

# Connecting Duluth

## 2010 Comprehensive Bicycle Assessment



*Prepared by:*  
Codie Leseman  
Active Living Coordinator,  
Fit City Duluth



# Introduction

## *Fit City Duluth - Mission Statement*

Fit City Duluth is a public/private community initiative designed to change the social and physical environment of Duluth to encourage active, healthy lifestyles. Through information and advocacy, we aim to prevent and reduce chronic health issues and to facilitate healthy built environments that reinforce human powered and public transportation.

## *What is Connecting Duluth?*

Connecting Duluth is a small workgroup that was formed to learn more about the current trends of bicycle riders, problems that they face, and what solutions would be effective in solving those problems. In doing so, the group aims to help make bicycling a safe and easy choice for all Duluthians.

## *Partnering Agencies*

The Active Living Coordinator position at Fit City Duluth was made possible by funding through the Duluth Local Initiative Support Corporation (LISC) AmeriCorps program. The Duluth-Superior Metropolitan Interstate Council (MIC) provided necessary technical assistance for this project. The Department of Geography at the University of Minnesota Duluth (UMD) provided additional assistance, including the use of the Geographic Information Sciences Laboratory.



COLLEGE OF  
LIBERAL ARTS  
Department of Geography

# Table of Contents

|                                        |    |
|----------------------------------------|----|
| Abstract                               | 4  |
| Purpose                                | 5  |
| Methodology                            | 6  |
| Public Input Process                   | 6  |
| Interpreting the Questionnaires        | 9  |
| Interpreting the Recreational Routes   | 15 |
| Interpreting the Transportation Routes | 16 |
| Results                                | 19 |
| Written Responses                      | 19 |
| Specific Areas of Concern              | 26 |
| Recreational Routes                    | 34 |
| Transportation Routes                  | 35 |
| Current Trends                         | 36 |
| Routes Bicyclists Want to Use          | 47 |
| Current Trends vs. Ideal Routes        | 58 |
| Preferred Bike Rack Locations          | 69 |
| Conclusion and Recommendations         | 76 |
| Discussion                             | 81 |
| Additional Information                 | 82 |

# Abstract

This study aims to identify effective ways to make bicycling a safe and easy form of transportation in the city of Duluth. 103 individuals were surveyed through a detailed public input process. These individuals identified the routes they most commonly bicycle on for transportation purposes, routes they would prefer to take if it was safer to do so, their biggest problems with bicycling, possible solutions to those problems, ideal bike rack locations, interesting locations for future bike route signage, and their favorite bike routes for recreational purposes.

The results from these surveys show several different patterns. 4th Street, Superior Street, and Woodland Avenue were the three roads that were mentioned the most for needing physical improvements for bicycle safety, and they were also among the most common routes that participants want to use for transportation. The greatest number of problems that were mentioned with bicycling involved the current transportation design, including issues with motorist behavior and a lack of physical space for bicyclists. The solution that was mentioned the most was the need for more designated bike lanes and open shoulder spaces on existing roads. The Munger Trail and the North Shore Scenic Drive were identified as the two most popular bicycle routes for recreation purposes. Ideal bike rack locations were identified all across Duluth and were most commonly located near businesses, especially grocery stores. The highest concentration of bike racks was located in the central business district.

This information is intended to serve as a reference document for planners, engineers, and stakeholders involved in the development of Duluth's transportation system to ensure that investments in bicycle transportation are as effective as possible. The results of this study should be considered anytime a road is being resurfaced or reconstructed in Duluth so that the road can be designed in a way that is safe for both motorists and bicyclists.

# Purpose of this Study

The purpose of this study is to **serve as a reference tool** for individuals and agencies involved with the city of Duluth's transportation system including planners, engineers, community organizations, businesses, and other stakeholders. In line with Fit City Duluth's goal to encourage active, healthy lifestyles, this study aims to identify how **to make bicycling a safe and easy choice** for day-to-day transportation needs. Since there has never been a study of bicycle transportation in Duluth before, this report focuses on a variety of different matters. In short, this report has

three main goals:

- To recognize the current barriers to bicycling
- To explore possible solutions to those barriers
- To identify which routes are the most favorable for bicycle transportation

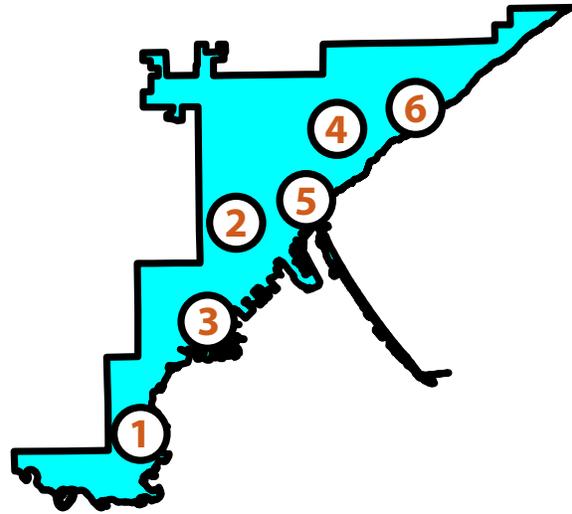
In addition to these three goals, this report also identifies ideal bike rack locations, destinations that should be included on future bike route signs, and the most favorable bike routes for recreational purposes. This information should be referenced so future investments in bicycling can be as effective as possible, and so roads can be effectively redesigned in a way that is safer for both bicyclists and motorists.

# Methodology

## The Public Input Process

Six public meetings were held across Duluth to learn more from current bicycle riders and from people who would be interested in bicycling if it was safer:

1. Morgan Park Community Center
2. Piedmont Heights Community Center
3. City Center West
4. University of Minnesota Duluth
5. Central Hillside Community Center
6. Portman Community Center



Before the meetings were held, they were publicized through several different outlets including local newspapers, magazines, websites, and television stations, as well as through flyers and emails. Free food was offered as an incentive to attend. The target audience was anybody who bikes in Duluth or would start biking if it was safer to do so. The meetings were held Mondays, Tuesdays, and Thursdays starting on April 22, 2010 and ending May 4, 2010 in the order listed above.

At each meeting, participants were first shown a brief PowerPoint presentation which explained the difference between safe roads as opposed to unsafe roads and also the difference between bicycling for transportation as opposed to bicycling for recreation. The presentation also described how participants should complete the mapping portion of the public input meeting. The final slide of the presentation (see below) remained

**REMINDER:**

- Indicate where your house is, and then indicate **up to three** destinations
- Use **YELLOW** for the routes you **currently** use for transportation (if you currently bike)
- Use **PINK** for the routes you **would** use if they were safer (if they are different from yellow)
- Use **GREEN** for the two best **bike rack** locations in your neighborhood

A street map of a neighborhood in Duluth. It shows a route starting from a star labeled 'Home' at the bottom. The route goes north to a star labeled 'Babysitter', then east to a star labeled 'Work', then north to a star labeled 'Friend's House'. The route from Home to Work is highlighted in yellow, and the route from Work to Friend's House is highlighted in pink. There are two green 'X' marks on the map, indicating bike rack locations. One is near 'Chester Park' and the other is near 'Friend's House'.

on the projection screen throughout the duration of the meeting. After the presentation was finished, participants were prompted to complete a questionnaire (next page). Responses to these questionnaires would be categorized and counted in order to identify patterns in the habits, interests, and problems facing bicycle riders in Duluth.

*The Public Input Process (continued)*

Copy of the Public Input Questionnaire

Connecting Duluth Bicycle Network Public Input Sheet

Name (optional): \_\_\_\_\_ E-Mail (optional): \_\_\_\_\_

Please describe exactly how you heard about this meeting in as much detail as possible.

(Examples: word of mouth, a specific website, Transistor magazine, The Hillsider, flyer on my bike, flyer at UMD, group email list, etc.)

Which of the following describes your bicycling habits? (Check all that apply)

I often bike for transportation       I often bike for recreation       I don't bike often

What specific destinations would a bicyclist who is riding through your neighborhood find interesting?

(Examples: specific trails, parks, libraries, landmarks, nice views, bike parking, etc.)

Describe the main problems you have with bicycling, if any, and describe possible solutions to these problems:

If you have any additional comments, please feel free to describe them here:

(Examples: routes that are only good downhill, reasons you chose a specific route, use of the DTA bike racks, off-street shortcuts, seasonal vs. year-round commuting, suggestions, etc.)

## *The Public Input Process (continued)*

After completing the questionnaires, participants then began the mapping portion of the meetings. 14 different maps were available for participants to choose from. All of the maps together covered the entire municipality of Duluth, except Park Point, and slightly overlapped the surrounding communities. Participants could choose to take as many of these maps as necessary. The guidelines for completing the maps were given during the PowerPoint presentation at the beginning of the meetings. Each participant was instructed to do the following:

- Mark where your home is on the map
- Mark up to three of your most common destinations on the map
- Using the yellow highlighter, draw the route you most commonly use to get to and from each destination, if you currently bike.
- Using the pink highlighter, draw the routes you would use to get to and from each destination if the infrastructure was safer for bicycling. If you do not currently bike, only use the pink highlighter to draw your preferred routes - not yellow.
- Using the green highlighter, mark where you would like to see two bike racks in Duluth.

Participants were also told that if their home or any of their destinations did not appear on any of the maps, then they could just draw the line to the edge of the map. Participants were also encouraged to make notations on the maps to help explain their routes. In addition, participants were told that they could draw different “to” and “from” locations to their destinations, if one of the routes was favorable on one direction but not the other.

Once a participant was finished with their map, they were told to hand it in along with their questionnaire. Afterwards, participants were to go to a large, citywide map of Duluth and identify up to five of their favorite bicycle routes for recreation purposes. Each participant could draw their favorite routes on the map using highlighter and add a single tally mark, or they could simply add tally marks to their favorite routes if they were already drawn on the map.

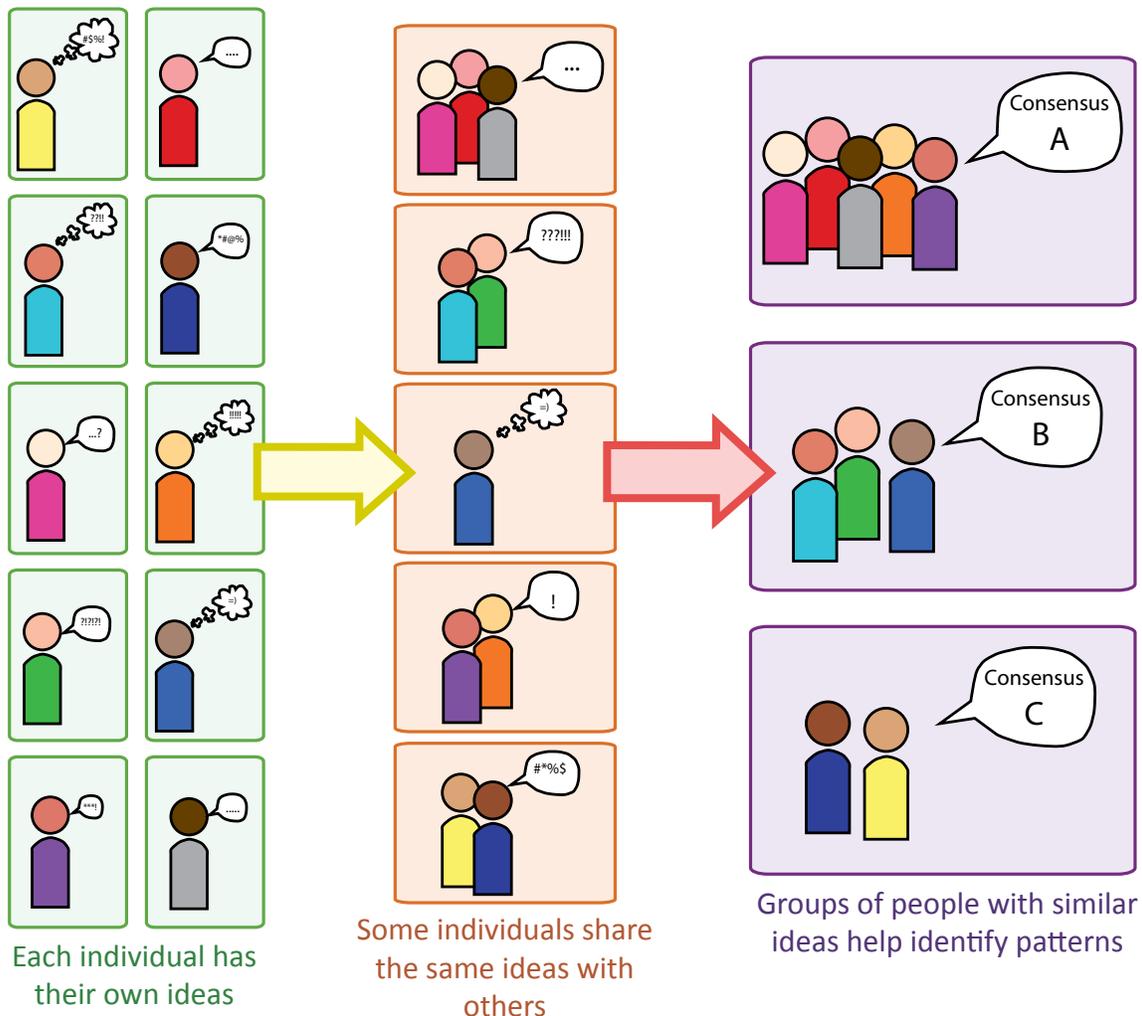
Each portion of the public meetings was optional. This means that some participants could choose to do all, or just part of the public input process. For instance, some participants may have decided not to add their favorite recreational route to the maps, or they may have only included one bike rack location on their maps instead of two. However, maximum values for the number of routes and bike racks were established to preserve the integrity of the information collected.

In addition to the public meetings, input was accepted from individuals who could not attend any of the meetings. These responses were accepted either by email or in person for seven days after the last public meeting was held. Some individuals completed the entire process, while others just left written feedback.

## Interpreting the Questionnaires

This section describes how the responses from the questionnaires were classified into different categories to help show patterns among Duluth bicyclists. First, once all of the meetings were finished, the responses to the questionnaires were typed word-for-word on a computer using Microsoft Word. Then, each response was given a “tag”. These tags, which appear in brackets, are used to generalize similar responses. So, for instance, if a participant indicated that they have trouble bicycling because of potholes, the tag [Road Condition] would be used.

The graphic below shows how tags are used to identify patterns using inductive reasoning. While everybody has their own ideas, many people share the same ideas. For instance, if one participant says, “there are no bike lanes,” and another participant says, “there isn’t room for bikes on the road,” both responses would be tagged as [Roads Without Space for Bikes]. Once all of the tags are calculated, tags that are similar in nature could be grouped again to identify what the most common patterns are.



## Interpreting the Questionnaires (continued)

The system used to tag each response is described below. Tags were given different colors to distinguish between different types of responses. Once all of the responses were tagged, they were all counted to find the total number of each response. These findings are available in the Results section.

[Black Tags] were used to classify how participants heard about the meetings and what destinations appeal to bicyclists.

[Orange Tags] were used whenever a participant identified that a *problem* with bicycling exists.

[Blue Tags] were used whenever a participant identified a *possible solution* to an existing problem.

[Green Tags] were used anytime a specific street or area was mentioned.

While these descriptions describe the basic definitions of the tags, there are some exceptions. This helps preserve the integrity and usefulness of the data. The following section describes the guidelines that apply to assigning tags. All tags are applied uniformly, throughout all parts of the questionnaire and the map.

Every time a respondent words an issue as a problem, it is tagged as a Problem with Biking in Duluth, which is noted by [this tag].

Examples: Roads are in poor shape [Road Condition]  
Cannot bike on ice in the wintertime [Winter Weather]  
Hills [Hills]

Every time a respondent words an issue as a solution, it is tagged as a Possible Solution for Biking in Duluth, which is noted by [this tag].

Examples: They need to fix these roads [Repair Roads]  
City should plow paths for bicycles in the winter [Remove Snow]  
More buses that go up the hill, for my bike [More DTA Routes]

## Interpreting the Questionnaires (continued)

Multiple responses that are similar in nature written by the same participant are only tagged once. This applies to tags of all colors.

Examples: Traffic drives too fast [Motorists/Traffic]  
Drivers are distracted, don't look for bikes  
People turning right cut me off

If a respondent indicates one option but also states that another option would be better, then only their preferred option is tagged.

Examples: Bike lanes would be great, or at very least some sharrows  
[Add Bike Lanes or Shoulder Space]  
More signage is a start, but they should really design roads to control traffic speed [Engineer Roads for Speed Control]

If a respondent includes a specific area in addition to their problem or solution, it is "tagged" as a Specific Area of Concern, which is noted by [this tag].

Examples: Cars drive too fast on Raceway Road [Motorists/Traffic] [Raceway Rd]  
Suchnsuch Street is full of potholes [Road Condition] [Suchnsuch St]  
Level sewer grates on Bumpy Blvd [Level Sewer Grates] [Bumpy Blvd]  
Roads around Pretty Park should be fixed [Repair Roads] [Pretty Park]

If a respondent mentions a specific location multiple times, it is only "tagged" once. However, each comment is still listed in the Specific Areas of Concern map section of this report.

Example: Traffic is scary on Reference Road [Motorists/Traffic] [Reference Rd]  
Reference Rd is too bumpy [Road Condition]  
They should put bike signs on Reference Rd [More Signage]  
Also, repairing the road would help too [Repair Roads]

Green tags will almost always be accompanied by an orange or blue tag, unless the comment is either too vague to categorize or if the comment relates to a very specific situation.

Example: It's hard to bike on Ambiguous Ave [Ambiguous Ave]  
The intersection of Main and Tangent is a problem [Main St]  
There's a small stretch of Tarmac Trail that is incomplete [Tarmac Trail]  
Particular Pkwy would be a great commuter road [Particular Parkway]

## Interpreting the Questionnaires (continued)

Responses to how participants heard about the meetings and what destinations appeal to bicyclists are tagged using [this tag].

Example:     **How did you hear about the meeting?**

Newspaper [Duluth News Tribune]

PDD [Perfect Duluth Day]

**What specific destinations are interesting in your neighborhood?**

Views on Skyline Drive [Skyline Parkway]

At Sara's Table [Chester Creek Café]

Any time a respondent addresses a problem or possible solution on their map(s), it is also included in this analysis, as long as it isn't too vague or too specific to one area.

Example:     **Map comments:**

This road is very bad [Unclear Ave]

RR crossing at this particular intersection is problematic. [Specific St]

This road has potholes everywhere. [Road Condition] [Problem Pl]

Need a bike lane on this street. [Add Bike Lanes or Shoulder Space]

[Solution St]

The only question that doesn't use tags is, "Which of the following describes your bicycling habits?" Instead, three choices with check boxes were given (see page 3). This created only four possible options: Just Transportation, Just Recreation, Both Transportation and Recreation, or I Don't Bike Often. If a respondent also wrote something by the question, it was only considered if it contradicted what they had checked.

Because multiple tags are used to describe different situations, it was necessary to create definitions for the most common tags - those used at least four times. The following section describes how each tag was assigned:

### [Bikes Not Considered in Street Design]

Used anytime somebody indicates that the design or construction of a road makes it unsafe for bicycle riders

### [Crossing Busy Intersections]

Used anytime somebody indicates that a roadway or intersection is difficult to enter or cross

## *Interpreting the Questionnaires (continued)*

### **[Debris/Grit on Road]**

Used anytime somebody indicates hazardous impediments on the road including debris, grit, gravel, broken glass, road salt, dirt, etc.

### **[Efficient Connections Unsafe for Bikes]**

Used anytime somebody identifies a roadway that is the most efficient route to a destination but is unusable because of the speed, volume, or distribution of automobile traffic

### **[Hills]**

Used anytime somebody identifies a problem related specifically to the steepness of hills in Duluth

### **[Lack of Snow Plowing]**

Used anytime somebody indicates that snow is not plowed for safe bicycle passage

### **[Motorists/Traffic]**

Used anytime somebody identifies a problem related specifically to the conduct of motorists including fast speeds, aggressive behavior, lack of attention, and traffic violations

### **[Road Condition]**

Used anytime somebody identifies a problem related specifically to the quality of the road surface including potholes, ruts, cracks, rough surfaces, etc.

### **[Roads Without Space for Bikes]**

Used anytime somebody identifies a problem related specifically to a lack of physical space for bikes to ride on the roadway, including a lack of bike lanes

### **[Safety Issues With Parked Vehicles]**

Used anytime somebody indicates a safety issue with parked vehicles such as parked cars backing out, doors opening up in front of bicyclists, and parked cars blocking the view of oncoming traffic

### **[Traffic Inhibits Bike Commuting]**

Used anytime somebody indicates that a road is too dangerous to use for commuting or transportation

## *Interpreting the Questionnaires (continued)*

### [\[Add Bike Lanes or Shoulder Space\]](#)

Used anytime somebody indicates a need for marked on-street bike route, including bike lanes and open shoulder space

### [\[Build Bike Paths, Off-Street or Unspecified\]](#)

Used anytime somebody indicates a need for a path or trail, either off-street or unspecified.

### [\[Cross City Trail\]](#)

Used anytime somebody indicates a need for the Cross City Trail, a proposed trail extension connecting the Lakewalk with the Munger Trail which is expected to be complete around 2015

### [\[Plow Snow With Bikes in Mind\]](#)

Used anytime somebody indicates a need to plow snow for safe bicycle passage

### [\[Public Education for Bicyclists\]](#)

Used anytime somebody identifies a need to educate bicyclists\*

### [\[Public Education for Motorists\]](#)

Used anytime somebody identifies a need to educate motorists\*

### [\[Repair Roads\]](#)

Used anytime somebody identifies a need to repair damaged roadways

\* - If a respondent identifies a need for education without indicating or implying for bicyclists or motorists, then both tags are used.

## ***Interpreting the Recreational Routes***

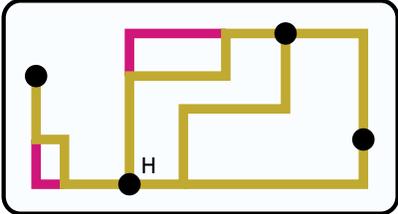
Participants could list up to five of their favorite recreational routes during the public input meetings. These were counted using tally marks alongside large citywide maps of Duluth. Participants could also draw their routes on the map using highlighter. In all, two of the citywide maps were used to record this data. Each map was used at multiple meetings. Individuals who took the survey without attending a meeting were told that they could list up to five of their favorite recreational routes on the back of the questionnaire.

First, the route names were typed word-for-word on a computer along with the total number of tallies for both maps and the individual responses. Then, duplicate routes were merged and their total number of tallies were combined. Next, routes that consisted of multiple roads were divided by the number of roads included on the route, and each road was given that number of tallies. So, for instance, if there are six tallies for “Snively Rd to Glenwood Rd”, three tallies would go to Snively Road and three tallies would go to Glenwood Rd. However, if there are nine tallies for “Skyline from Chester Bowl to Becks Rd” for instance, all nine tallies would be assigned to Skyline Parkway, because that is the only road being travelled on.

When it was unclear which roads were implied, the large citywide maps from the public input meetings were referenced to identify the exact routes. Roads that are partially in Duluth, such as Jean Duluth Rd and the Bong Bridge, were included in this analysis. However, roads that are entirely outside of Duluth, such as Zimmerman Rd, were not included.

# Interpreting the Transportation Routes

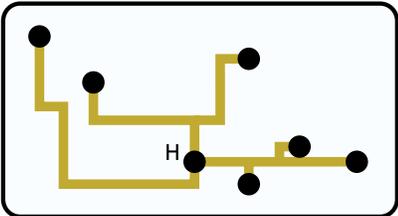
Each participant was instructed to mark where their home is and mark up to three destinations that they commonly bike to. Then, they were to draw the routes they most commonly use to get to and from each of their destinations using a yellow highlighter. If the route they would like to take is different from the route they currently take, they were to mark those differences with a pink highlighter. Roads drawn in pink are typically thought of as too dangerous or comfortable to bike on but would be preferable if improvements were made to make them safer. Participants could draw up to two different routes between each destination and their home, because there might be one route they prefer to take one way but a different route the other way. Below is a diagram illustrating a properly completed map.



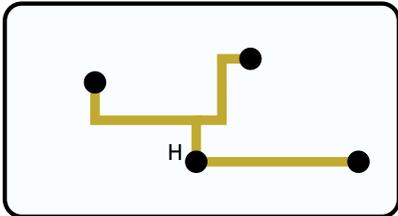
Notice how the map meets all of the guidelines. There are no more than two routes, in yellow, going between the same two locations. All of the properly completed maps were entered in a computer using ArcGIS software. Two maps were made for most participants: a complete map of their current routes, and another map with their preferred changes incorporated into the routes. Some of the participants' maps were invalid and required corrections in order to make the information usable. The following section describes all of the errors that occurred on the maps and how each of them was corrected:

### Too many destinations

If a participant included more than three destinations, in addition to their home, the “middle of the road” destinations were disregarded first. These are the destinations that are along a route to another destination. These are eliminated first to preserve as much of the information as possible. If there were still too many destinations, the most remote destination was also disregarded. However, if the farthest path is labeled as a destination and a closer path is not labeled, then the latter is disregarded instead.



Before

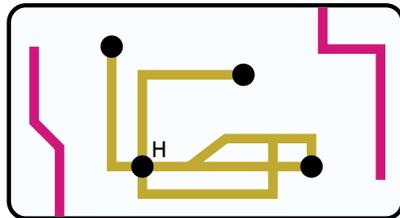


After

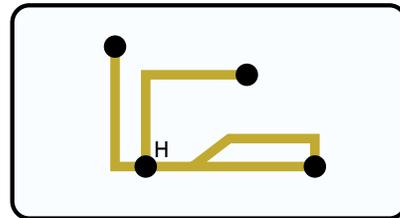
## Interpreting the Transportation Routes (continued)

### Too many routes

If a participant included more than two routes between any two destinations, only the most direct routes were counted. However, if the participant made it clear that certain routes were preferred over others, then the other routes would be disregarded. If an overabundance of routes were drawn, only the ones that appeared to be going to a particular destination were considered.



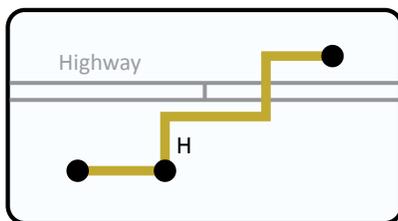
Before



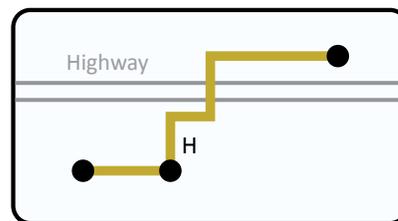
After

### Lines where roads don't exist

If a participant drew a line where a road doesn't exist, satellite imagery was used to determine whether a reasonable route actually exists where the line was drawn, (e.g. bike trails, sidewalks, parking lots, overpasses). If so, then the route was added to the ArcGIS map file of Duluth. However, if no reasonable route exists, then the closest possible route was used instead. Several routes from the Lakewalk had to be rerouted using this process, because it was unclear which entrance some participants used. If a participant drew a line shorter than two blocks with the pink highlighter on an area where there is no existing route, but a small, inexpensive connector path could feasibly be developed, then the route was also added to the ArcGIS map file.



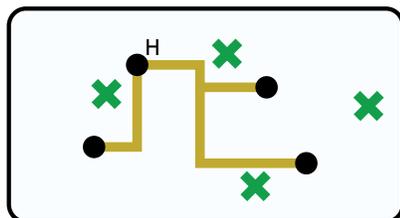
Before



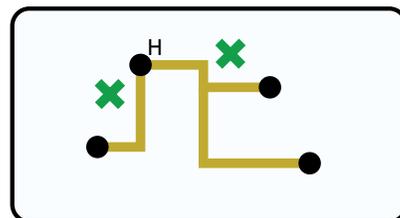
After

### Too many bike racks

If a participant drew more than two bike racks on their maps, the two that are closest to the individual's home are included. However, if it isn't clear where their home is, then the two bike racks that are closest to the individual's bike paths are included instead.



