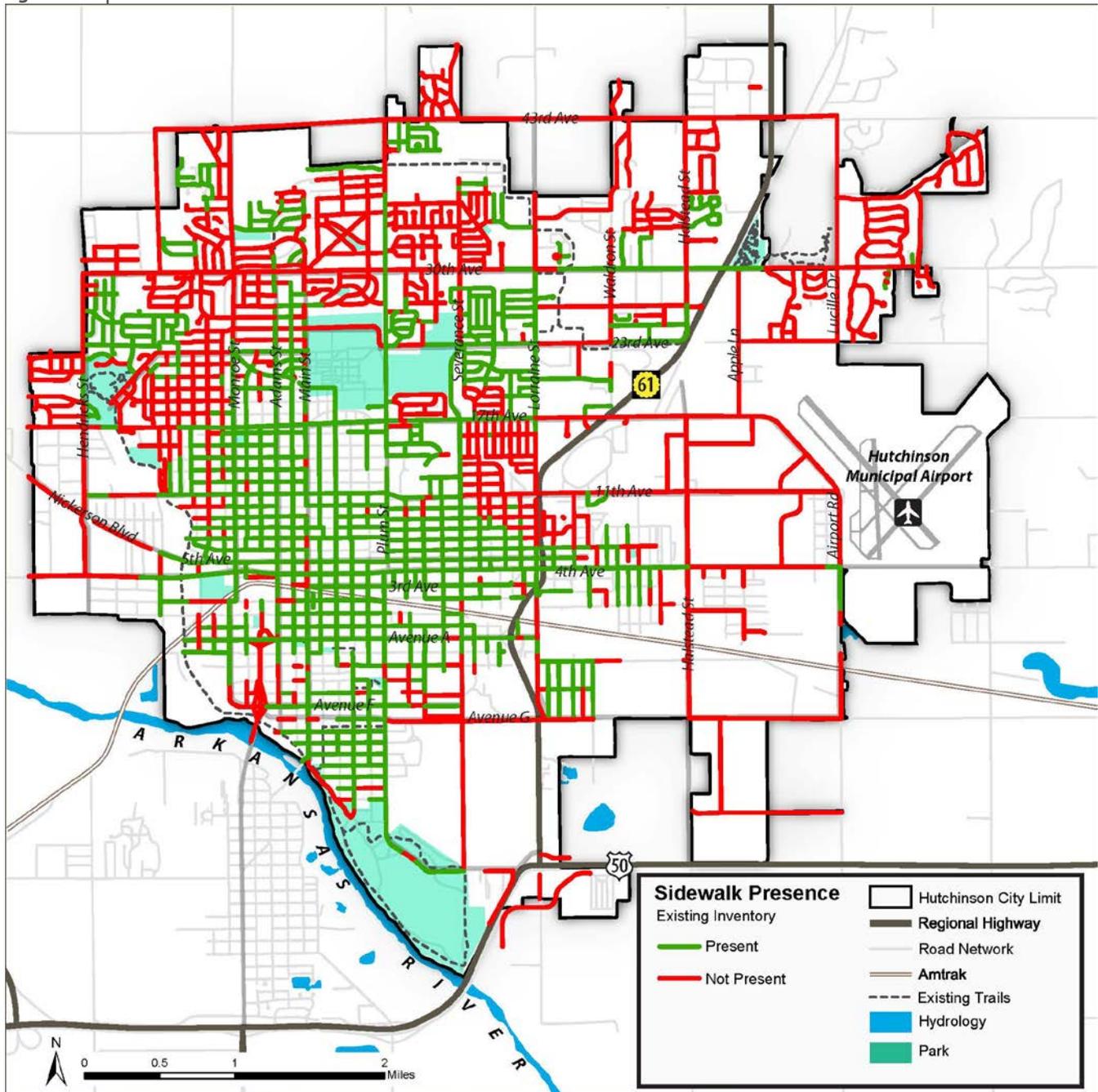




Figure 5-16 | Sidewalk Presence Detail

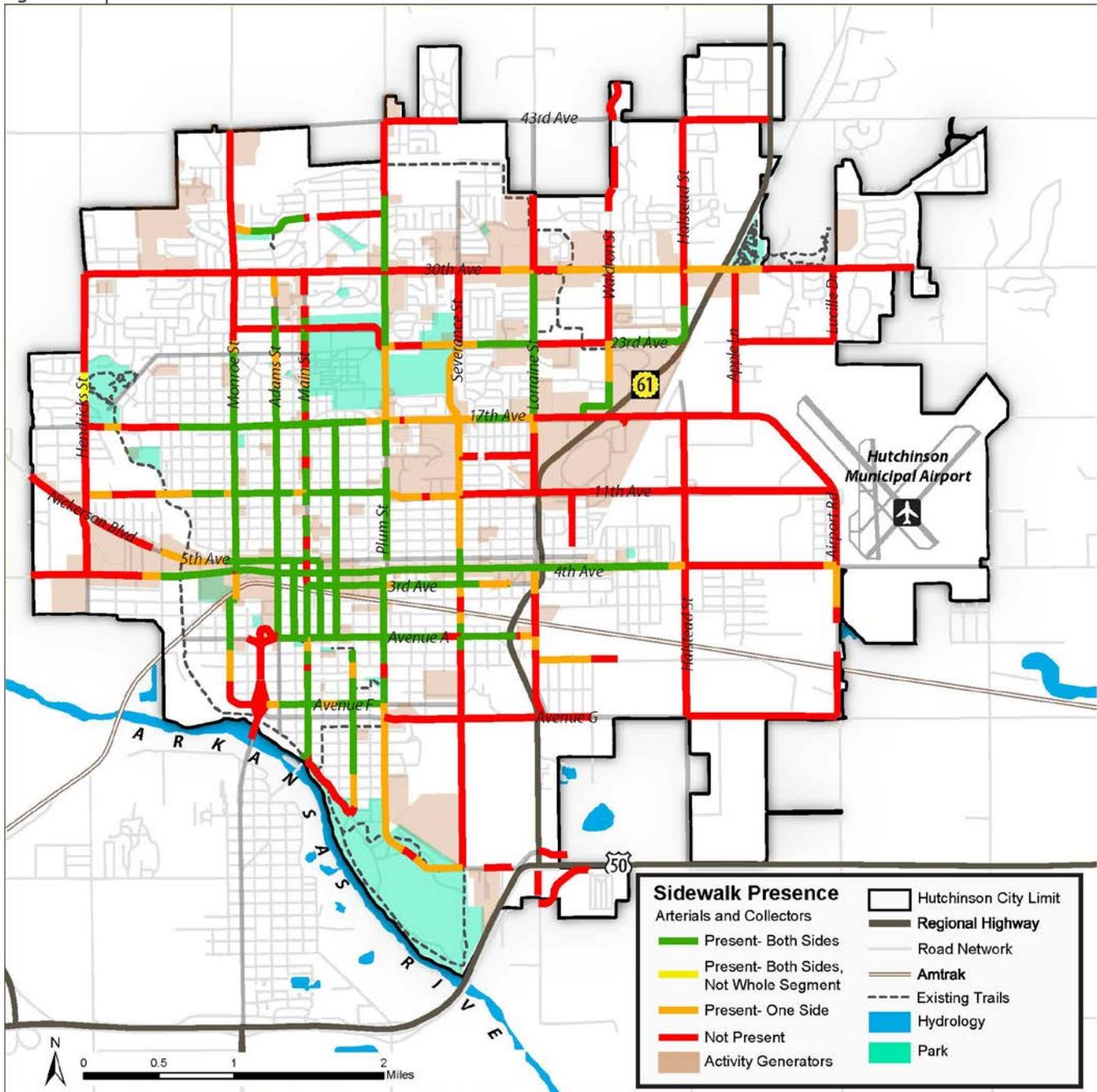




Figure 5-17 | Sidewalk Typology

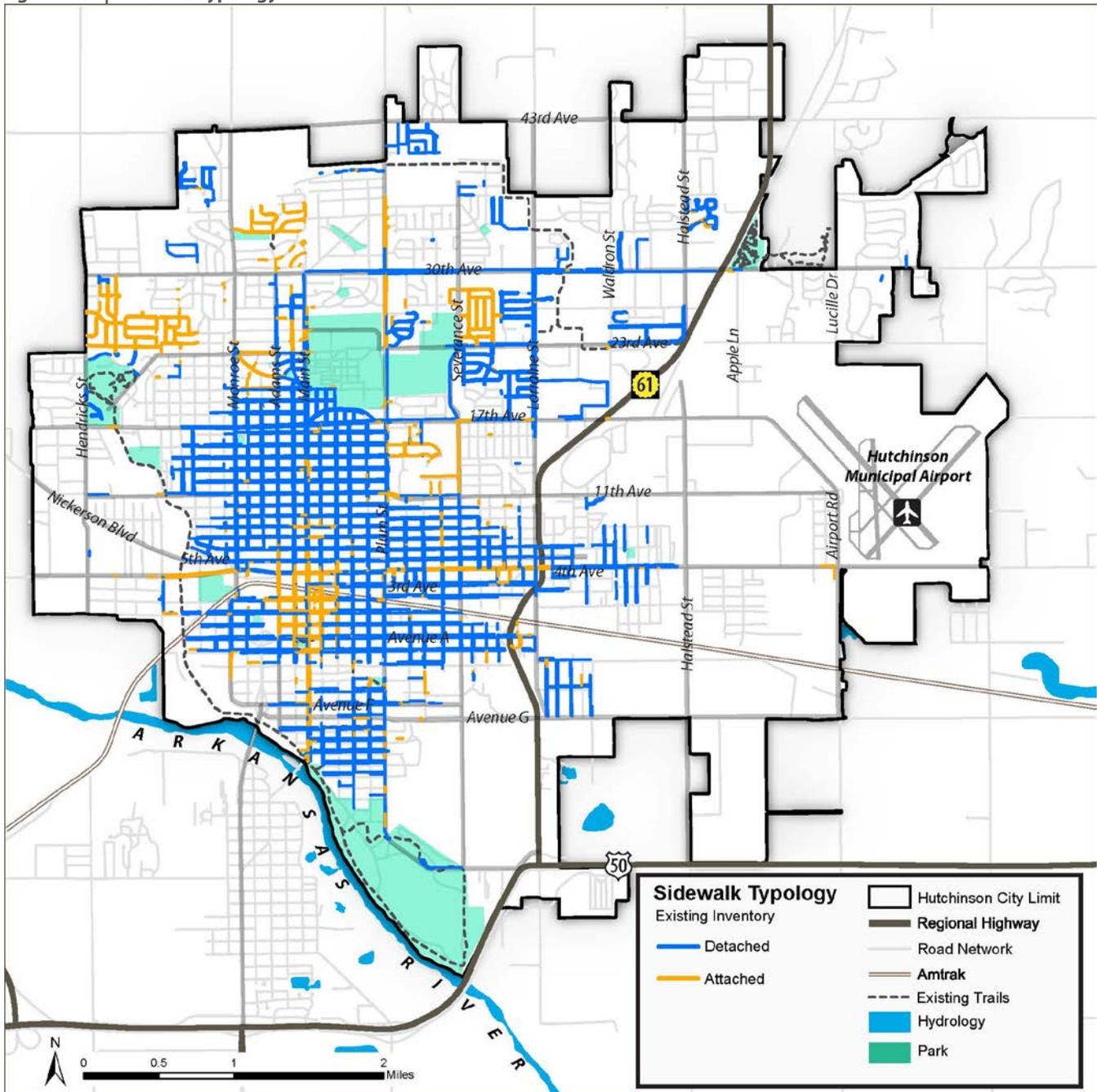




Figure 5-18 | Sidewalk Conditions

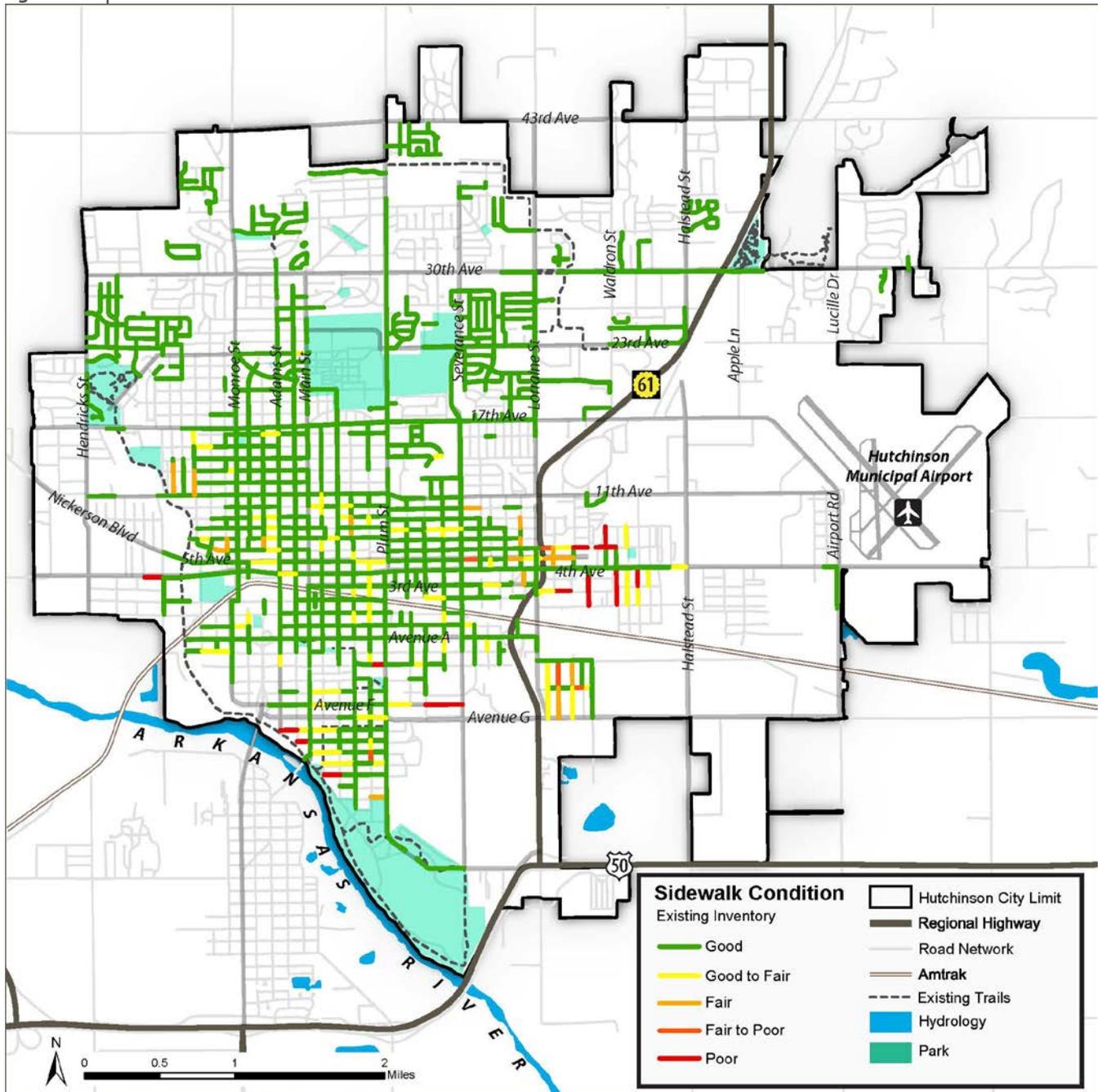
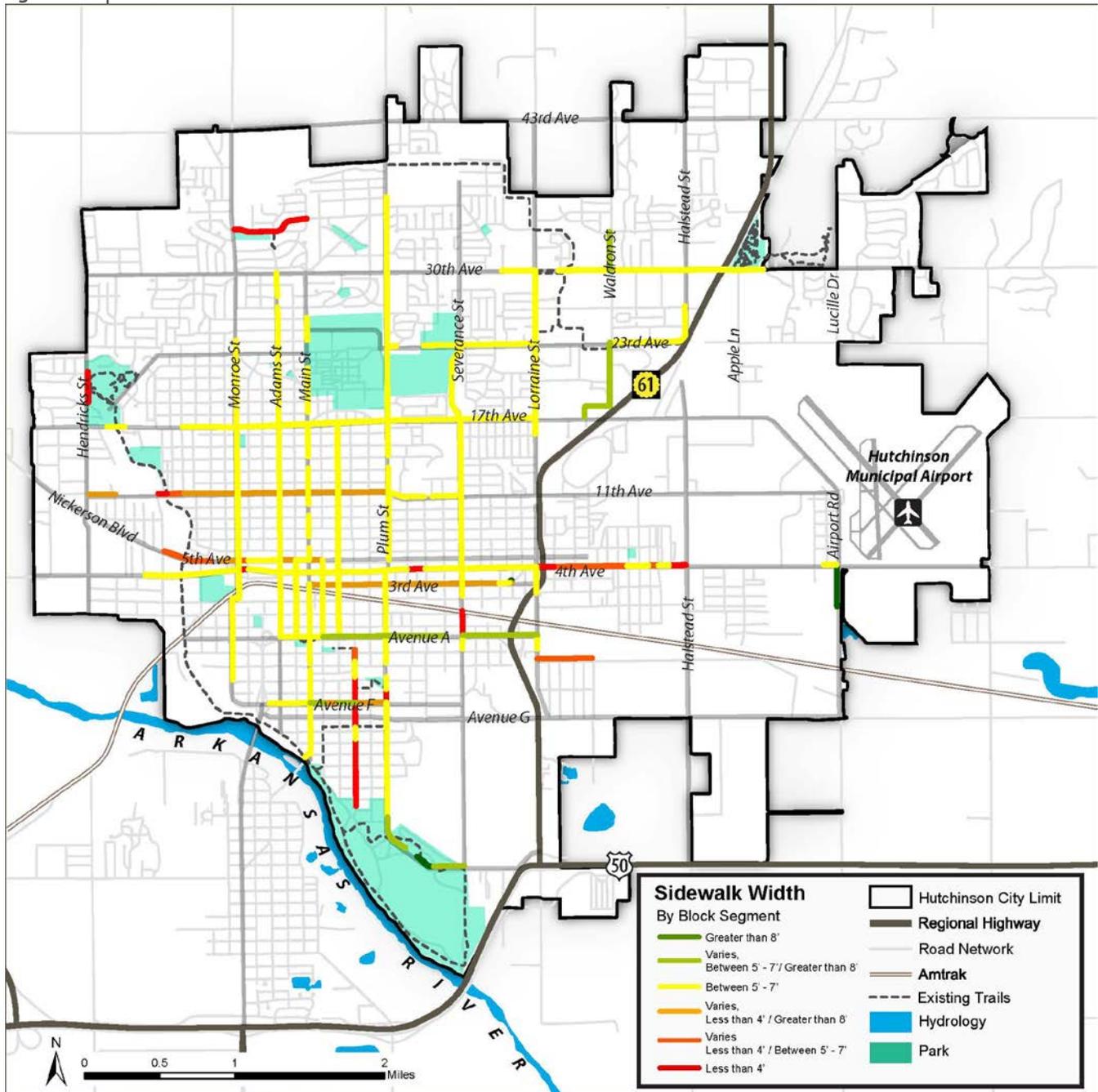




Figure 5-19 | Non-Residential Sidewalk Widths





5.12 ACTIVITY GENERATORS

Activity generators are destinations where concentrations of commercial and or institutional development generate activity. These including existing and future land use designations public/institutional, commercial/retail, and multifamily residential. Examples of activity generators in Hutchinson would be businesses that front Main Street, 3rd Avenue, and 5th Avenue in downtown, public libraries, schools, and parks. High pedestrian traffic, retail, office and commercial uses all contribute to the generation of activity. Figure 5-20 depicts where activity generators are currently located. Many of the activity generators are noted in the key above the legend.

SCHOOLS

Connectivity to schools is critical in ensuring safe and convenient access to schools via all travel modes. Furthermore, it is an excellent way to promote use of the bicycle and pedestrian network. By designating appropriate shared or segregated facilities that connect schools to residential neighborhoods or multifamily developments a municipality is addressing multimodal transportation in a meaningful way that encourages healthy, active and safe communities. Furthermore, identifying sidewalk improvements or gaps in the sidewalk network in proximity to schools is a great strategy for prioritizing these capital expenditures. Sidewalk repair or infill can be done in these areas in a fiscally conscience manner by utilizing the Kansas' Safe Routes to Schools (SRTS) funds.

Figure 5-21 illustrates where public schools are located in proximity to parks, existing recreational trails and existing and future activity generators. Out of the eighteen schools within the city, more than half are within a mile of a park and or existing recreational trail. Three schools in particular (Wiley Elementary, Allen Elementary, and Lincoln Elementary) are located within a quarter mile of the Jim P. Martinez Sunflower Trail. The schools in Hutchinson benefit from the connectivity of the city's grid street system which provides great accessibility to public and institutional facilities. Most schools are concentrated within this grid street system which makes connecting future bicycle and pedestrian facilities to destinations convenient.

To further communicate the relationship between public schools and walkability, Figure 5-22 shows sidewalk conditions in proximity to public schools. Out of the 18 public schools, 6 (buffered in red) are not integrated fully into existing sidewalk grid system. This pattern indicates that there are pedestrian connectivity issues in regards to these select schools where students might be forced to walk in the street, the roadway shoulder, or across residential properties. Since many of the schools are located along residential streets (with the exception of Trinity Catholic High School, Central Christian High School, and Union Valley Elementary) and where traffic volumes are significantly lower, installing sidewalks may have not been a top priority for the City in the past. However, this plan will address issues related to sidewalk gaps within school catchment areas in order to provide safe routes that allow children to walk or bicycle to school. Where there are existing sidewalks within proximity to schools the conditions of the sidewalks overall are good. Having a robust sidewalk network that connects public schools, neighborhoods, and activity generators allows students to safely walk in their community.



RECREATION

Figure 5-23 depicts the public park system in Hutchinson. There are 19 public parks throughout the city operating on three different levels; regional, community, and neighborhood. The Kansas State Fairgrounds and Carey Park are regional parks that draw users from a larger regional and state-wide geography and feature park amenities distinct to Reno County. Rice Park, Dillon Nature Center, and Avenue A Park are community level parks which serve all users of Hutchinson as they provide amenities which make them distinct destination in the city. The remainder of the park system is comprised predominately of varying scales of neighborhoods parks which range from small green space to whole city blocks. These parks serve smaller populations on a neighborhood scale.