Before

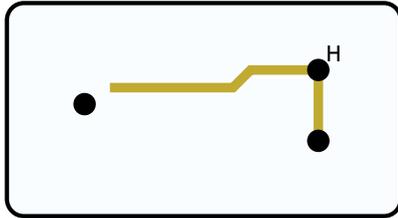


After

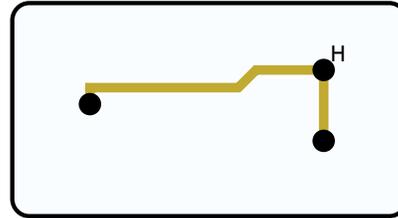
## Interpreting the Transportation Routes (continued)

### Paths don't connect

If a participant drew a path that doesn't completely connect to a destination, the shortest possible route was added to complete the path.



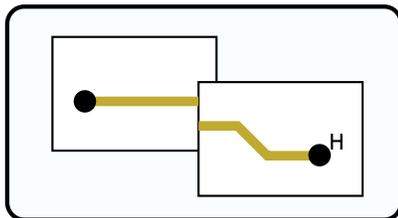
Before



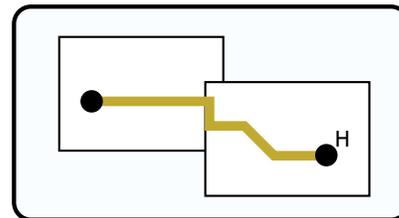
After

### Mismatching maps

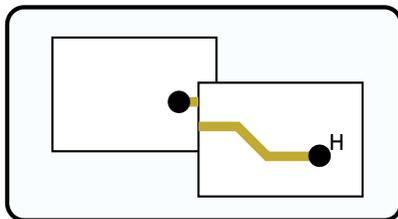
If a participant drew a route on one map that didn't match with the same route on another map, the correction depended on the length of the routes. If the route on one of the maps is only a few blocks long, the route from the other map was used instead. If the routes on both maps were longer than a few blocks, a segment was added to connect the two routes. However, if a correction would be too drastic (i.e. moving or adding more than two blocks), the mismatched map was not included in this analysis.



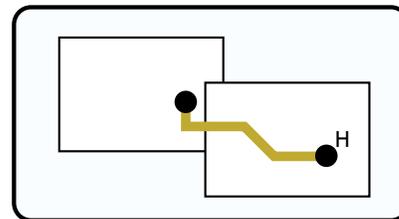
Before



After



Before



After

# Results

This section outlines all of the results obtained from the public input meetings. Below is a graph showing the number of participants at each meeting. These numbers only include the number of people that gave input. They do not include other people who attended the meetings without giving any input, including facilitators, press, supporters, and children.

## Participant Counts per Meeting

| Rank  | Location                          | # of Participants |
|-------|-----------------------------------|-------------------|
| 1.    | University of Minnesota Duluth    | 27                |
| 2.    | Portman Community Center          | 24                |
| 3.    | Central Hillside Community Center | 16                |
| 4.    | City Center West                  | 13                |
| 5.    | Piedmont Heights Community Center | 11                |
| 6.    | Individual Cases                  | 8                 |
| 7.    | Morgan Park Community Center      | 4                 |
| Total |                                   | 103               |

## Written Responses

The following statistics were derived from the questionnaires given at the public input meetings. 87 participants included their email address to the questionnaire while only 16 did not. This shows that the vast majority participants were interested in learning more about this project. Participants who did not include their email may have done so because they didn't have one, they were already part of the project, or because they didn't care to learn more.

Below is a chart that shows how participants claimed they heard about the meetings. This information can be used to identify which outlets work best for future bicycle related announcements. Please note that participants could claim they heard about the meeting through as many sources as they chose.

## How Participants Heard About the Meetings

| Rank | Source                  | # of Mentions |
|------|-------------------------|---------------|
| 1.   | Word of Mouth*          | 29            |
| 2.   | Duluth News Tribune     | 27            |
| 3.   | Group Email List        | 11            |
| 3.   | Perfect Duluth Day      | 11            |
| 3.   | The Hillsider           | 11            |
| 6.   | Flyer                   | 10            |
| 7.   | Fit City Duluth Website | 6             |
| 8.   | Transistor Magazine     | 5             |
| 8.   | Work                    | 5             |

\* - Includes personal emails

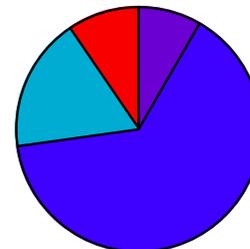
*Written Responses (continued)*

| Rank | Source                         | # of Mentions |
|------|--------------------------------|---------------|
| 10.  | Facebook                       | 4             |
| 11.  | Group Meeting Duluth Budgeteer | 3             |
| 12.  | News                           | 2             |
| -    | At Home in Duluth              | 1             |
| -    | COGGs Website                  | 1             |
| -    | Duluth Ski Club Website        | 1             |
| -    | KUMD                           | 1             |
| -    | Reader Weekly                  | 1             |
| -    | Sustainable Twin Ports Website | 1             |
| -    | Television                     | 1             |
| -    | The Voice                      | 1             |

The next portion of the questionnaires asked how participants would describe their bicycling habits. They could check “I often bike for transportation”, “I often bike for recreation”, both, or “I don’t bike often”. The results are below:

**How Participants Described Their Bicycling Habits**

| # of Participants | Reason for Bicycling          |
|-------------------|-------------------------------|
| 62                | Transportation and Recreation |
| 17                | Just Recreation               |
| 9                 | Don’t Bike Often              |
| 8                 | Just Transportation           |
| 96                | Total                         |



These results show that, in all, 82% of the participants ride bicycles for recreation, and 73% of the participants bike for transportation. This indicates a need make accommodations for both types of bicycling.

The following page shows how participants answered the question, “What specific destinations would a bicyclist who is riding through your neighborhood find interesting?” The question was open ended, and there was no set limit to how many places an individual could list. The purpose of this question was to identify which destinations would be helpful to include on additional bike route signs if additional funding becomes available.



## Written Responses (continued)

### Destinations that are Interesting for Bicyclists

| # of Mentions | Destination                       | # of Mentions | Destination                                |
|---------------|-----------------------------------|---------------|--------------------------------------------|
| 23            | Skyline Parkway                   | 1             | Arnold Rd                                  |
| 17            | Chester Park                      | 1             | Bagley Nature Area                         |
| 17            | Hartley Park                      | 1             | Bars                                       |
| 16            | Lakewalk                          | 1             | Bed and Breakfasts                         |
| 14            | UMD                               | 1             | Bike Paths                                 |
| 9             | Mount Royal Area                  | 1             | Challenge of Riding on Observation Hill    |
| 9             | Nice Views                        | 1             | Churches                                   |
| 8             | Lester Park                       | 1             | Community Gardens                          |
| 6             | Chester Creek Café                | 1             | Community Recreation Centers               |
| 6             | Lincoln Park                      | 1             | Congdon School                             |
| 5             | Brighton Beach                    | 1             | Duluth Arts Institute                      |
| 5             | Canal Park                        | 1             | East 3rd St                                |
| 5             | Distinguished Houses/Architecture | 1             | Edison School                              |
| 5             | Hawk Ridge                        | 1             | Emerson School                             |
| 4             | Congdon Park                      | 1             | Hills                                      |
| 4             | Downtown                          | 1             | I-35 Bike/Pedestrian Overpass              |
| 3             | Enger Park                        | 1             | Iron Ore Docks                             |
| 3             | Holy Rosary Church                | 1             | Jean Duluth Rd                             |
| 3             | North Shore                       | 1             | Kenwood Shopping Center                    |
| 3             | Parks                             | 1             | Kingsburg Creek                            |
| 3             | Public Libraries                  | 1             | Lake Superior College                      |
| 3             | Spirit Mountain                   | 1             | Lakeside Post Office                       |
| 3             | Trails                            | 1             | Lakeview Dr                                |
| 2             | Beaner's Central                  | 1             | Lakeview Tennis Courts                     |
| 2             | Bike Shops                        | 1             | Lester River Medical Center                |
| 2             | Burrito Union                     | 1             | Marshall Hardware                          |
| 2             | Clyde Park/Heritage Sports Center | 1             | Millennium Trail                           |
| 2             | COGG's Piedmont Trails            | 1             | Miller Creek                               |
| 2             | College of Saint Scholastica      | 1             | Morgan Park Disk Golf Course               |
| 2             | East 4th St                       | 1             | Morgan Park Middle School                  |
| 2             | East High School                  | 1             | Munger Trail                               |
| 2             | Fitger's Brewing Complex          | 1             | North Pole Bar                             |
| 2             | Grassy Point Trail                | 1             | Oneota Cemetery                            |
| 2             | Harrison Community Center         | 1             | Ordean School                              |
| 2             | Keene Creek                       | 1             | Portland Square Basketball Court           |
| 2             | Lake Superior Zoo                 | 1             | Rezoning of Woodland Middle School         |
| 2             | Lakeside Business District        | 1             | Scenery by Holy Rosary School              |
| 2             | Lakeside Super One                | 1             | Shops at 6th Ave E and 4th St              |
| 2             | Lief Erickson Park/Rose Garden    | 1             | Sir Benedict's Tavern                      |
| 2             | New London Café                   | 1             | St. Louis River                            |
| 2             | Park Point                        | 1             | Superior Hiking Trail                      |
| 2             | Park Point Beaches                | 1             | Superior Hiking Trailhead at 24th Ave East |
| 2             | Portland Square                   | 1             | Thompson Hill Visitors Center              |
| 2             | Rural Roads                       | 1             | Twin Ponds                                 |
| 2             | Seven Bridges Road                | 1             | US Bank                                    |
| 2             | Wade Stadium                      | 1             | Vermilion Rd                               |
| 2             | Washington Square                 | 1             | VIP Pizza                                  |
| 2             | West Duluth Business District     | 1             | Western Waterfront Trail                   |
| 2             | Wheeler Field                     | 1             | Wooded Areas                               |
| 2             | Whole Foods Co-op                 | 1             | Yoga North                                 |

## Written Responses (continued)

The next section shows how people responded to the statement, “Describe the main problems you have with bicycling, if any, and describe possible solutions to these problems.” First, problems that participants mentioned will be described. Then, their ideas for solving these problems will be outlined. The issues mentioned in this section are broad and relate the Duluth as a whole. The chart below describes how many times each issue with bicycling was mentioned. The process used to generalize each response is described on page 6.

### Problems with Bicycling in Duluth

| Rank | Problem                                           | # of Mentions |
|------|---------------------------------------------------|---------------|
| 1.   | <b>Motorists/Traffic</b>                          | <b>42</b>     |
| 2.   | <b>Road Condition</b>                             | <b>35</b>     |
| 3.   | <b>Roads Without Space for Bikes</b>              | <b>28</b>     |
| 4.   | <b>Efficient Connections Are Unsafe For Bikes</b> | <b>14</b>     |
| 4.   | <b>Hills</b>                                      | <b>14</b>     |
| 6.   | <b>Crossing Busy Intersections</b>                | <b>11</b>     |
| 7.   | <b>Safety Issues With Parked Vehicles</b>         | <b>8</b>      |
| 8.   | <b>Grit/Debris on Roads</b>                       | <b>7</b>      |
| 9.   | <b>Lack of Snow Plowing</b>                       | <b>5</b>      |
| 9.   | <b>Traffic Inhibits Bike Commuting</b>            | <b>5</b>      |
| 11.  | Bikes Not Considered in Street Design             | 4             |
| 12.  | Not Being Visible to Motorists                    | 3             |
| -    | Bicyclists Not Obeying Traffic Regulations        | 2             |
| -    | Designated Bike Routes are Dangerous              | 2             |
| -    | DTA Bike Racks Full                               | 2             |
| -    | Lack of Bike Racks                                | 2             |
| -    | Lack of Daylight                                  | 2             |
| -    | One-Way Streets                                   | 2             |
| -    | Poor Access to Superior                           | 2             |
| -    | Poor Sidewalk Condition                           | 2             |
| -    | Winter Weather                                    | 2             |
| -    | Drainage Grates Set Too Low                       | 1             |
| -    | Family                                            | 1             |
| -    | Lack of Off-Street Paths                          | 1             |
| -    | Lakewalk is Very Congested                        | 1             |
| -    | Loose Bricks Downtown                             | 1             |
| -    | Mixing Bikes and Automobiles                      | 1             |
| -    | Not Safe on Two Wheels on Existing Roads          | 1             |
| -    | People Alarming Bicyclists on Purpose             | 1             |
| -    | Personal Inertia                                  | 1             |
| -    | Poor Connectors                                   | 1             |
| -    | Roads Designed to Encourage Speeding              | 1             |
| -    | Time Management                                   | 1             |
| -    | When Stoplights Only Trigger for Cars             | 1             |

## Written Responses (continued)

With this information, it is possible to categorize these issues even further. This helps identify where agencies should focus their attention when trying to improve bicycle accessibility in Duluth. The numbers on the right show how many times each problem was mentioned.

### Number of Times That Problems With Bicycling Were Mentioned by Category

|                                            |            |                                            |           |
|--------------------------------------------|------------|--------------------------------------------|-----------|
| <b>Transportation Design</b>               | <b>129</b> | <b>Maintenance Issues</b>                  | <b>50</b> |
| Motorists/Traffic                          | 42         | Road Condition                             | 35        |
| Roads Without Space for Bikes              | 28         | Grit/Debris on Roads                       | 7         |
| Efficient Connections Are Unsafe For Bikes | 14         | Lack of Snow Plowing                       | 5         |
| Crossing Busy Intersections                | 11         | Poor Sidewalk Condition                    | 2         |
| Safety Issues With Parked Vehicles         | 8          | Loose Bricks Downtown                      | 1         |
| Traffic Inhibits Bike Commuting            | 5          |                                            |           |
| Bikes Not Considered in Street Design      | 4          | <b>Unchangeables</b>                       | <b>18</b> |
| Not Being Visible to Motorists             | 3          | Hills                                      | 14        |
| Designated Bike Routes are Dangerous       | 2          | Lack of Daylight                           | 2         |
| One-Way Streets                            | 2          | Winter Weather                             | 2         |
| Poor Access to Superior                    | 2          |                                            |           |
| Drainage Grates Set Too Low                | 1          | <b>Other</b>                               | <b>10</b> |
| Lack of Off-Street Paths                   | 1          | Bicyclists Not Obeying Traffic Regulations | 2         |
| Lakewalk is Very Congested                 | 1          | DTA Bike Racks Full                        | 2         |
| Mixing Bikes and Automobiles               | 1          | Lack of Bike Racks                         | 2         |
| Not Safe on Two Wheels on Existing Roads   | 1          | Family                                     | 1         |
| Poor Connectors                            | 1          | People Alarming Bicyclists on Purpose      | 1         |
| Roads Designed to Encourage Speeding       | 1          | Personal Inertia                           | 1         |
| When Stoplights Only Trigger for Cars      | 1          | Time Management                            | 1         |

The chart on the next page shows what participants indicated as possible solutions to some of these problems. Agencies should consider implementing the possible solutions with the greatest number of mentions, as these will have the most positive response. This list also provides a wealth of other ideas that could be implemented in Duluth.

## Possible Solutions for Bicycling in Duluth

| Rank | Possible Solution                                     | # of Mentions |
|------|-------------------------------------------------------|---------------|
| 1.   | <b>Add Bike Lanes or Shoulder Space</b>               | <b>28</b>     |
| 2.   | <b>Public Education for Motorists</b>                 | <b>11</b>     |
| 3.   | <b>Public Education for Bicyclists</b>                | <b>10</b>     |
| 4.   | <b>Build Bike Paths, Off-Street or Unspecified</b>    | <b>6</b>      |
| 5.   | <b>Plow Snow With Bikes in Mind</b>                   | <b>5</b>      |
| 5.   | <b>Repair Roads</b>                                   | <b>5</b>      |
| 7.   | <b>Cross City Trail</b>                               | <b>4</b>      |
| 8.   | <b>More Signage</b>                                   | <b>3</b>      |
| -    | Change the Auto-Dominant Culture                      | 2             |
| -    | Clean Bike Routes                                     | 2             |
| -    | Convert One-Ways to Two-Ways                          | 2             |
| -    | Enforce Traffic Laws for Bicyclists                   | 2             |
| -    | Engineer Roads for Speed Control                      | 2             |
| -    | Identify Routes to Avoid Hills                        | 2             |
| -    | More Bike Racks                                       | 2             |
| -    | More DTA Bike Racks                                   | 2             |
| -    | Paint Sharrows                                        | 2             |
| -    | Reduce or Eliminate Parking                           | 2             |
| -    | UMD Should Be a Main Focal Point                      | 2             |
| -    | Add Bike Access to Blatnik Bridge                     | 1             |
| -    | Add Cross Button for Bikes at Intersections           | 1             |
| -    | Allow Bikes on Scenic Railroad                        | 1             |
| -    | Bicycle Safety Rally                                  | 1             |
| -    | Buffer Zone Between Parking and Driving Lane          | 1             |
| -    | Change Lights to Timer System                         | 1             |
| -    | Change Parking to Accommodate Bikes                   | 1             |
| -    | City Should Hire a Bike/Ped Coordinator               | 1             |
| -    | City Workers Should Consider Bikes                    | 1             |
| -    | Connect Neighborhoods, Parks, and Schools             | 1             |
| -    | Consider Bike/Ped Trails Through Green Space          | 1             |
| -    | Convert Abandon Railways to Trails                    | 1             |
| -    | Coordinate With MapMyRide Website                     | 1             |
| -    | Create Centralized Bike Route Hubs                    | 1             |
| -    | Create Rules for Etiquette on Lakewalk                | 1             |
| -    | Designate Routes                                      | 1             |
| -    | DTA Free Pass for Bikes Program                       | 1             |
| -    | Enforce Speeding Laws                                 | 1             |
| -    | Enforce Vehicle Noise Laws                            | 1             |
| -    | Incorporate Streets Paralleling Major Roads for Bikes | 1             |
| -    | Insert Curb to Separate Bike and Auto Lanes           | 1             |
| -    | Install a Norwegian Bike Lift                         | 1             |
| -    | Install Free Air Machine(s)                           | 1             |
| -    | Level Sewer Grates                                    | 1             |
| -    | Lower Speed Limits                                    | 1             |
| -    | Paint Zebra Crossings                                 | 1             |
| -    | Redesign Busy Intersections                           | 1             |
| -    | Repair Bricks Downtown                                | 1             |
| -    | Restrict Parking to One Side                          | 1             |
| -    | Safer Pedestrian Channels                             | 1             |
| -    | Sheltered Bike Parking                                | 1             |
| -    | Subsidize Electric Bikes                              | 1             |

## Written Responses (continued)

The charts below classifies each of the possible solutions into different categories to show how different departments and organizations can help improve bicycling in Duluth.

### Number of Times That Solutions to Bicycling Were Mentioned by Category

|                                                       |           |                                         |           |
|-------------------------------------------------------|-----------|-----------------------------------------|-----------|
| <b>Transportation Design</b>                          | <b>63</b> | <b>Maintenance</b>                      | <b>13</b> |
| Add Bike Lanes or Shoulder Space                      | 28        | Plow Snow With Bikes in Mind            | 5         |
| Build Bike Paths, Off-Street or Unspecified           | 6         | Repair Roads                            | 5         |
| Cross City Trail                                      | 4         | Clean Bike Routes                       | 2         |
| Convert One-Ways to Two-Ways                          | 2         | Repair Bricks Downtown                  | 1         |
| Engineer Roads for Speed Control                      | 2         |                                         |           |
| Paint Sharrows                                        | 2         | <b>Bicycle Amenities</b>                | <b>9</b>  |
| UMD Should Be a Main Focal Point                      | 2         | More Signage                            | 3         |
| Add Bike Access to Blatnik Bridge                     | 1         | More Bike Racks                         | 2         |
| Add Cross Button for Bikes at Intersections           | 1         | More DTA Bike Racks                     | 2         |
| Buffer Zone Between Parking and Driving Lane          | 1         | Install Free Air Machine(s)             | 1         |
| Change Lights to Timer System                         | 1         | Sheltered Bike Parking                  | 1         |
| Change Parking to Accommodate Bikes                   | 1         |                                         |           |
| Connect Neighborhoods, Parks, and Schools             | 1         | <b>Government/Policy</b>                | <b>9</b>  |
| Consider Bike/Ped Trails Through Green Space          | 1         | Allow Bikes on Scenic Railroad          | 1         |
| Convert Abandon Railways to Trails                    | 1         | City Should Hire a Bike/Ped Coordinator | 1         |
| Create Centralized Bike Route Hubs                    | 1         | City Workers Should Consider Bikes      | 1         |
| Designate Routes                                      | 1         | Create Rules for Etiquette on Lakewalk  | 1         |
| Incorporate Streets Paralleling Major Roads for Bikes | 1         | DTA Free Pass for Bikes Program         | 1         |
| Insert Curb to Separate Bike and Auto Lanes           | 1         | Eliminate Parking in Summer             | 1         |
| Install a Norwegian Bike Lift                         | 1         | Lower Speed Limits                      | 1         |
| Level Sewer Grates                                    | 1         | Restrict Parking to One Side            | 1         |
| Paint Zebra Crossings                                 | 1         | Subsidize Electric Bikes                | 1         |
| Redesign Busy Intersections                           | 1         |                                         |           |
| Safer Pedestrian Channels                             | 1         |                                         |           |
|                                                       |           |                                         |           |
| <b>Education/Outreach</b>                             | <b>27</b> | <b>Enforcement</b>                      | <b>4</b>  |
| Public Education for Motorists                        | 11        | Enforce Traffic Laws for Bicyclists     | 2         |
| Public Education for Bicyclists                       | 10        | Enforce Speeding Laws                   | 1         |
| Change the Auto-Dominant Culture                      | 2         | Enforce Vehicle Noise Laws              | 1         |
| Identify Routes to Avoid Hills                        | 2         |                                         |           |
| Bicycle Safety Rally                                  | 1         |                                         |           |
| Coordinate With MapMyRide Website                     | 1         |                                         |           |

## Specific Areas of Concern

This next section shows comments that participants wrote about specific areas in Duluth on their questionnaires. This section contrasts with the previous one, because the previous section focuses on Duluth as a whole. Anytime a participant made a comment about a specific road or area, that comment was tagged and included in this analysis. Each comment is labeled on one of the following maps. The comments for each road should be referenced during road construction season to help making roads safer for both motorists and bicyclists.

Each response is as word-for-word as possible. However, sometimes minor paraphrasing was necessary. For instance, if a participant wrote that “Superior St and E 9th St would both be ideal routes,” the comment was reworded to make sense for each route. The resulting phrases would be “Superior St would be an ideal route,” and “E 9th St would be an ideal route.”

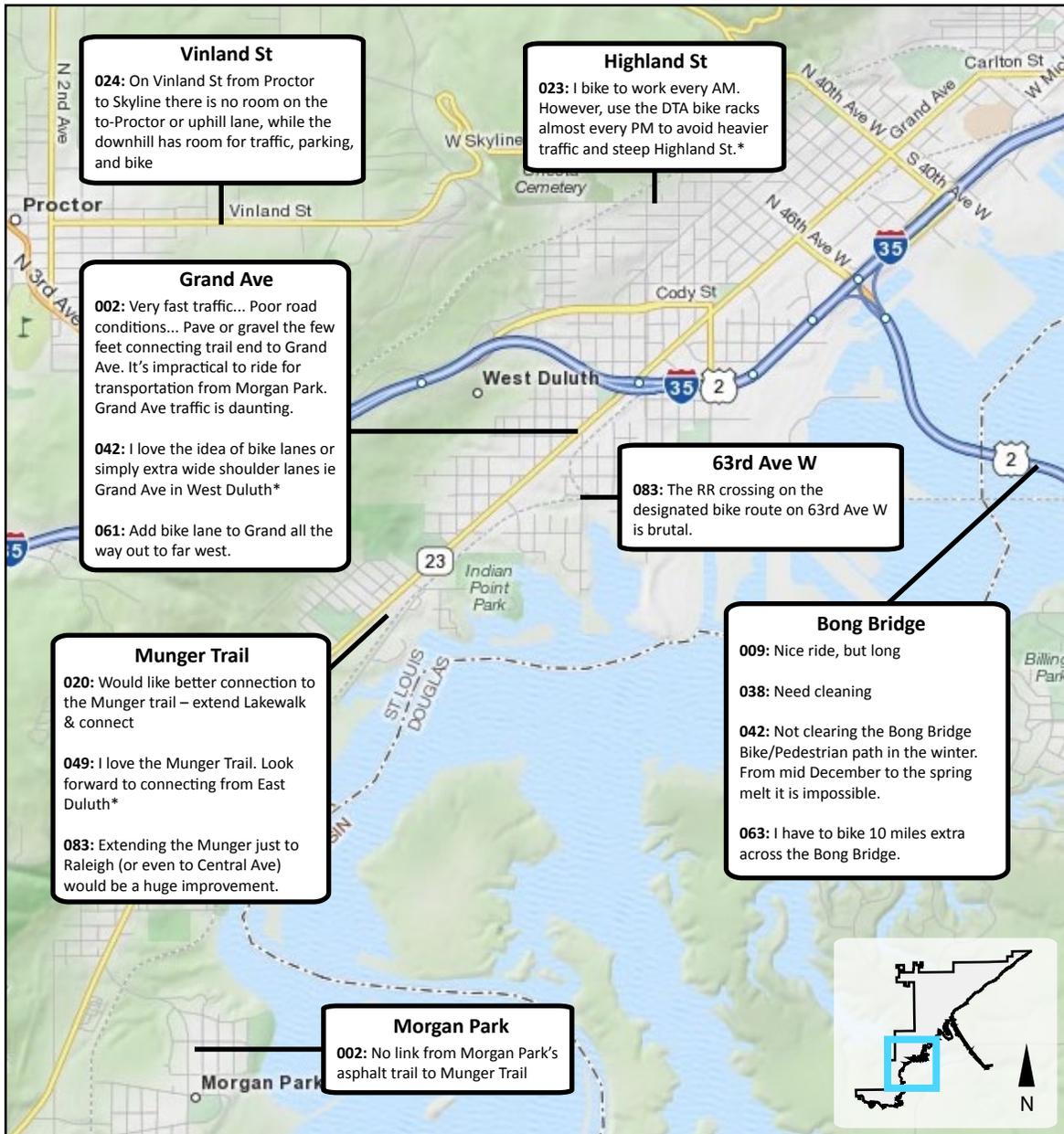
These maps include each participant’s number, as well as any comments they made. Comments that are very similar by the same participant are only included once. Comments labeled with an asterisk (\*) are those that do not suggest any changes need to be made to a specific route, including comments mentioning steep hills. These maps are generally ordered from southwest to northeast.

**People who could benefit from these maps include** planners and engineers hired to repave or redesign a road in Duluth, community organizations wanting to learn which roads people are most concerned with, and individuals curious about the road conditions throughout Duluth. The following chart shows which page comments for each road can be found on.

|                  |       |                  |       |                 |       |
|------------------|-------|------------------|-------|-----------------|-------|
| 12th Avenue E    | p. 31 | Chester Park     | p. 31 | Michigan St     | p. 28 |
| 14th Avenue E    | p. 31 | College St       | p. 32 | Minnesota Ave   | p. 30 |
| 1st Street       | p. 30 | Congdon Trail    | p. 32 | Morgan Park     | p. 27 |
| 26th Avenue E    | p. 32 | Downtown         | p. 30 | Munger Trail    | p. 27 |
| 2nd Avenue W     | p. 30 | Garfield Ave     | p. 28 | Ordean School   | p. 32 |
| 2nd Street       | p. 30 | Glenwood St      | p. 32 | Piedmont Ave    | p. 28 |
| 34th Ave E Trail | p. 32 | Grand Ave        | p. 27 | Rice Lake Rd    | p. 29 |
| 3rd Ave E        | p. 30 | Haines Rd        | p. 29 | Skyline Parkway | p. 28 |
| 3rd Street       | p. 30 | Harbor Dr        | p. 30 | Snelling Ave    | p. 32 |
| 4th Street       | p. 30 | Highland St      | p. 27 | Snively Rd      | p. 32 |
| 63rd Avenue W    | p. 27 | Howard Gnesen Rd | p. 32 | Springvale Rd   | p. 28 |
| 6th Avenue E     | p. 31 | Kenwood Ave      | p. 32 | Stebner Rd      | p. 29 |
| 7th Avenue E     | p. 31 | Lake Ave         | p. 30 | Superior St     | p. 30 |
| 8th Avenue E     | p. 31 | Lakeview Dr      | p. 32 | UMD Area        | p. 32 |
| 9th Street       | p. 31 | The Lakewalk     | p. 31 | US Highway 53   | p. 28 |
| Amity Trail      | p. 32 | Lincoln Park Dr  | p. 28 | Vinland St      | p. 27 |
| Arrowhead Rd     | p. 29 | London Rd        | p. 31 | Water St        | p. 31 |
| Blatnik Bridge   | p. 28 | Mall Area        | p. 29 | Woodland Ave    | p. 32 |
| Bong Bridge      | p. 27 | Maple Grove Rd   | p. 29 |                 |       |
| Central Entrance | p. 29 | Mesaba Ave       | p. 30 |                 |       |

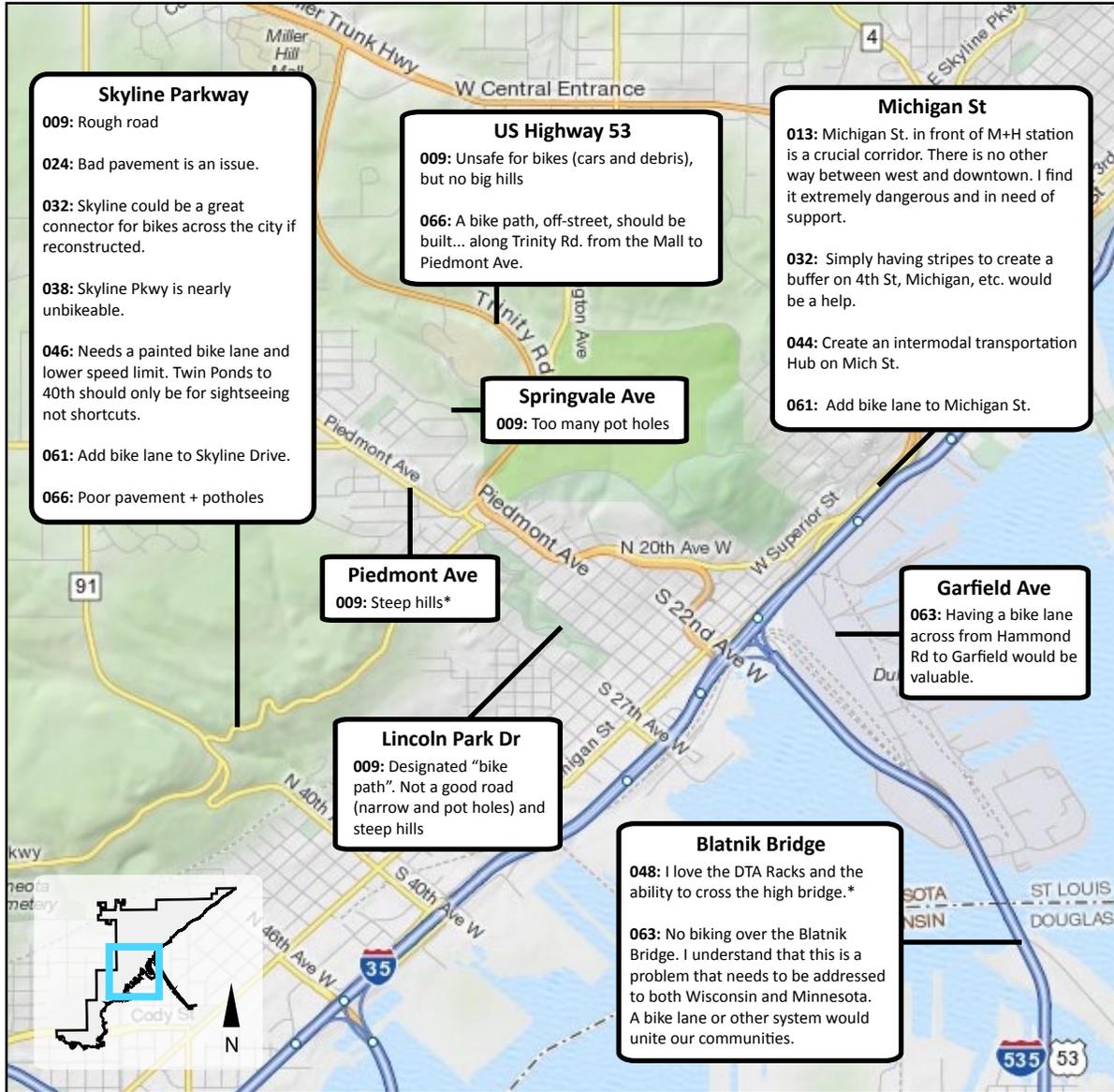
## Specific Areas of Concern (continued)

### West Duluth



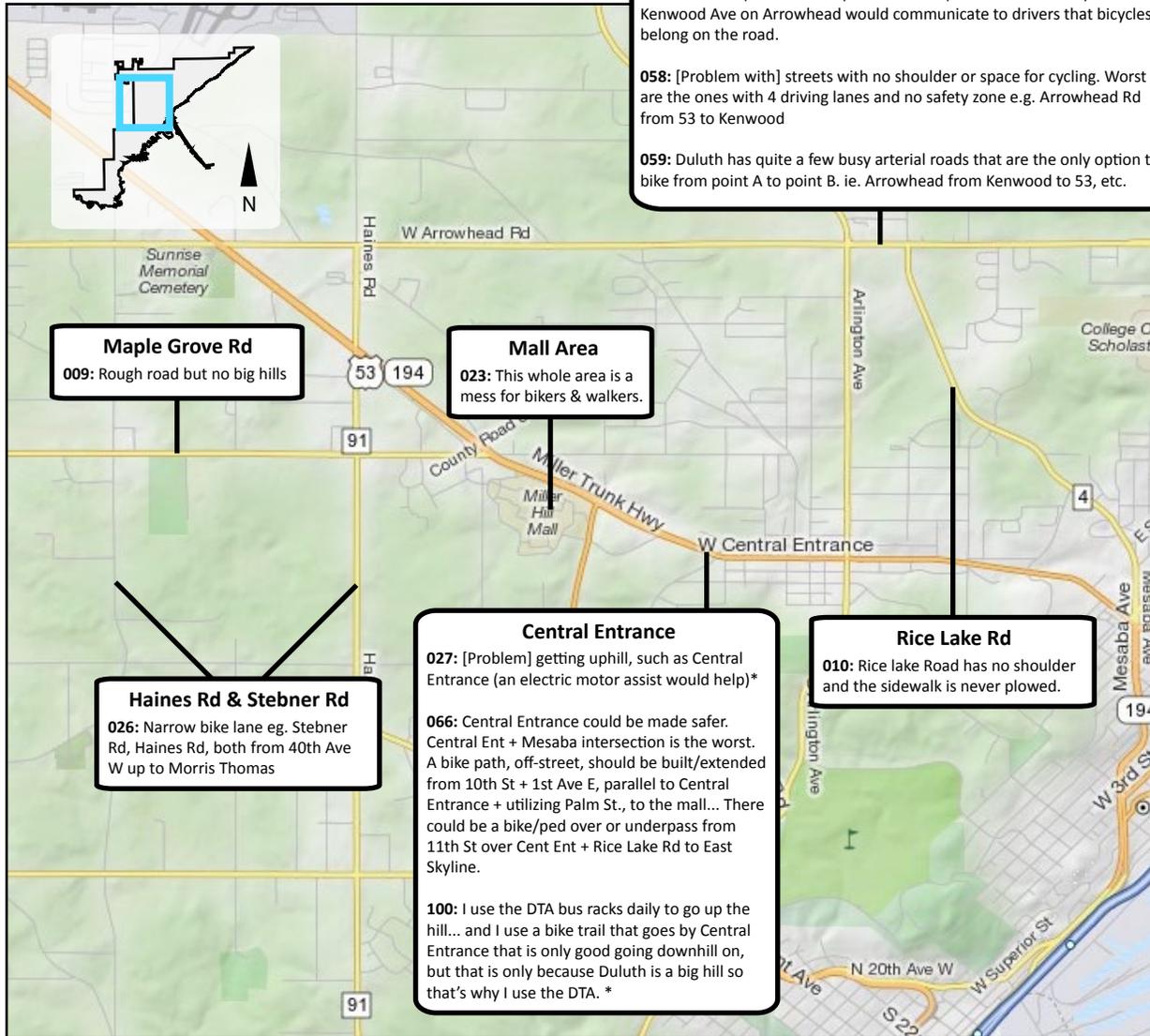
# Specific Areas of Concern (continued)

## Lincoln Park



## Specific Areas of Concern (continued)

### Mall Area



# Specific Areas of Concern (continued)

## Downtown

**3rd Street**

**015:** Fast drivers on 3rd St

**020:** Prefer we convert 2nd & 3rd St to two-way

**046:** Please accommodate 3rd Street to be a better route (signs, paint) this year!

**071:** Parking on right eliminates riding far right. I ride far left inside the yellow painted line.

**079:** 3rd St only good for downhill. There is no crosstown route that is safe for going East through the Central Hillside/East Hillside region.

**084:** One-way streets... Making them 2-way would improve connectivity.

**2nd Street**

**020:** Prefer we convert 2nd & 3rd St to two-way

**039:** I do not feel safe riding on the one ways 1st & 2nd street from my house to work.

**079:** 2nd St is dangerously narrow.

**084:** One-way streets... Making them 2-way would improve connectivity.

**1st Street**

**039:** I do not feel safe riding on the one ways 1st & 2nd street from my house to work.

**066:** Poor pavement + potholes

**084:** One-way streets. Making them 2-way would improve connectivity.

**089:** Switching between the streets (1st Street E) and sidewalk depends on the time of day.

**Mesaba Ave**

**010:** Mesaba Avenue would be nice to bike 'cause less steep, but totally scary.

**020:** Need better crossing at the Coppertop/access to East Hillside & Chester Bowl

**061:** Hard to cross Mesaba

**066:** Biggest problem is trigger lights that don't change unless a car pulls up to it – particularly 1st St + Mesaba. I only use [Mesaba] one-way, downhill. Some roads are dangerous, but there are no alternatives – particularly the 2 blocks of Mesaba that Skyline Parkway uses. Central Ent + Mesaba intersection is the worst.

**2nd Ave W**

**020:** Get rid of one-ways on... W 2nd Avenue downtown

**3rd Ave E**

**049:** : Very difficult to climb from Lakewalk up to top of 3rd Ave E (to go home).

**Lake Ave**

**077:** Drivers pulling thru the crosswalk at the red light at Superior St + Lake Ave crosswalk.

**Downtown**

**067:** Lack of bike lanes on downtown thoroughfares

**078:** We need a safe way to the Canal Park area from downtown.

**Harbor Dr**

**019:** There should be a real bike path here!

**Superior St**

**012:** Think Superior in Lakeside, less trafficked streets for cars are also the ones in the worst condition

**017:** In Lakeside, Superior St – bad. Lakewalk ext along Superior St – good.

**039:** I don't feel safe on Superior St.

**047:** I don't understand East Superior Street. There are shoulders set aside, but cars are generally parked on both?

**066:** Poor pavement + potholes

**067:** Superior St not bike friendly - I utilize it frequently on bike but reluctantly

**071:** Angled parking unsafe for biking. A buffer zone is needed.

**084:** The lack of designated lanes on minor collectors like Superior

**086:** It seems Superior is a natural artery through downtown... but it intimidates the living daylights out of less experienced people.

**098:** Cars don't pay attn. on Superior St, looking for parking spots, etc. One-ways and lakewalk are impractical alternatives.

**4th Street**

**015:** Fast drivers on 4th St

**020:** Big problem here!!!

**032:** Simply having stripes to create a buffer on 4th St would be a help.

**036:** 4th street could be a great "complete" street and a convenient bike artery .

**039:** I don't feel safe on 4th St.

**043:** 4th St east is an ideal route on the east central hillside.

**049:** 4th St too rough. Too dangerous for my recumbent.

**066:** Poor pavement + potholes

**067:** 4th Street not bike friendly - I utilize it frequently on bike but reluctantly. Would like to see safer ped channels across 4th street in Central Hill.

**069:** Roads that should be well-traveled bike routes (like East 4th St) are dangerous because they have too many cross streets (and cars pull into the bike lane) and too much parking (we will get doored and also a hazard near intersections).

**071:** Parking eliminates far right riding. Eliminate parking in the summer.

**079:** Widen 4th St? – Make cars park on one side only on 4th St?? 4th St is too busy with many aggressive drivers/narrowness.

**086:** It seems 4th St is a natural artery through downtown... but it intimidates the living daylights out of less experienced people.

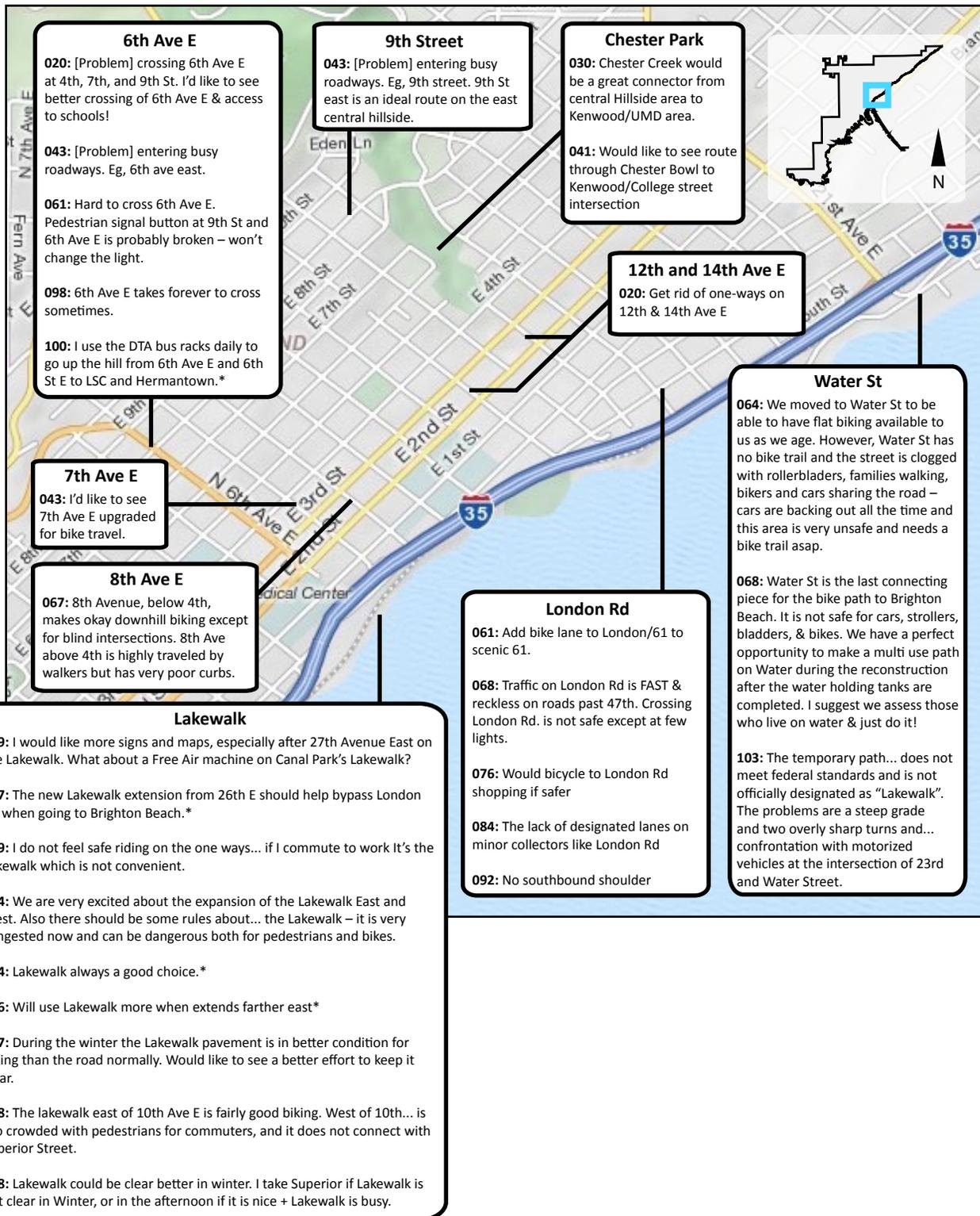


**Minnesota Ave**

**102:** There is no designated bike lane because a lane must be physically separated from traffic on a State Aid road. However, it appears as if there is a bike lane because traffic is parking on the bay side all summer. So going both ways in the lake side lane are bikes, roller bladders, joggers, skate boarders, walkers with dogs, etc. It is, to put it mildly, insane.

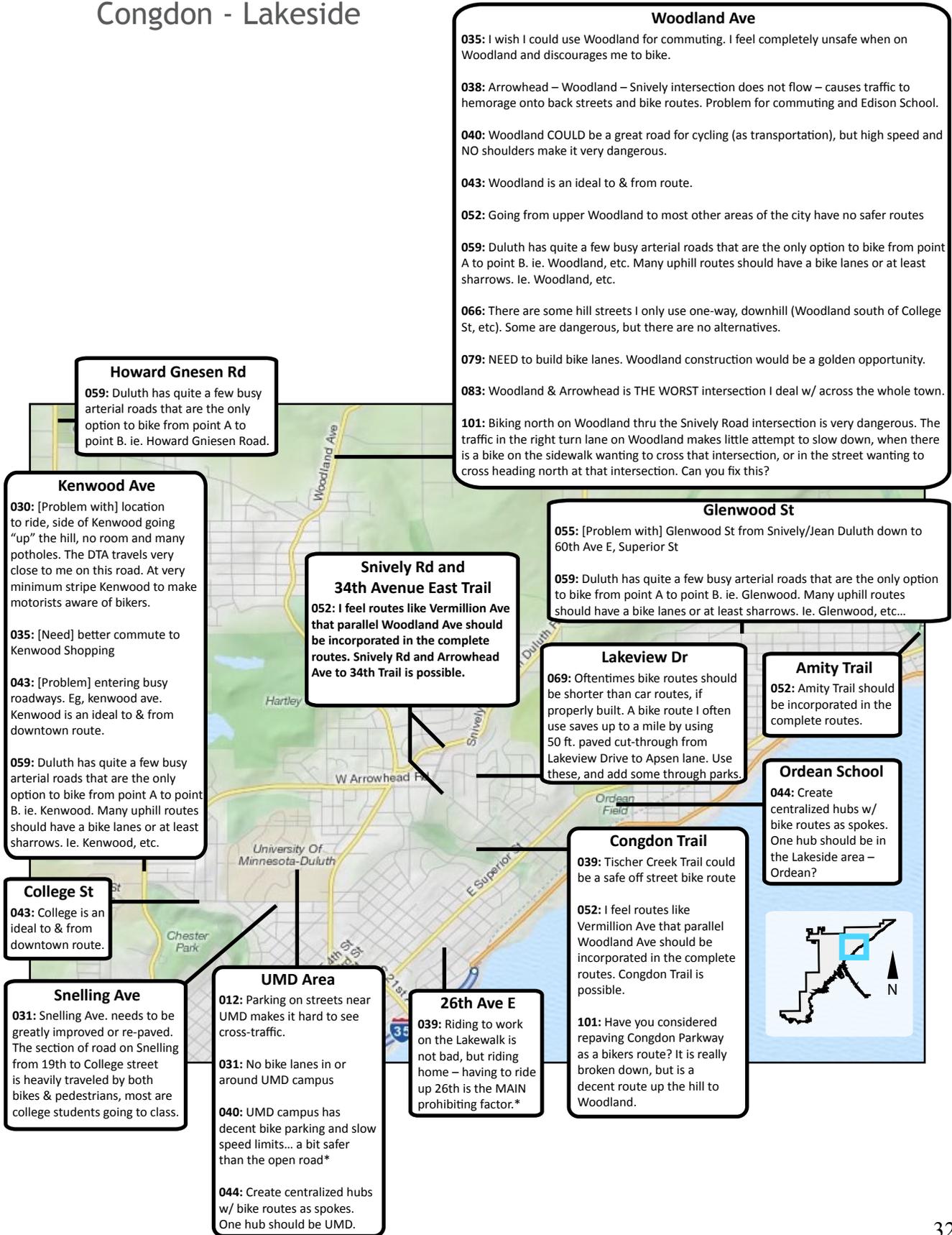
# Specific Areas of Concern (continued)

## East End



# Specific Areas of Concern (continued)

## Congdon - Lakeside



## Specific Areas of Concern (continued)

The chart below shows the number of participants that made a comment about suggesting improvements on a given road or area. Anytime a participant mentioned problems with steep hills, those comments were not counted as suggestions for improvements. If a participant made a comment stating that particular route is “an ideal route”, then it is counted as a suggestion for improvements. This information should be referenced when new roads are being redesigned or resurfaced, so the appropriate safety improvements can be incorporated into the new design.

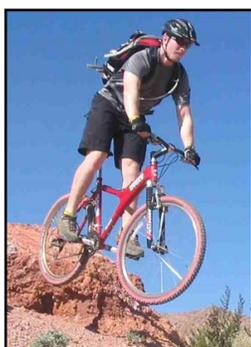
### Roads and Trails in Need of Improvement

| Rank | Road or Area           | Comments Suggesting Improvements | Total Comments | Rank | Road or Area        | Comments Suggesting Improvements | Total Comments |
|------|------------------------|----------------------------------|----------------|------|---------------------|----------------------------------|----------------|
| 1.   | <b>4th Street</b>      | <b>12</b>                        | <b>12</b>      | -    | 7th Avenue E        | 1                                | 1              |
| 2.   | <b>Superior St</b>     | <b>10</b>                        | <b>10</b>      | -    | 8th Avenue E        | 1                                | 1              |
| 2.   | <b>Woodland Ave</b>    | <b>10</b>                        | <b>10</b>      | -    | 9th Street          | 1                                | 1              |
| 4.   | <b>Skyline Parkway</b> | <b>7</b>                         | <b>7</b>       | -    | Amity Trail         | 1                                | 1              |
| 5.   | <b>3rd Street</b>      | <b>6</b>                         | <b>6</b>       | -    | 34th Avenue E Trail | 1                                | 1              |
| 5.   | <b>Arrowhead Rd</b>    | <b>6</b>                         | <b>6</b>       | -    | Blatnik Bridge      | 1                                | 2              |
| 5.   | <b>The Lakewalk</b>    | <b>6</b>                         | <b>9</b>       | -    | Central Entrance    | 1                                | 1              |
| 8.   | <b>London Rd</b>       | <b>5</b>                         | <b>5</b>       | -    | College St          | 1                                | 1              |
| 9.   | 1st Street             | 4                                | 4              | -    | Garfield Ave        | 1                                | 1              |
| 9.   | 2nd Street             | 4                                | 4              | -    | Haines Rd           | 1                                | 1              |
| 9.   | Bong Bridge            | 4                                | 4              | -    | Harbor Dr           | 1                                | 1              |
| 9.   | Kenwood Ave            | 4                                | 4              | -    | Howard Gnesen Rd    | 1                                | 1              |
| 9.   | Mesaba Ave             | 4                                | 4              | -    | Lake Ave            | 1                                | 1              |
| 9.   | Michigan St            | 4                                | 4              | -    | Lakeview Dr         | 1                                | 1              |
| -    | 6th Avenue E           | 3                                | 4              | -    | Lincoln Park Dr     | 1                                | 1              |
| -    | Congdon Trail          | 3                                | 3              | -    | Mall Area           | 1                                | 1              |
| -    | UMD Area               | 3                                | 4              | -    | Maple Grove Rd      | 1                                | 1              |
| -    | Water St               | 3                                | 3              | -    | Minnesota Ave       | 1                                | 1              |
| -    | Chester Park           | 2                                | 2              | -    | Morgan Park         | 1                                | 1              |
| -    | Downtown               | 2                                | 2              | -    | Ordean School       | 1                                | 1              |
| -    | Glenwood St            | 2                                | 2              | -    | Rice Lake Rd        | 1                                | 1              |
| -    | Grand Ave              | 2                                | 3              | -    | Snelling Ave        | 1                                | 1              |
| -    | Munger Trail           | 2                                | 3              | -    | Snively Rd          | 1                                | 1              |
| -    | US Highway 53          | 2                                | 2              | -    | Springvale Rd       | 1                                | 1              |
| -    | 12th Avenue E          | 1                                | 1              | -    | Stebner Rd          | 1                                | 1              |
| -    | 14th Avenue E          | 1                                | 1              | -    | Vinland St          | 1                                | 1              |
| -    | 2nd Avenue W           | 1                                | 1              | -    | 26th Avenue E       | 0                                | 1              |
| -    | 3rd Avenue E           | 1                                | 1              | -    | Highland St         | 0                                | 1              |
| -    | 63rd Avenue W          | 1                                | 1              | -    | Piedmont Ave        | 0                                | 1              |

## Recreational Routes

This section shows how participants ranked their favorite recreational bicycle routes. These are routes that are used for the purpose of exercise, leisure, or sport, as opposed to commuting or utility purposes. Each participant was allowed to select up to five routes. However, each route could consist of several different roadways. The total number of participants that selected a particular route is divided by the number of roads in that route. So for instance, if 10 people selected “Skyline to Hwy 2 to Vinland St loop” then 3.33 selections would be counted for each road: Skyline Parkway, US Highway 2, and Vinland St. The table below shows how many times each road or trail was selected.

### Top Bicycle Routes for Recreation Purposes



| Rank | Road or Trail                        | # of Times Selected |
|------|--------------------------------------|---------------------|
| 1.   | <b>Munger Trail</b>                  | <b>35.4</b>         |
| 2.   | <b>North Shore Scenic Drive</b>      | <b>35</b>           |
| 3.   | <b>Park Point</b>                    | <b>22</b>           |
| 4.   | <b>Skyline Parkway</b>               | <b>19.75</b>        |
| 5.   | <b>Lakewalk</b>                      | <b>14</b>           |
| 5.   | <b>Lester River Rd</b>               | <b>14</b>           |
| 7.   | <b>Jean Duluth Rd</b>                | <b>13.5</b>         |
| 8.   | <b>Western Waterfront Trail</b>      | <b>13</b>           |
| 9.   | <b>Howard Gnesen Rd</b>              | <b>11.67</b>        |
| 10.  | <b>Grant-Aid Trail</b>               | <b>7</b>            |
| 11.  | Bong Bridge                          | 6                   |
| 11.  | Lavaque Rd                           | 6                   |
| 13.  | MN Highway 23                        | 5.15                |
| 14.  | Snively Rd                           | 4.5                 |
| 15.  | Arrowhead Rd                         | 4.33                |
| 16.  | Strand Rd                            | 4                   |
| 17.  | Woodland Ave                         | 3.67                |
| 18.  | Glenwood Rd                          | 3                   |
| 19.  | Piedmont/Hermantown Rd               | 2.33                |
| 20.  | Calvary Rd                           | 2                   |
| 20.  | Hartley Rd                           | 2                   |
| 20.  | Martin Rd                            | 2                   |
| 20.  | Orange Street                        | 2                   |
| 24.  | Spirit Mountain Trails               | 1.67                |
| 25.  | Morris Thomas Rd                     | 1.33                |
| 26.  | Becks Rd                             | 1.15                |
| 27.  | Arnold Rd                            | 1                   |
| 27.  | Occidental Blvd (Seven Bridges Road) | 1                   |
| 27.  | Rice Lake Rd                         | 1                   |
| 30.  | MN Highway 39/WI Highway 105         | 0.75                |
| 31.  | 131st Ave W                          | 0.4                 |
| 31.  | MN Highway 210                       | 0.4                 |

# Transportation Routes

Basically, transportation refers to getting from point A to point B. Some examples of bicycling for transportation include commuting to work, riding to the grocery store, or simply biking to a friend’s house. Most bicycle travel for the purposes of transportation takes place within city limits.