Figure 5-20 | Activity Generators and Future Land Use

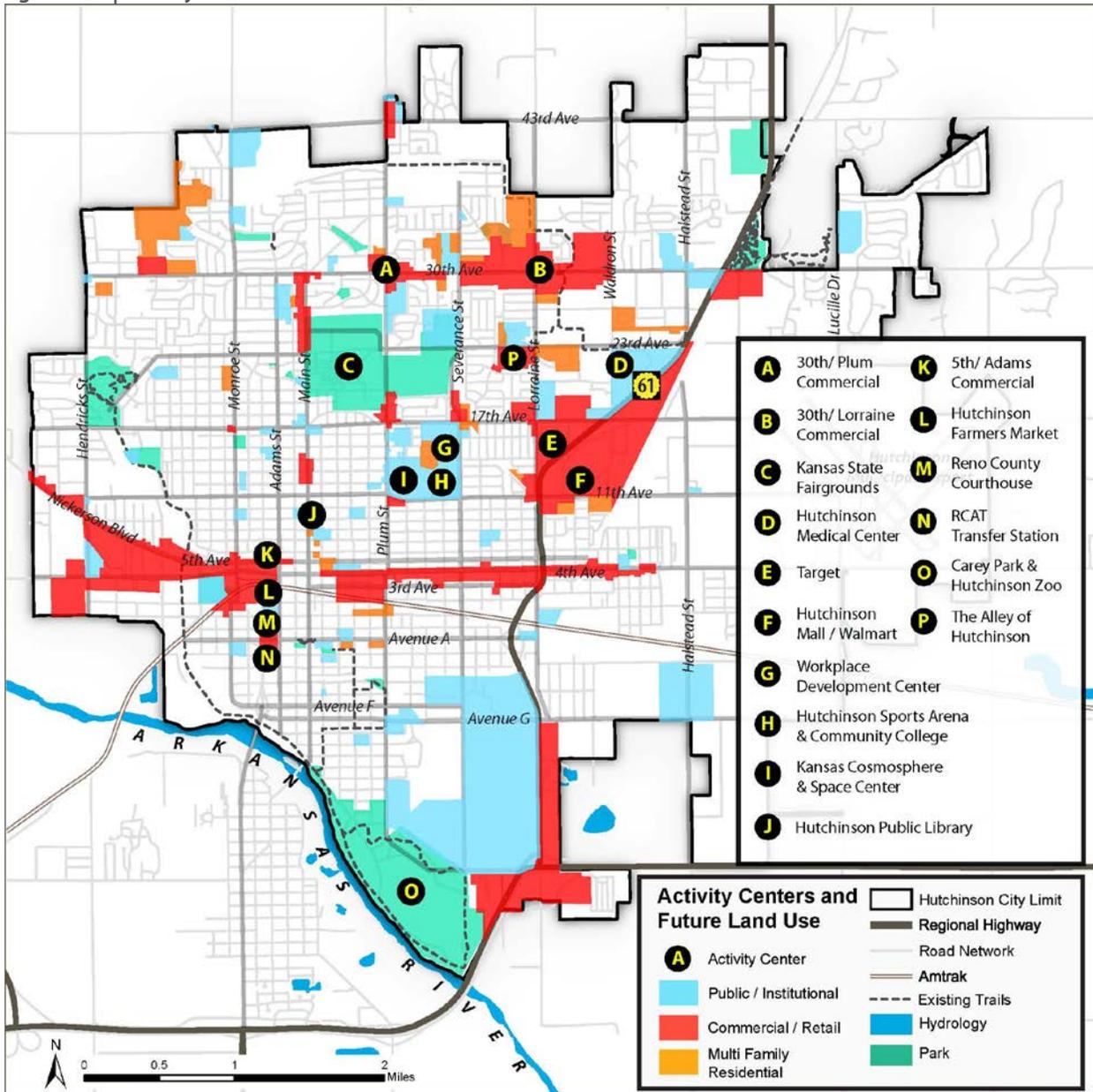




Figure 5-21 | Schools and Future Land Use

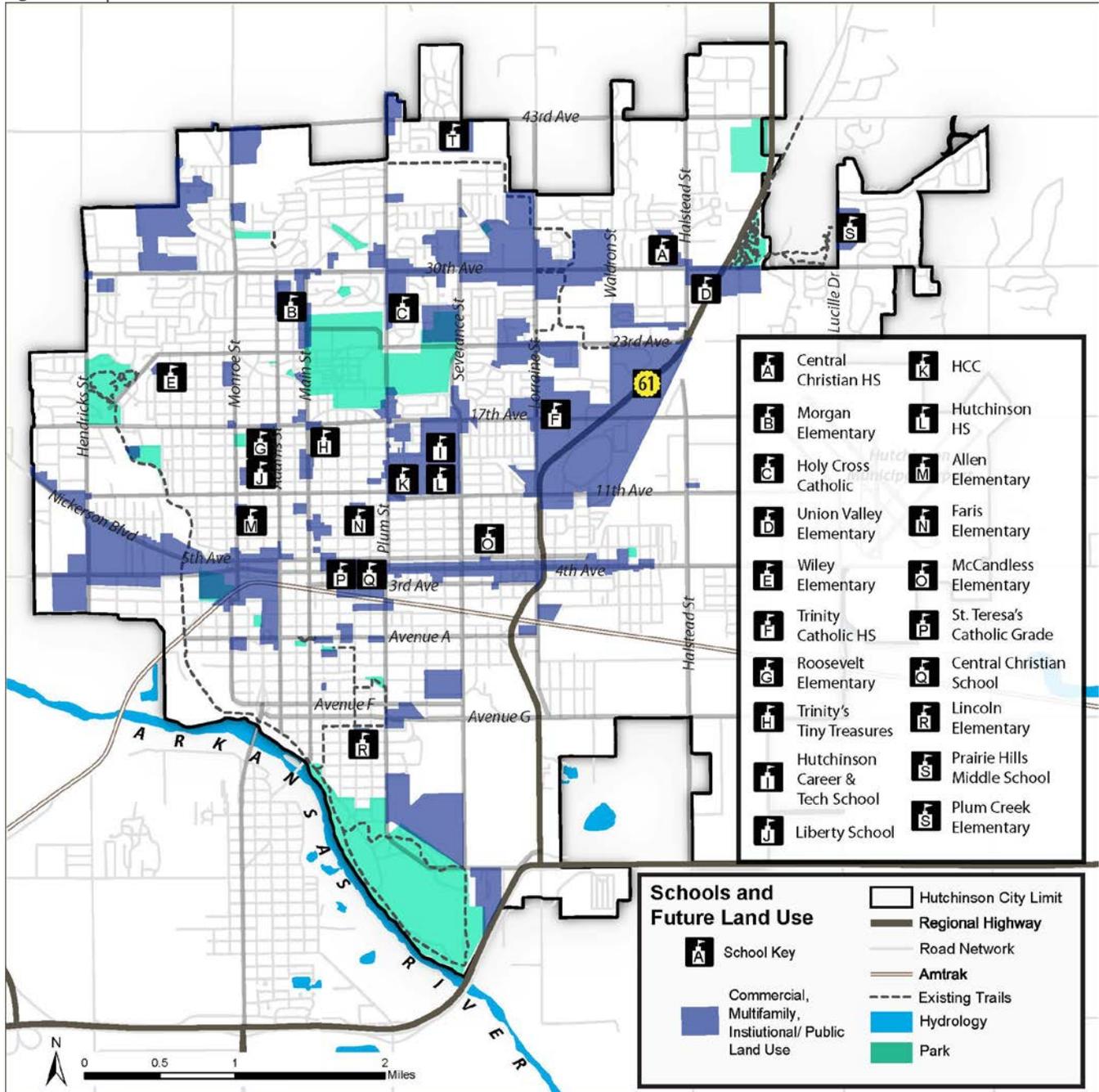




Figure 5-22 | Schools and Sidewalk Condition

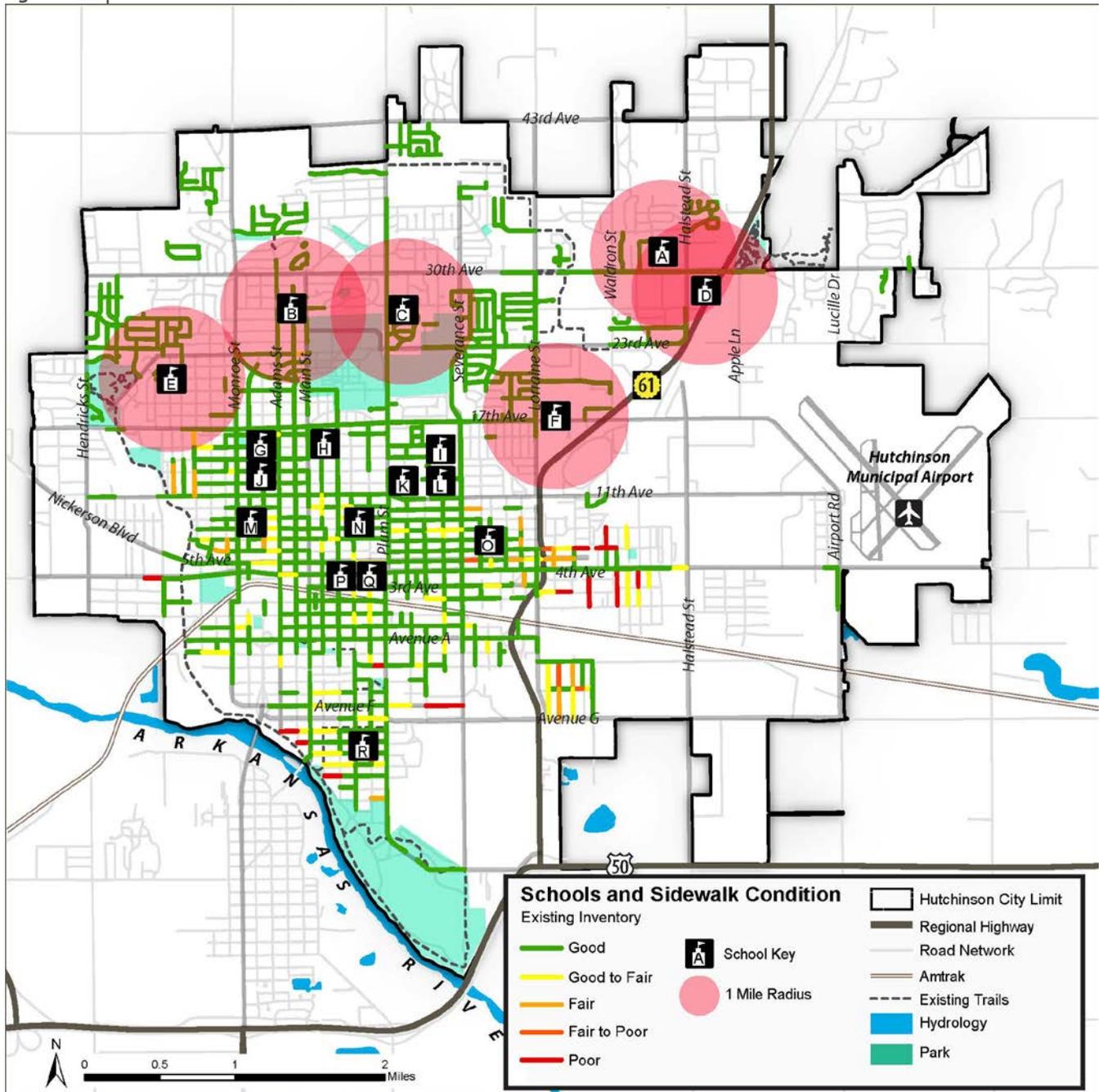
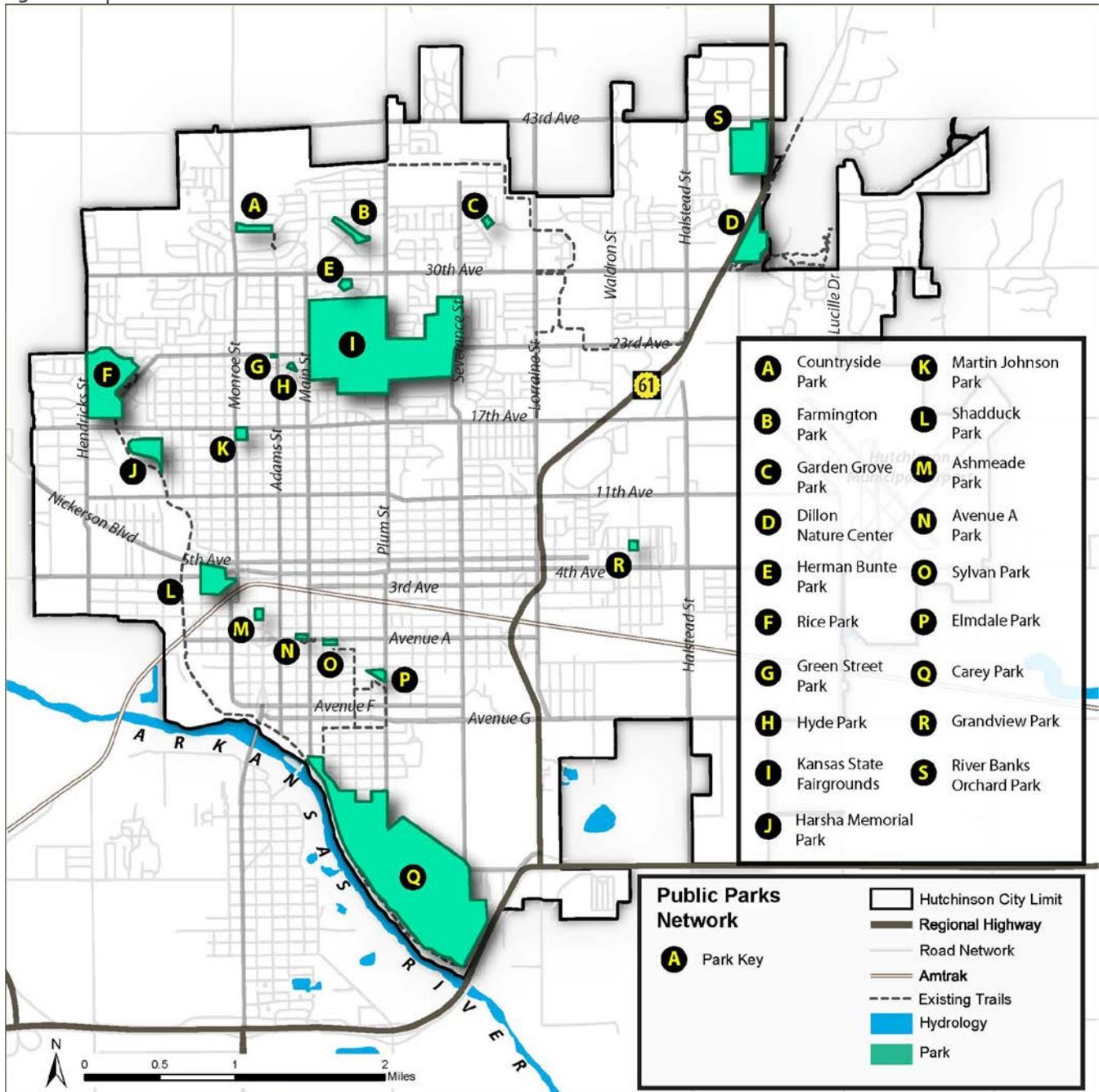




Figure 5-23 | Public Parks





5.13 MULTIMODAL CONNECTIVITY

Connectivity, or proximity to amenities, is an important consideration in determining the selection of one route over another. If multiple routes have identical scores using a quantitative analysis, then a qualitative judgment may be utilized in order to determine which route has a higher application potential. In terms of connectivity, four types of criteria were analyzed; connectivity to activity centers, schools, recreational access, and transit.

Figure 5-24 illustrates the current connectivity between existing trail systems, the RCAT transit routes, on-street bicycle facilities (most of which are share the road facilities), public parks, and activity generator land uses (i.e. public/institutional, commercial/retail, and multifamily residential). This figure indicates that the overall connectivity of Hutchinson is fairly comprehensive. Whether by transit, existing trails or on-street bicycle facilities, residents have a means of accessing many of the public parks and activity generators within the city. This connectivity is a good starting point for multimodal connections and the basis from which a more comprehensive bicycle and pedestrian network can be built.

EXISTING BICYCLE FACILITIES

Bicycle and pedestrian facilities, when connected to recreational amenities, act as an extension of the recreational system. Connecting parks and other recreational facilities via bicycle and pedestrian facilities is a way to make parks more accessible and provide a safe and convenient means for residents to explore the recreational system.

Figure 5-25 illustrates existing on-street bicycle facilities including local signed routes (share the road), bike lanes, and off-street trails. The map indicates that the three facility types connect users to most of the public parks and bring users within proximity of many of the city's activity generators; however, there are gaps in the system. Furthermore, because most of the on-street facilities share the road, safety and comfortable use of the system is questionable. Share the road facilities (discussed in detail in Chapter 3) provide cyclists the least amount of protection physically and are not adequate facilities for high trafficked arterials and collectors. Furthermore, although share the road facilities are most commonly implemented, they can be confusing to drivers. Often these facilities do not denote where the cyclist should ride, making vehicle/bicycle interactions on roadways confusing. The share the road designations are a starting point for a more integrated and inclusive facility network. In Chapter 3.1, share the road facilities are discussed in detail. In order to build an inclusive network of on-street facilities, a multitude of factors that impact the application of on-street facility and the comfort of future users must be taken into consideration.

Figure 5-26 identifies corridors that the Project Management Team (PMT) indicated as routes that are frequently ridden in relation to how comfortable users feel. Routes within the core of the city including Washington Street, Monroe Street and portions of Avenue A and 3rd Avenue appear to be comfortable for cyclists. The PMT identified that 17th Street, 5th Avenue, and portions of Monroe Street south of 5th Avenue are difficult to ride on.



Comfortable use of a bicycle facility or street is critical for encouraging future riders. According to the PMT much of the city is accessible utilizing comfortable routes, some of which are designated facilities, but there are large gaps in the system.

In addition, the PMT identified proposed routes (indicated by a dashed blue line) that would link existing on-street facilities, link preferred comfortable routes, and provide connections to outer loops of the city.

TRANSIT

Providing transit on a local and county-wide level is important to the Hutchinson community. Successful transit is crucial to a stable economic program that serves social needs while supporting and promoting employer needs. Successful transit systems require continual investment that focuses on integrating transit into the community framework. As neighborhoods are built, as employment centers are created, and as roadways are improved, transit accessibility improvements can be incorporated to strengthen connections between origins, transit facilities, and destinations.

Despite how transit patrons primarily arrive at a transit stop, in the end all are pedestrians at some point in their trip. The pedestrian network, bicycle network, and transit network all support each other. A robust pedestrian and bicycle network serves as an important extension of any transit system.

Reno County Area Transit (RCAT) is a service of the Reno County Public Transportation Department. RCAT operates fixed route service in Hutchinson and South Hutchinson and provides complimentary paratransit service for eligible passengers within a 3.5 mile radius of 11th Avenue and Plum Street. Fixed route service in Hutchinson is illustrated on Figure 5-27 and includes the following routes:

- *Route 1N*: primarily serves areas north of downtown
- *Route 1S*: Primarily serves areas south of downtown and in South Hutchinson
- *Route 2NW*: Primarily serves a route northwest of downtown and along 17th Avenue
- *Route 2E*: Primarily serves an area east of downtown to the airport and north to 17th Avenue
- *Route 3*: Primarily serves an area just north of downtown along mostly 11th and 17th Avenues

Transfer locations are locations where route transfers can be made between routes 1, 2, and 3. Transfer locations are located at Hutchinson Mall (between 11th Avenue and 17th Avenue, east of K-61) and at the intersection of Avenue A and Washington Street.

Points of interest are identified stop destinations along the fixed routes although few locations have physical bus stop facilities. The points of interest are indicated with an asterisk on Figure 5-27. Currently, the RCAT fixed route service operates a “wave and ride” policy which means transit patrons can board and alight a bus at any location along the route, not just at the points of interest. RCAT plans to transition from the “wave and ride” policy to designated bus stops in the future, which will change the way riders access transit in the community.

LINEAR PARKS MASTER PLAN OBSERVATIONS



The Linear Parks Master Plan (LPMP), developed in 1999, is comprised of a planned interconnected network of trail corridors including outer loop recreational and multi-use trails, off-street facilities within the road right-of-way or along an easement, and on-street bicycle facilities.

Figure 5-28 shows a summary of the Linear Parks Master Plan. In the map, the different sections are grouped by their appropriate facility type. The outer loop trails (shown in orange) connect the outer periphery of the city to the Jim P. Martinez Sunflower Trail and complete a loop system around the city. These outer loop trails serve multiuse recreational functions accommodating equestrians, bird watchers, cyclists, and joggers. There are two outer loop trail sections identified that are possible alignments for a southeast loop extension; the two routes are denoted via a light and a heavy dashed line. Southeast Option 1 would keep the trail system within the existing city boundaries and avoid many of the industrialized areas. Southeast Option 2 pulls the system further to the east around the airport utilizing right-of-way along the edge of the airport property which would provide the users with a more rural experience (LPMP, 1999). The off-street facilities, shown as a solid blue line, act as a city-wide system connecting existing trails with proposed outer loop trails, on-street bicycle facilities, and activity centers.

This system is comprised of paved facilities, either asphalt or concrete, segregated from the street but within the right-of-way. The easement facilities, shown as a blue dashed line, serve to connect the off-street facilities via utility easements. Lastly, the on-street bicycle facilities, shown as a solid black line, connect segments of the off-street and easement facilities via designated bicycle routes or bike lanes.

Figure 5-29 shows the relationship between the proposed LPMP system and the public park system. The LPMP system connects nearly all of the parks within the city. Coupled with the existing recreational trail systems that have been built, the LPMP, if implemented would create a highly interconnected recreational trail system along arterial and collectors streets.

However, given that most of the LPMP system will be comprised of paved off-street facilities presumably located within the right-of-way, constructing much of this system will be very expensive. Previously discussed in Chapter 5, additional lane widths were analyzed to determine which arterial and collector streets have additional space for on-street facilities from curb to curb. The preliminary results of that analysis have identified alternative routes that deliver similar desired outcomes of some of the LPMP system at a fraction of the cost.