The following section presents a series of maps. The first set of maps show which routes participants currently take for transportation. The second set of maps show which routes participants would choose to use in a hypothetical scenario where every road was completely safe to bike on. The third set of maps show the difference between the first two sets of maps. This set of maps identifies which road and trails bicyclists are using that they would rather not be using, as well as which routes they aren’t currently using but would prefer to use if it was safer. The table below shows which page each map is on:

**Current Trends** **p. 36**

- Gary - New Duluth p. 37
- Spirit Valley p. 38
- Denfeld - Lincoln Park p. 39
- Mall Area p. 40
- Downtown Area p. 41
- Downtown (zoomed-in) p. 42
- Airport Area p. 43
- Kenwood - Woodland p. 44
- Congdon p. 45
- Lakeside p. 46

**Roads Bicyclists Want to Use** **p. 47**

- Gary - New Duluth p. 48
- Spirit Valley p. 49
- Denfeld - Lincoln Park p. 50
- Mall Area p. 51
- Downtown Area p. 52
- Downtown (zoomed-in) p. 53
- Airport Area p. 54
- Kenwood - Woodland p. 55
- Congdon p. 56
- Lakeside p. 57

**Current Trends vs. Ideal Routes** **p. 58**

- Gary - New Duluth p. 59
- Spirit Valley p. 60
- Denfeld - Lincoln Park p. 61
- Mall Area p. 62
- Downtown Area p. 63
- Downtown (zoomed-in) p. 64
- Airport Area p. 65
- Kenwood - Woodland p. 66
- Congdon p. 67
- Lakeside p. 68



## *Transportation Routes (continued)*

### **Current Trends**

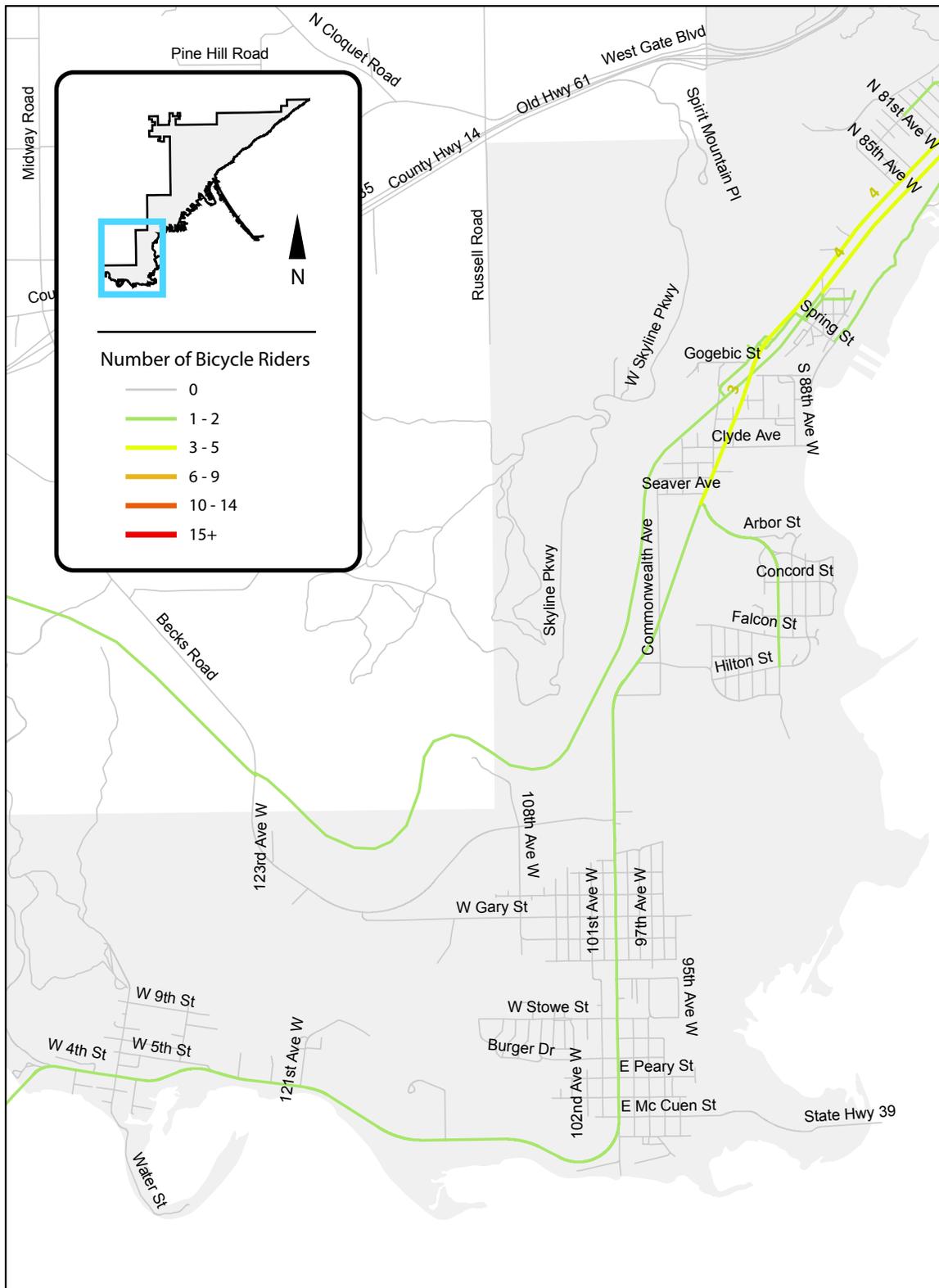
The first set of maps show the current trends of bicycle travel for transportation purposes prior to the 2010 summer construction season. These maps are not intended to show small block-by-block differences, because a completely different set of participants would have likely produced different results. However, these maps are intended to show overall patterns of the distribution of bicycle riders in Duluth.

Each map is divided by neighborhood to help show the results in greater detail. Roads that three or more participants drew have labels with numbers showing how many people use that road.

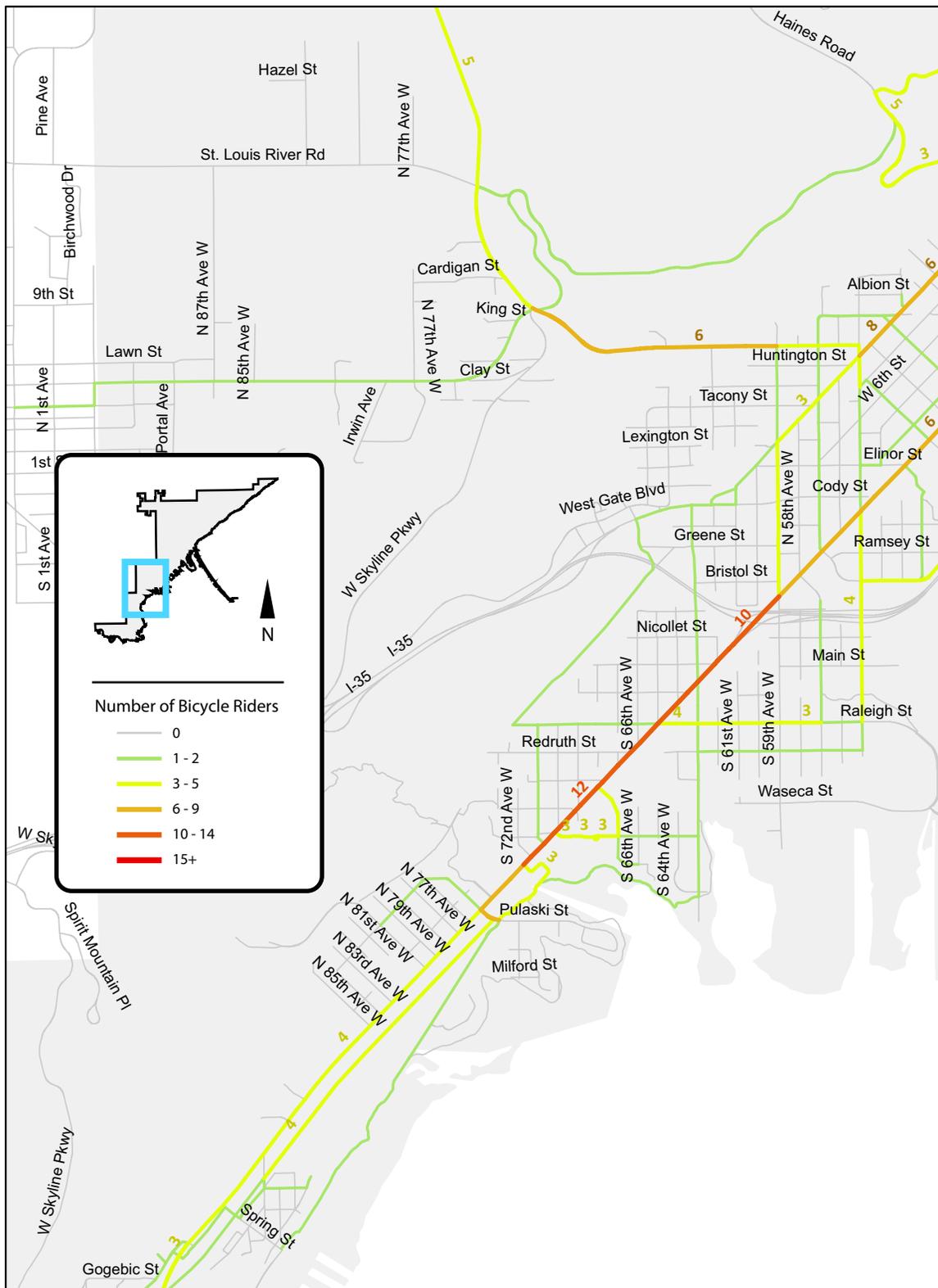
**People who could benefit from these maps would include** individuals seeking the most commonly used roads for bicycling, photographers interested in taking pictures of bicycle riders, businesses that are curious about the traffic distribution of bicycle riders, and agencies that are working to improve bicycling by learning more about the current patterns.

# Transportation Routes (continued)

## Current Trends: Gary - New Duluth

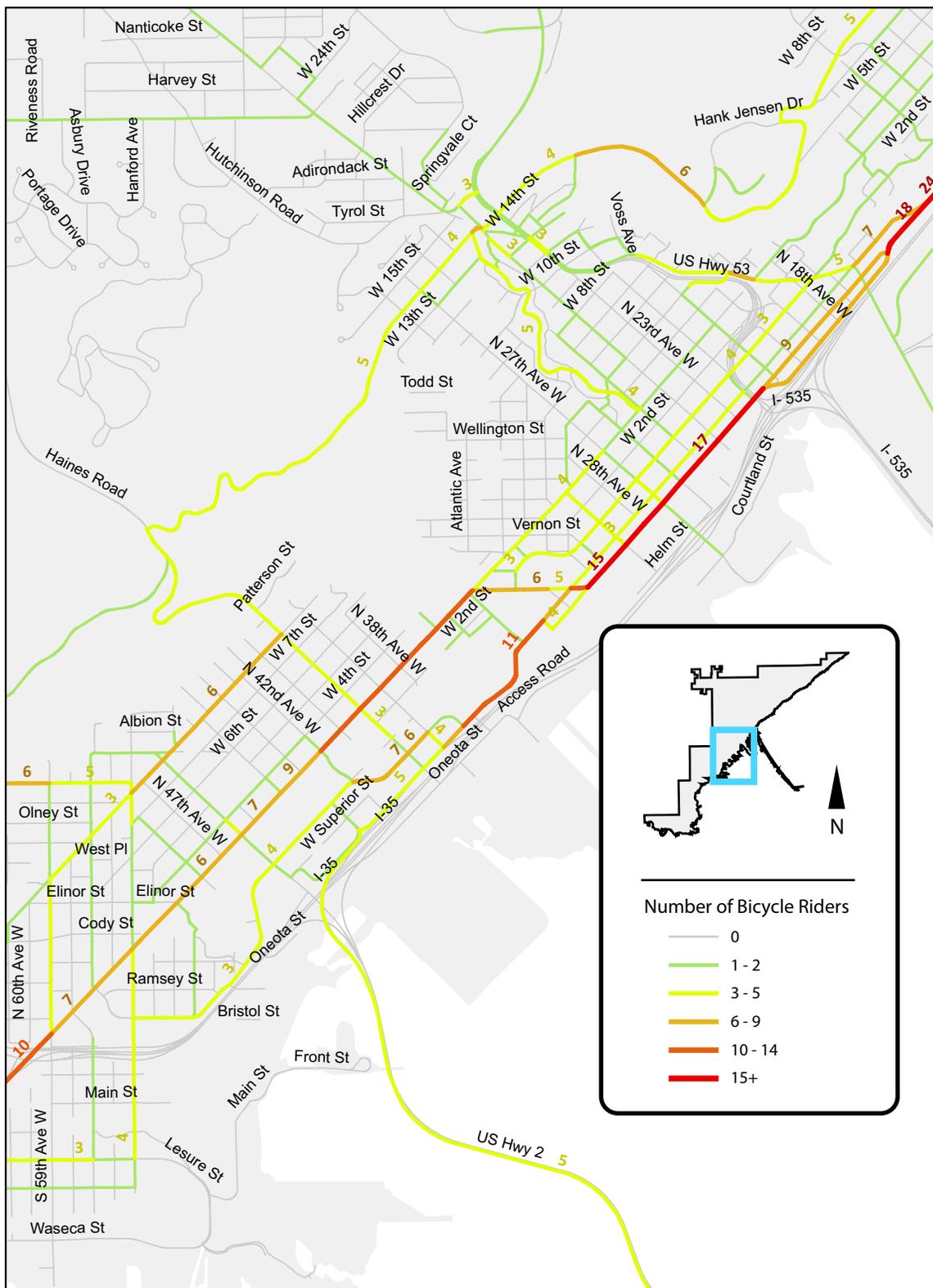


# Transportation Routes (continued) Current Trends: Spirit Valley

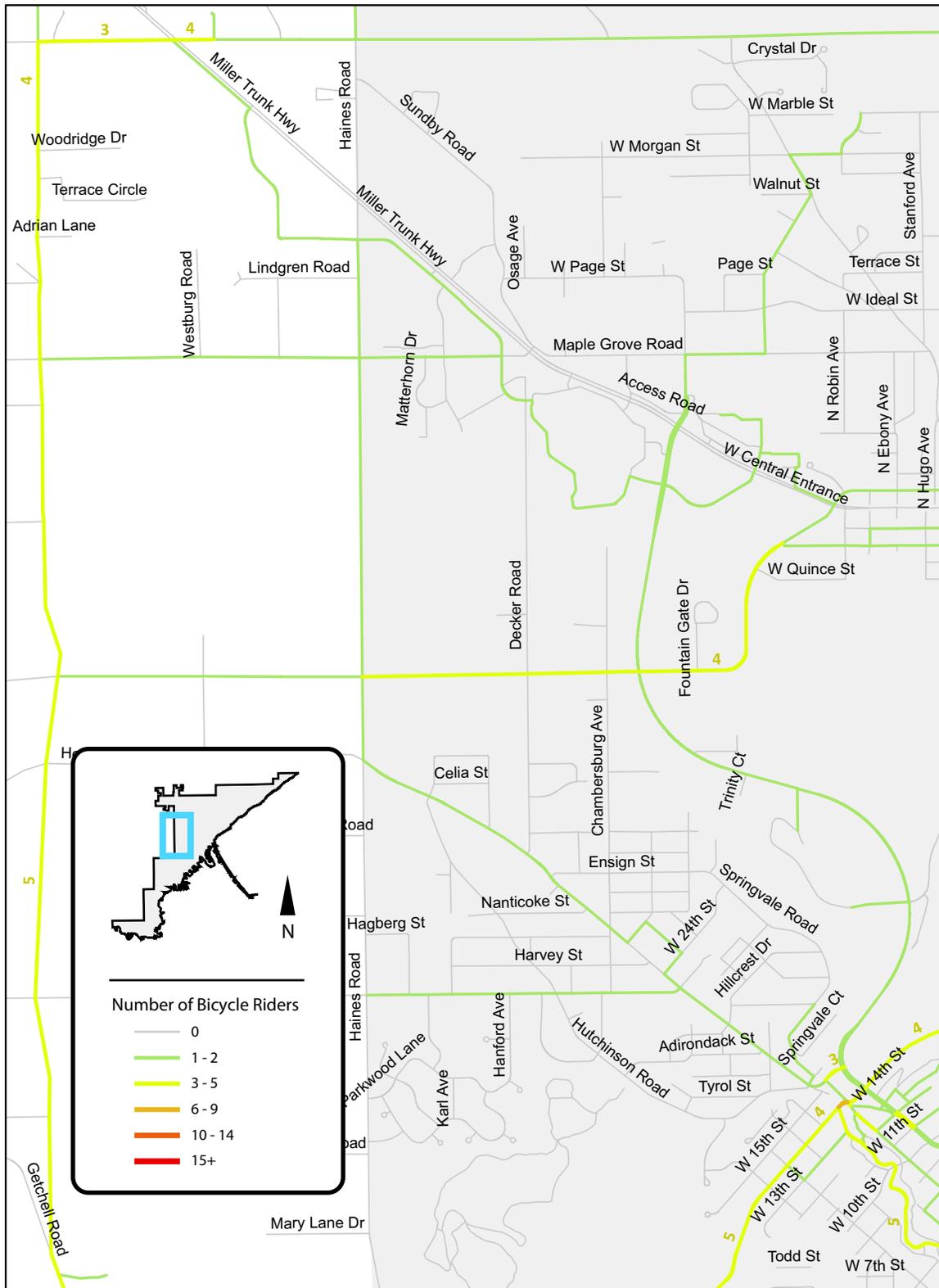


# Transportation Routes (continued)

## Current Trends: Denfeld - Lincoln Park



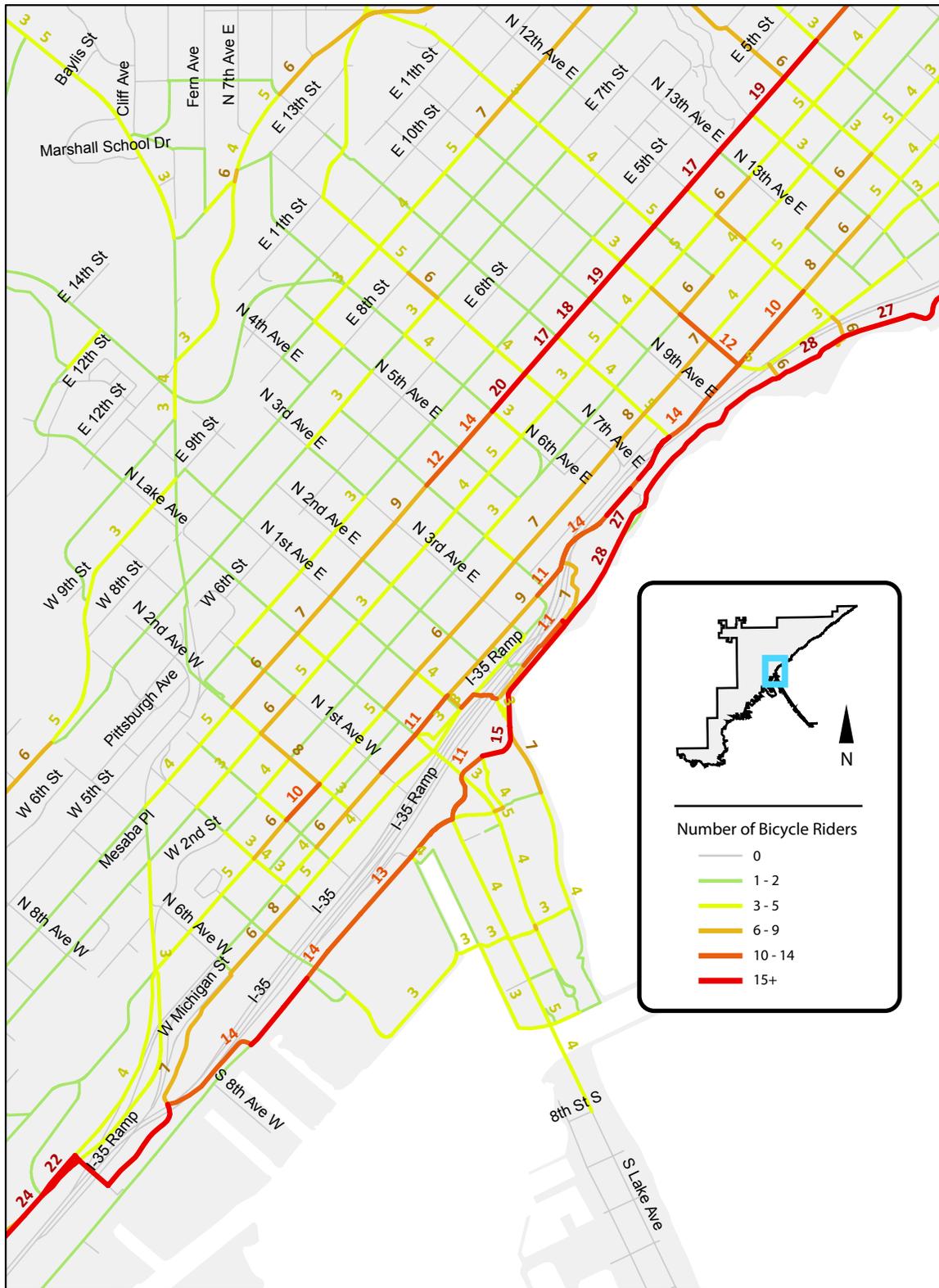
# Transportation Routes (continued) Current Trends: Mall Area





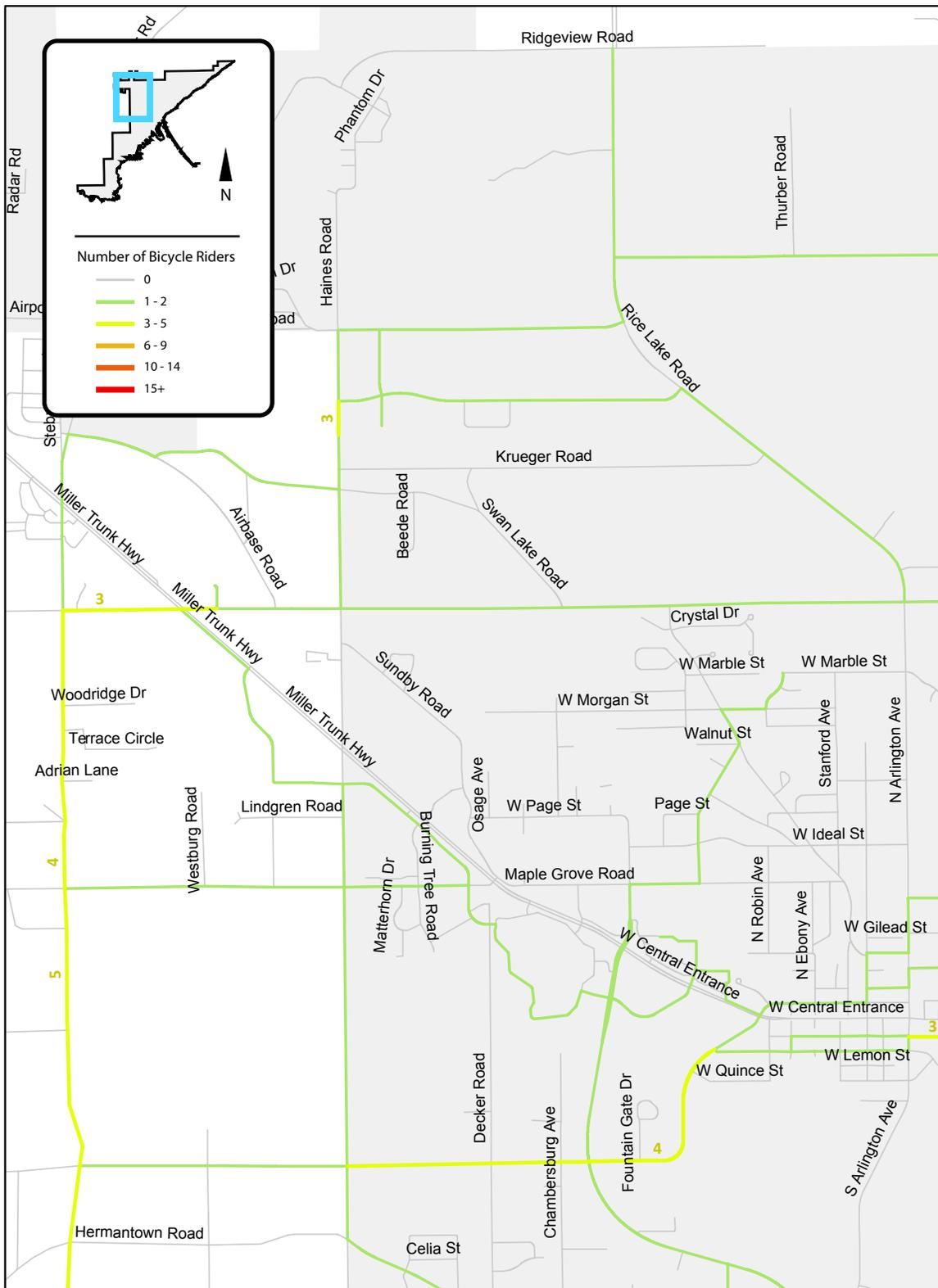
# Transportation Routes (continued)

## Current Trends: Downtown (zoomed-in)



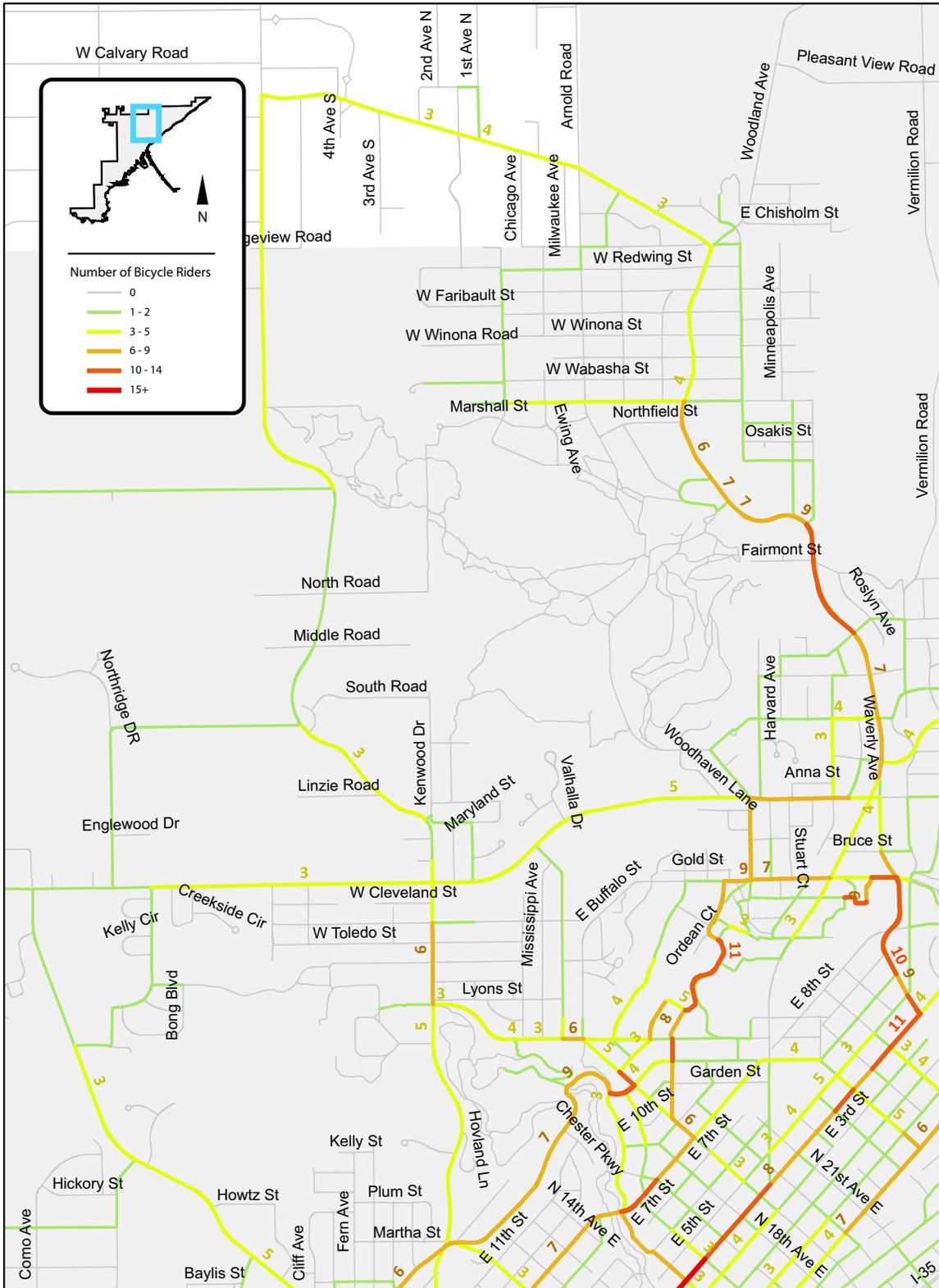
# Transportation Routes (continued)

## Current Trends: Airport Area

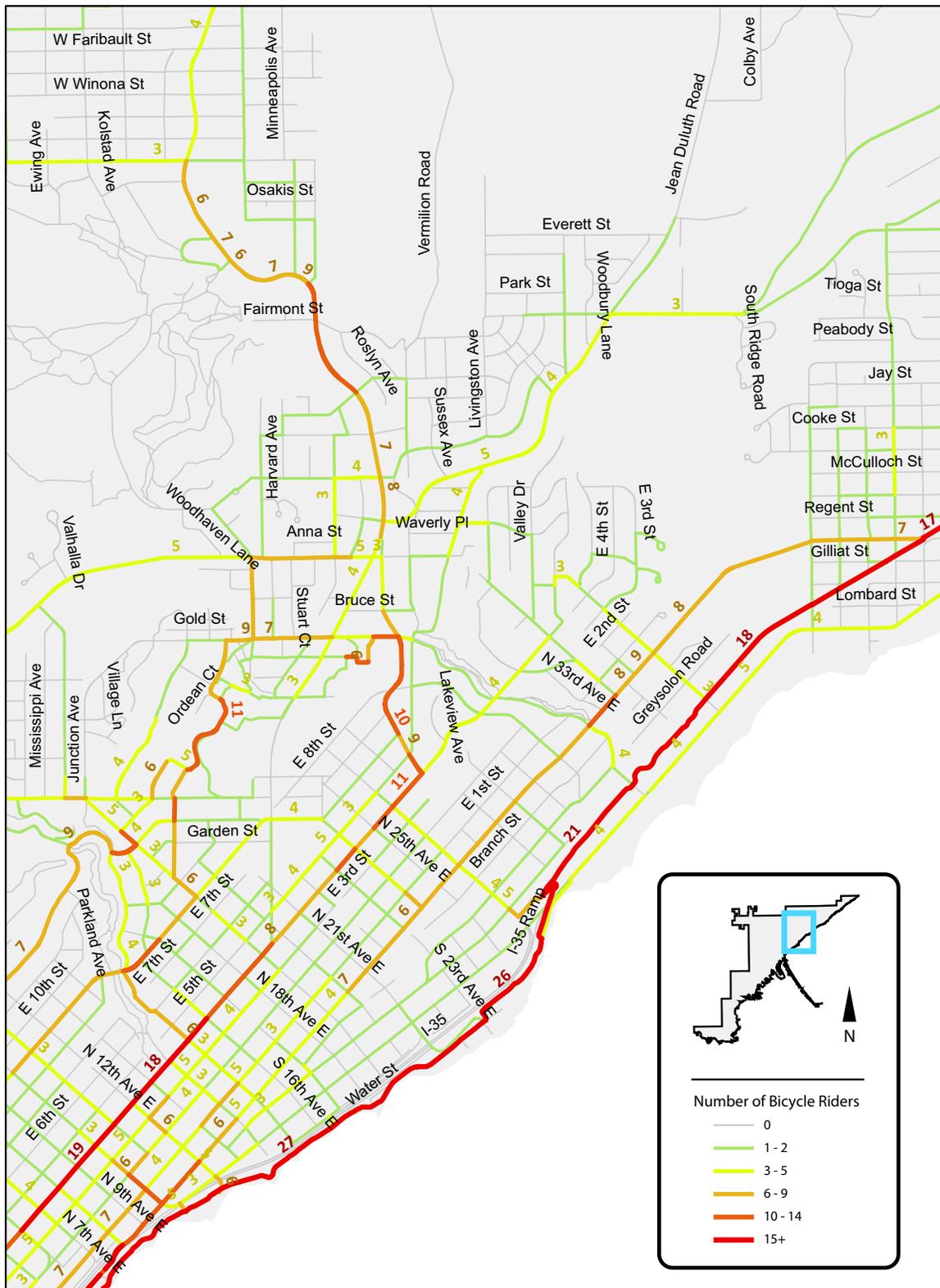


# Transportation Routes (continued)

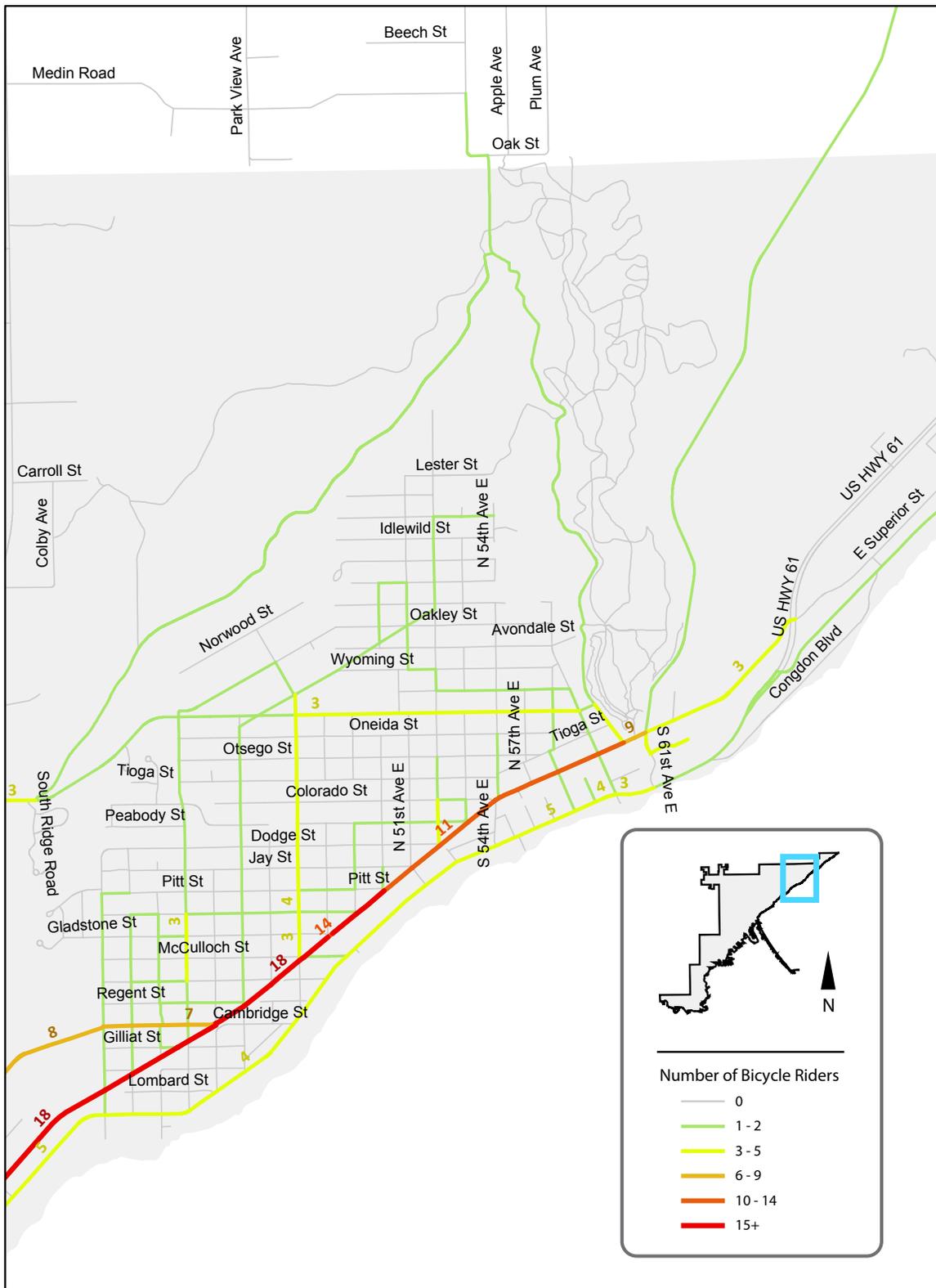
## Current Trends: Kenwood - Woodland



# Transportation Routes (continued) Current Trends: Congdon



# Transportation Routes (continued) Current Trends: Lakeside



Number of Bicycle Riders

- 0
- 1 - 2
- 3 - 5
- 6 - 9
- 10 - 14
- 15 +

## *Transportation Routes (continued)*

### **Routes Bicyclists Want to Use**

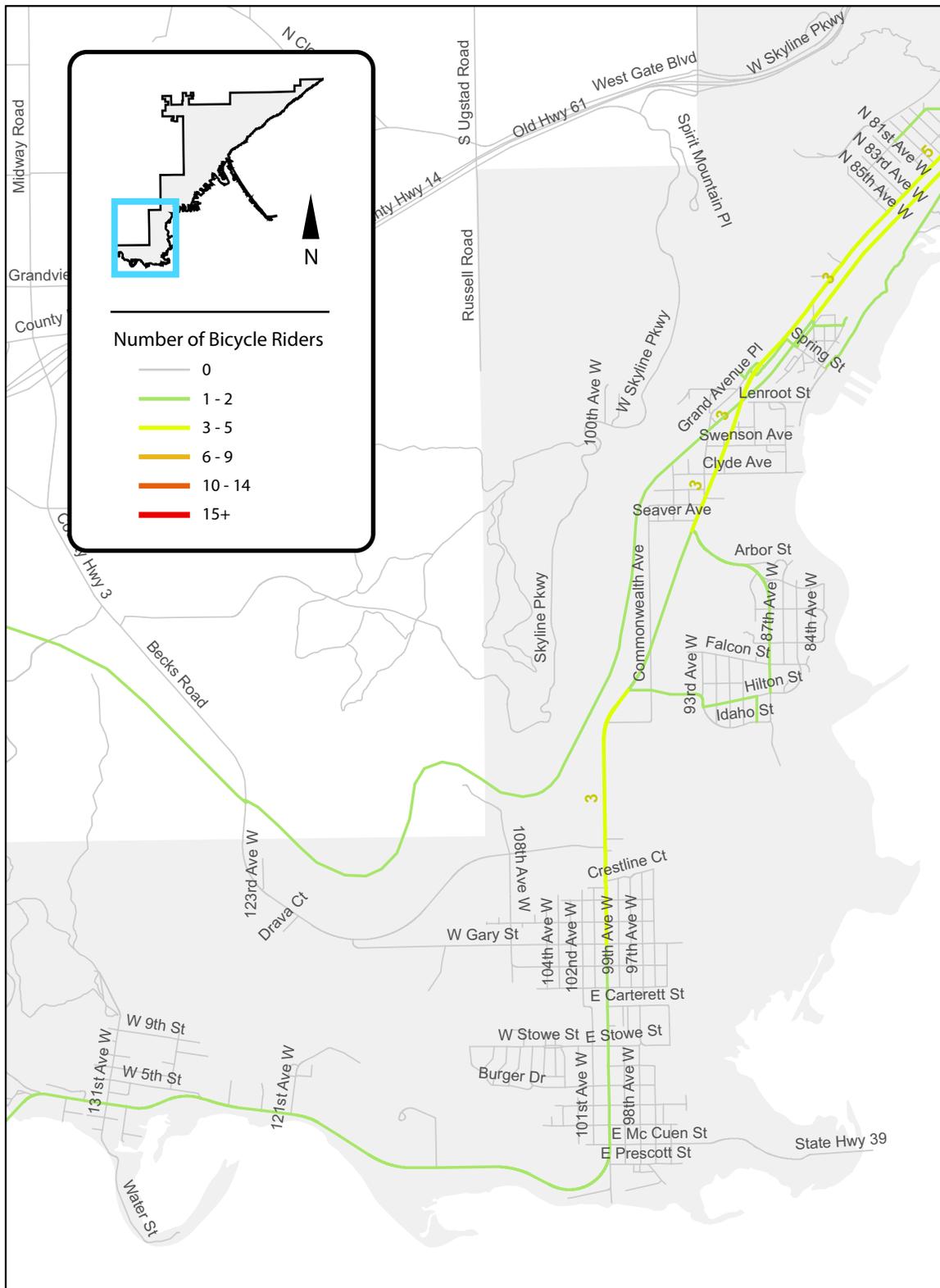
This next set of maps will show which routes participants would prefer to use if the infrastructure on every road supported bicycling. This information aims to show what an ideal bicycle network would look like. Higher numbers indicate that people would use that particular road if it was safe to bike on (i.e. wide shoulder, good pavement, no litter or parked vehicles).

The routes on these maps are determined by each participant's current routes with any changes made using the pink highlighter incorporated into the route, as described on page 4. Participants that don't currently bike were instructed to use the pink highlighter to draw routes they would most likely choose to use, so these maps account for those participants as well.

**People who could benefit from the following maps include** individuals and agencies interested in learning which roads that new improvements, such as bike lanes, would be most effective on.

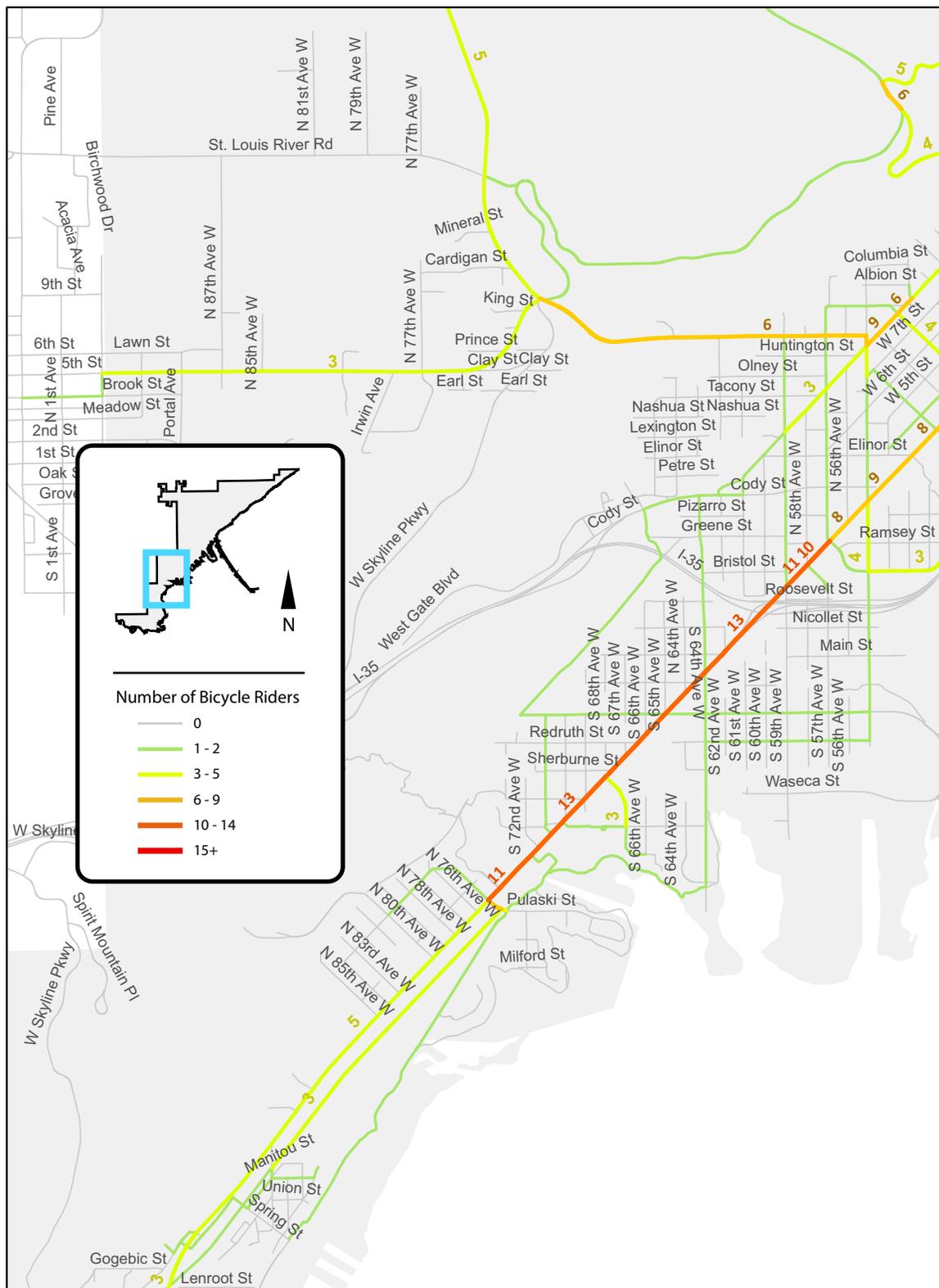
# Transportation Routes (continued)

## Routes Bicyclists Want to Use: Gary - New Duluth



# Transportation Routes (continued)

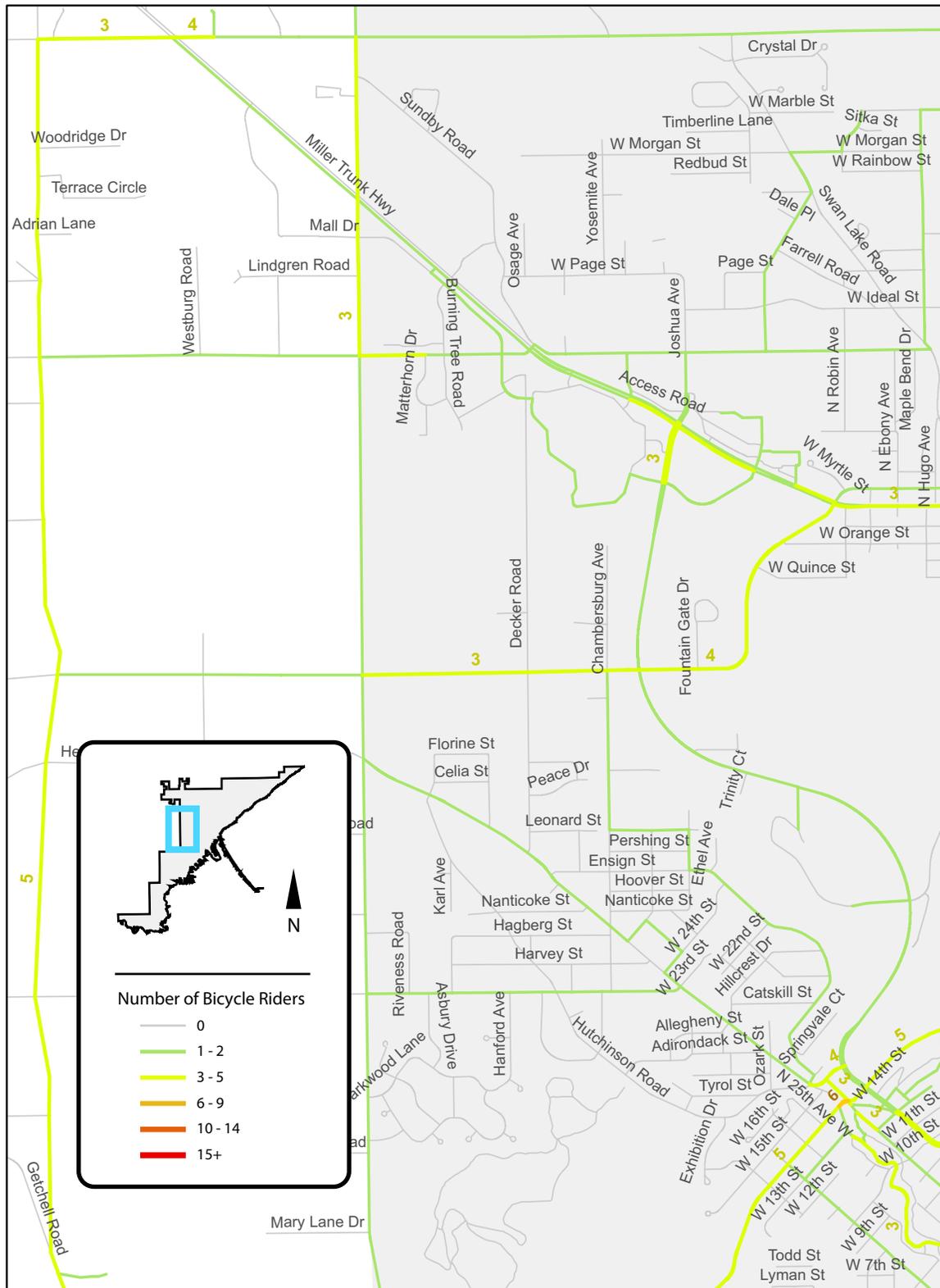
## Routes Bicyclists Want to Use: Spirit Valley





# Transportation Routes (continued)

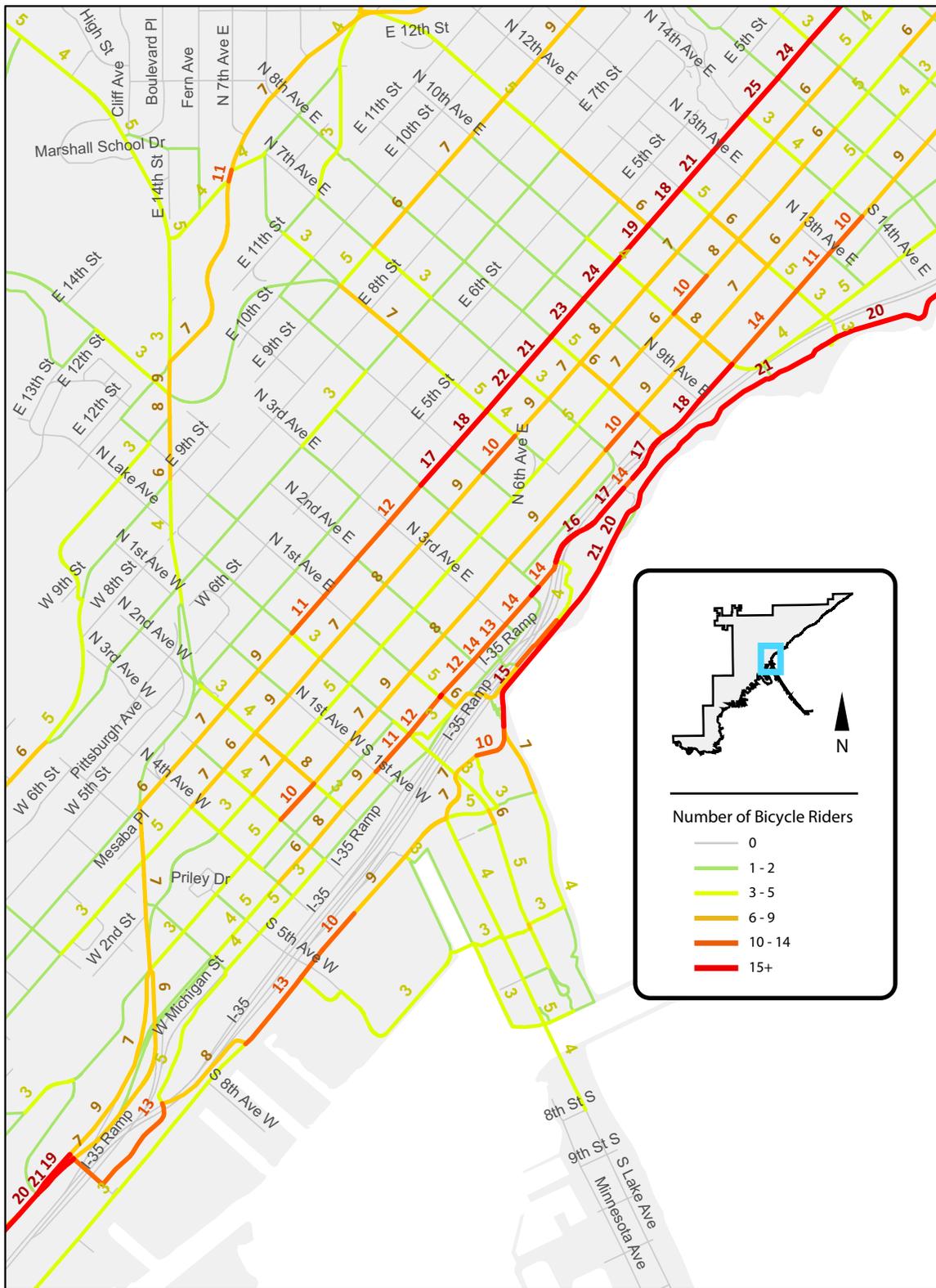
## Routes Bicyclists Want to Use: Mall Area





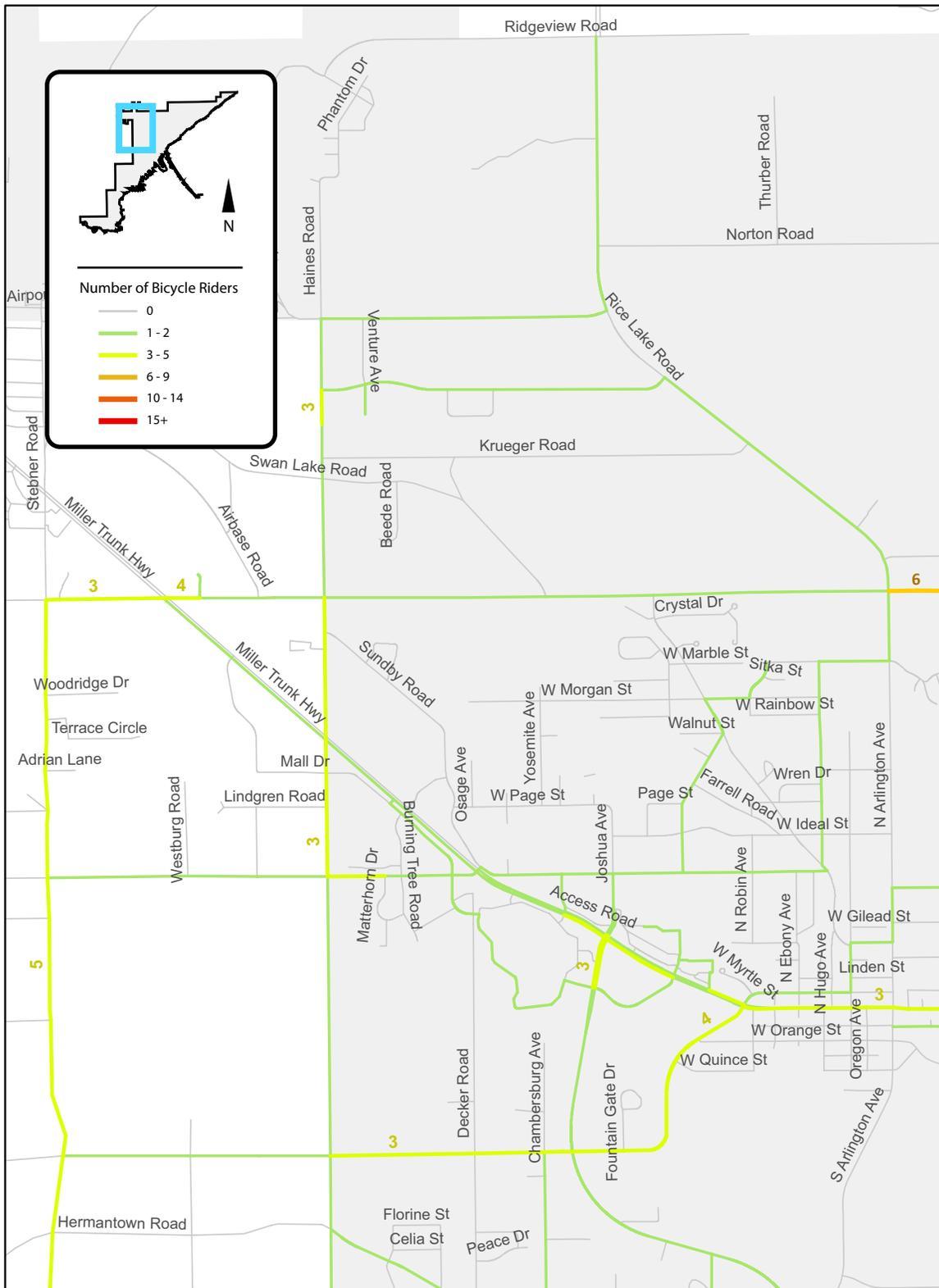
# Transportation Routes (continued)