Additionally, the bicycle facility application potential analysis (Chapter 5) has identified select arterial and collector streets that could also facilitate the intended goals of a number of routes proposed in the LPMP system. If proposed routes in the LPMP were instead replaced by on-street facilities that utilize additional width within the curb to curb dimension of streets, then large capital costs could be saved or diverted to building some of the Easement Facilities or Outer Loop Trails proposed in the LPMP.



Figure 5-24 | Multimodal Connectivity

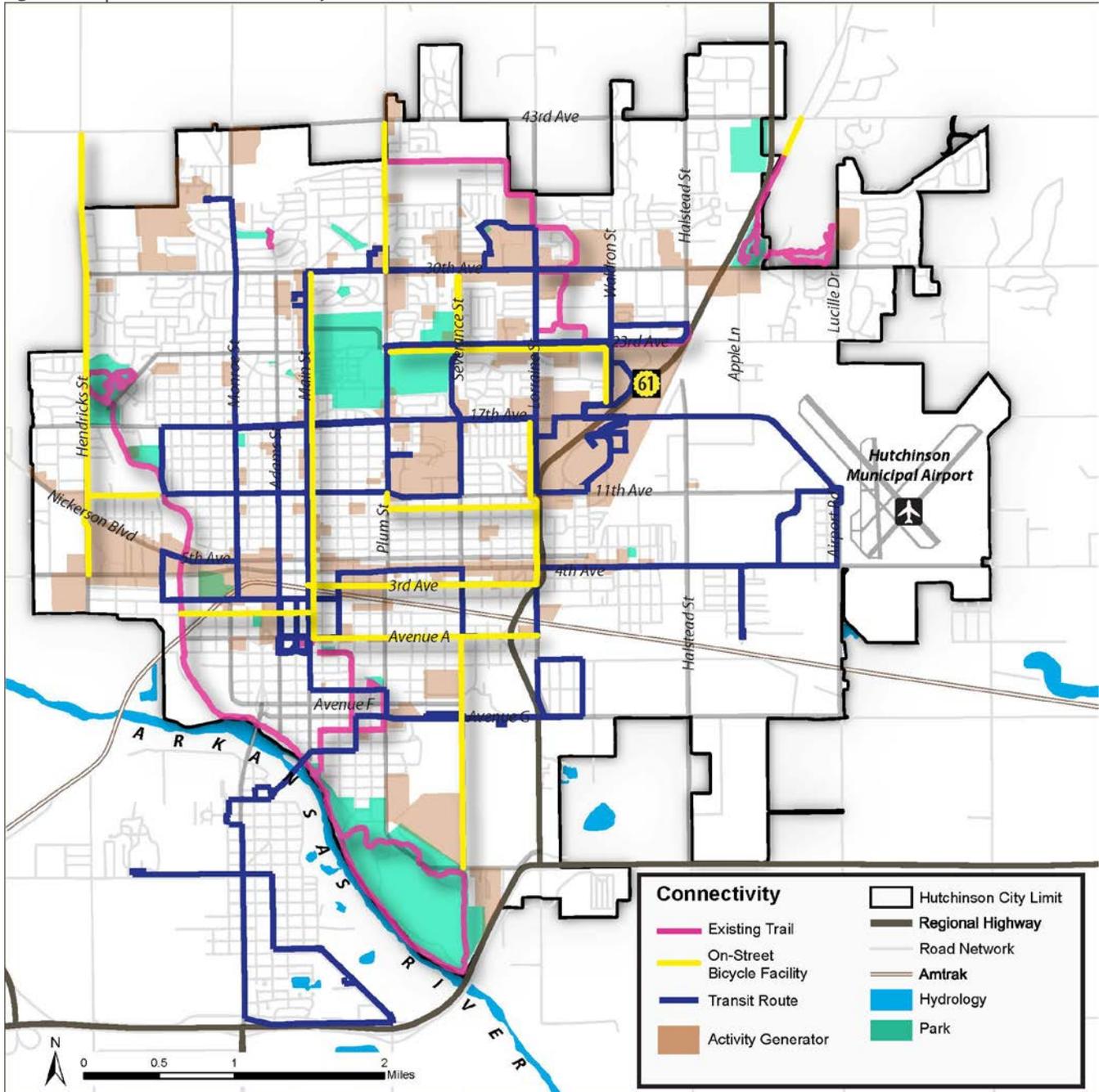




Figure 5-25 | Existing Bicycle Facilities

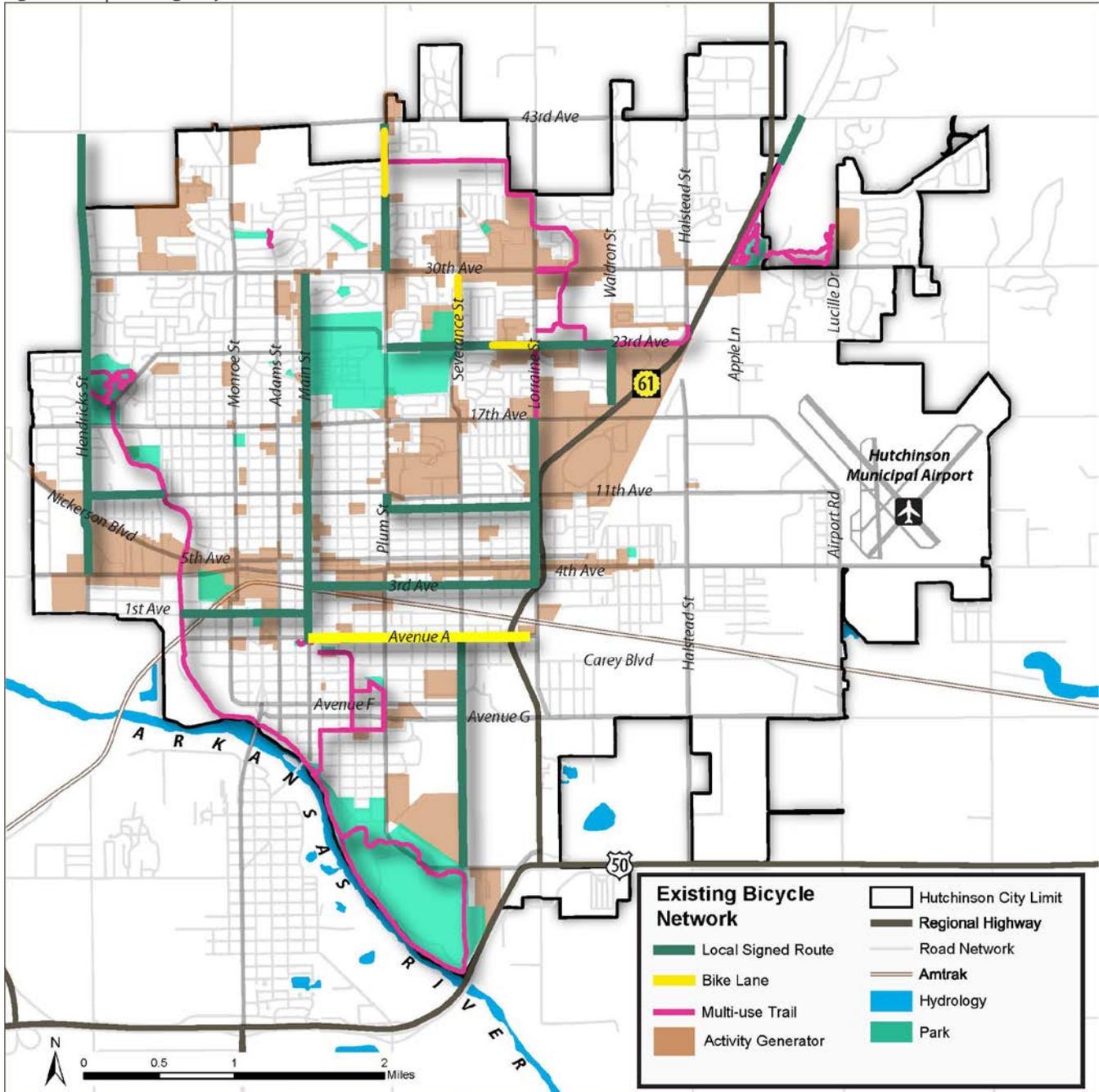




Figure 5-26 | PMT Identified Bicycle Corridors

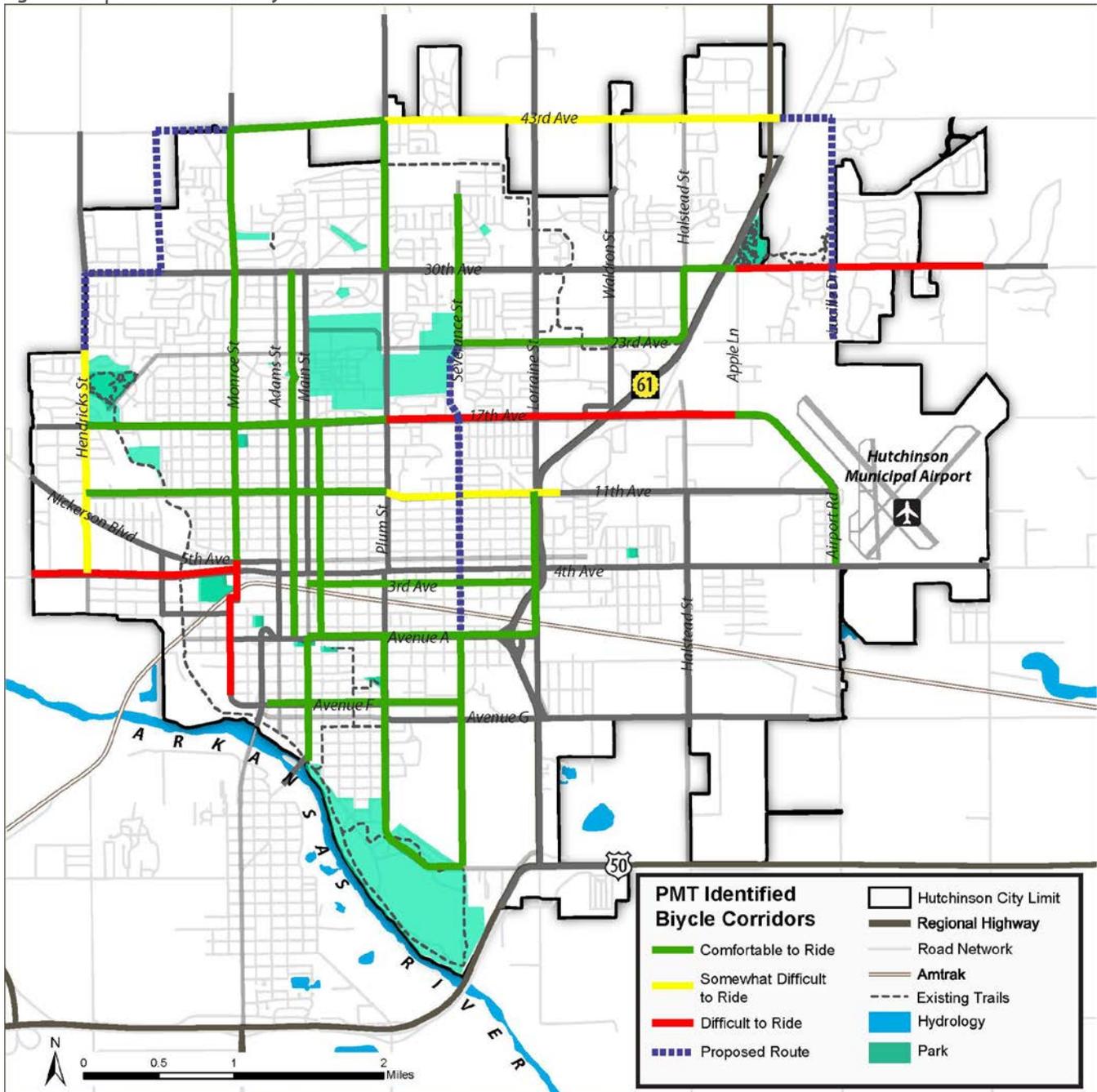




Figure 5-27 | RCAT Routes

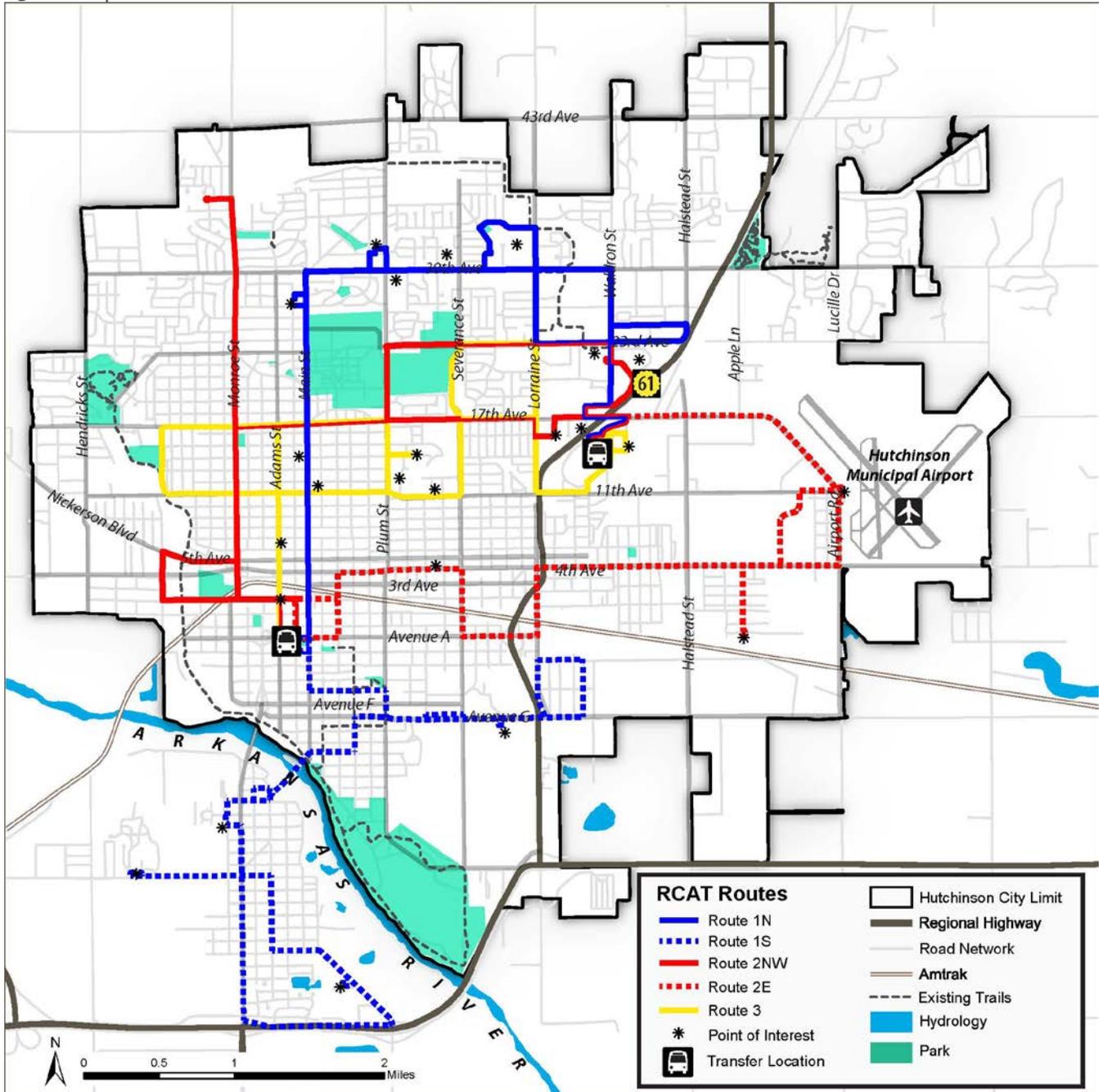




Figure 5-28 | Linear Parks Master Plan

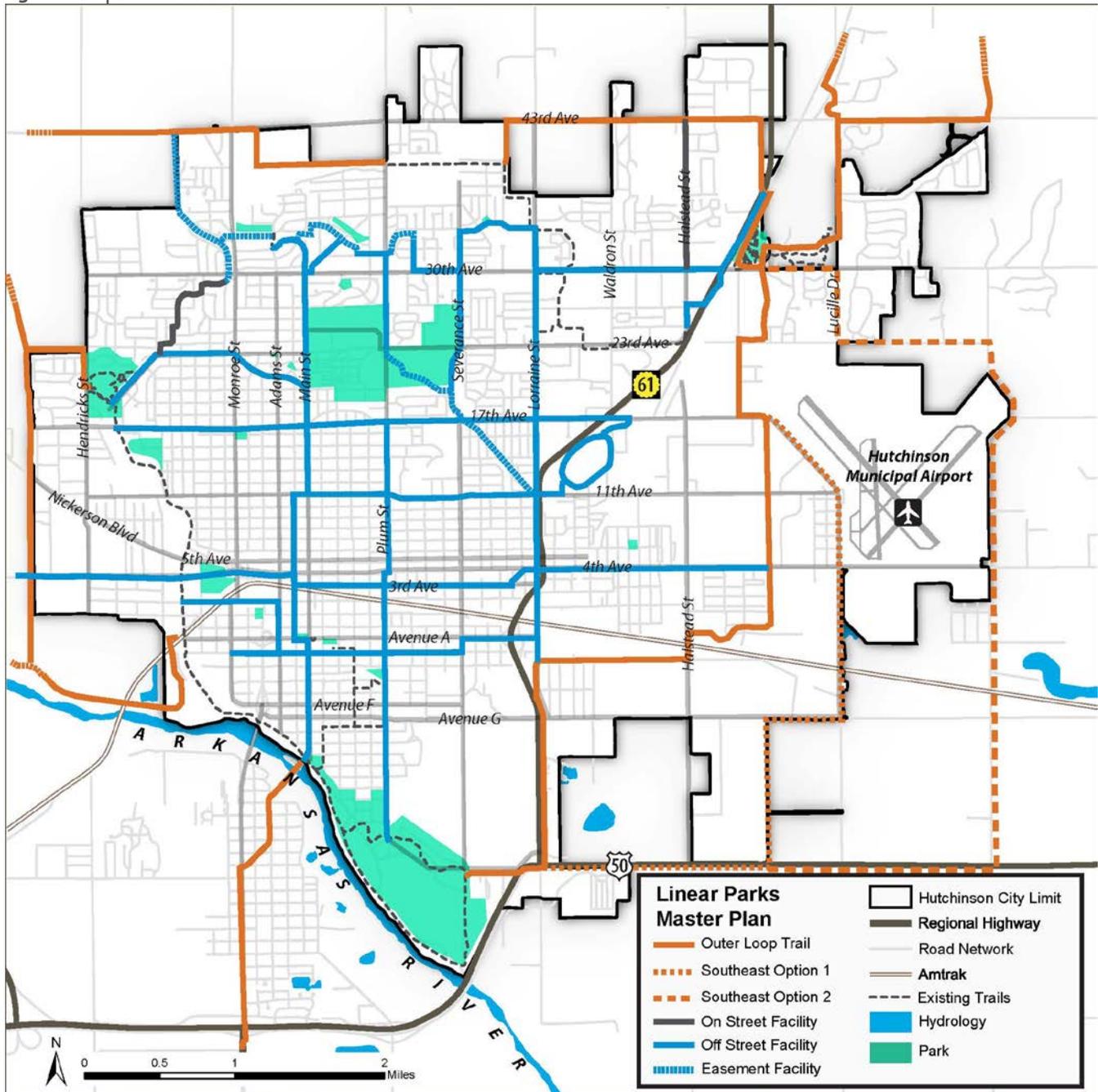
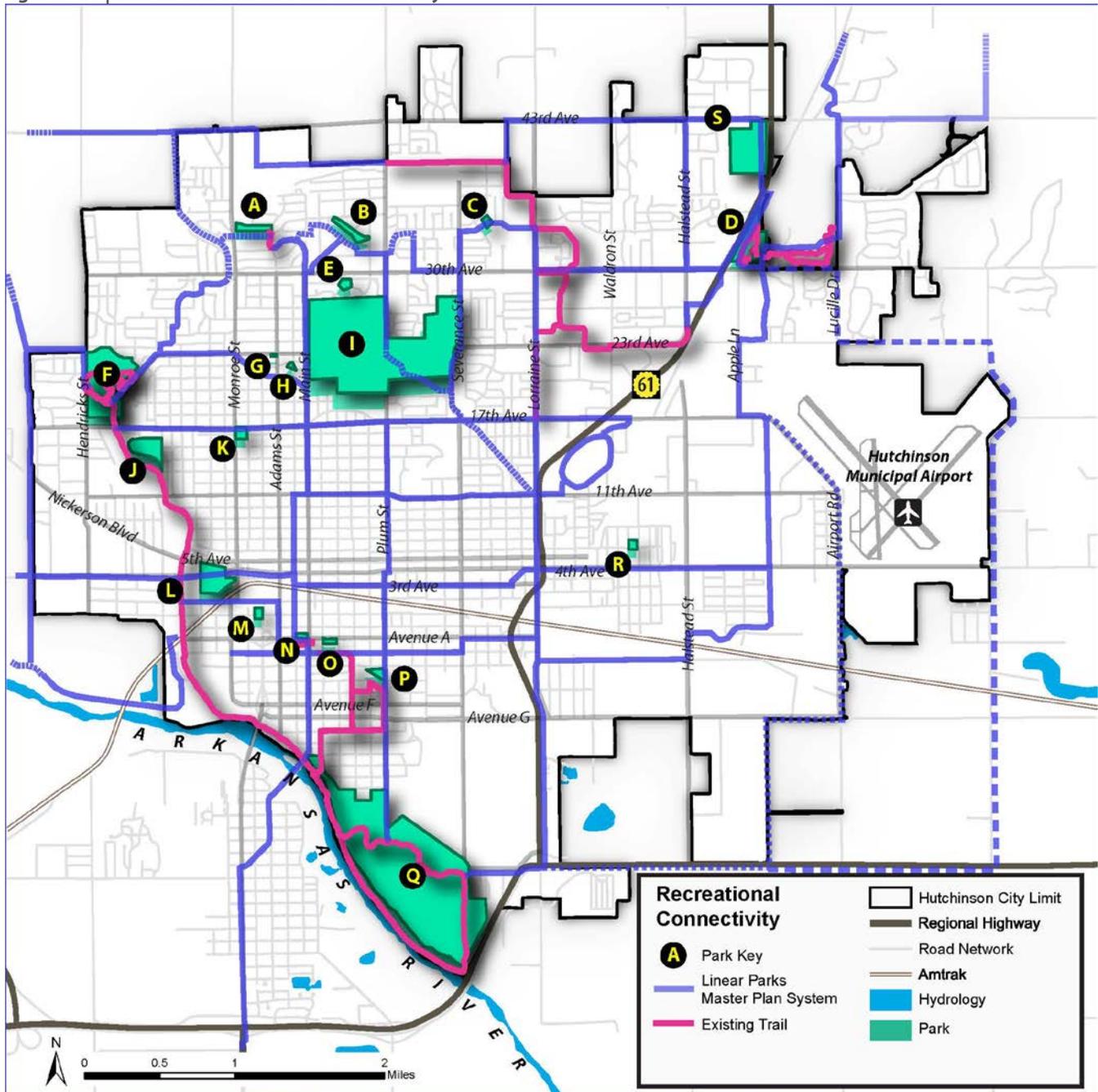




Figure 5-29 | Linear Parks Master Plan Connectivity



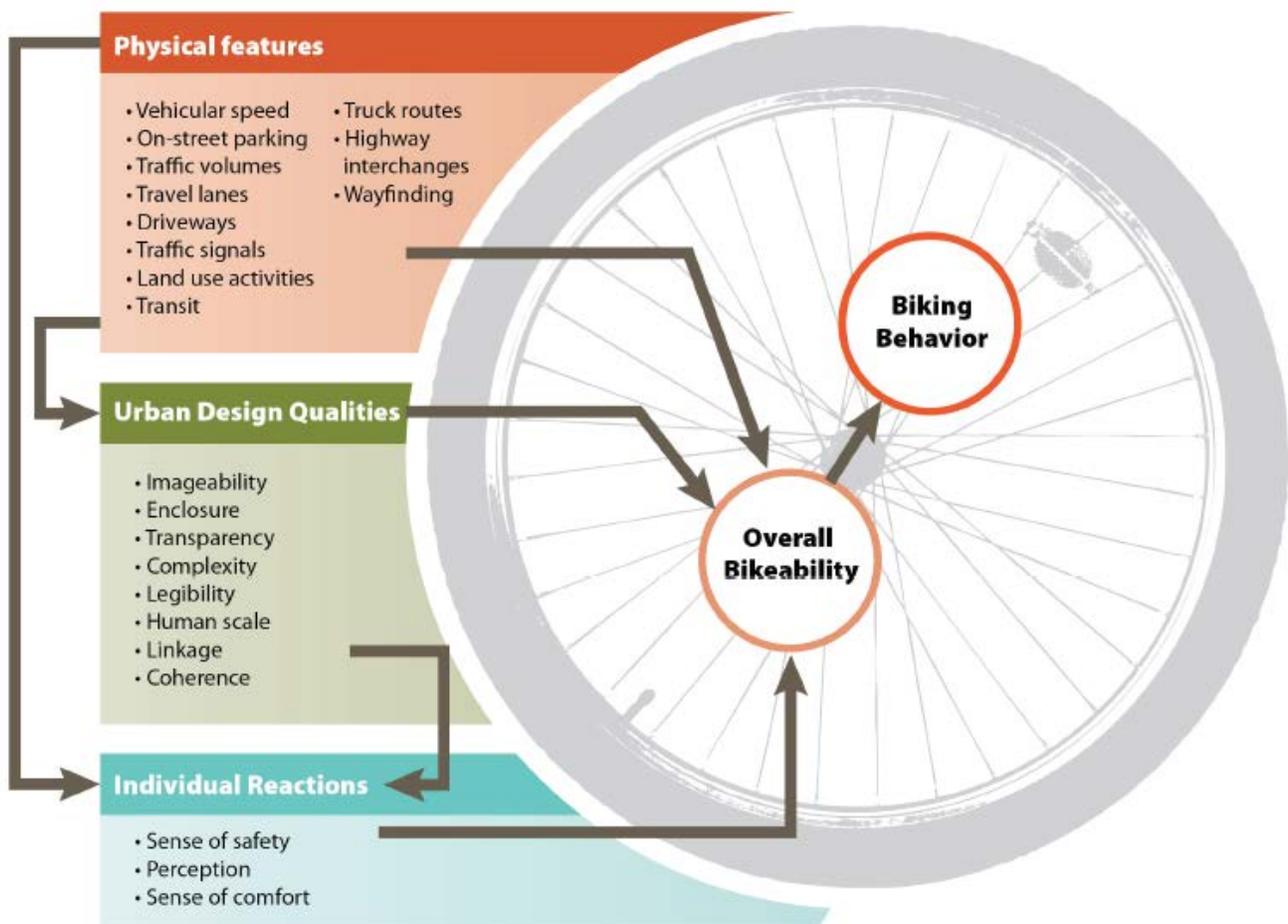


6.0 BICYCLE FACILITY OPPORTUNITIES & CONSTRAINTS

6.1 METHODOLOGY

An ideal bicycle route is determined by looking at the existing context of a community and the travel behavior of both drivers and bicyclists. Determining a good route requires an understanding of bicyclist and driver expectations. It also requires an understanding of the land use and development patterns, origins and attractions, traffic volumes and speed, roadway width and roadway configuration, among other community characteristics. Figure 6-1 illustrates the physical features and urban design qualities that contribute to a bikeable environment and the individual reactions that impact overall bikeability.

Figure 6-1 | Bikeability Factors



The methods used throughout this analysis utilized both quantitative and qualitative assessments of present day conditions. Using GIS data provided by the City in addition to background and support data collected through this project process, an understanding of connectivity and roadway characteristics was developed.

A matrix was developed in order to gauge the application potential of different bicycle facility types along the arterial and collector street network. This matrix includes several roadway characteristics and connectivity to



destinations within the city. Figure 5-2 is the matrix for which the application potential score was derived. The matrix categorizes street condition break points that impact the suitability of the three on-street bicycle facility types considered for this analysis: share the road, bike lane, and cycle track. Each facility type is sensitive to different roadway characteristics. For example share the road, bike lane, and cycle track facilities all have a high application potential on streets with a speed limit of 30 MPH and under; however, if the speed limit increases to 35 MPH or higher, share the road facilities are not recommended and bike lanes and cycle tracks are moderately applicable.

Each of the roadway characteristics identified impact the applicability or suitability of on-street bicycle facilities. The application potential is summarized into three tiers: high application potential, moderate application potential, and not recommended. The scoring of application potential was conducted by applying a weighted value to each street condition and calculating a composite scoring ranging from 0 to 60 (60 representing high application potential, 0 representing low application potential). This methodology allowed for quantitative analysis of city data to deliver an objective, unbiased assessment of bicycle facility performance.

Figure 6-2 | Bicycle Facility Suitability Matrix

STREET CONDITIONS		BICYCLE FACILITY TYPE		
		Share the Road	Bike Lane	Cycle Track
VEHICLE SPEED	≤ 30 mph	●	●	●
	≥ 35 mph	●	●	●
ON-STREET PARKING	Parallel Parking	●	●	●
	Diagonal Parking	●	●	●
TRAFFIC VOLUME	< 5000 Per Day	●	●	●
	> 5000 Per Day	●	●	●
TRAVEL LANES	≤ 2 Lanes	●	●	●
	≥ 3 Lanes	●	●	●
DRIVEWAY ACCESS	Few Driveways	●	●	●
	Many Driveways	●	●	●
TRAFFIC CONTROL	2 Signals Per Mile	●	●	●
	4 Signals Per Mile	●	●	●
	6 Signals Per Mile	●	●	●
CONNECTIVITY	Transit	●	●	●
	Schools	●	●	●
	Recreational	●	●	●
	Activity Generators	●	●	●
BARRIERS	Truck Route	●	●	●
	HWY Interchange	●	●	●

APPLICATION POTENTIAL

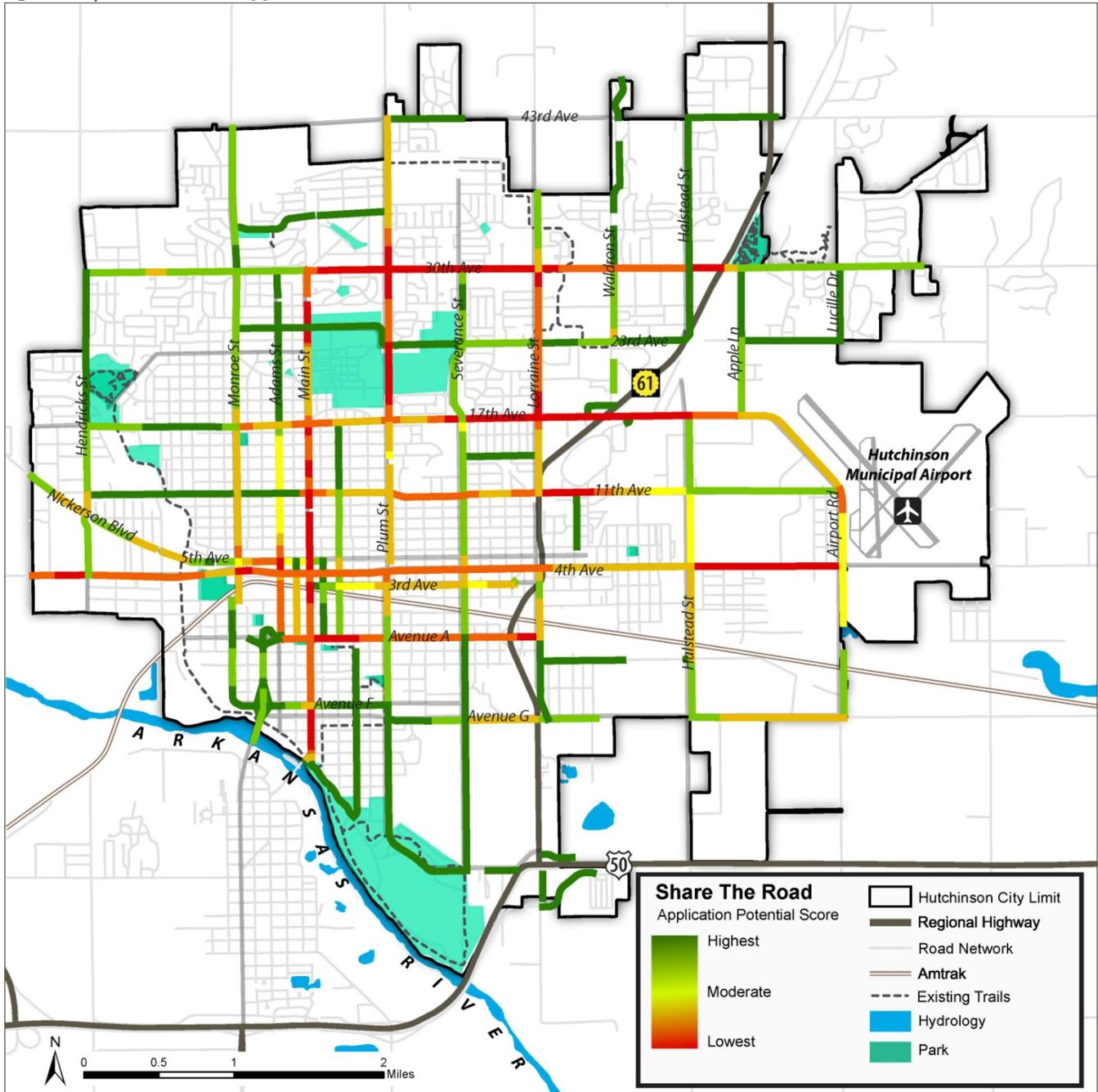
- High
- Moderate
- Not Recommended



6.2 SHARE THE ROAD APPLICATION POTENTIAL

Figure 5-3 shows the application potential score for share the road facilities within the curb to curb width of the arterial and collector street network. Share the road facilities have a very low application potential on 30th, 17th, and 4th Avenues in addition to Main Street and Lorraine Street (North of 4th Avenue). Streets with high application potential include Hendricks, Severance, and Halstead Streets (North of 23rd Avenue) in addition to 25th, 23rd, and 11th Avenues between Hendricks Street and Main Street.

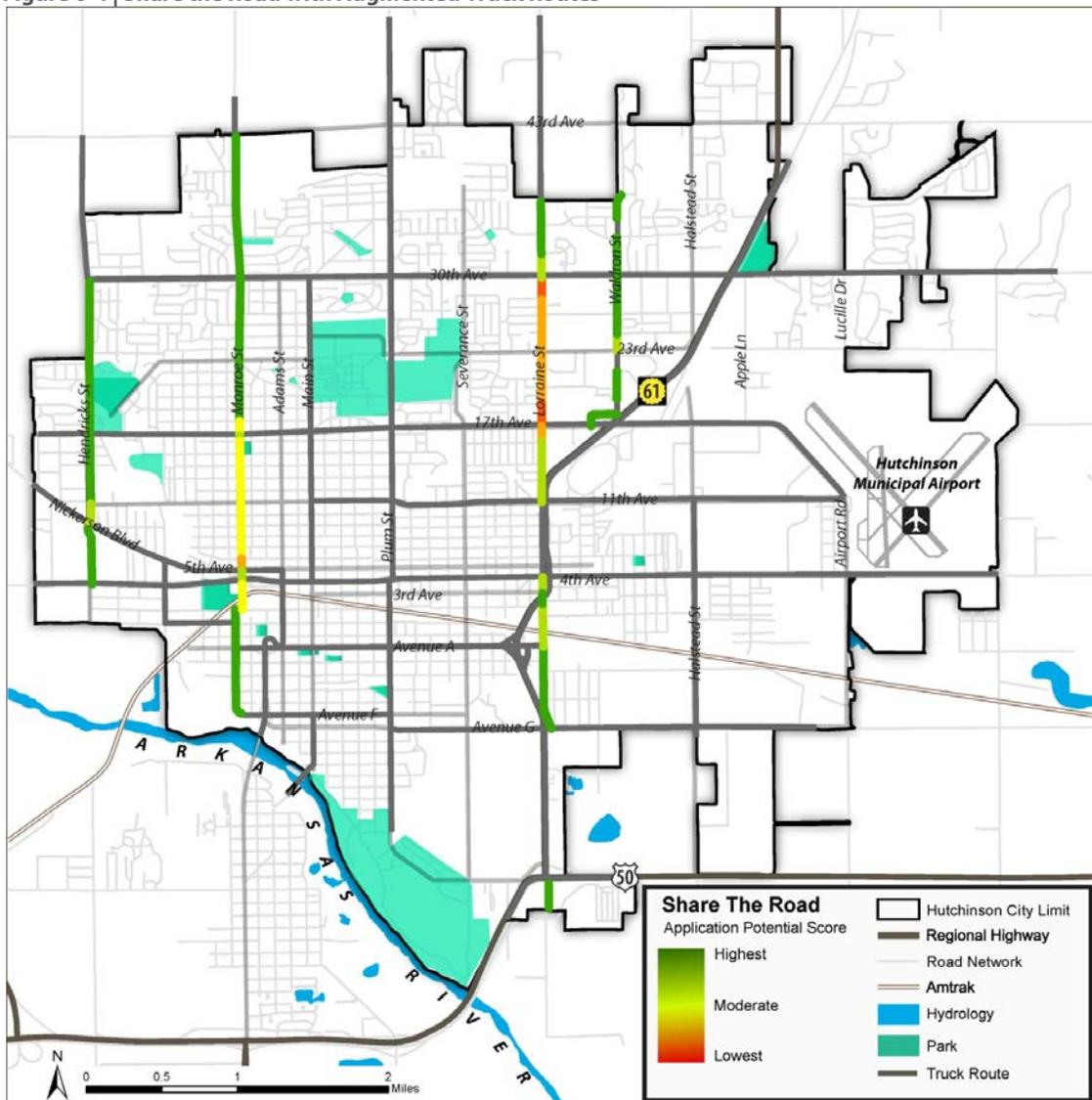
Figure 6-3 | Share the Road Application Potential





The truck route system in Hutchinson utilizes the city's arterial and collector network to provide commercial trucks access to commercial and industrial land uses. However, large trucks pose a significant barrier to on-street bicycle facilities, especially those that are unprotected, like share the road facilities. Monroe, Lorraine, Waldron, and Hendricks Streets are key north-south arterials and collectors that are currently designated as truck routes. Figure 5-4 attempts to examine how the application potential score for these routes would change if the truck route designation were removed. As the figure illustrates Hendricks Street becomes a high performing share the road route when the truck route designation is removed. Whereas Lorraine's share the road performance improves but only moderately. Additionally, Monroe Street performs well as a share the road facility when the truck route designation is removed. Waldron near 17th Avenue has considerable truck traffic therefore removing the truck route category may not make a significant impact at that specific location. If share the road facilities are a preferred facility type on arterials and collectors then removing Monroe Street or Hendricks Street from the truck route system should be considered.

Figure 6-4 | Share the Road with Augmented Truck Routes





6.3 BIKE LANE APPLICATION POTENTIAL

Figure 5-5 shows the application potential for bike lanes within the curb to curb width along arterial and collector streets. Compared to the share the road facility application, it becomes clear that more routes have higher application potential when upgraded to bike lanes. Severance Street in addition to 23th and 25th Avenues, have higher application potential as bike lanes that connect as a central artery for bicycle movement throughout the city.

Figure 6-5 | Bike Lane Application Potential

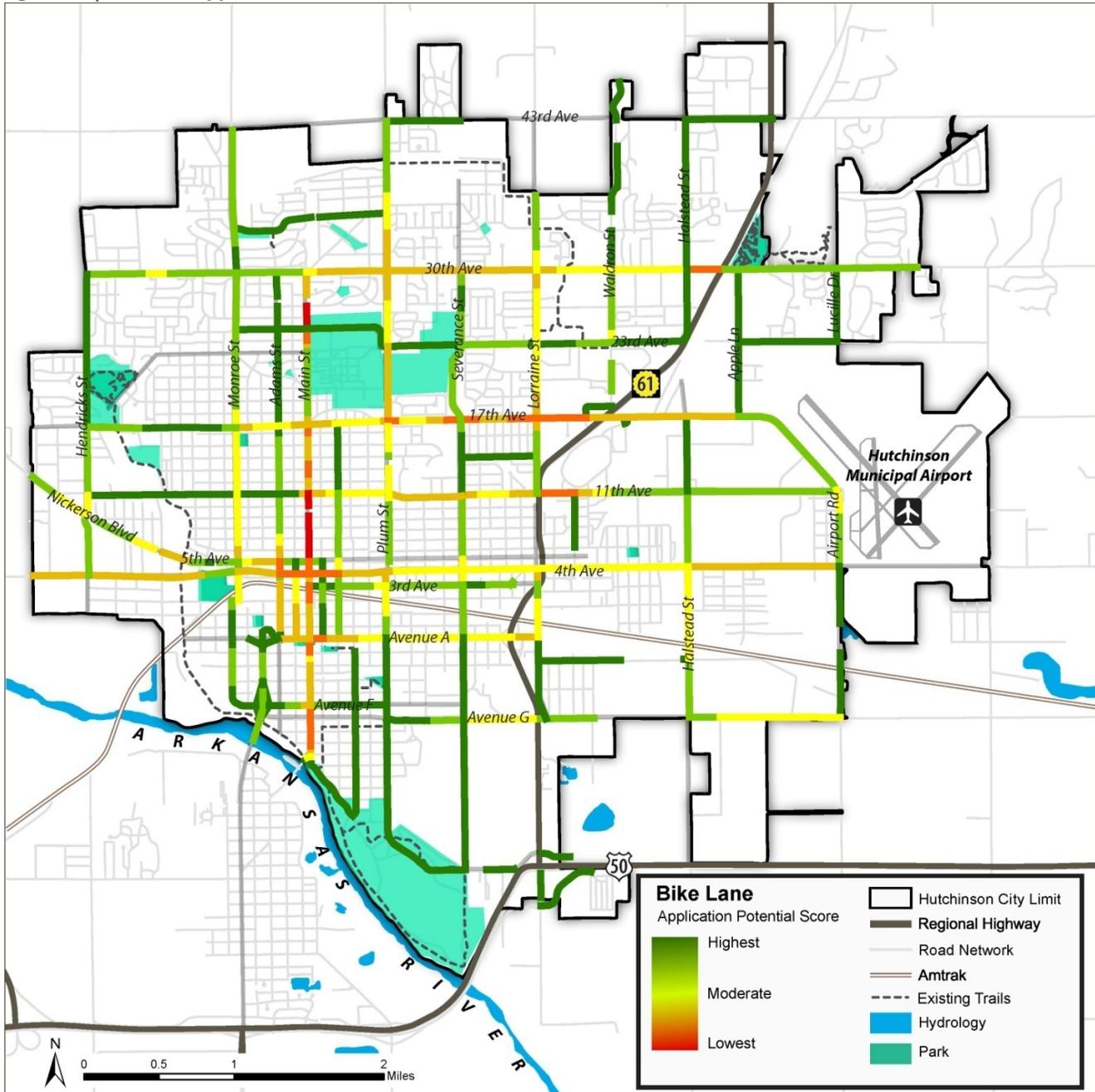
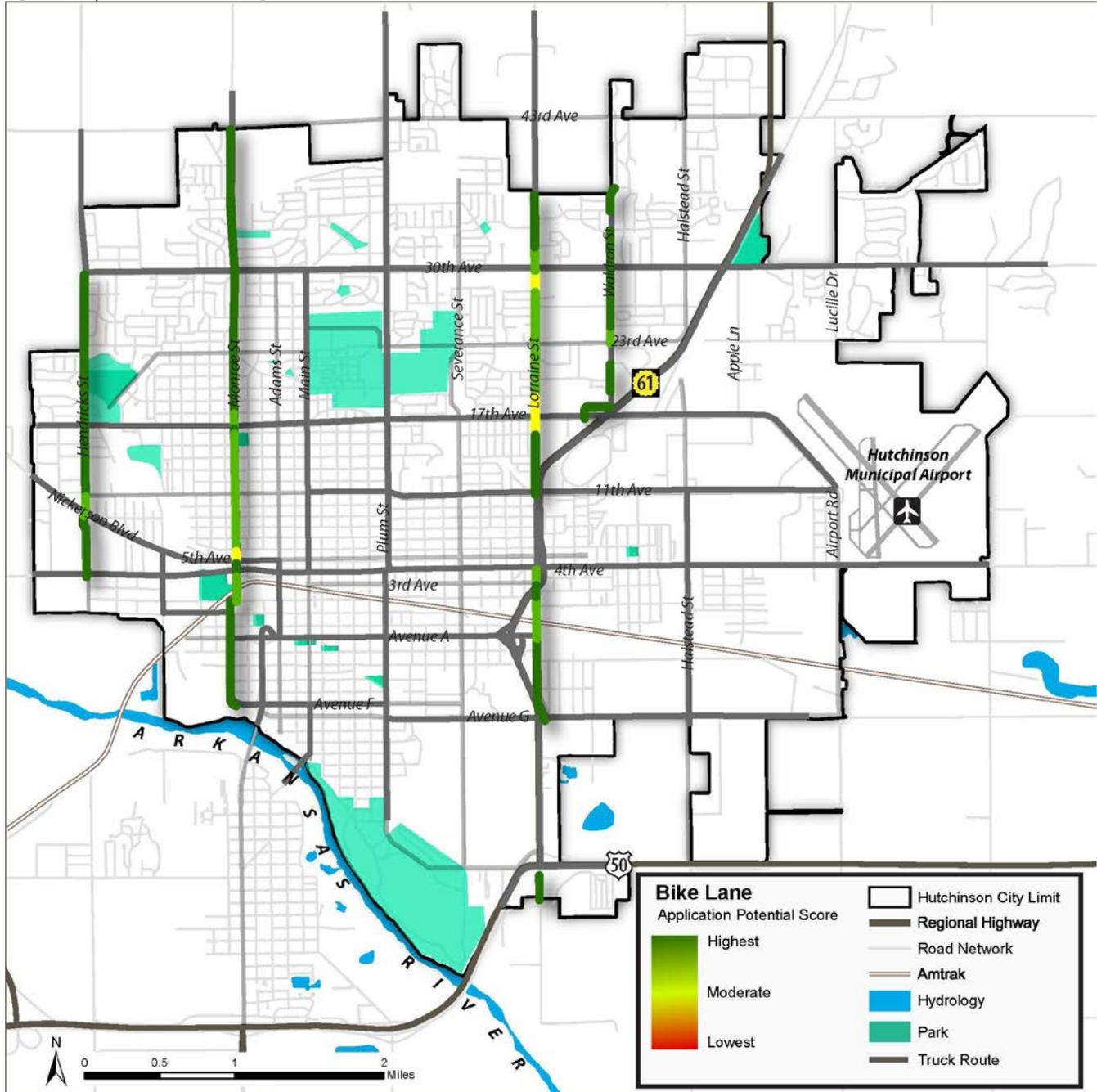




Figure 5-6 illustrates the removal of truck route designations along the same arterial and collector streets as discussed in Section 5.2. All streets in the figure, when bike lane facilities are applied, become highly applicable routes for north-south bicycle movement. Significant improvements in applicability are found along Monroe and Lorraine Streets especially between 11th and 30th Avenues.