## Routes Bicyclists Want to Take: Downtown (zoomed-in)



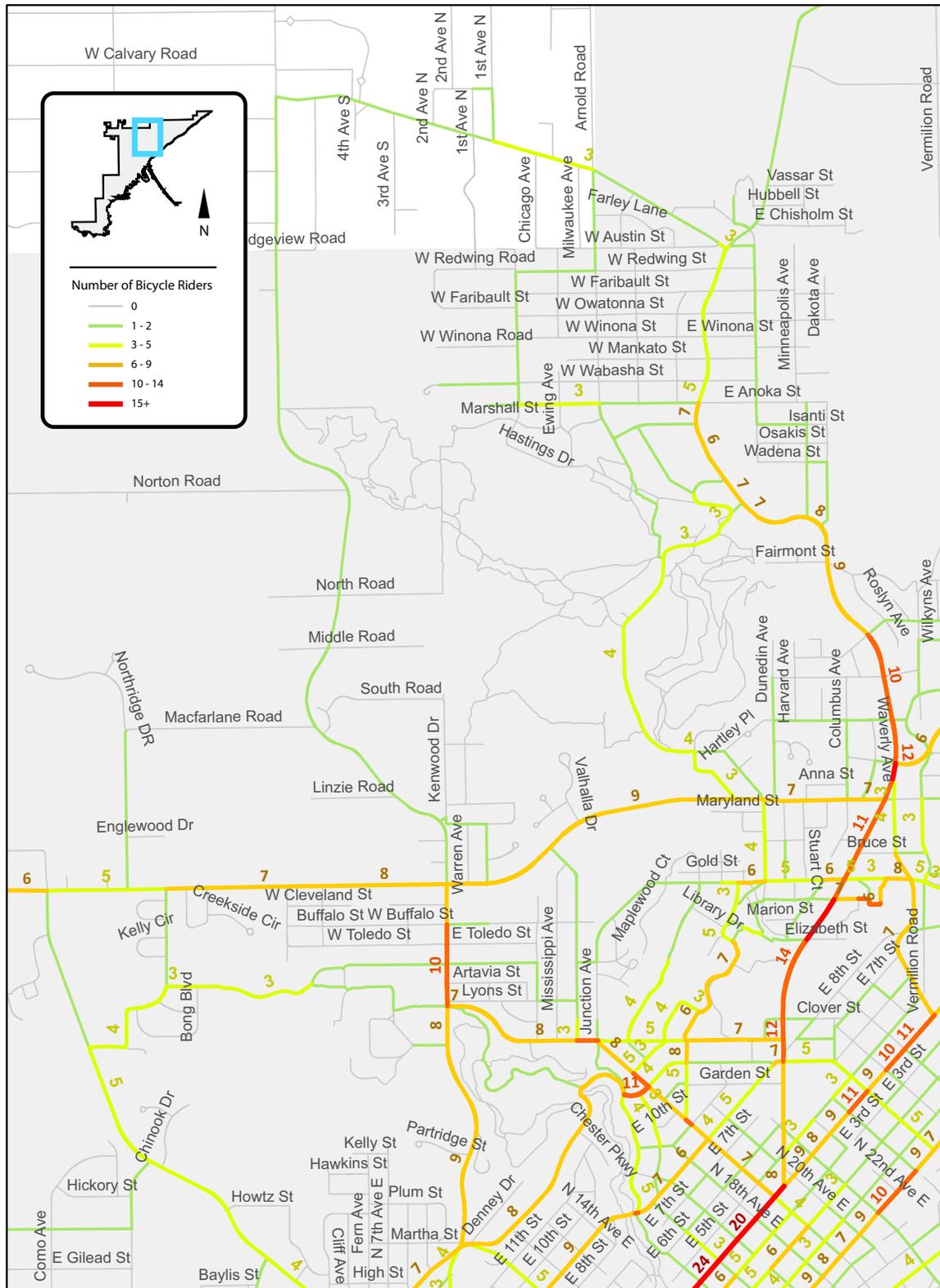
# Transportation Routes (continued)

## Routes Bicyclists Want to Take: Airport Area



# Transportation Routes (continued)

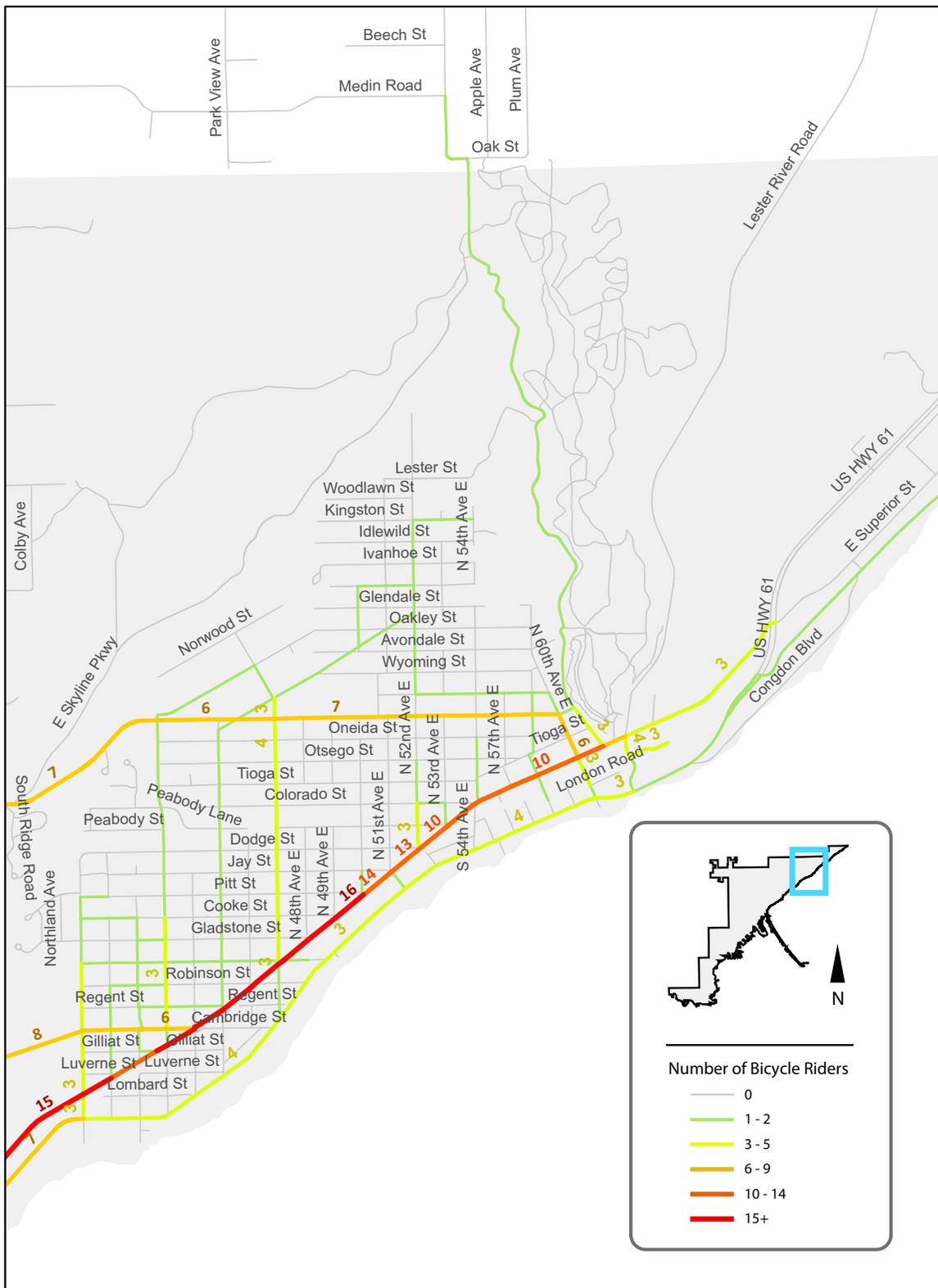
## Routes Bicyclists Want to Take: Kenwood - Woodland





# Transportation Routes (continued)

## Routes Bicyclists Want to Take: Lakeside



## *Transportation Routes (continued)*

### **Current Trends vs. Ideal Routes**

This next set of maps will show the difference between the last two sets of maps. The values for each block represent the value of Routes Bicycles Want to Take minus Current Trends. The result shows two different phenomena:

#### **Routes with a positive value (in blue)**

These are routes that participants would like to use but currently avoid because it is too dangerous.

#### **Routes with a negative value (in red)**

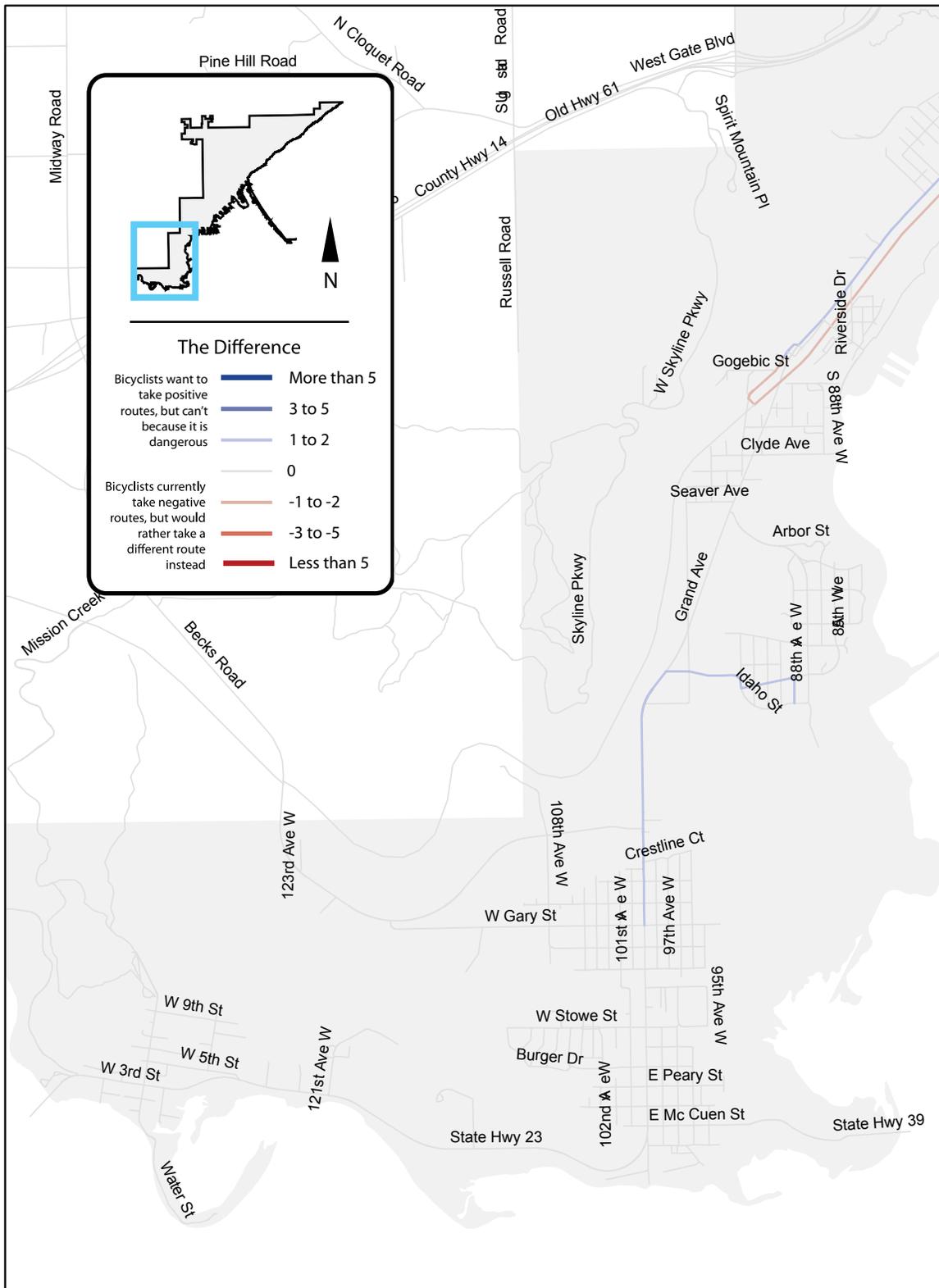
These are routes that participants currently take but would like to avoid in favor of a different route.

In short, routes that are very blue have a high demand for bicycle safety improvements. Likewise, routes that are very red have a greater the number of people who would rather go a different way. This doesn't mean that all red roads should be completely disregarded as possible bike routes, and that all blue roads should become bike routes. Rather, these maps are designed to show how each participant feels about the routes they currently take.

**People who could benefit from the following maps include** individuals and agencies interested in learning which roads that new improvements, such as bike lanes, would be most effective on.

# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Gary - New Duluth



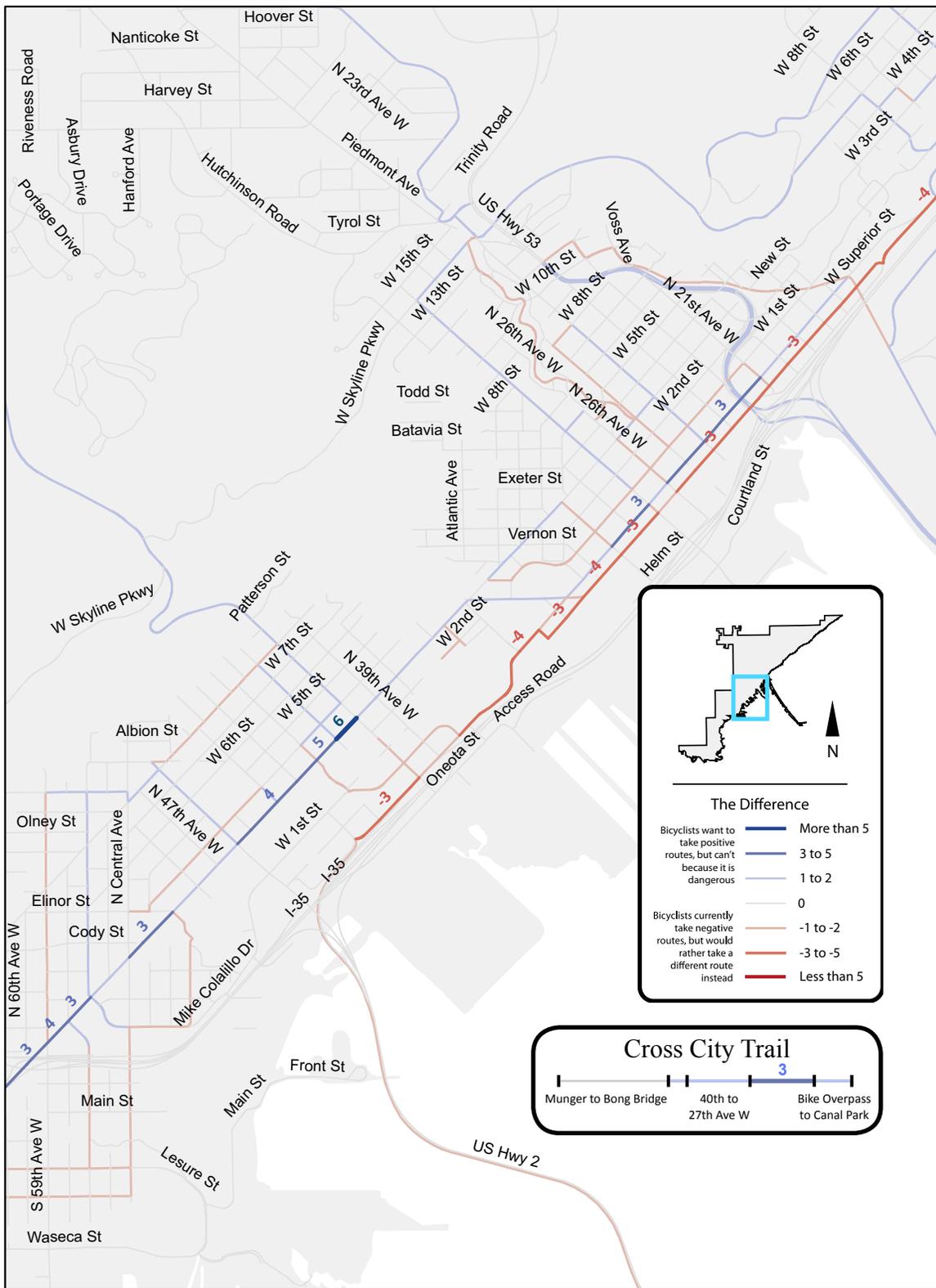
# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Spirit Valley



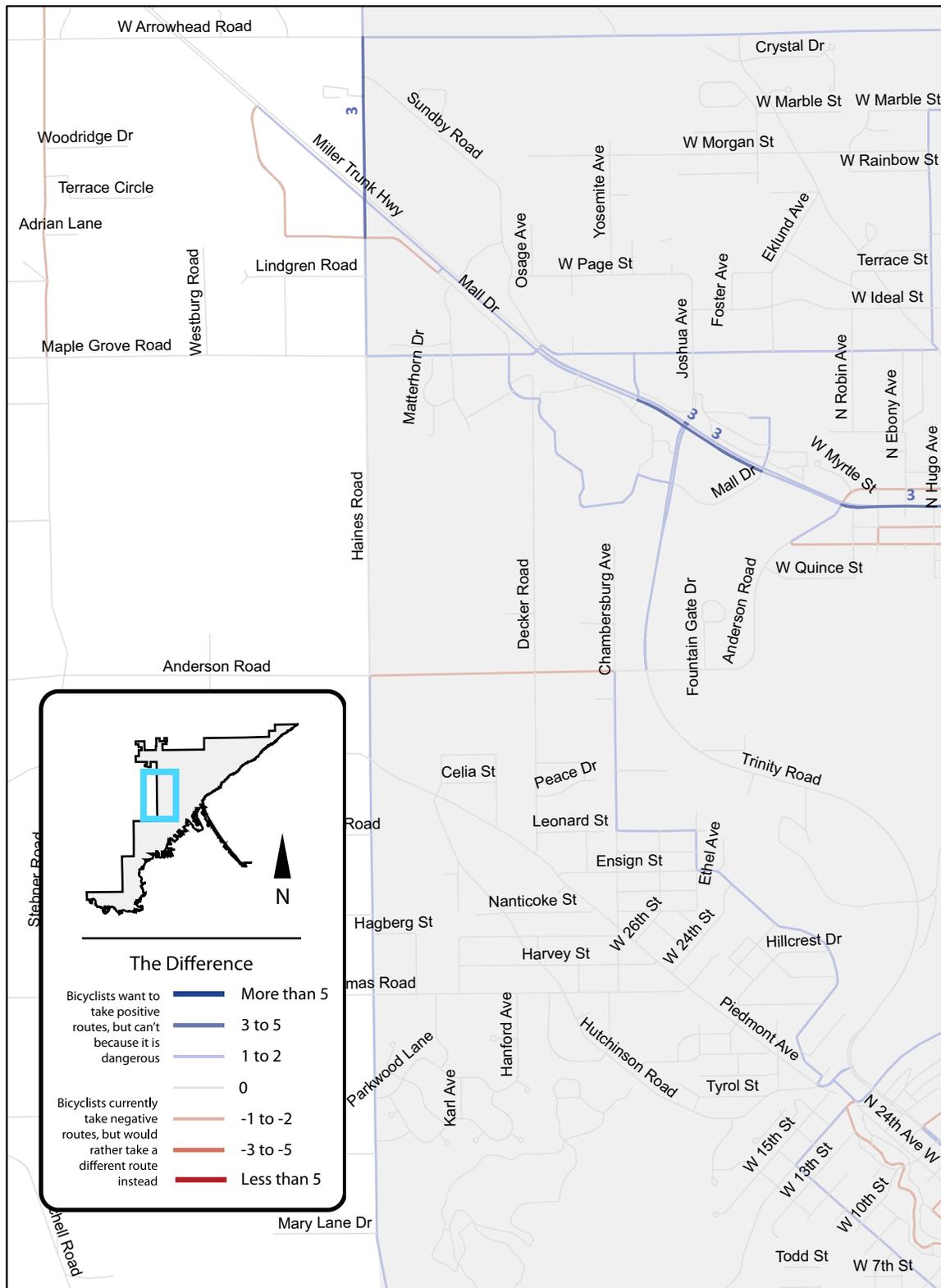
# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Denfeld - Lincoln Park



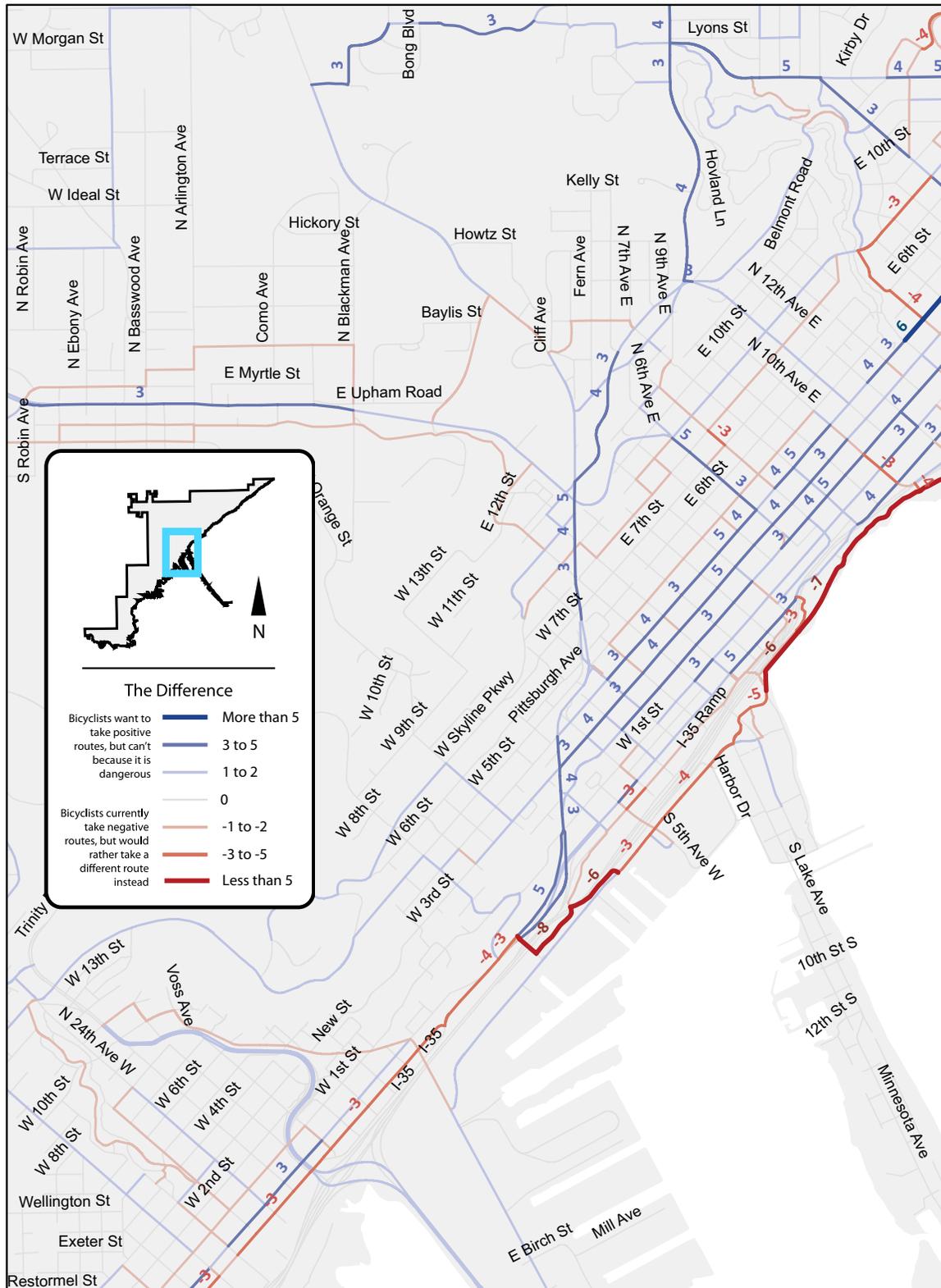
# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Mall Area



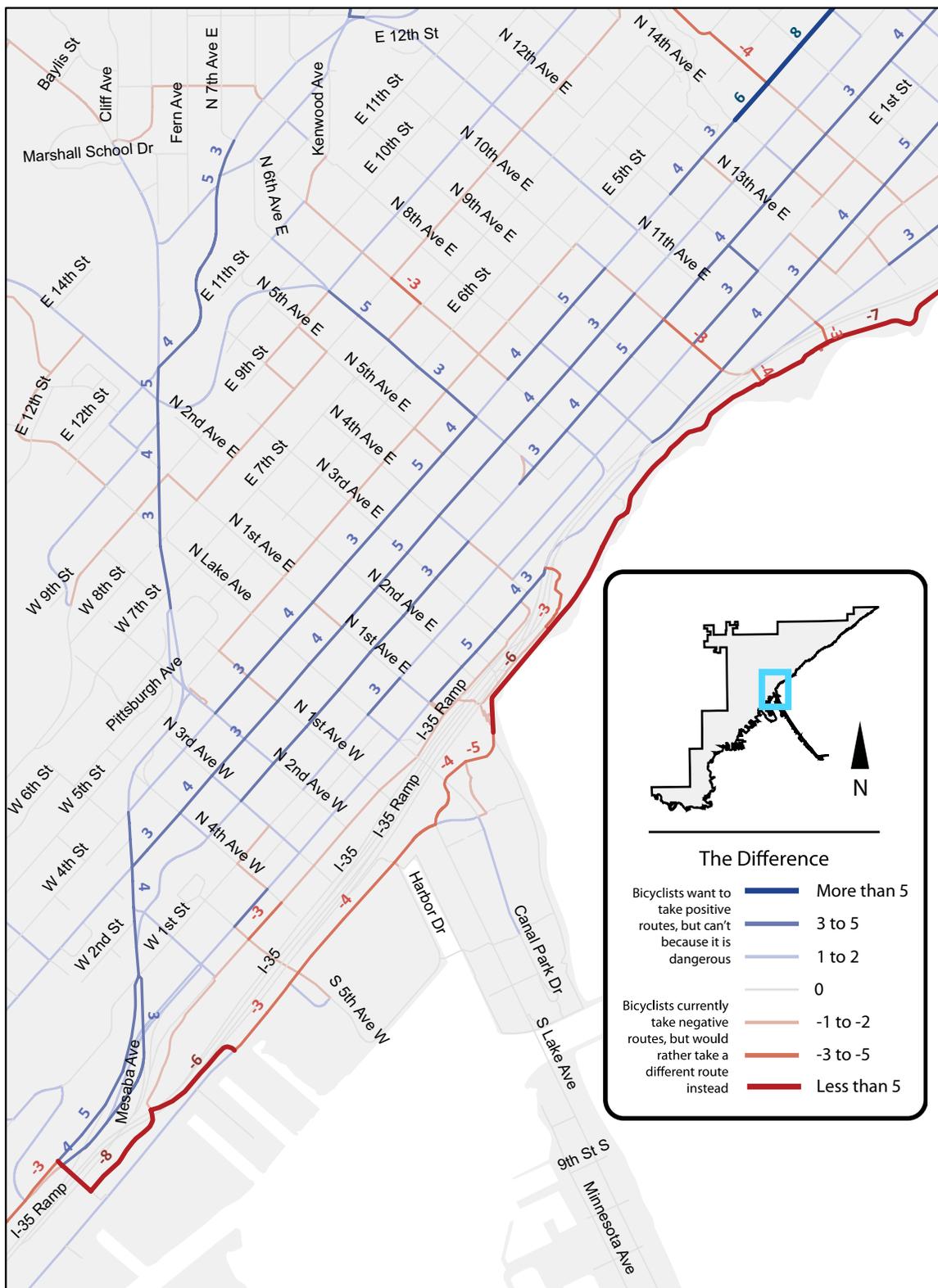
# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Downtown Area