Figure 6-6 | Bike Lane with Augmented Truck Routes





6.4 CYCLE TRACK APPLICATION POTENTIAL

Figure 5-7 shows the application potential for cycle track facilities within the curb to curb width of the arterial and collector street network. Compared to the previous facility types, much more of the arterial and collector system opens up when cycle track facilities are implemented. This figure begins to identify more east-west routes with higher application potential, Avenue A in particular becomes more appealing and suggests further connectivity with southeast Hutchinson.

Figure 6-7 | Cycle Track Application Potential

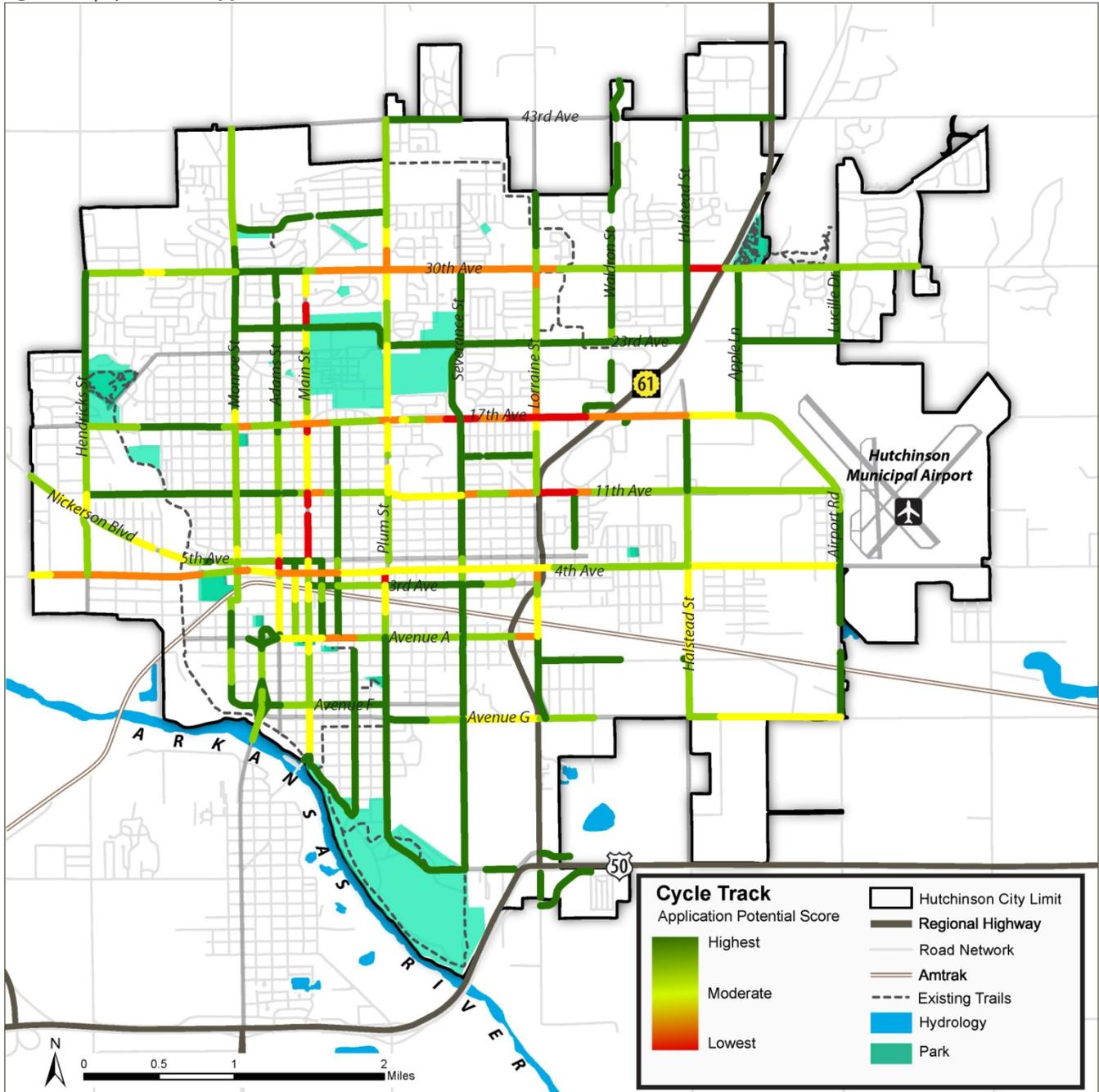
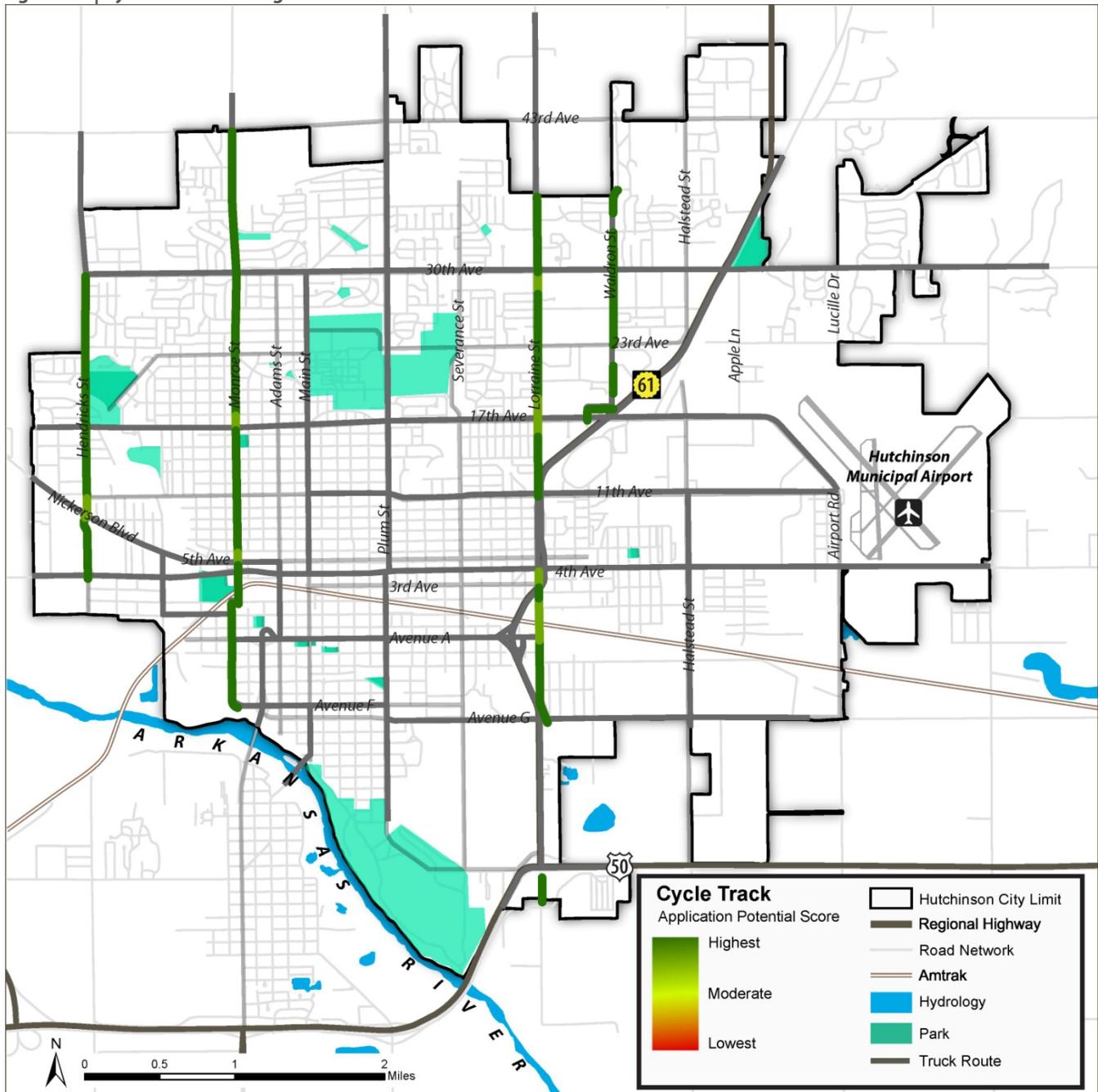




Figure 5-8 illustrates the removal of truck route designations along the same arterial and collector streets as discussed Section 5.2. Compared to the previous figures regarding this analysis (Figures 5-6 and 5-4) all of the streets in Figure 5-8 are shown to have a very high application potential. Lorraine Street, in particular, shows a significant improvement in application potential for a cycle track if the truck route designation is removed. Lastly, the removal of truck route designations improves the intersection conditions along high traffic east-west arterial and collector streets; this is especially the case for 30th, 17th, and 11th Avenues.

Figure 6-8 | Cycle Track with Augmented Truck Routes





6.5 FINDINGS

Referring to the application potential maps for each bicycle facility type (Figures 5-3 to 5-8), initial findings from this analysis indicate there is not one facility type that is more appropriate than another when considering a general application city-wide. Some facility types have a higher application potential to select arterials and collectors than others. Additionally, depending on the desired outcome of a connected on-street bicycle system, some facility types may be unnecessary. Using Severance Street as an example, in all three facility application potential maps, Severance has a high application potential. Therefore, if the application potential is high as a share the road facility as well as when measured as a cycle track facility, perhaps a share the road facility is more applicable because of the cost of construction for a higher protected facility (i.e. bike lane or cycle track).

With this example in mind, several arterial and collector streets appear to be potential connector routes that could effectively link the entire city, while minimizing capital expenditures. Severance Street and 23rd Avenue (connecting to 25th Avenue near the State Fair Grounds) could act as a spine for city-wide connectivity. These streets have high application potential for share the road or bike lane facilities because there is significantly less traffic along these streets. Additionally, Monroe and Lorraine Street could act as additional north-south connectors (bike lanes or cycle tracks) if these streets are removed from the truck route designation.

A southern east-west connection is desirable; however, even when utilizing cycle tracks the application potential for any contiguous street is moderate at best. Avenue A recently was redesigned to incorporate bike lanes. Although this route only performed moderately there may be an opportunity to increase the performance of this new facility if strategic improvements to minimize truck route impacts and K-61 interchange conflicts are implemented.

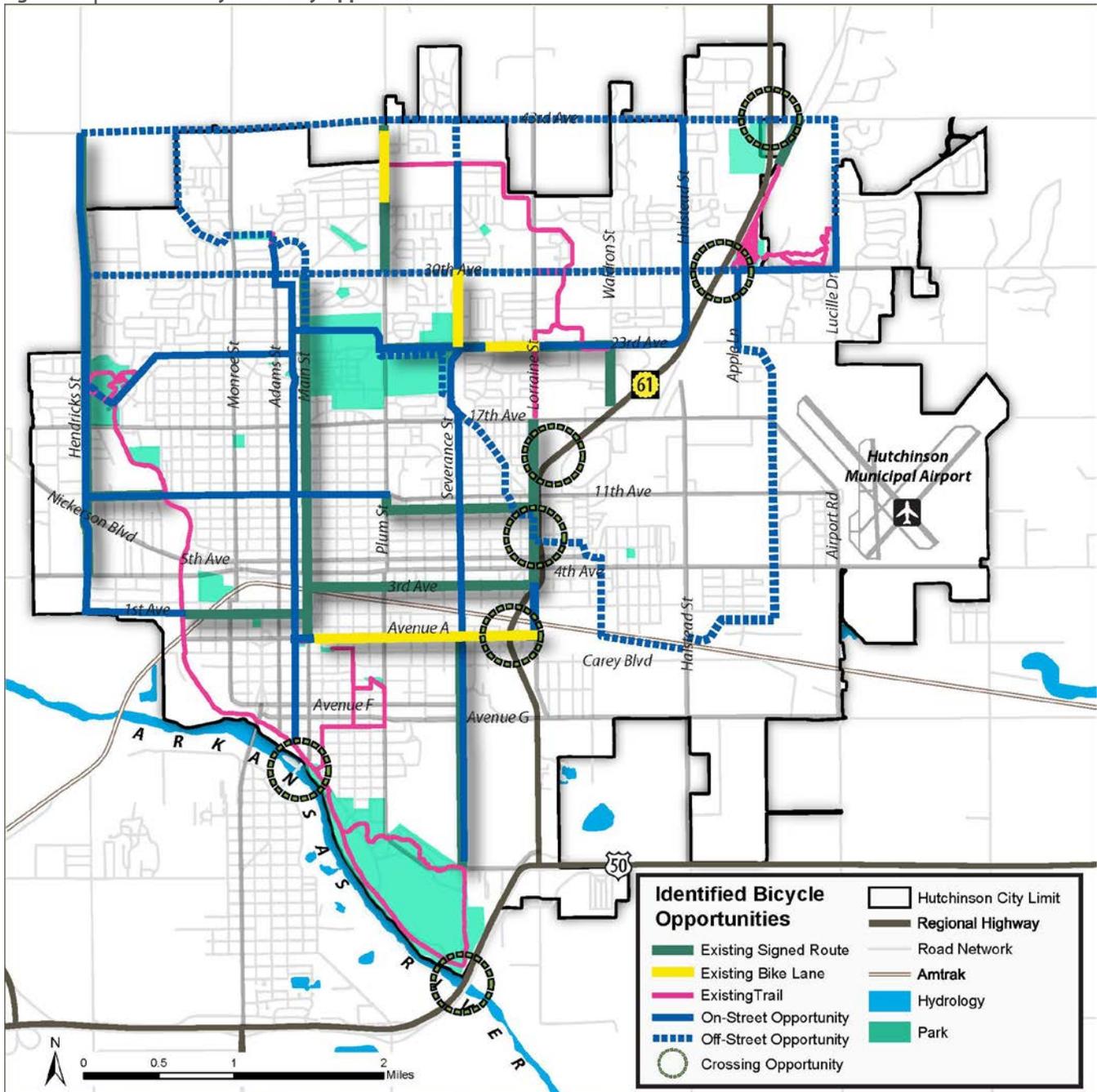
Figure 5-9 illustrates identified bicycle facility opportunities given the preceding analysis. The figure includes existing on-street and off-street bicycle facilities, on-street and off-street opportunities, areas of concern, and crossing opportunities for K-61 and the Arkansas River.

The on-street opportunities, shown via a solid blue line, predominantly follow the arterial and collector system with the exception of Washington Street, described further in Chapter 7. These include extensions of existing bike lanes and share the road facilities that can facilitate a comprehensive system, providing comfort and safety to users and connectivity to activity generators, parks, trails, and the City of South Hutchinson.

The off-street facilities utilize key easement facilities identified from the LPMP, discussed in Section 4.13. These off-street routes remove cyclists and pedestrians from the heaviest traveled arterials and provide connectivity along a more scenic and quiet route.



Figure 6-9 | Identified Bicycle Facility Opportunities





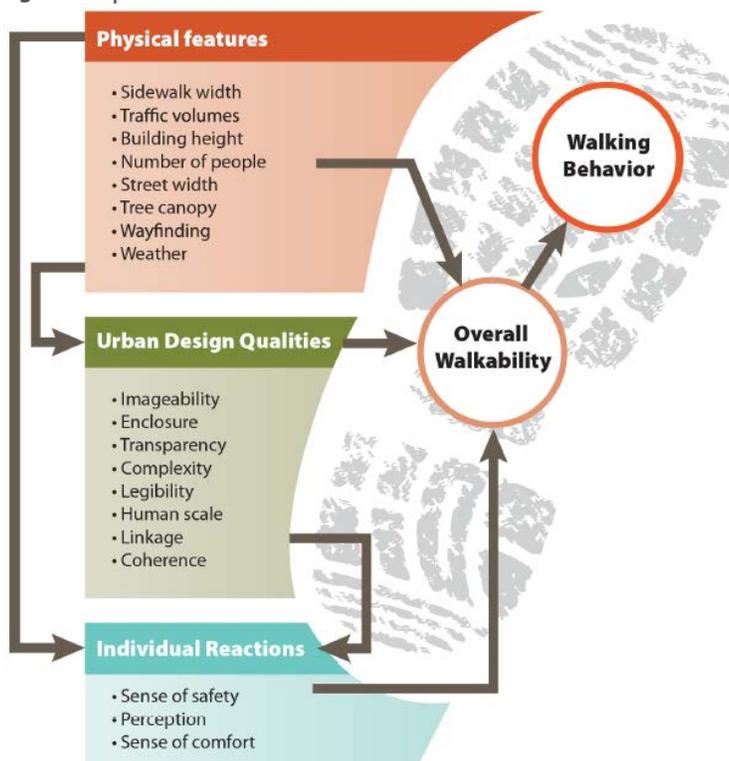
7.0 PEDESTRIAN FACILITY OPPORTUNITIES & CONSTRAINTS

In addition to a robust on-street bicycle facility system, a complimentary pedestrian system is incredibly important to connecting people and places in Hutchinson. With rare exception, at some point in a day everyone is a pedestrian. Well-connected sidewalks that facilitate pedestrian movement to and from destinations helps to mitigate safety concerns but can also encourage an active and healthy lifestyle, encourage alternative transportation modes and can stimulate development and economic development activity. Section 5.11 of this plan includes an analysis of sidewalk inventory conducted by the City of Hutchinson. Referencing the analysis of sidewalk existing conditions, Hutchinson has the beginnings of a cohesive pedestrian network that links public parks, schools, activity generators, transit and neighborhoods. The following analysis is intended to connect the gaps in that system to encourage an inclusive network, making all of Hutchison accessible on foot.

7.1 METHODOLOGY

An ideal pedestrian route is determined by looking at the existing context of a community and the travel behavior of pedestrians along with all other roadway users (vehicles, buses, and bicycles). Determining a good route requires an understanding of who the pedestrian is and where they want to go. It also requires an understanding of land use and development patterns, origins and attractions, traffic volumes and speed, and sidewalk conditions, among other community characteristics. Figure 7-1 illustrates the physical features and urban design qualities that contribute to a walkable environment and the individual reactions that impact overall walkability.

Figure 7-1 | Features of Walkable Environments





Utilizing sidewalk condition data collected from the City, a pedestrian facility rating analysis and application potential matrix was created. The Pedestrian Facility Suitability Matrix, similar to that of the bicycle facilities suitability analysis, utilizes a cumulative score based on break point identified in the City’s data. The highest possible score for a sidewalk segment is 70 and the lowest is 0. As an example, Table 7-1 shows how the rating for sidewalk width was determined, this rating was combined with the rating a segment received using the matrix in Figure 7-2; each of the factors are weighted equally.

Table 6-1 | Rating Matrix for Sidewalk Widths

Sidewalk Width	Score
Greater than 8'	10
Between 5' – 7' / Greater than 8'	8
Between 5' – 7'	5
Less than 4' / Greater than 8'	4
Less than 4' / Between 5' – 7'	3
Less than 4'	0

Figure 7-2 | Pedestrian Route Suitability Matrix

STREET CONDITIONS	SIDEWALK PRESENCE			SIDEWALK WIDTH			TRAVEL SPEED		TRAFFIC VOLUME		TRAVEL LANES		DRIVEWAY ACCESS		CONNECTIVITY			BARRIERS		
	Both-sides	One-side	None Present	≥ 10 feet	5-9 feet	≤ 4 feet	≤ 30 mph	≥ 35 mph	< 5000 Per Day	> 5000 Per Day	≤ 2 Lanes	≥ 3 Lanes	Low Access	High Access	Transit	Schools	Recreational	Activity Generators	Truck Route	HWY Interchange
Pedestrian-friendly Characteristic	High	Moderate	Not Recommended	High	Moderate	Not Recommended	High	Moderate	High	Not Recommended	High	Moderate	High	Not Recommended	High	High	High	High	Not Recommended	Not Recommended

APPLICATION POTENTIAL ● High ● Moderate ● Not Recommended

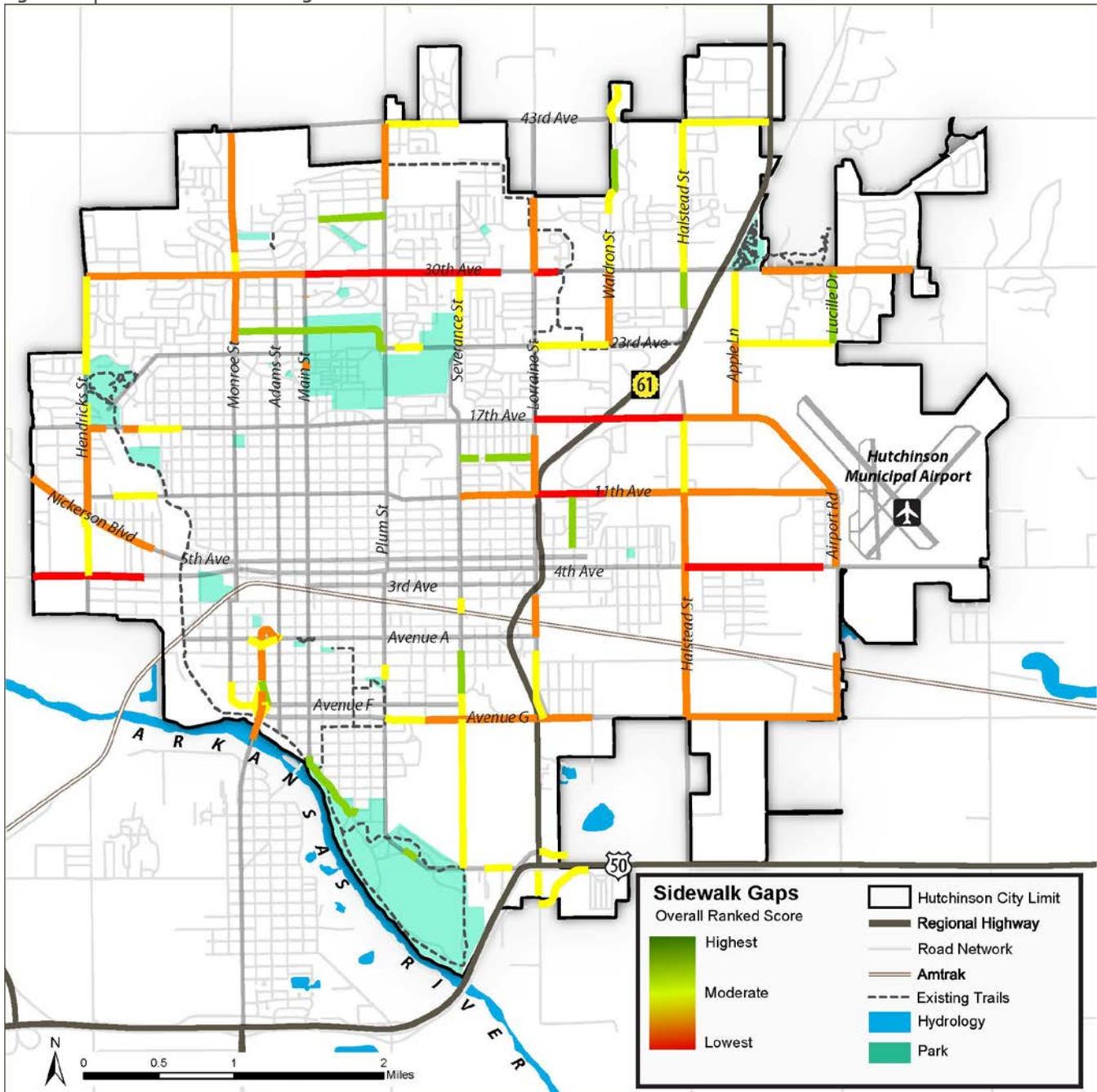
7.2 FINDINGS

Figure 7-3 illustrates the rating system as applied to the arterial and collector street system where no sidewalk is present. Many of the peripheral streets score relatively low where no sidewalk is present. Similarly, the streets in and around downtown score higher because there is a well established sidewalk network and both the sidewalk and roadway characteristics are more favorable to pedestrian facilities.

Considering the application of pedestrian facility types in relation to the Pedestrian Route Rating analysis (Figure 7-3), streets that score a moderate to low rating would best be served by a pedestrian facility with a higher level of protection, including more buffer space and/or a wider sidewalk width. Detached sidewalks with larger pedestrian zones would be ideal for the lowest scoring streets especially when the sidewalk connects to activity generators.



Figure 7-3 | Pedestrian Route Rating





8.0 CONCLUSION: CITY OF HUTCHINSON, BICYCLE & PEDESTRIAN MASTER PLAN

Previous sections of this plan outlined the existing conditions and methodology used in producing the future bicycle network and future pedestrian network. This section is divided into the Bicycle Network and the Pedestrian Network.

8.1 BICYCLE NETWORK

The bicycle network was developed by determining the best assessment performance by facility type for each corridor. Constraints such as curb-to-curb width, right-of-way width, and areas of concern were used to determine which final type of facility would be recommended. Table 8-1 breaks down these factors by identified route. The complete bicycle network is mapped in Figure 8-1.

Table 8-1 | Identified Bicycle Opportunities Matrix

Identified Route	Best Assessment Performance	Travel Lanes	Curb Width (feet)	ROW Width (feet)	Area of Concern	Traffic Volume (VPD)	Recommended Facility	Priority
Hendricks St (4th to 30th Ave)	Share the Road Facility	2	22 - 28	61 - 78	Narrow curb width (11th to 19th Ave)	2,001 - 5,000	Bike Lane	3
Washington St	Not Scored	2	20 - 60	51 - 83	Connection North via Adams	NA	Bicycle Boulevard	1
Lorraine St (3rd to 17th Ave)	Share the Road Facility	3-5	25 - 72	58 - 97	K-61 Interchange and Truck Route	5,001 - 10,000	Bike Lane	2
Severance St	Share the Road Facility	2	25 - 48	47 - 152	Narrow curb width (Avenue A to Sherman St)	5,001 - 10,000 (30th to Avenue A)	Bike Boulevard	1
Main St	Share the Road Facility	4-5	62 - 82	110 - 130	NA	5,001 - and higher	No Facility	1
Halstead St (23rd to 43rd Ave)	Share the Road Facility	2	22 - 34	59 - 80	NA	2,001 - 5,000	Bike Lane	2 and 3
Plum St (30th to 43rd Ave)	Cycle Track	2-4	25 - 36	60 - 100	Higher Traffic Volumes (30th Ave)	5,001 - and higher	Bike Lane	2
Avenue A	Cycle Track	3	50 - 60	118 - 125	K-61 Interchange	5,001 - 10,000	Bike Lane	1
State Fair Rd	Share the Road Facility	2	24	NA	State Fair Traffic	NA	Share The Road	1
1st Ave	Not Scored	2	26 - 92	46 - 127	Island parking (Jefferson to Poplar St)	NA	Bike Lane	3
3rd Ave	Cycle Track	2-4	38 - 60	100 - 123	Traffic Volume Increases near Severance St	Varies	Bike Lane	2
10th Ave (Plum to Lorraine St)	Not Scored	2	28 - 60	61 - 68	NA	NA	Bike Boulevard	2
11th Ave (Hendricks to Plum St)	Bike Lane	2	22 - 36	70 - 81	Traffic Volume Increases near Plum St	Varies	Bike Lane	2
Swarens St/ 23rd Ave (West of Main St)	Not Scored	2	26 - 28	48 - 89	NA	NA	Bike Boulevard	1
23rd Ave (East of Main St)	Bike Lane	2	26 - 30	35 - 77		Less than 5,000	Bike Boulevard	1
30th Ave	Cycle Track	2-5	24 - 76	66 - 131	K-61 Interchange and Truck Route	10,000 and higher	Cycle Track or Multi Use Path	2
43rd Ave	Bike Lane	2	22 - 30	46 - 82	Speed Greater than 45 MPH	2,001 - 5,000	Bike Lane or Multi Use Path	3



Figure 8-1 | Planned Bicycle Network

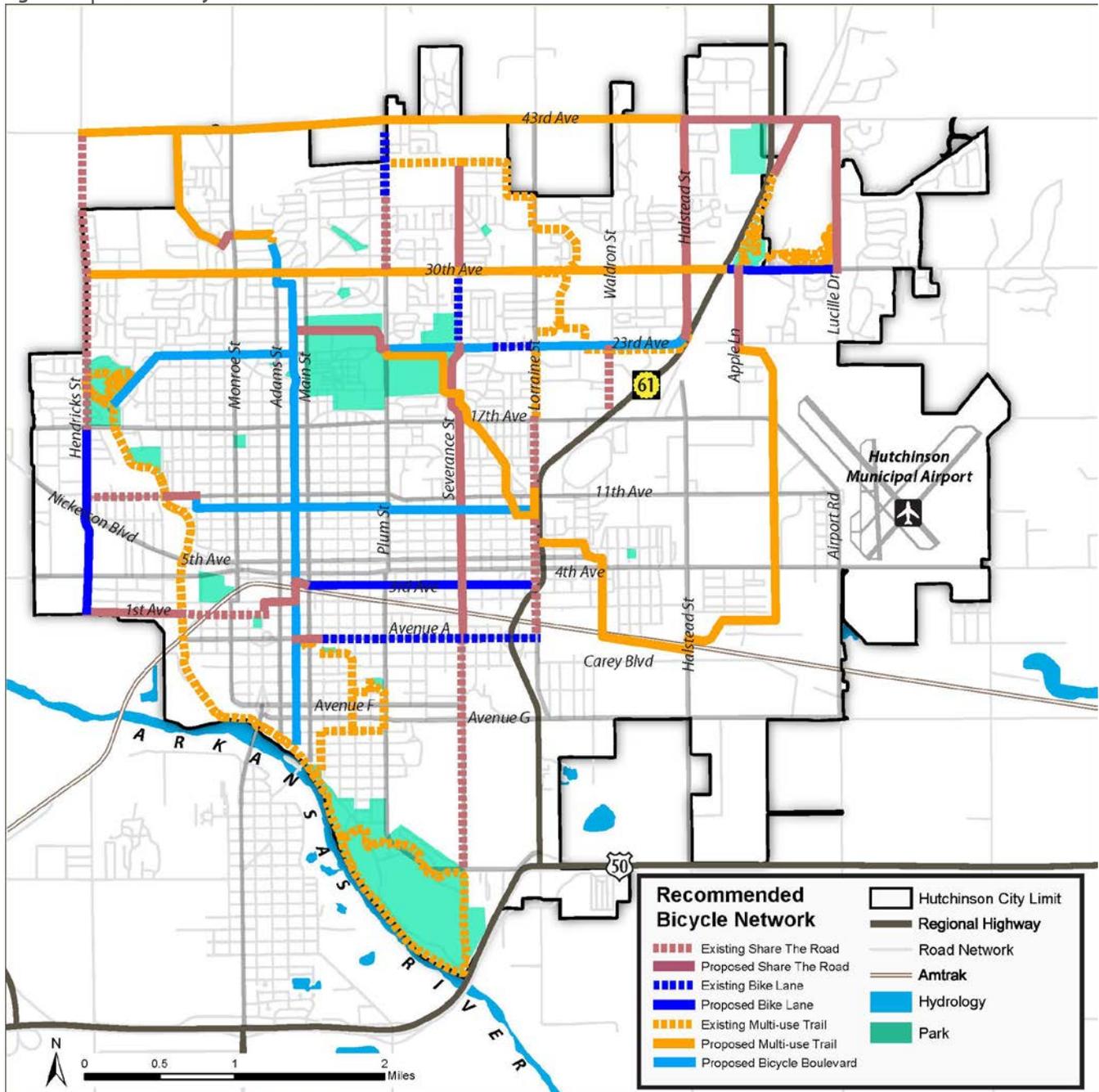
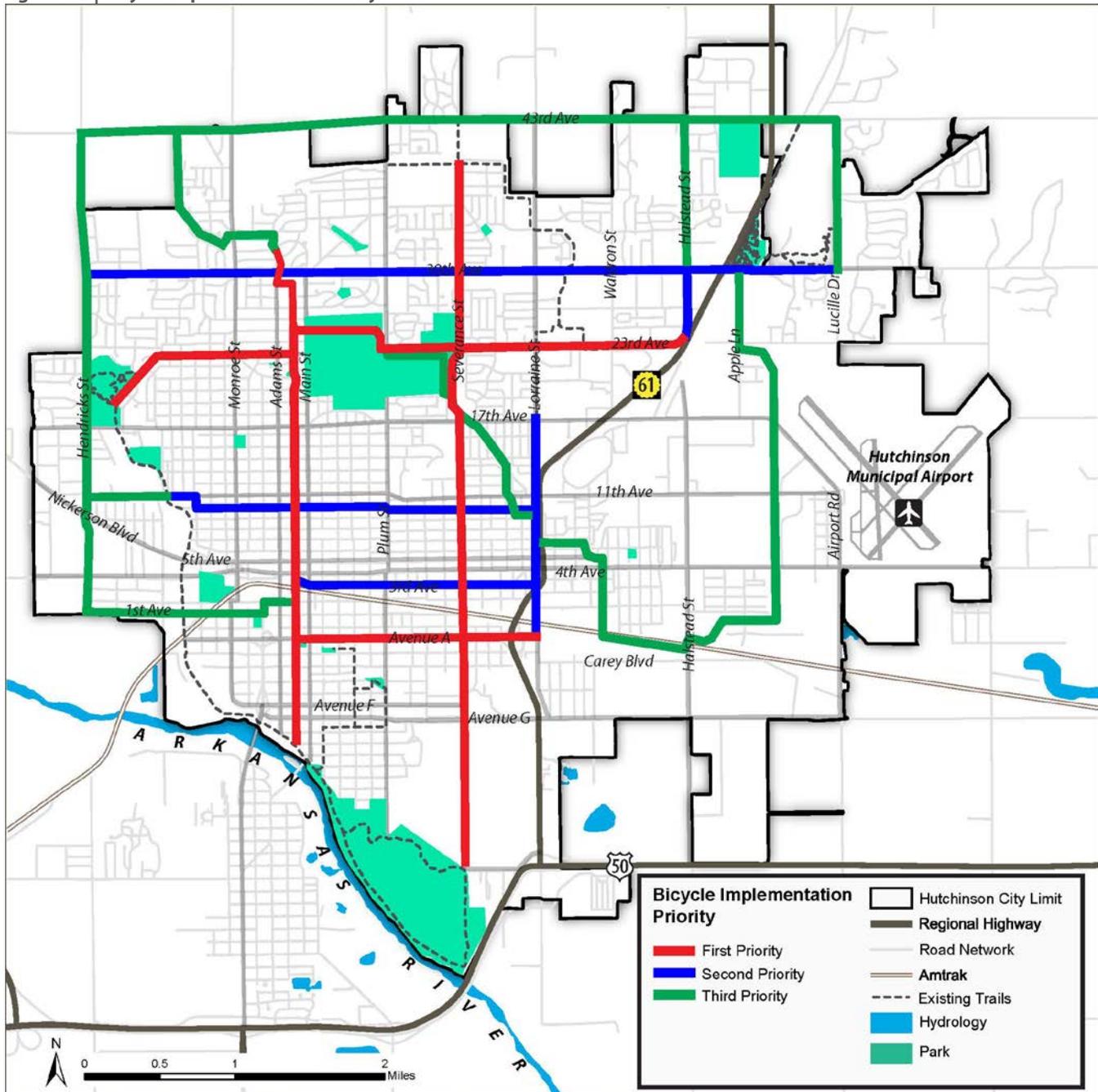


Figure 8-2 displays the implementation priority of the bicycle network. The priority of each route was determined based upon what routes build the spines of the network and expanding from their based upon the role each route plays in connecting the Hutchinson community. It is recommended that these improvements be incorporated at the time of roadway improvements. Many of the proposed facilities are on-street bike lane or share the road facilities which may require little more than proper signage and pavement markings.



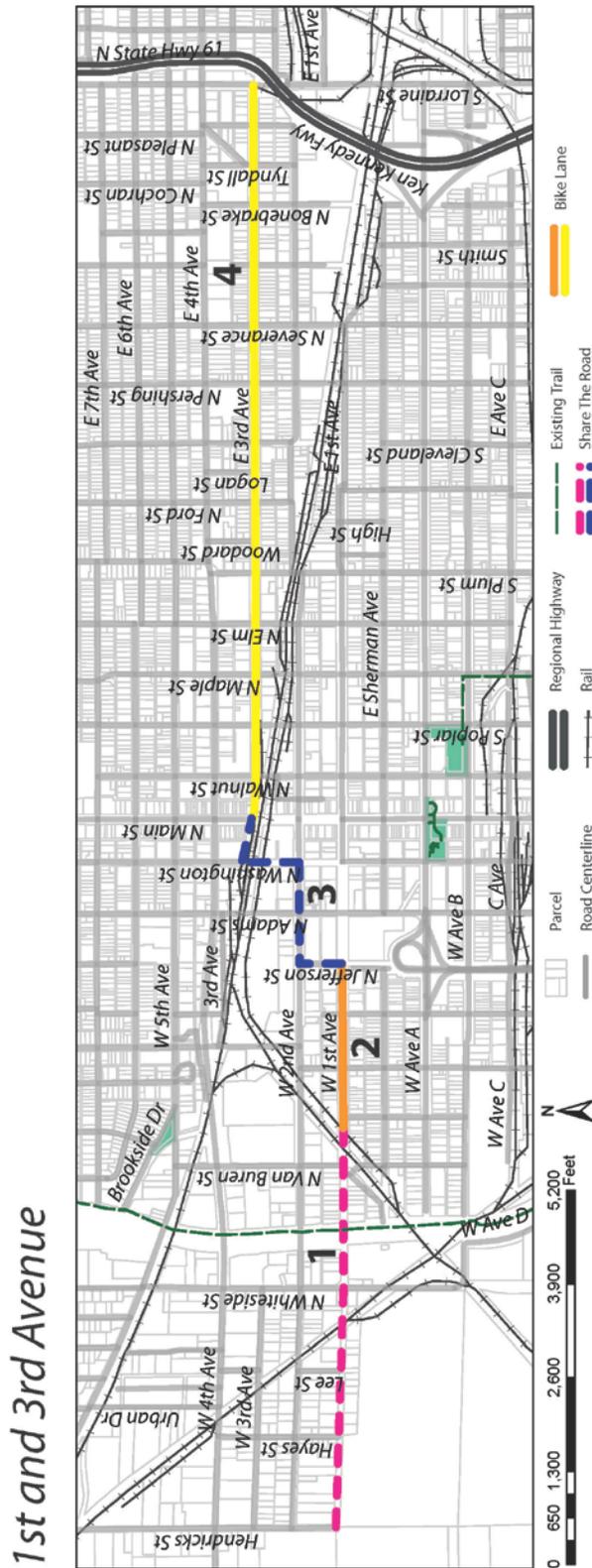
Figure 8-2 | Bicycle Implementation Priority



Figures 8-3 through 8-12 illustrate the segment-by-segment design of each route including cost estimates and implementation strategies for each segment. Figures 8-3 through 8-12 are organized south to north, followed by east to west.



Figure 8-3 | 1st and 3rd Avenue Corridor Recommendations



Corridor	Location	Type	Fits Within Existing ROW	Paved Width	Cost Estimate	Implementation Strategies
1st Ave (Hendricks to Whiteside)	On-Street	Share The Road	Yes	N/A	\$7,100.00	Low traffic volume in addition to narrow curb to curb widths, make this street an optimal candidate for Share The Road facilities. -Add signage and pavement markings.
1st Ave (Van Buren to Jefferson)	On-Street	Bike Lane	Yes	N/A	\$5,600.00	Adjacent activity generators and wider curb to curb widths will necessitate a higher level of protection for cyclists. -Add signage and pavement markings.
2nd Ave (Jefferson to Washington)	On-Street	Share The Road	Yes	52 - 60'	\$2,000.00	-Add Share The Road signage and Bike Crossing pavement markings as necessary.
3rd Ave	On-Street	Bike Lane	Yes	60'	\$17,500.00	Very wide road widths allow for bicycle lanes -Add signage and pavement markings



Figure 8-4 | 10th and 11th Avenue Corridor Recommendations

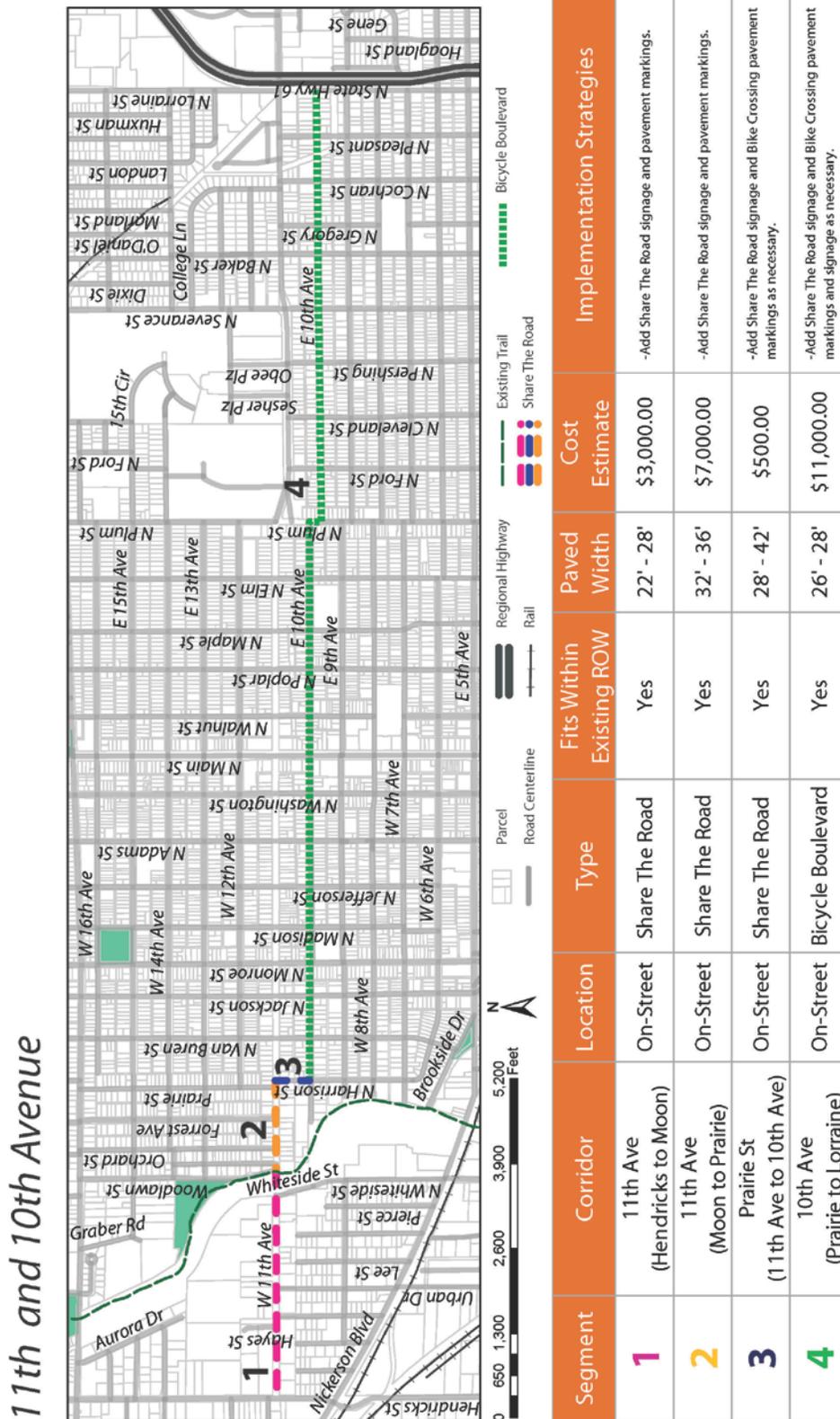




Figure 8-5 | 23rd Avenue Corridor Recommendations



Segment	Corridor	Location	Type	Fits Within Existing ROW	Paved Width	Cost Estimate	Implementation Strategies
1	23rd Ave (Swarens to Washington)	On-Street	Bicycle Boulevard	Yes	25' - 28'	\$6,200.00	Corridor has low traffic volume along residential streets -Install signage and pavement markings.
2	State Fair Rd (Main to Severance)	On-Street	Share The Road	Yes	24' - 26'	\$120,000.00	-Install signage and pavement markings. -Add 3' of paved shoulder on each side of street.
3	23rd Ave (Severance to Halstead)	On-Street	Bicycle Boulevard	Yes	26' - 30'	\$3,800.00	Corridor has low traffic volume along a residential street in addition to the proximity to major arterials. -Install signage and pavement markings. -Delineate connections with existing and proposed on and off-street facilities.