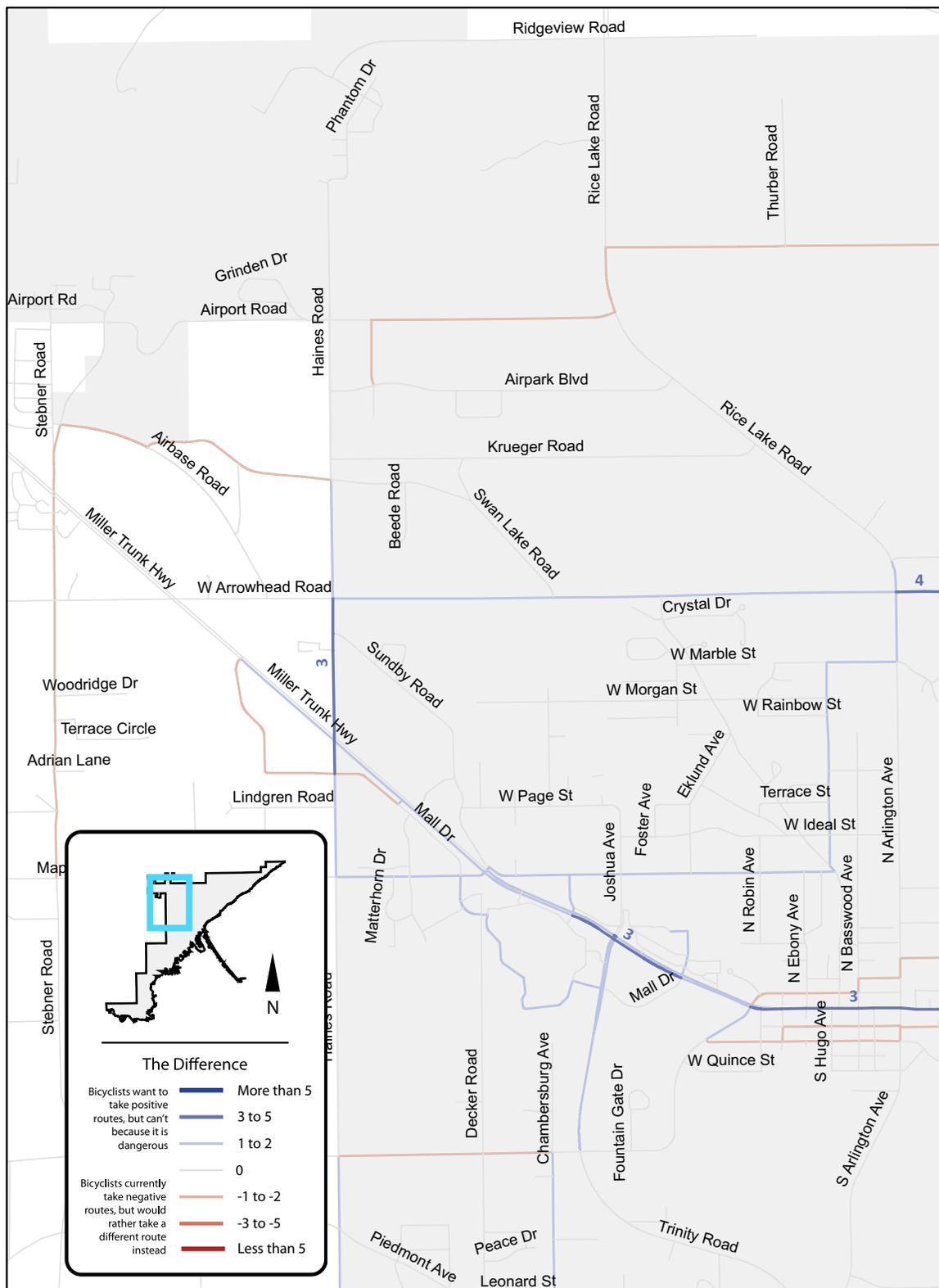
## Transportation Routes (continued)

### Current Trends vs. Ideal Routes: Downtown (zoomed-in)



# Transportation Routes (continued)

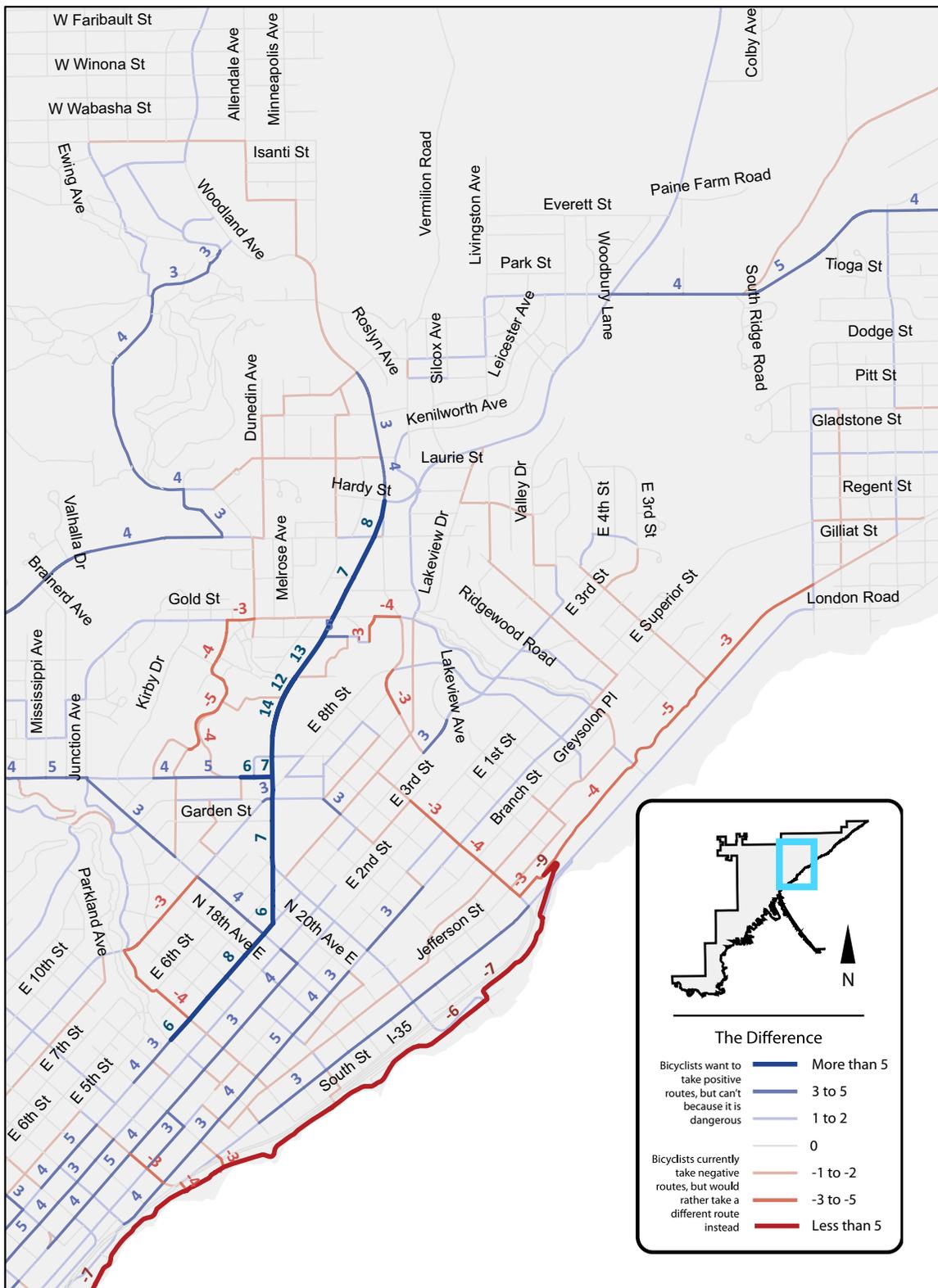
## Current Trends vs. Ideal Routes: Airport Area





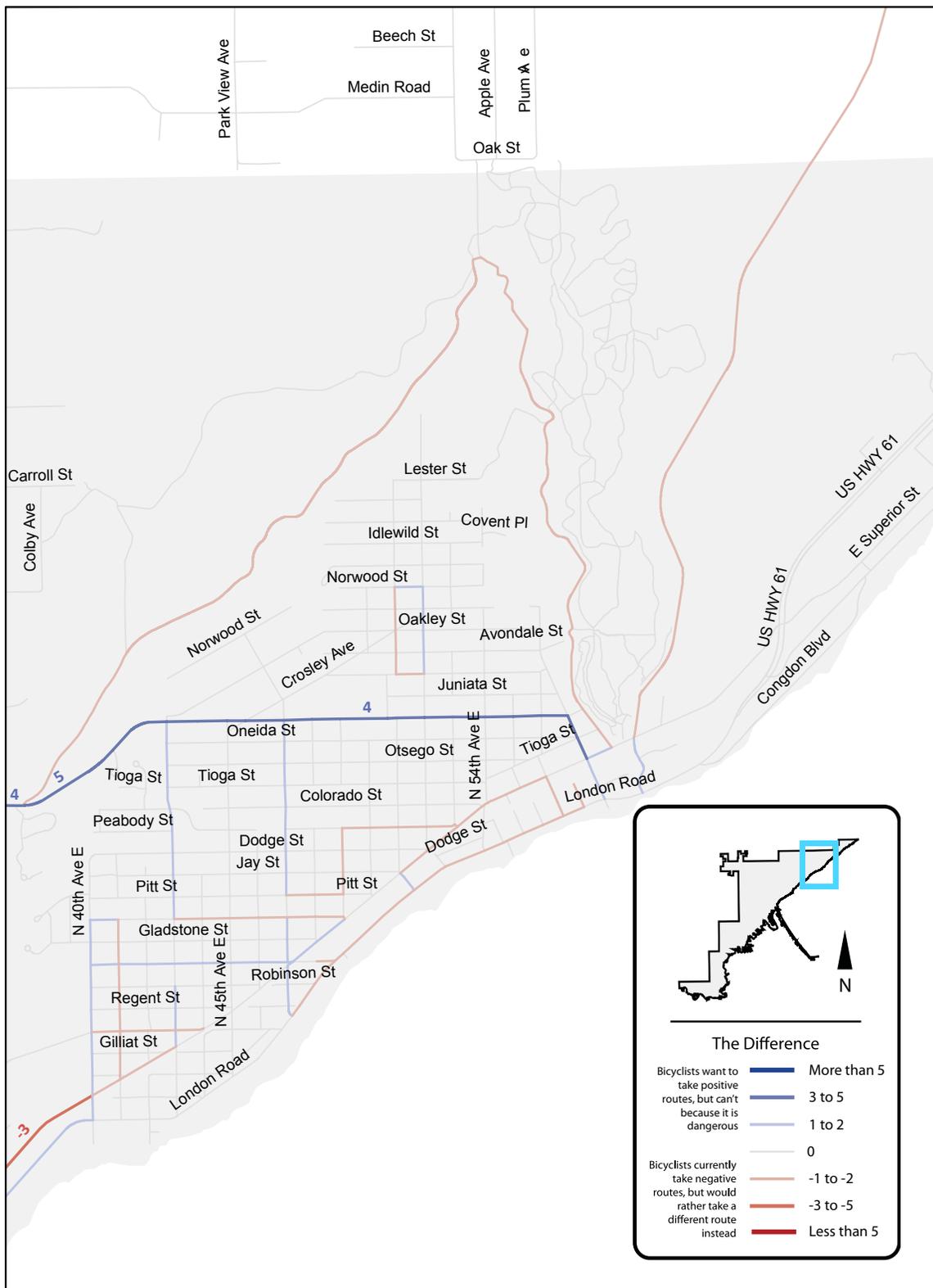
# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Congdon



# Transportation Routes (continued)

## Current Trends vs. Ideal Routes: Lakeside



## ***Preferred Bike Rack Locations***

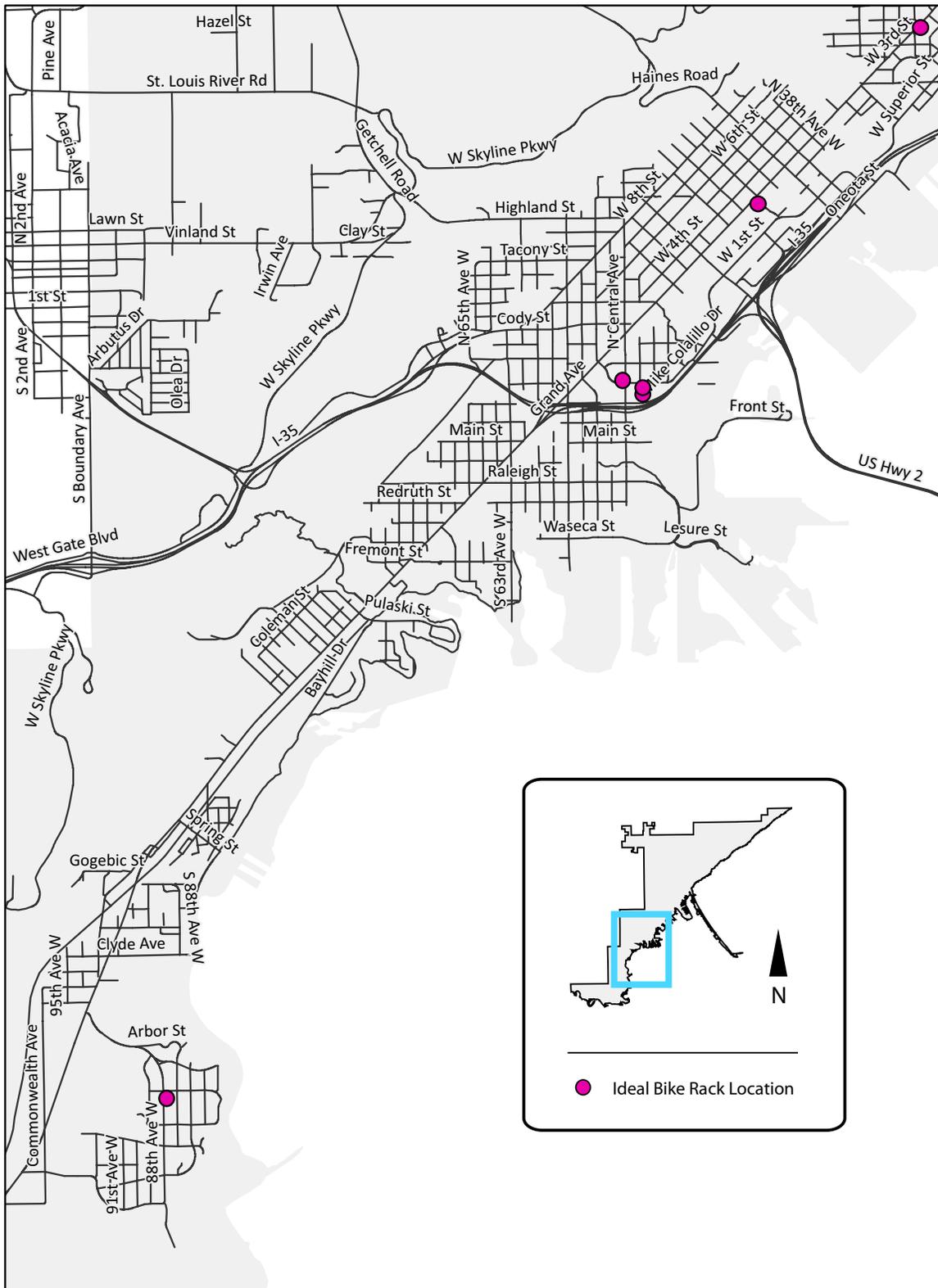
This next set of maps shows points that would be ideal for bike racks. Each participant was instructed to draw up to two locations where they would like to see bicycle racks in the future.

Each point represents one bike rack. Unlike the other maps, these next maps will only show where participants drew points, rather than encompassing the entire city of Duluth. If a certain area is not included on these next maps, it means that nobody indicated that a bike rack should be there. Areas with multiple points should especially be considered for new bike parking amenities, because it is likely that they would be more frequently utilized.

**People who could benefit from the following maps include** businesses interested in sponsoring bike racks for publicity, agencies applying for grant funding to get more bike racks, community organizations interested in raising money for bike racks, business associations interested in making their district more accessible for bicyclists, designers and professors interested in designing a Duluth-themed bike rack, and anybody else curious as to where the greatest demand for bike parking is.

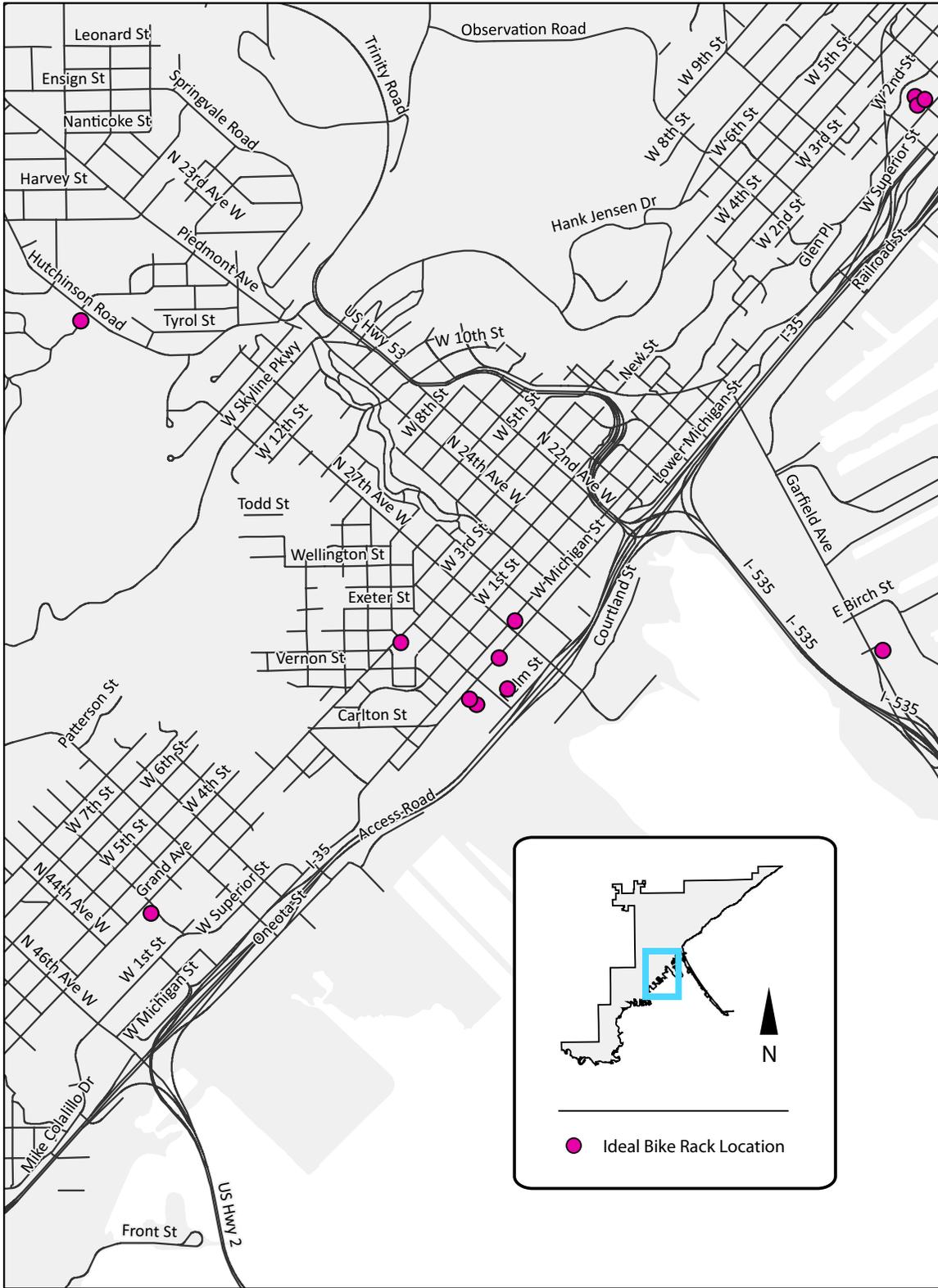
# Preferred Bike Rack Locations (continued)

## West Duluth



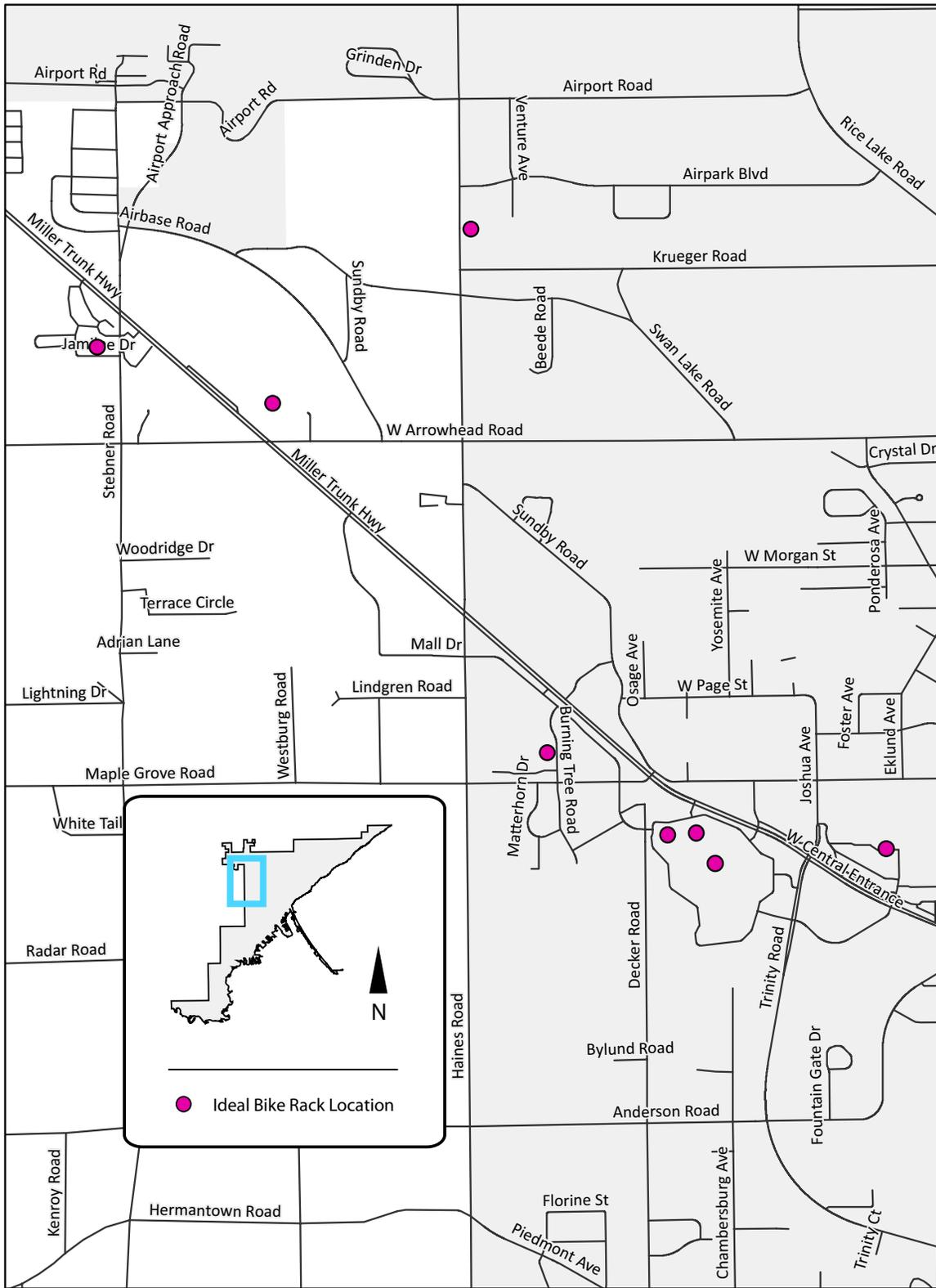
# Preferred Bike Rack Locations (continued)

## Lincoln Park

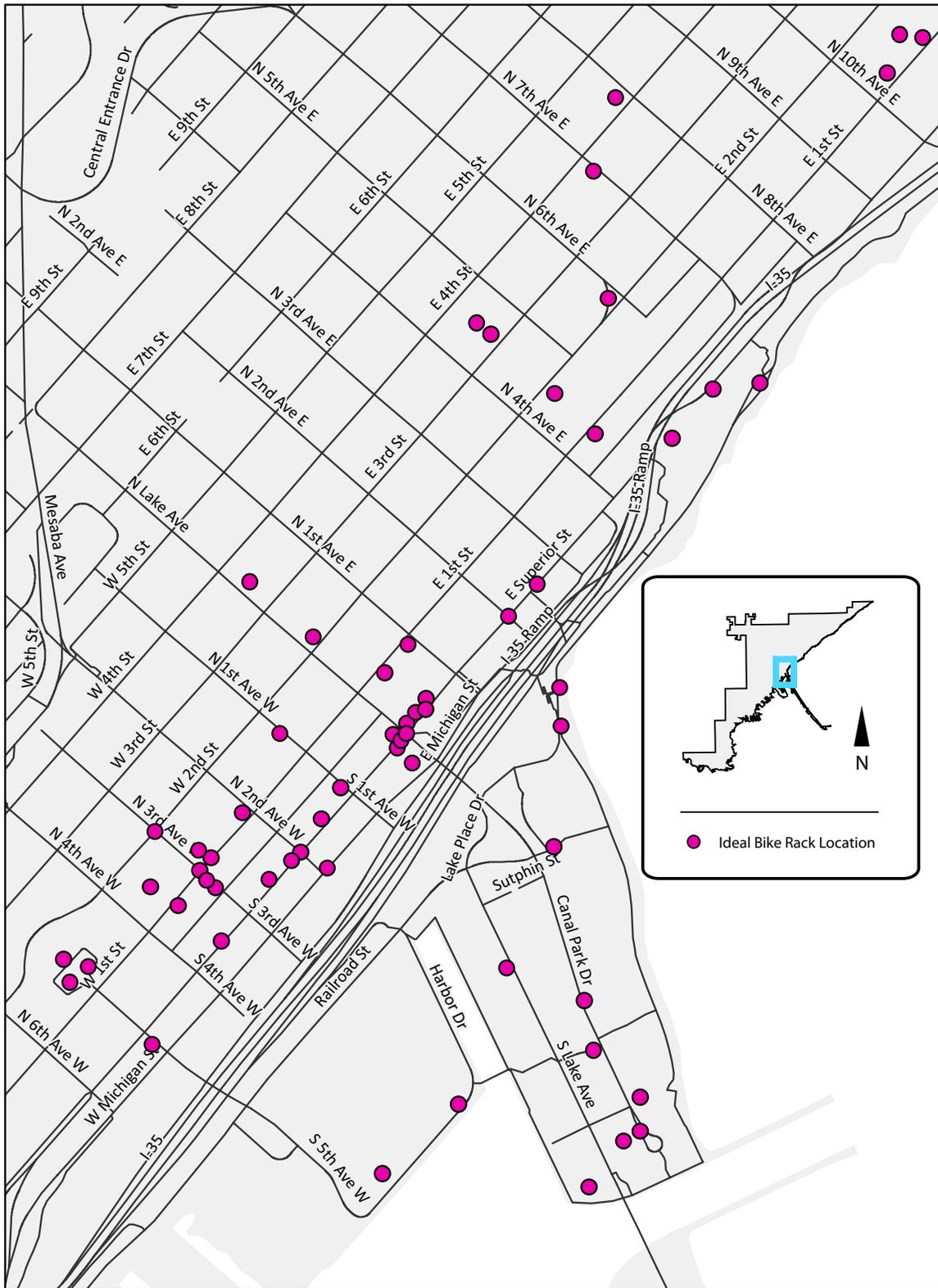


# Preferred Bike Rack Locations (continued)

## Mall Area

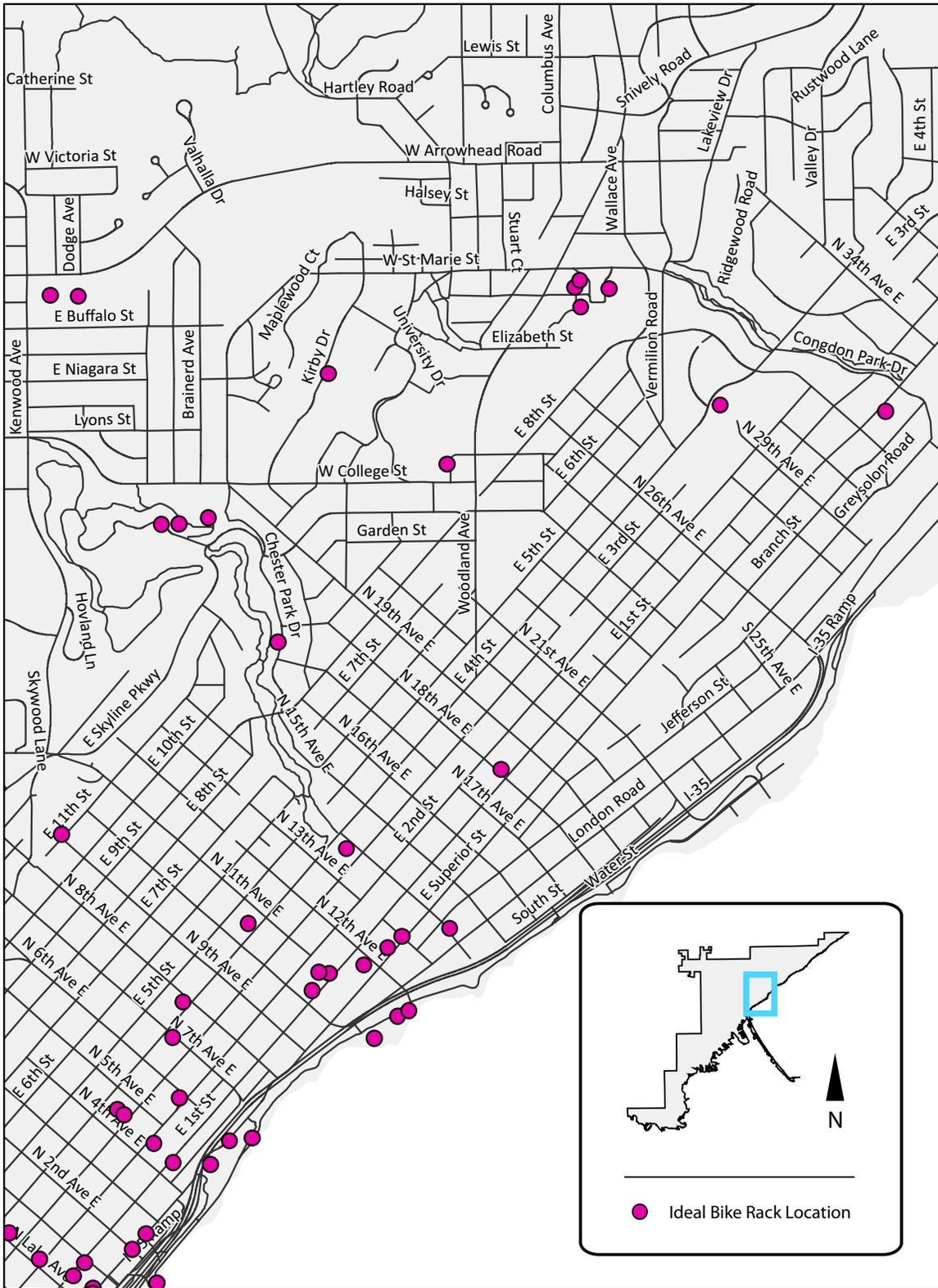


# Preferred Bike Rack Locations (continued) Downtown



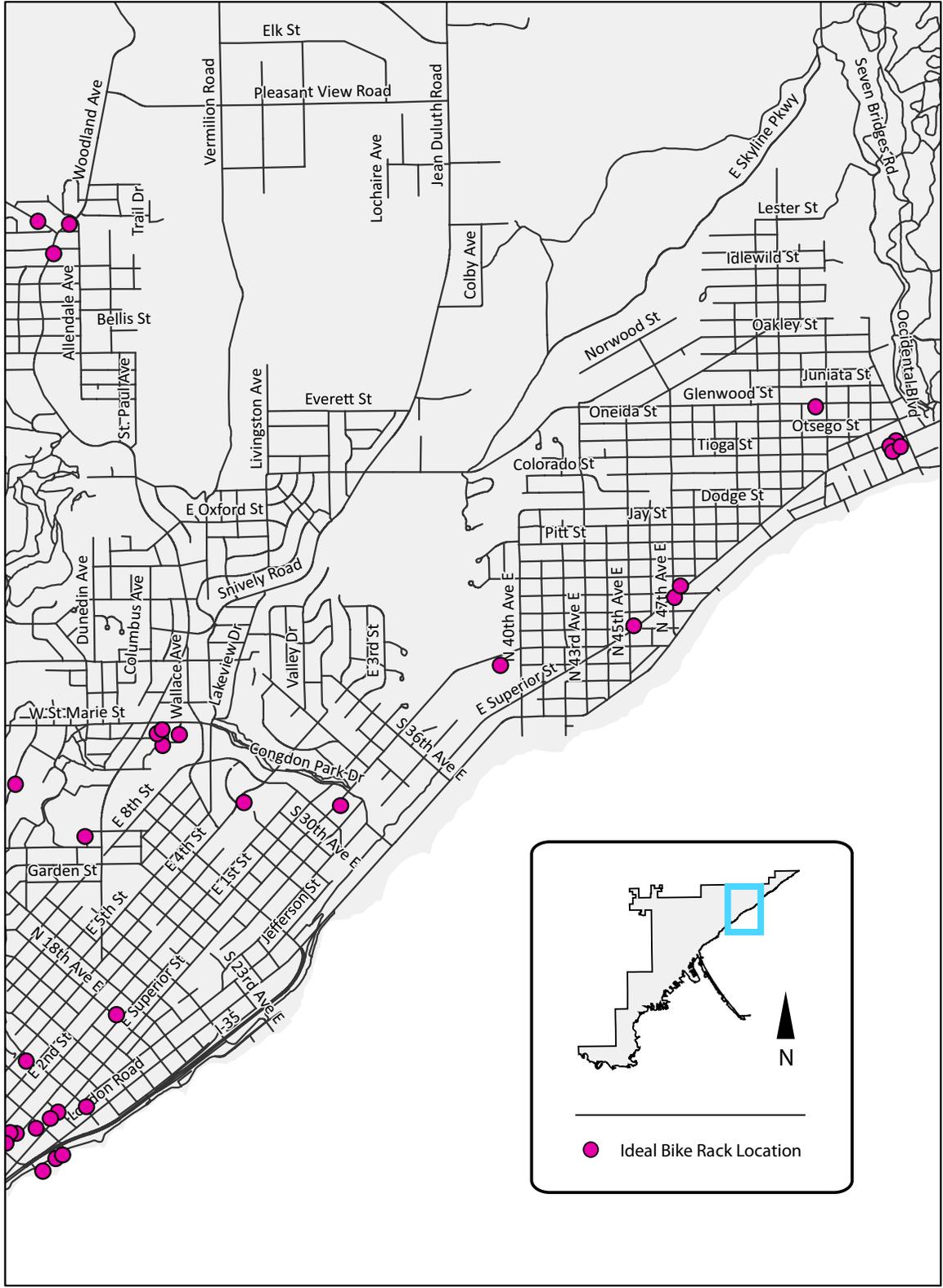
# Preferred Bike Rack Locations (continued)

## UMD Area



# Preferred Bike Rack Locations (continued)

## Woodland - Lakeside



# Conclusion and Recommendations

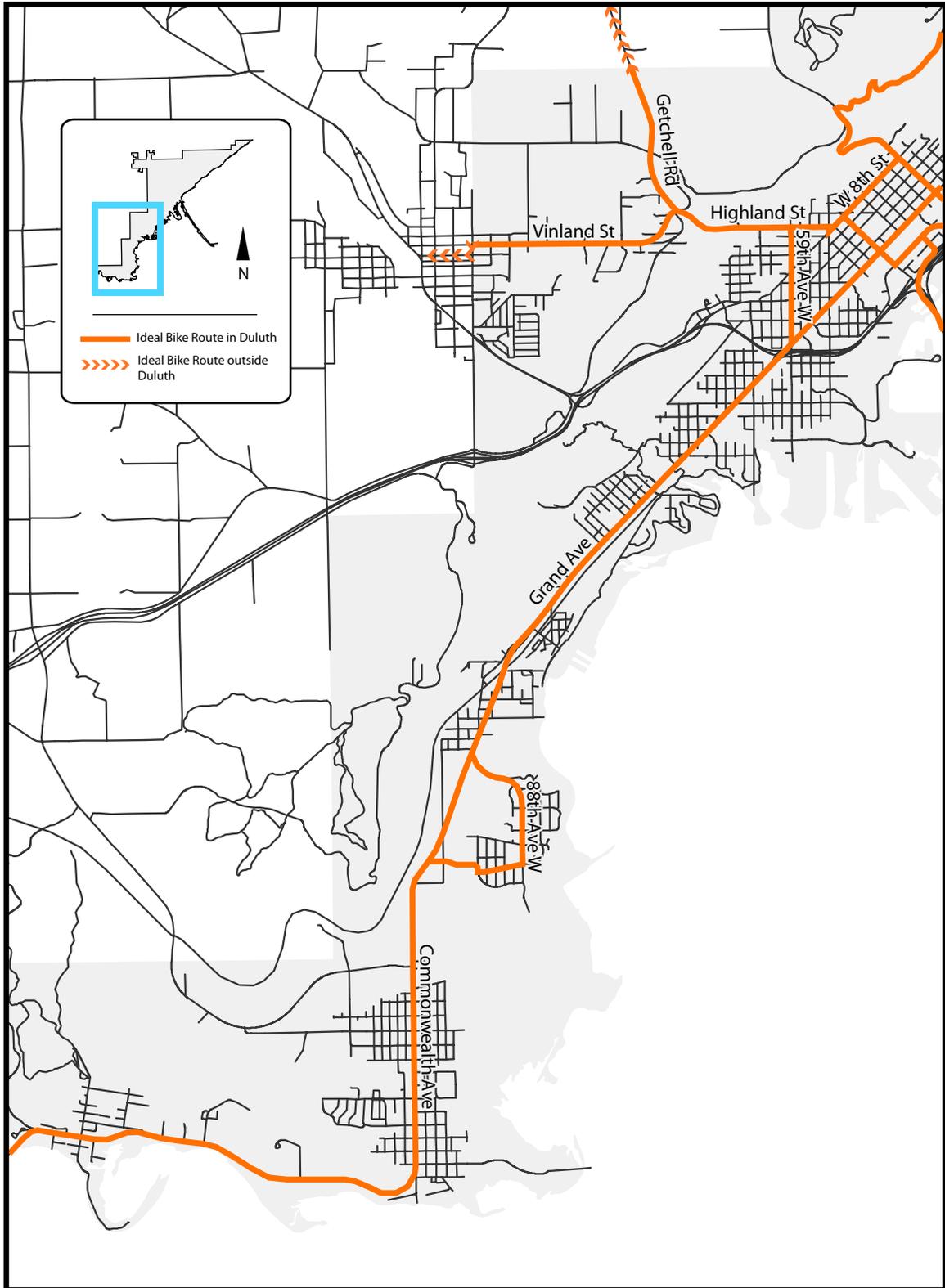
The results from this report show several different patterns. The most prominent of these patterns will be highlighted in this section. For the city as a whole, there is a high demand for improving the safety of the current transportation system. Such improvements include adding bike lanes, shoulder space, and off-street routes for bicyclists to separate them from automobile traffic. In addition, traffic calming measures should also be considered in every new street design throughout Duluth to encourage motorists to drive within the posted speed limit.

Overall, it appears that bicyclists prefer to take the most direct route possible to get to their destinations, regardless of automobile traffic. This typically means that main thoroughfares are more preferable than side streets. 4th Street, Superior Street, and Woodland Avenue were mentioned the most for needing such bike route improvements. In addition, these three routes were among the most currently traveled routes as well as the most ideal bike routes. Woodland Avenue, in particular, had the greatest number of people claim that they currently avoid using the road but would prefer to use it if it was less dangerous (see p. 67). The Lakewalk, on the other hand, had the greatest number of people claim that they currently take that route but would rather take a different route instead.

Any time a road or trail is being restriped, resurfaced, or completely reconstructed, the Results section from this report should be referenced to identify how to make the road safer. First, the Specific Areas of Concern section (p. 26) should be referenced to identify what problems, if any, were identified for a given roadway. Then, the maps showing route bicyclists prefer to take (p. 47) should also be considered to see how much bicycle travel is expected on each road. By identifying the needs of each road, it becomes easier to identify which solutions should be implemented. In addition, if funding for bike racks becomes available, the Preferred Bike Rack Locations maps (p. 69) should also be considered so that racks are placed most effectively.

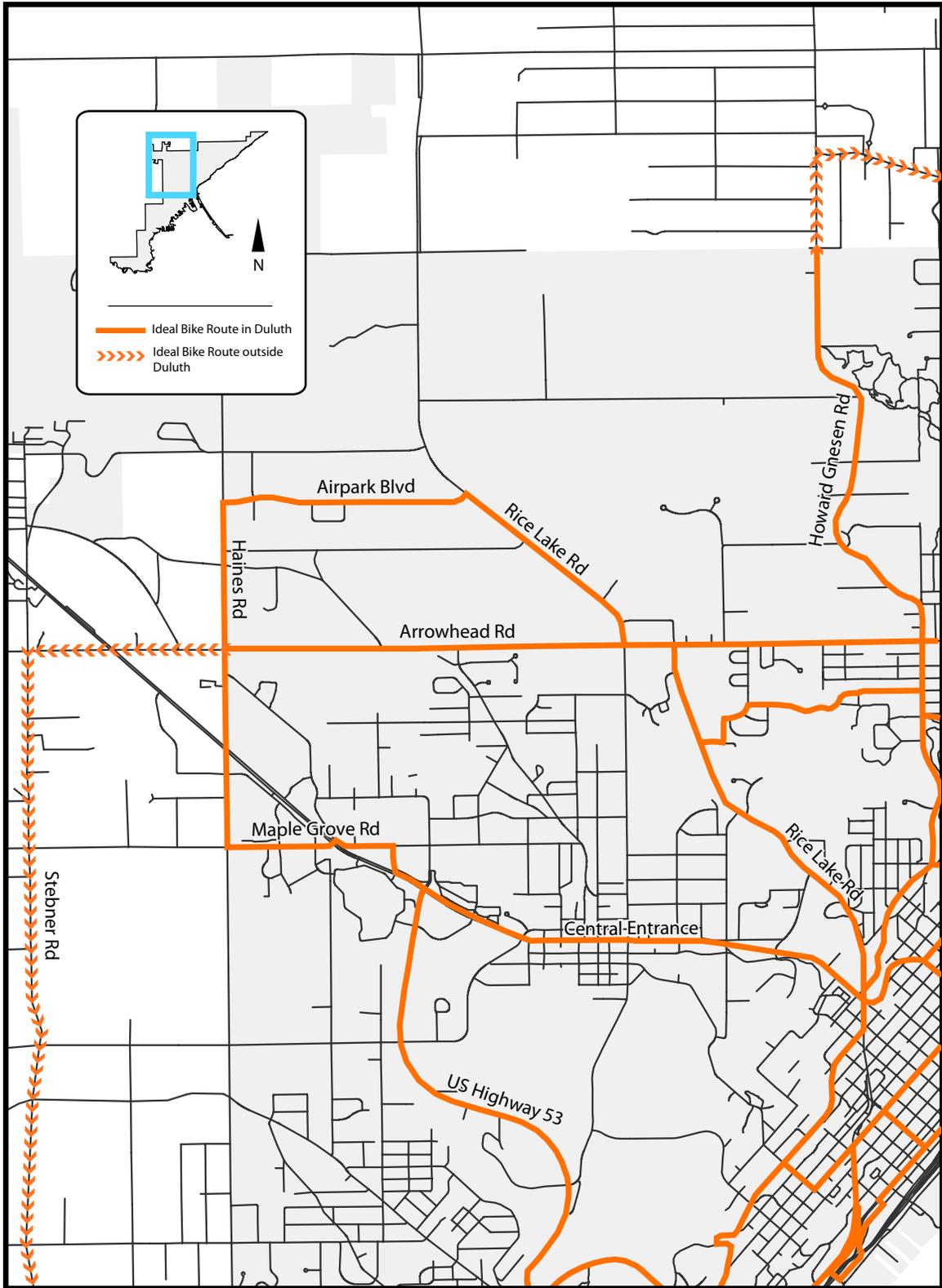
The next four pages show what an ideal bike route network would look like. These are roads that should be considered for bike route improvements. This does not imply that every one of these roads needs a designated bike lane. Instead, each route should be assessed individually to identify the most feasible improvements. These could include bike lanes, wider shoulders, traffic calming measures, sharrows, off-street paths, or the reduction of driving or parking lanes. For roads that do not have a high demand for bicycle ridership, as defined on pages 48-57, it is acceptable to reroute the bike route if it is more feasible to do so. However, routes that do have a high demand for bicycle ridership should not be rerouted. Improvements to these roads should be done so in a way that makes them practical to use for commuting by bicycle.

# Recommended Routes for Bike Route Improvements West Duluth



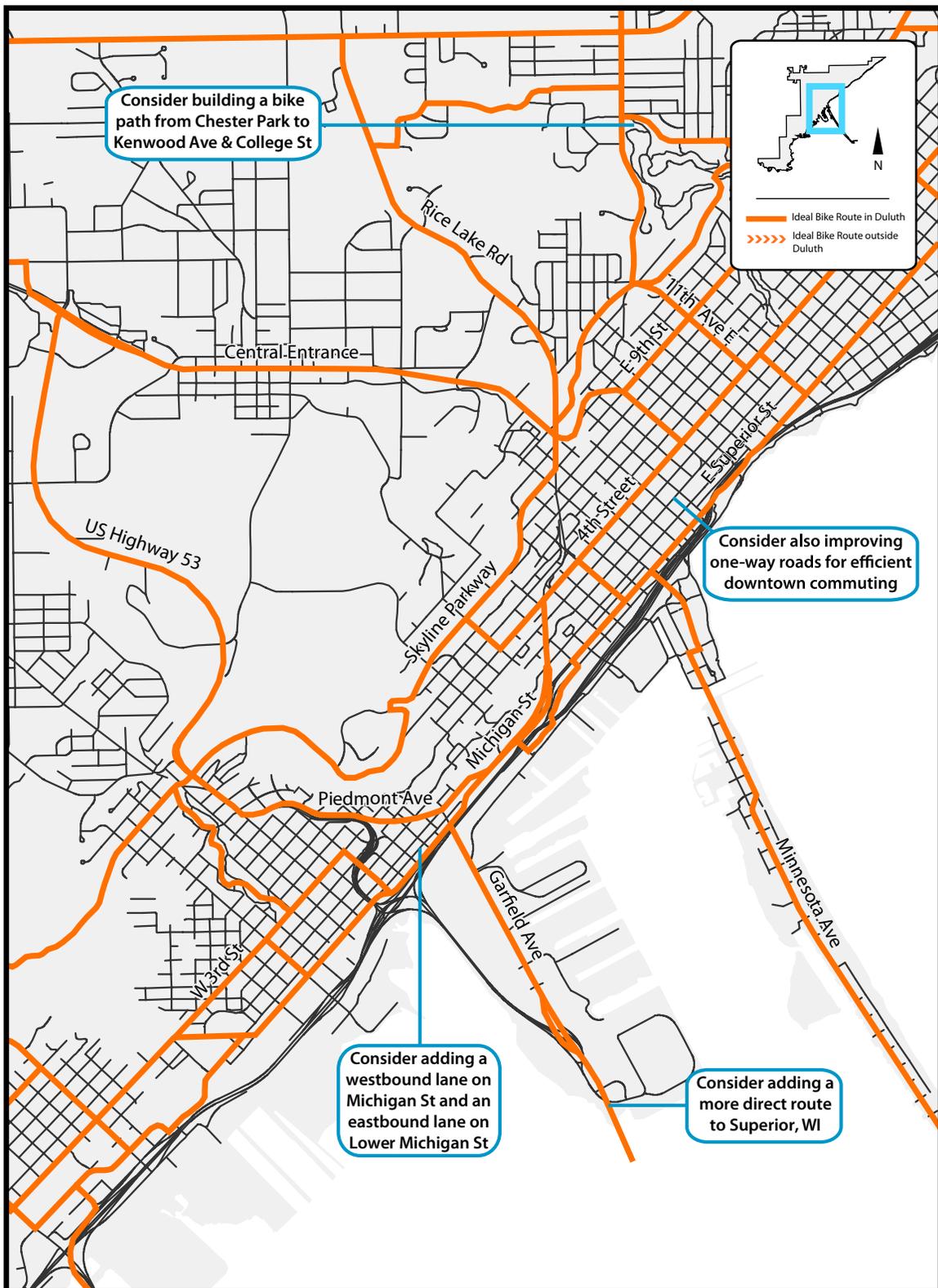
# Recommended Routes for Bike Route Improvements

## Mall Area



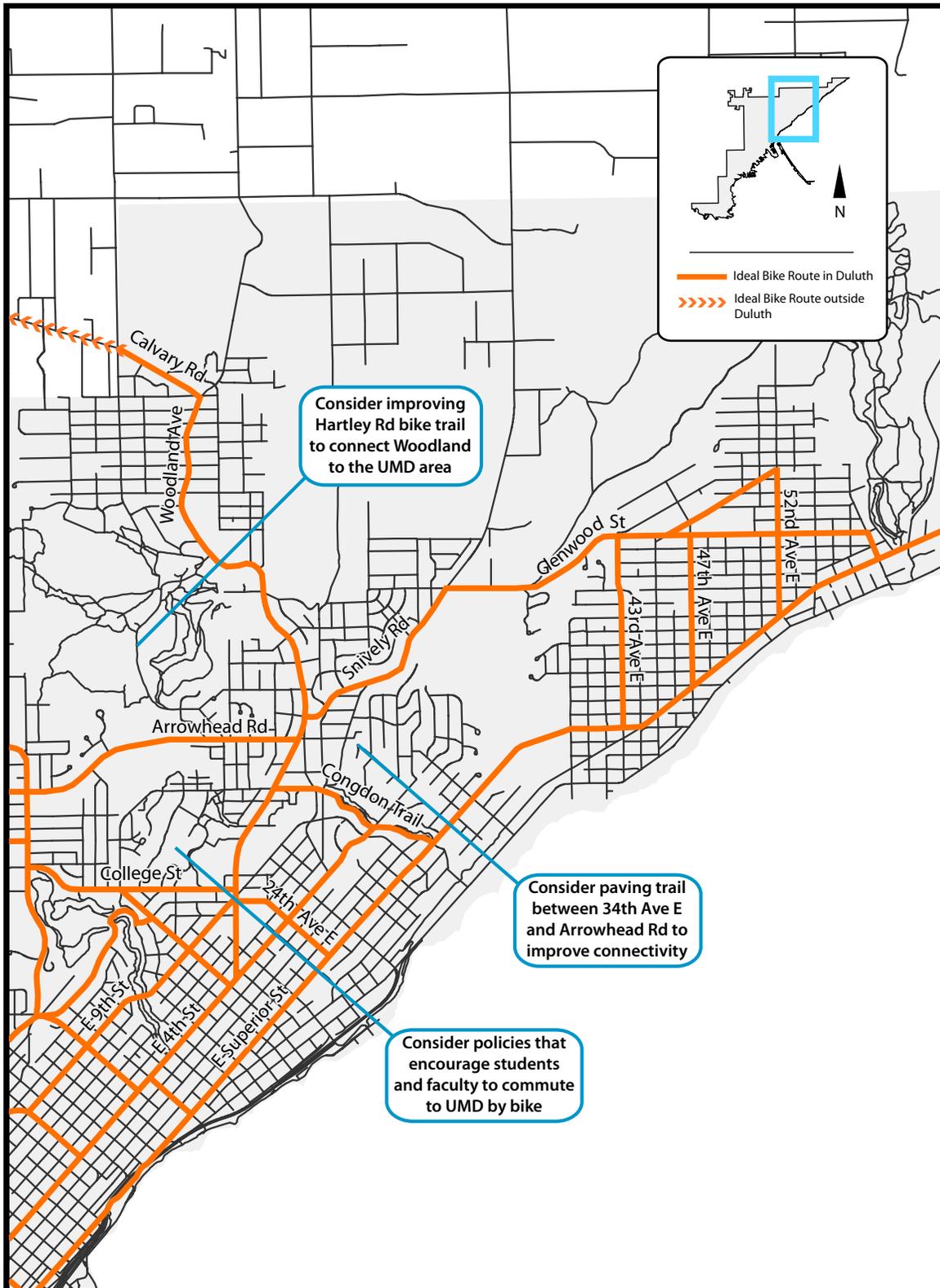
# Recommended Routes for Bike Route Improvements

## Central Duluth



# Recommended Routes for Bike Route Improvements

## East Duluth



# Discussion

This section describes issues that aren't already mentioned that may have affected the results of this study or future studies. First of all, the sample size of 103 people seems to be an ideal size for this kind of study. If less than 50 people were surveyed, the results would not have been as reliable. If more than 150 people were surveyed, it would have taken far too long to compile all of the information using the current methodology.

At each meeting, participants were given maps of the city of Duluth that only slightly overlapped the surrounding communities (i.e. Proctor, Rice Lake Township, Hermantown). As such, the routes that participants chose to draw may have been different than if more maps were available. Some participants drew a line to the edge of a map and wrote which roads they take from there, however, so some roads (e.g. Stebner Road) that weren't on the maps were still included in this analysis. Maps for Park Point were also not included. This is because there is only one major road that runs through the neighborhood, so it is assumed that would be the road that bicyclists would use.

In addition, the maps that were used for each meetings were taken from Google Maps. While the vast majority of the roads on these maps were accurate, there were a few roads that were missing and other roads that don't currently exist but were falsely added. As such, participants may have mistakenly chose some roads, thinking that they were different roads, because of how they appeared relative to other locations.

Lastly, while trying to promote the public input meetings, flyers were stapled to bicycles parked outside in an attempt to increase attendance. As it turns out, these flyers didn't seem to work, because nobody indicated that they heard about the meetings through a flyer on their bike, even though it was listed as one of the examples (see p. 7).

# Additional Information

## Useful Links

**Minnesota Bicycle Laws** - Shows the current statutes regarding bicycling  
<https://www.revisor.mn.gov/statutes/?id=169.222>

**Current Duluth-Superior Bike Route Map** - Shows the current bike routes in the city of Duluth as of 2010.  
<http://www.dsmic.org/Default.asp?PageID=539>

**Oregon Bicyclist Manual** - Shows proper bicycling techniques including tips for how to ride in traffic  
[http://www.oregon.gov/ODOT/HWY/BIKEPED/docs/bike\\_manual\\_06.pdf](http://www.oregon.gov/ODOT/HWY/BIKEPED/docs/bike_manual_06.pdf)

## Software Used



**ArcGIS**  
Used to input and classify the routes from the participants' maps



**Microsoft Word**  
Used to record all of the responses from the participants' questionnaires



**Adobe InDesign**  
Used to lay out and design this report



**Microsoft PowerPoint**  
Used at each public input meeting to present the instructions for participants



**Adobe Illustrator**  
Used convert the ArcGIS files to Adobe and also to create graphics, including the legends for each map



**Microsoft Excel**  
Used to calculate and sort the total values from the participants' questionnaires



**Adobe Photoshop**  
Used make changes to all of the raster images in this document, including these logos



**Mozilla Firefox**  
Used to gather maps and other images for this project and also to reference additional information