Figure 8-6 | 30th Avenue Corridor Recommendations

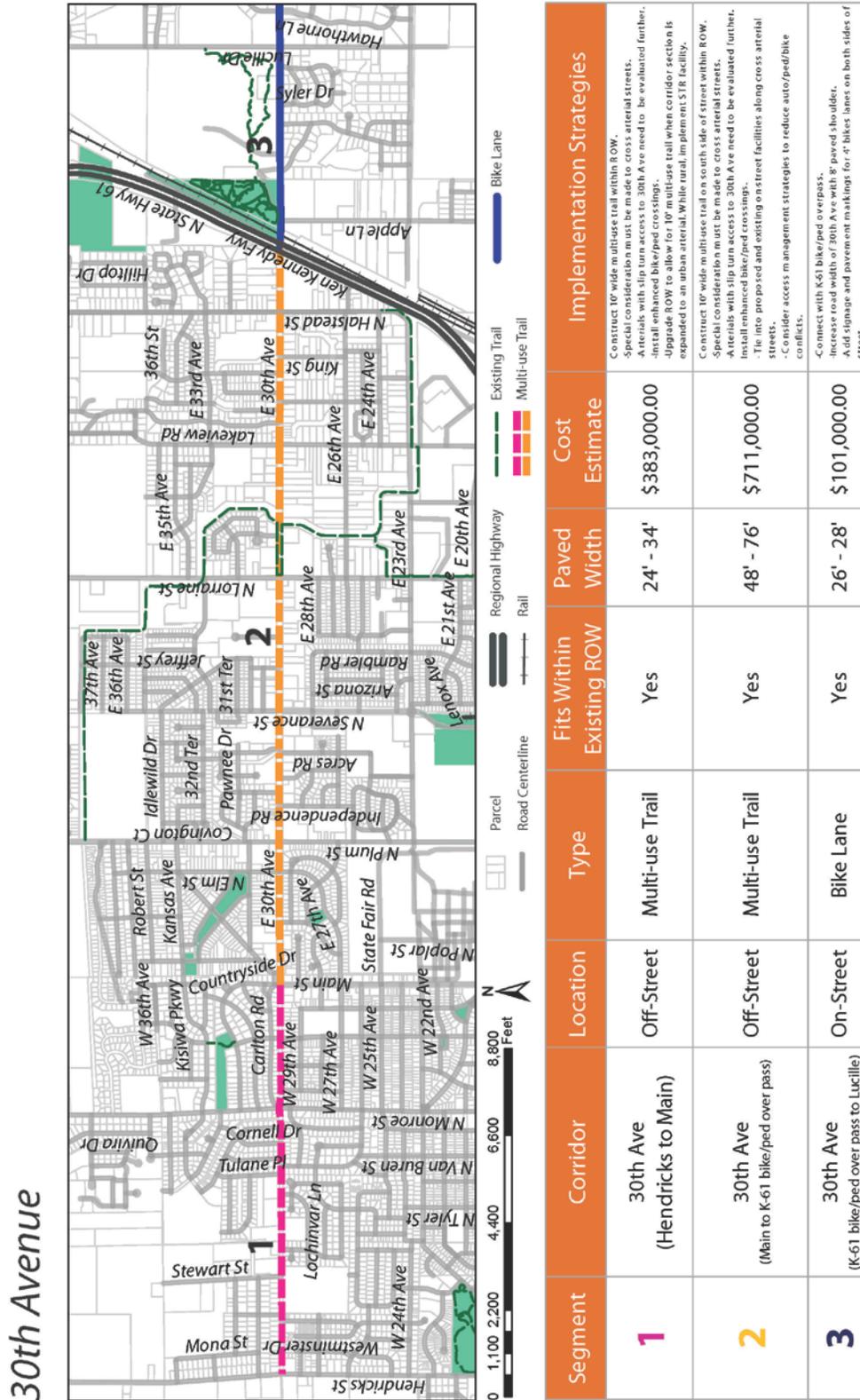




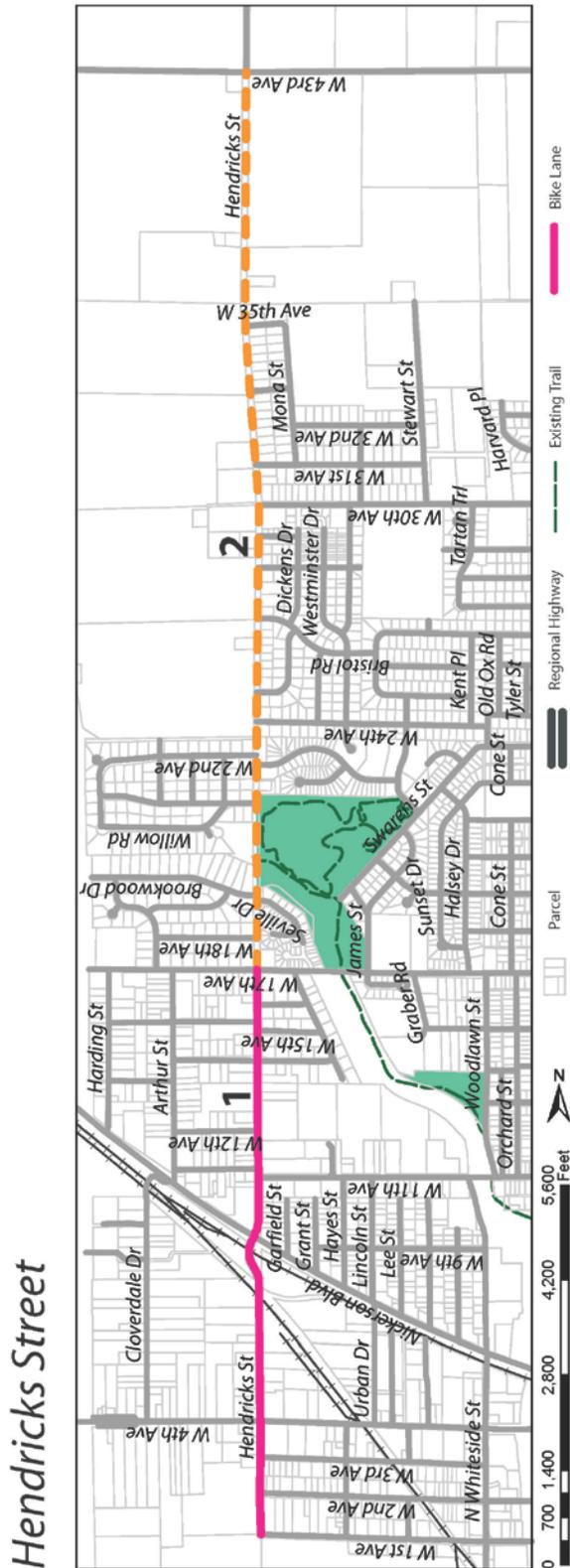
Figure 8-7 | 43rd Avenue Corridor Recommendations



Segment	Corridor	Location	Type	Fits Within Existing ROW	Paved Width	Cost Estimate	Implementation Strategies
1	43rd Ave (Hendricks to Monroe)	Off-Street	Multi-use Trail	Yes	N/A	\$263,000.00	<ul style="list-style-type: none"> -Construct 10' multi-use trail within existing ROW when corridor is upgraded to urban arterial. While rural, implement STR facility. -Address intersection crossings with pavement markings and signage. -Install trail head connecting to Hendricks on-street facility.
2	43rd Ave (Monroe to Halstead)	Off-Street	Multi-use Trail	Yes	22'	\$790,000.00	<ul style="list-style-type: none"> -Construct 10' multi-use trail within existing ROW. -Address intersection crossings with pavement markings and signage. -Install trail heads connecting with Severance and Halstead on-street facilities.
3	43rd Ave (Halstead to Lucille)	On-Street	Share The Road	Yes	20' - 22'	Paved Shoulder: \$25,000.00 Multi-use Trail: \$270,000.00	<ul style="list-style-type: none"> Narrow lane width and speed limit is 40mph, however, traffic volumes are very low. Implement STR facility over bridge. Evaluate bridge widening when bridge replacement is necessary. -Add signage and pavement markings. -Add 4' paved shoulder on both sides. -Consider acquiring easement to build multi-use trail when VPD exceeds 5,000.



Figure 8-8 | Hendricks Street Corridor Recommendations



Segment	Corridor	Location	Type	Fits Within Existing ROW	Paved Width	Cost Estimate	Implementation Strategies
1	Hendricks Street (1st Ave to 17th Ave)	On-Street	Bike Lane	Yes	22' - 28'	\$272,000.00	<p>Higher traffic counts warrant the addition of striped facilities. There is no additional width within the paved width.</p> <ul style="list-style-type: none"> -Add 8' paved shoulder and bike lane striping. -Remove Truck Route designation between Nickerson and 17th Ave. -Reduce facility to Share The Road to cross railroad tracks.
2	Hendricks Street (17th Ave to 43rd Ave)	On-Street	Share The Road	Yes	22' - 28'	\$430,000.00	<ul style="list-style-type: none"> -Consider reducing speed limit to 30mph. -Add Share The Road signage. -Add 4' shoulder on both sides when YPD exceeds 5,000. -Recommended upgrade to bike lane when corridor is upgraded to urban arterial.



Figure 8-9 | Washington Street Corridor Recommendations

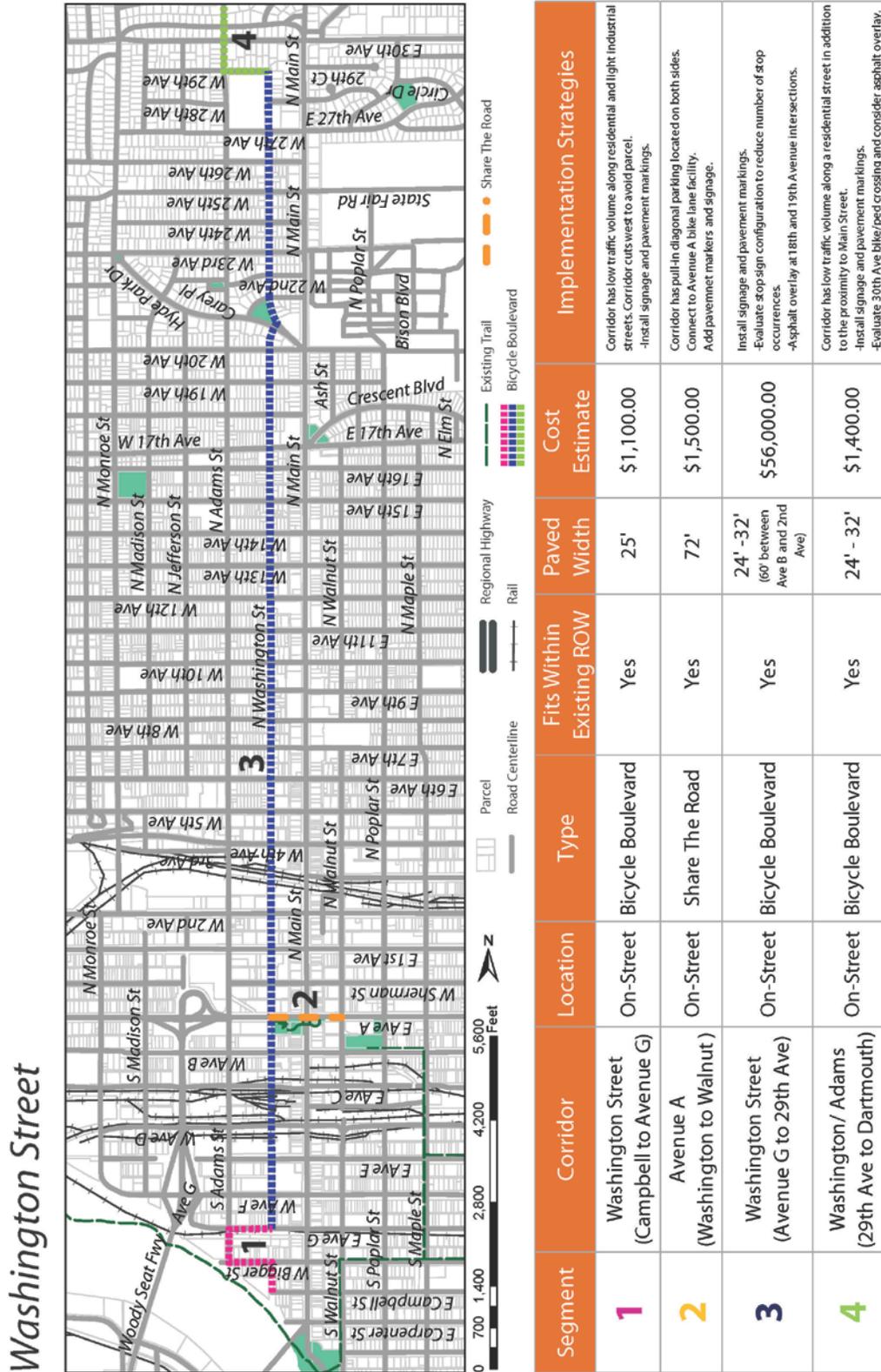




Figure 8-10 | Severance Street Corridor Recommendations

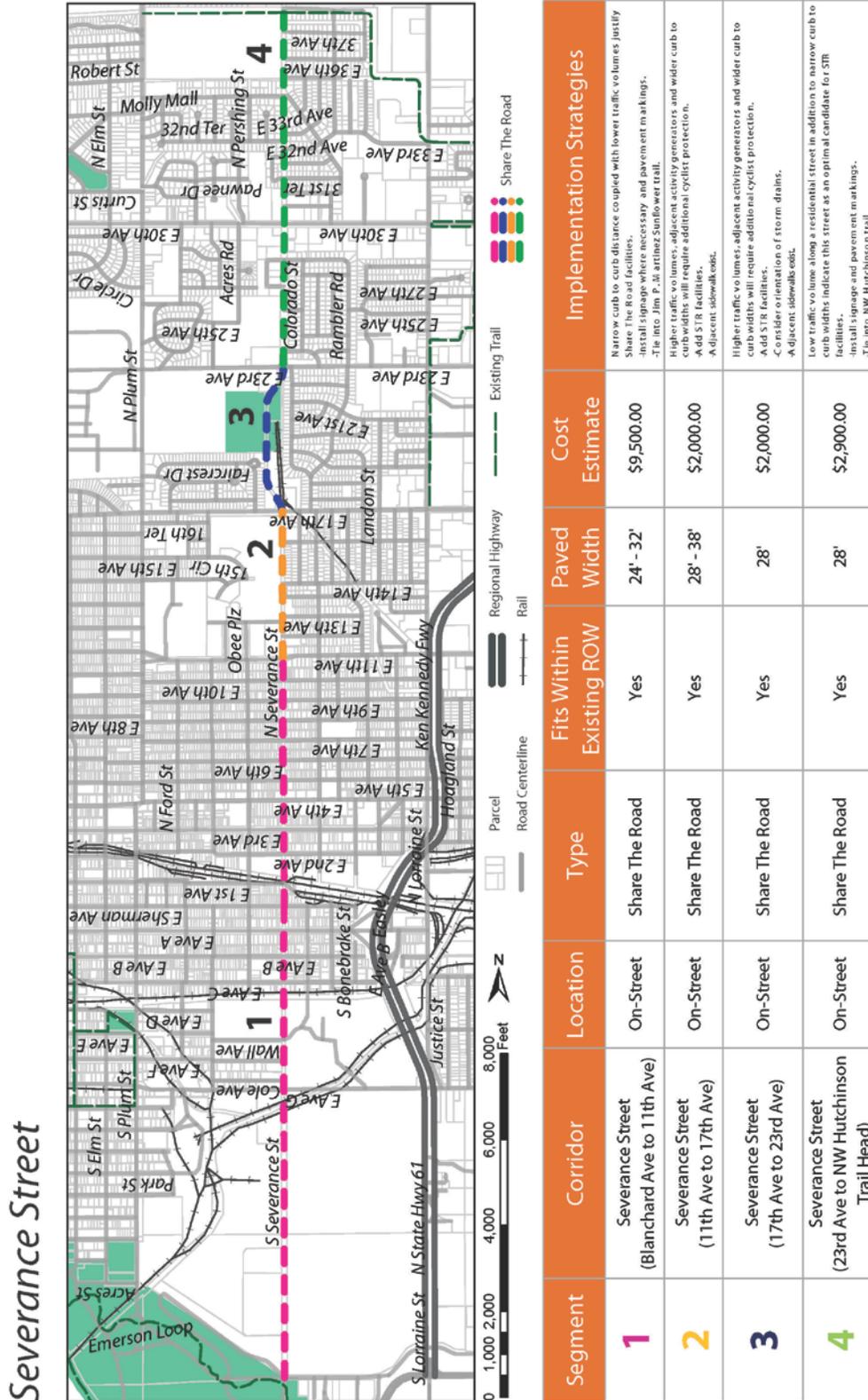
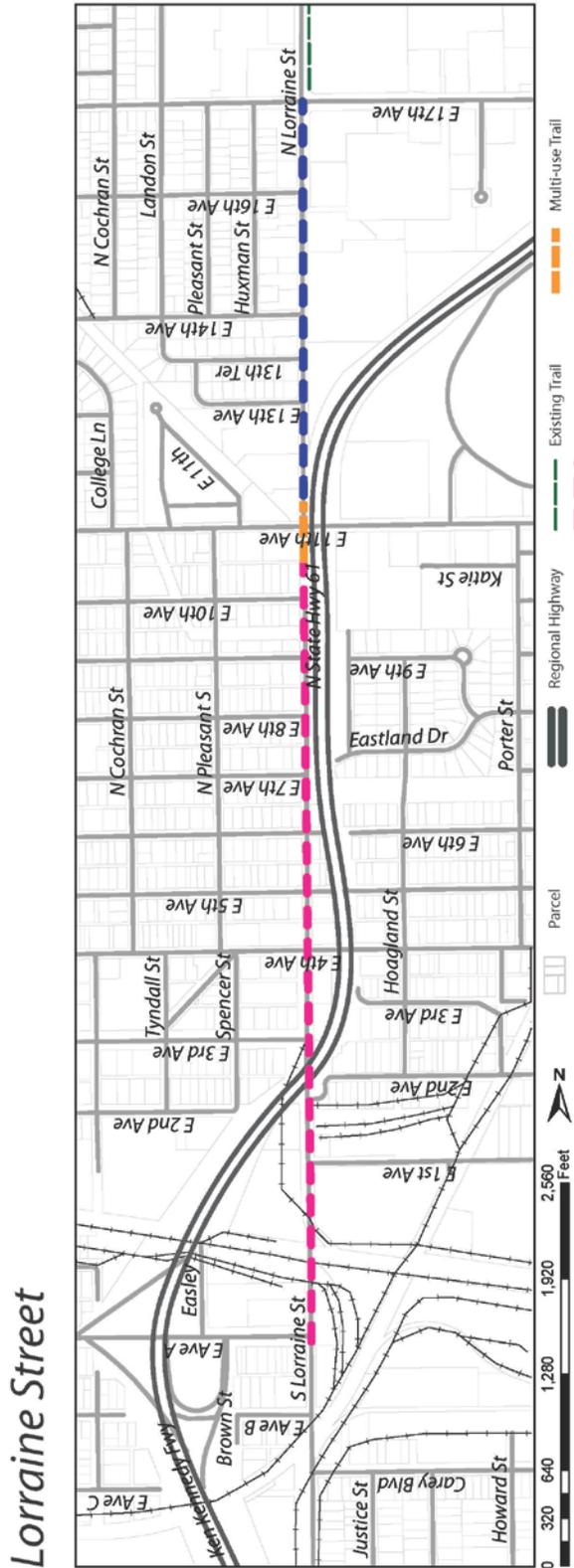




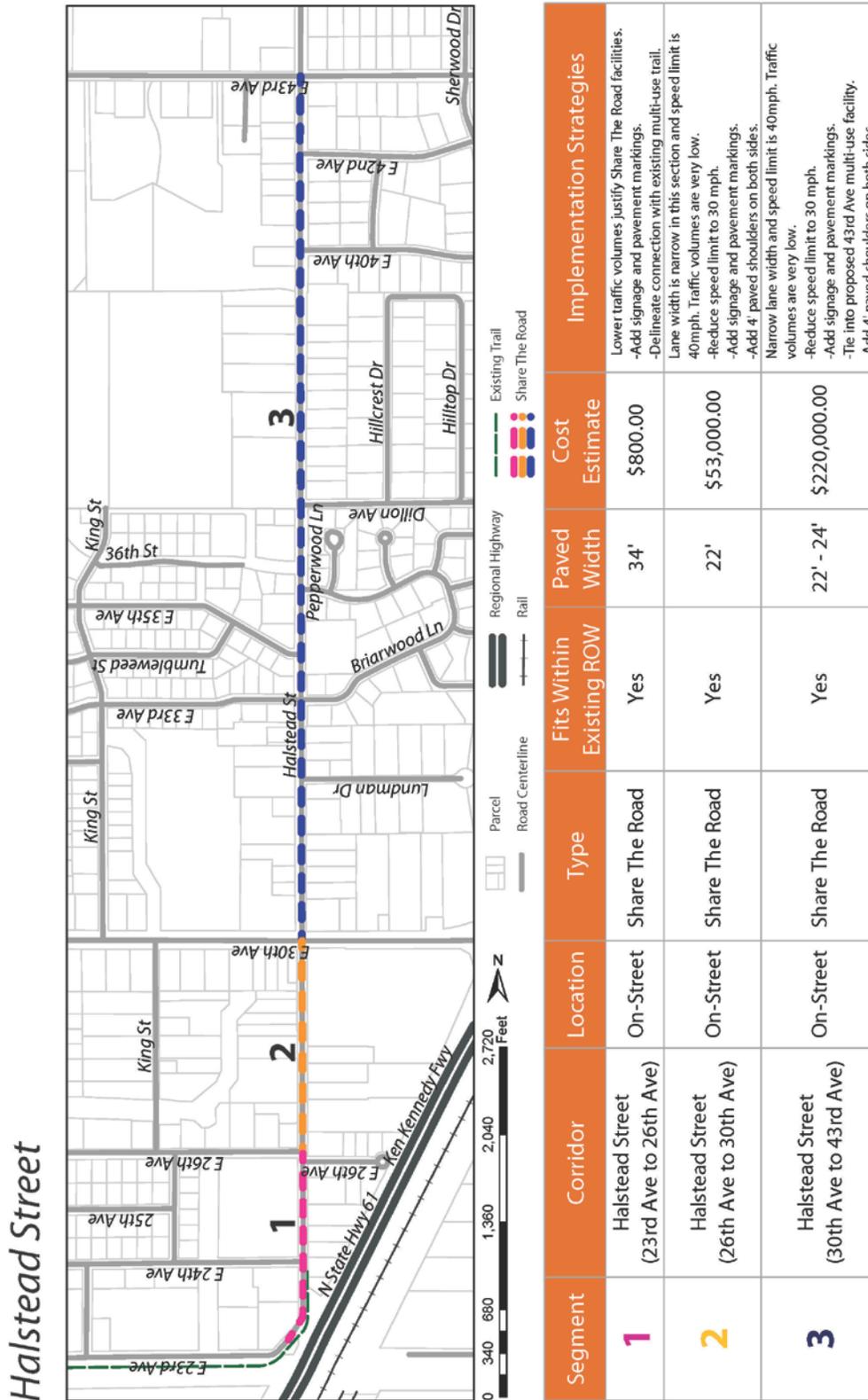
Figure 8-11 | Lorraine Street Corridor Recommendations



Segment	Corridor	Location	Type	Fits Within Existing ROW	Paved Width	Cost Estimate	Implementation Strategies
1	Lorraine Street (Avenue A to 10th Ave)	On-Street	Share The Road	Yes	22' - 54'	\$5,000.00	Corridor has low traffic volume along residential street adjacent to K61. Install signage and pavement markings. Evaluate crossing safety at K61 and yield to cyclists signage. Evaluate 4th Ave crossing safety, add bike/ped crossing signage and pavement markings. Evaluate at grade railroad crossing 7/00ft north of Avenue A.
2	Lorraine Street (Utility Easement)	Off-Street	Multi-use Trail	Yes	NA	\$40,000.00	Construct 10' multi-use path within old ROW east of drainage easement. Evaluate crossing location across 11th Avenue. Consider moving stop bars for eastbound traffic on 11th closer to K61. Install signalized Bike/Ped crossing at intersection. Consider adding crosswalks east across K61 if sidewalks are planned for 11th Ave.
3	Lorraine Street (11th Ave to 17th Ave)	On-Street	Share The Road	Yes	32'	\$2,600.00	Corridor has low traffic volume along commercial/residential street adjacent to K61. Evaluate future connection to proposed Hutchinson Mall from Lorraine and existing off-street facility north of 17th Ave. Install signage and pavement markings.



Figure 8-12 | Halstead Street Corridor Recommendations



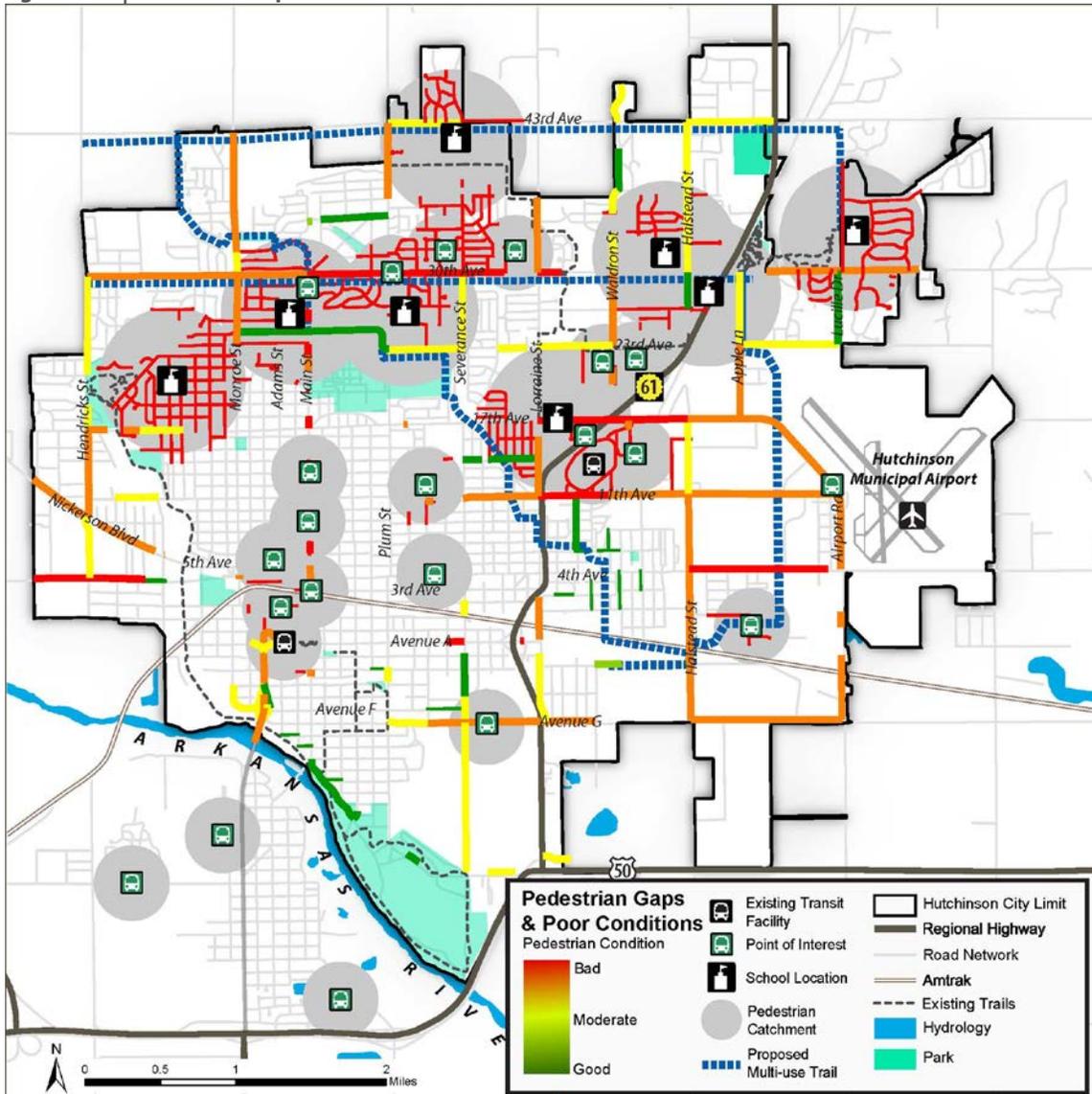
Segment	Corridor	Location	Type	Fits Within Existing ROW	Paved Width	Cost Estimate	Implementation Strategies
1	Halstead Street (23rd Ave to 26th Ave)	On-Street	Share The Road	Yes	34'	\$800.00	<ul style="list-style-type: none"> Lower traffic volumes justify Share The Road facilities. -Add signage and pavement markings. -Delineate connection with existing multi-use trail.
2	Halstead Street (26th Ave to 30th Ave)	On-Street	Share The Road	Yes	22'	\$53,000.00	<ul style="list-style-type: none"> Lane width is narrow in this section and speed limit is 40mph. Traffic volumes are very low. -Reduce speed limit to 30 mph. -Add signage and pavement markings. -Add 4' paved shoulders on both sides.
3	Halstead Street (30th Ave to 43rd Ave)	On-Street	Share The Road	Yes	22' - 24'	\$220,000.00	<ul style="list-style-type: none"> Narrow lane width and speed limit is 40mph. Traffic volumes are very low. -Reduce speed limit to 30 mph. -Add signage and pavement markings. -The into proposed 43rd Ave multi-use facility. -Add 4' paved shoulders on both sides.



8.2 PEDESTRIAN NETWORK

The pedestrian network was developed by identifying gaps in the existing network and poor sidewalk conditions along arterial and collector streets and within pedestrian catchment areas for schools, transit stops and key points of interest. The priority ranking of these potential future sidewalk locations was determined by identifying the vulnerability of the population likely to use these facilities (i.e. school locations), and by the pedestrian evaluation factors described in Chapter 7 of this study. Furthermore, where existing sidewalks were present but in poor condition, these sidewalks were flagged as high priority improvements. Many local routes within the pedestrian catchment areas for schools were highlighted as high priority because in addition to improving the safety and children walking to and from school, these are ideal locations to utilize Safe Routes to Schools funding. Figure 8-13 maps the priority ranking of additions or improvements to the existing pedestrian network.

Figure 8-13 | Pedestrian Gaps and Poor Conditions





Cost estimates for the proposed pedestrian facilities were calculated. These cost estimates were calculated by the linear feet of proposed sidewalks on arterials and collectors (207,753 total linear feet), local streets (344,187 total linear feet), and multi-use trails (97,861 total linear feet). A five foot sidewalk costs approximately \$25 per linear foot and a ten foot sidewalk/multi-use paths costs approximately \$50 per linear foot. The cost estimates for the proposed sidewalk network are listed in Table 8-2 by the potential sidewalk configuration. Additionally, Table 8-3 illustrates the total cost of constructing the multi-use path network; these costs would be redundant of any multi-use path costs outlined previously in Figures 8-3 through 8-12. For 30th and 43rd Avenues these rights-of-way would consist of both a 10' multi-use path and a 5' sidewalk; therefore, cost calculations for those roadway configurations are not accounted for in Table 8-2 but are accounted for in Table 8-3.

Table 8-2 | Pedestrian Network Sidewalk Costs

Street Functional Class	Total Linear Feet	Side 1 Width (Feet)	Side 2 Width (Feet)	Cost Estimate
Arterial/Collector	177,807	5'	5'	\$8,890,000
		10'	5'	\$13,335,000
Local	331,839	5'	None	\$8,300,000
		5'	5'	\$16,592,000

Table 8-3 | Multi-use Trail Network Costs

Easement / ROW	Total Linear Feet	Side 1 Width (Feet)	Side 2 Width (Feet)	Cost Estimate
Cross Town Easement Trail	33,476	10' Multi-use Trail	none	\$1,653,000
Eastern Outer Loop Trail	17,128	10' Multi-use Trail	none	\$846,000
30th Avenue	20,240	10' Multi-use Trail	5' sidewalk	\$1,518,000
43rd Avenue	27,017	10' Multi-use Trail	5' sidewalk	\$2,027,000

After estimating the costs of implementing the pedestrian network a project priority map was developed which first identified potential routes that would qualify for Safe Routes to Schools funding. Figure 8-14 identifies the routes that would be eligible for Safe Routes to School funding.

Figure 8-15 furthers the priority ranking identifying key routes within the City as well as routes with poor pedestrian conditions including high vehicular travel speeds, high traffic volumes, and public input regarding sidewalk needs. Figure 8-15 illustrates the Pedestrian Network Priority. The high priority projects are also provided in Table 8-4.

Table 8-4 | High Priority Pedestrian Projects

Street	From	To	Centerline Length	Facility Type	Notes
Severance Street	23 rd Avenue	30 th Avenue	2,640'	Sidewalk	New facility. SRTS eligible.
Main Street	3 rd Avenue	30 th Avenue	5,600'	Sidewalk	Gaps and repair. SRTS eligible.
Monroe Street	20 th Avenue	30 th Avenue	4,100'	Sidewalk	New facility. SRTS eligible.
11th Avenue	Lyman Avenue	Severance Street	5,200'	Sidewalk	New facility. Partial SRTS eligible.
17th Avenue	Halstead Street	Lorraine Street	5,300'	Sidewalk	New facility. Partial SRTS eligible.
23rd Avenue	Severance Street	Plum Street	2,650'	Multi-use Path	New facility. SRTS eligible.
State Fair Road	Plum Street	Main Street	3,600'	Sidewalk	New facility. SRTS eligible.



Street	From	To	Centerline Length	Facility Type	Notes
25 th Avenue	Main Street	Monroe Street	2,500'	Sidewalk	New facility. SRTS eligible.
30 th Avenue	Apple Lane	Main Street	15,300'	Multi-use Path	New facility. Partial SRTS eligible.

Figure 8-14 | Safe Routes to School Eligible Sidewalk Projects

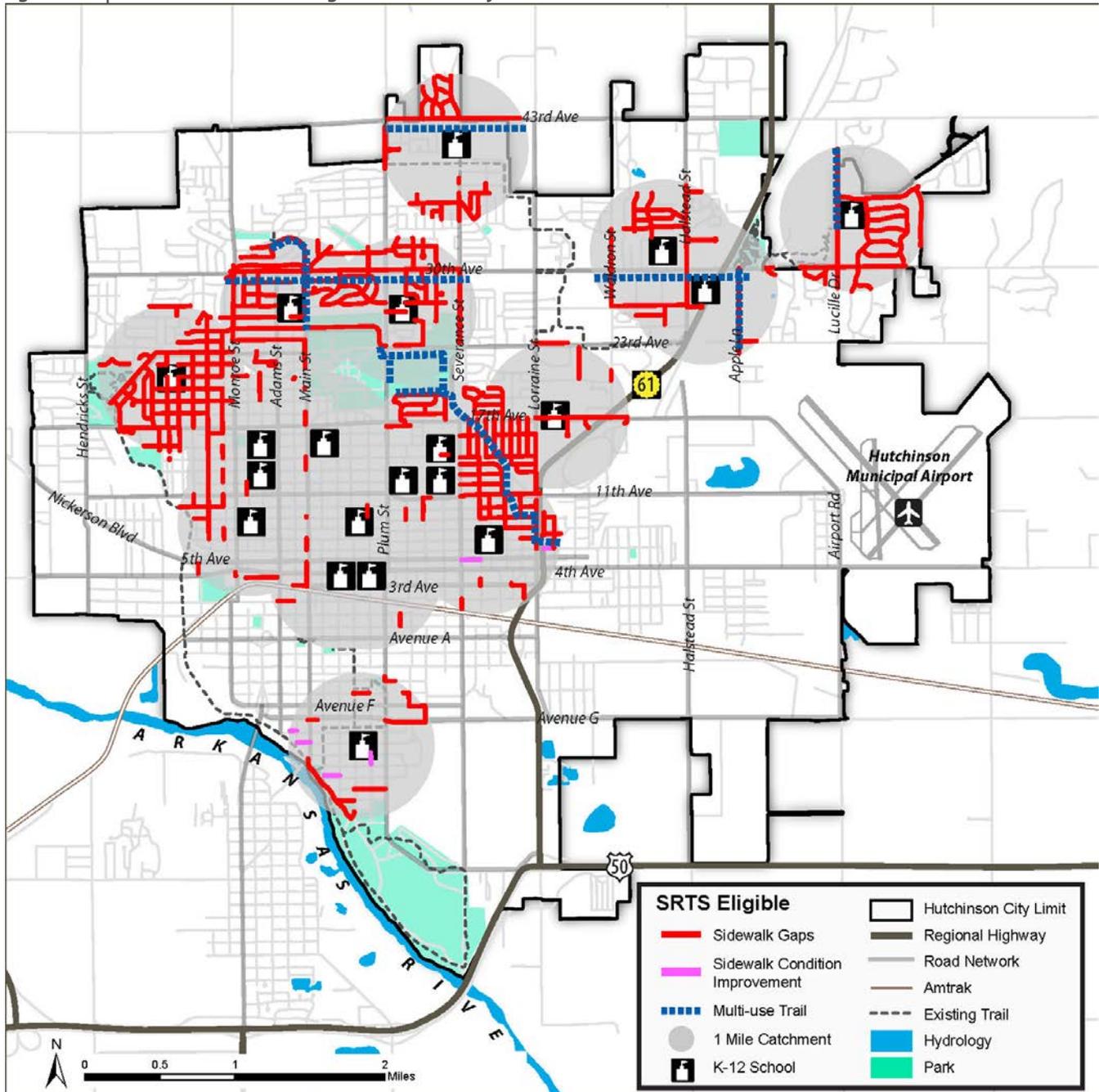




Figure 8-15 | Pedestrian Network Implementation Priority

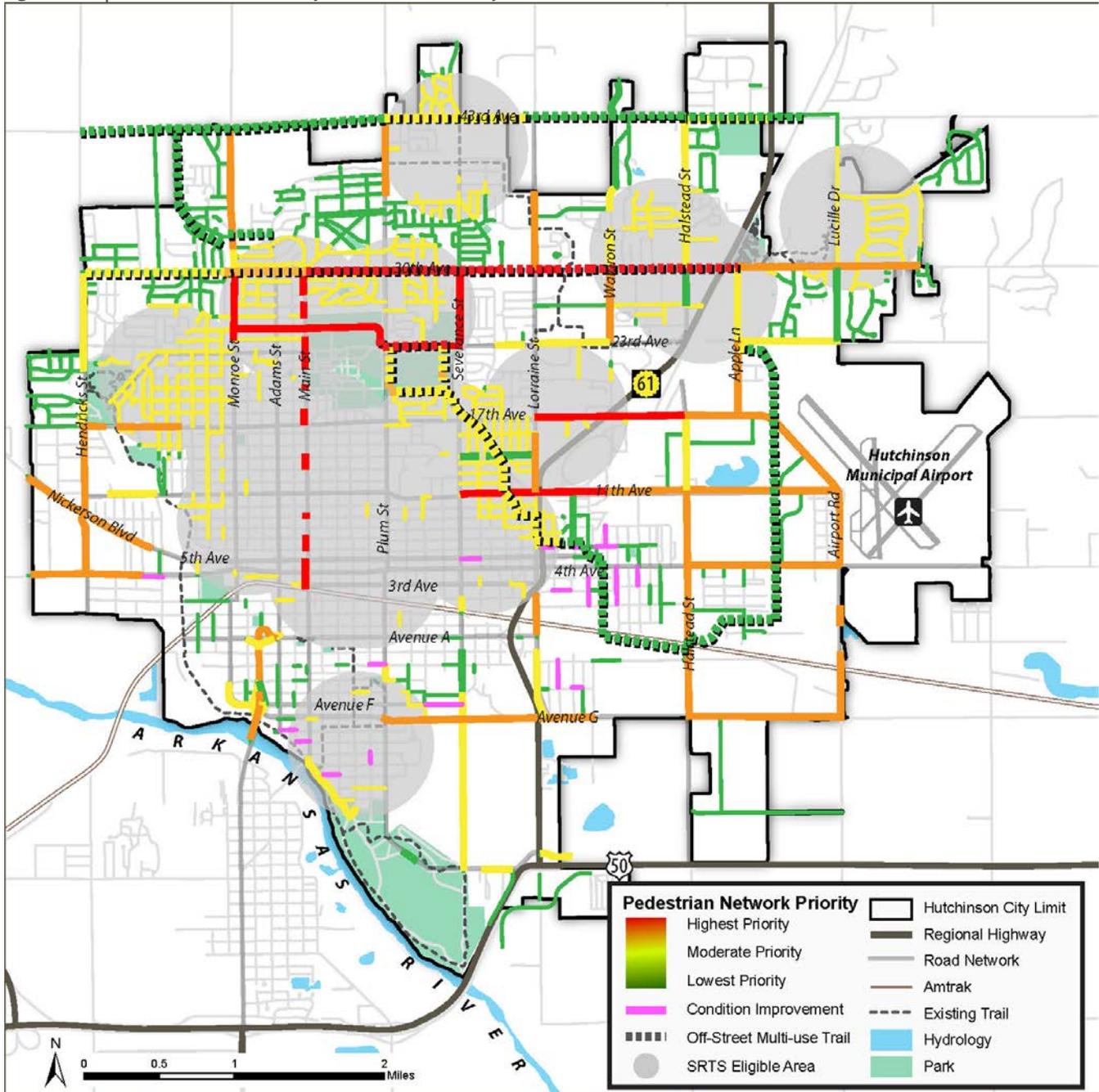




Figure 8-16 maps the ultimate pedestrian network after all facilities have been constructed.

Figure 8-16 | Pedestrian Network Ultimate Buildout

